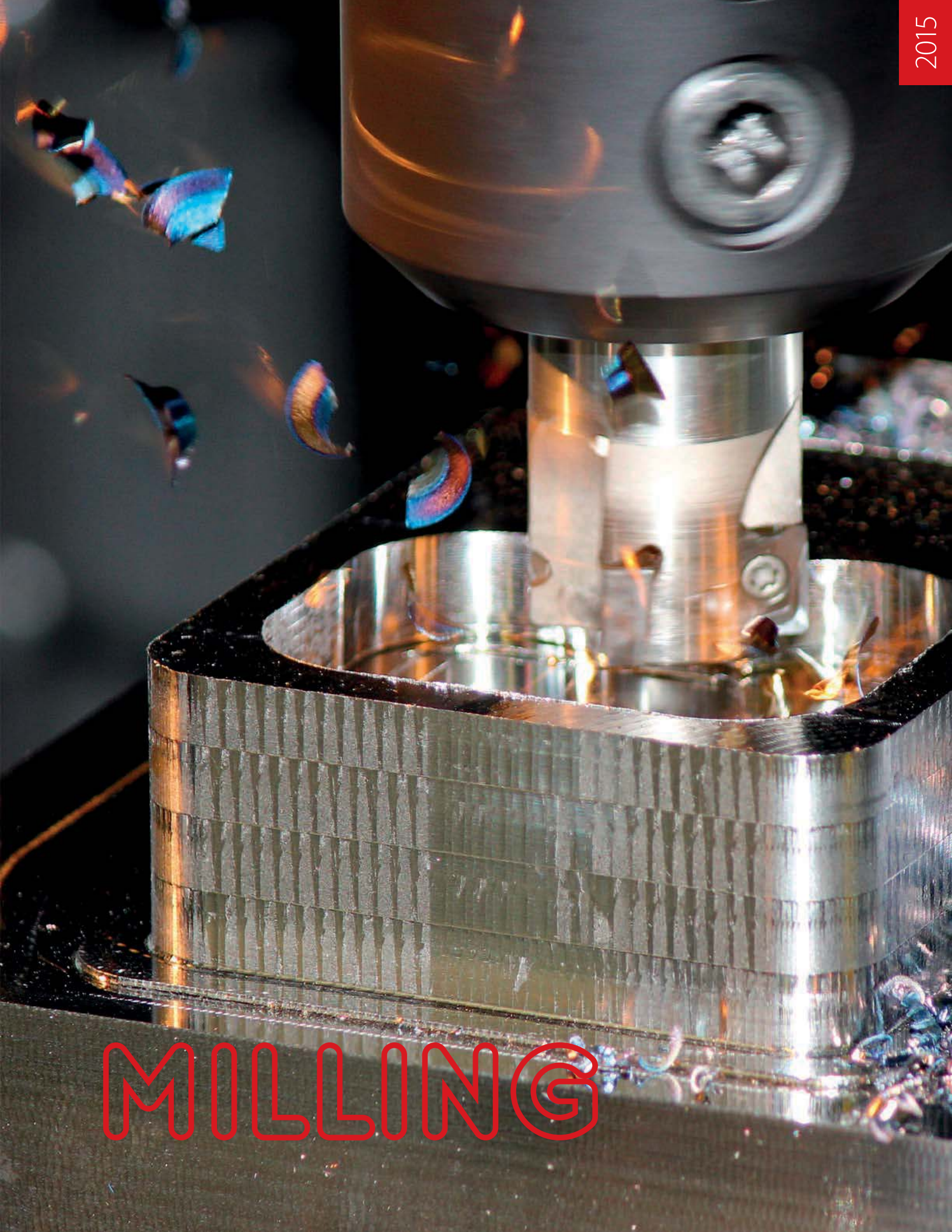

MILLING

FACE MILLING CUTTERS

M10 - M47

SQUARE SHOULDER AND SLOT MILLING CUTTERS

M28 - M63

HELICAL AND DISC MILLING CUTTERS

M64 - M71

COPY MILLING CUTTERS

M72 - M87

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ICAD15 modular	M48
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XNGX	M124
XPHT 16	M125
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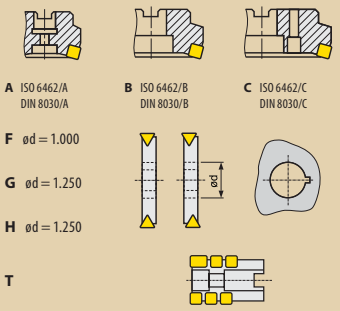
ZDEW 12	M126

SHELL CUTTER BODIES

2 – Cutting type, designation and/or size of clamping

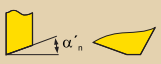


5 – Standard

I	Inch

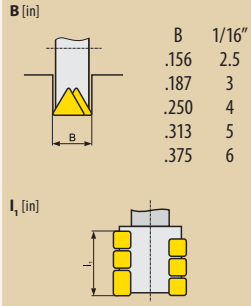
7 – Setting angle

11 – Clearance angle



N	$\alpha'_N = 0°$	E	$\alpha'_N = 20°$
P	$\alpha'_N = 11°$	F	$\alpha'_N = 25°$
D	$\alpha'_N = 15°$		

12 – Cutting edge length (width)



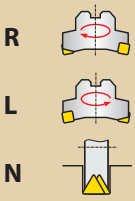
B	1/16"
.156	2.5
.187	3
.250	4
.313	5
.375	6

1	2	3	4		5	6	7	8	9	10	11	12
300	F	04	N		I	S	90	S	N	12	N	4
250	**A**	**06**	**R**	–	**I**	**S**	**90**	**A**	**D**	**16**	**E**	

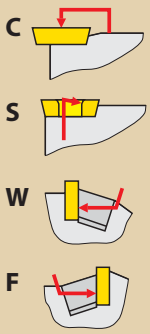
1 – Cutting diameter [in]

3 – No. of working edges

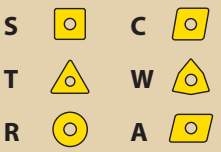
4 – Direction of cut



6 – Clamping designation



8 – Insert shape



9 – Clearance angle

N	$\alpha_N = 0°$	D	$\alpha_N = 15°$
C	$\alpha_N = 7°$	E	$\alpha_N = 20°$
P	$\alpha_N = 11°$	F	$\alpha_N = 25°$

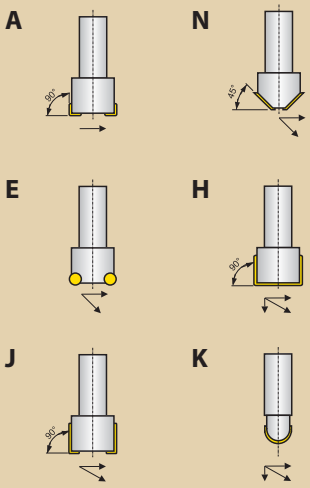
10 – Insert size or cutting edge length

d [mm]	S	C	T	W	R	A
6,35						9/11
7,94				05		
8,00					08	
9,525	09	09	16	06		12
10,00					10	
12,00					12	
12,70	12	12	22	08		15
15,875	15					
16,00					16	
25,00					25	
25,40	25					

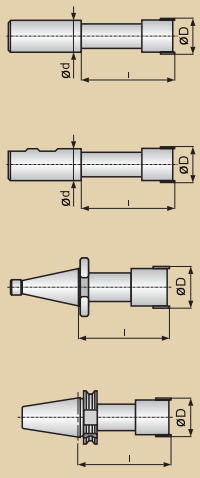
SHOULDER END MILLING CUTTERS

1	1a	3	4	2a	3a	4a		5	6	8	9	10	11	12
125	J	2	R	236	W	125		I	S	A	D	11	E	185
100	**A**	**3**	**R**	**128**	**W**	**100**	–	**I**	**S**	**A**	**D**	**11**	**E**	

1a – Cutter type and setting angle



2a – Overhang [in]



3a – Shank designation

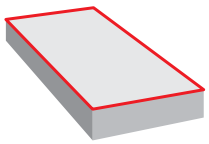
C	DIN 1835-1
W	ISO 3338-2 DIN 1835-2
G	ISO 297 DIN 208-1
H	ISO/DIS 7388-1 DIN 69871-1

4a – Shank size

øD .625 - 1.250	ød .625 - 1.250
øD .625 - 1.500	ød .625 - 1.250
øD 2.000 - 3.000	7:24 No. 40 50
øD 2.000 - 3.000	7:24 No. 40 50

PRAMET

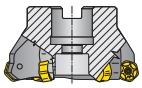
MILLING FLAT SURFACES



IS45HN06C

45° | $a_{p\,max}$ [in] .118 | ø D [in] 1.000 - 5.000

ECON HN



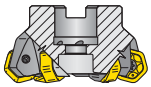
	P	M	K
HN 0604			
XN 0604	N		H

M10 - M15

IS45HN09C

45° | $a_{p\,max}$ [in] .197 | ø D [in] 2.000-12.000

ECON HN

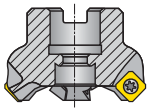


	P	M	K
HN 0906			
XN 0906	N		H

M16 - M17

IS45SE09F

45° | $a_{p\,max}$ [in] .177 | ø D [in] .750-6.000



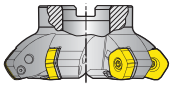
	P	M	K
SE 09T3			
	N	S	H

M18 - M21

IS57PN13

57° | $a_{p\,max}$ [in] .394 | ø D [in] 4.000-12.000

PENTA HD



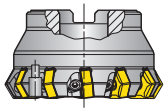
	P	M	K
PN 1308			
	N	S	H

M22 - M23

IC60HN09

60° | $a_{p\,max}$ [in] .236 | ø D [in] 3.000-10.000

ECON HN



	P		K
HN 0905			
			H

M24 - M25

IF60SB22X

60° | $a_{p\,max}$ [in] .590 | ø D [in] 5.000-12.000

ROUGH SB

	P	M	K
SB 2207			
			H

M26-27

ISRD07

- | $a_{p\,max}$ [in] .071 | ø D [in] .625-1.000

	P	M	K
RD.. 0702			
	N		H

M74 - M75

ISRD10

- | $a_{p\,max}$ [in] .100 | ø D [in] .750-1.500

	P	M	K
RD 1003			
	N		H

M72 - M75

IS(C)RD12

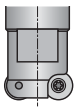
- | $a_{p\,max}$ [in] .118 | ø D [in] 1.000-3.000

	P	M	K
RD 12T3			
	N		H

M74 - M77

ISCMORD16

- | $a_{p\,max}$ [in] .157 | ø D [in] 2.500-4.000



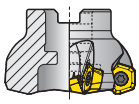
	P	M	K
RD 1604			
	N		H

M76 - M77

IS19PD09

19° | $a_{p\,max}$ [in] .079 | ø D [in] 1.250-4.000

PENTA HF



	P	M	K
PD 0905			
	N	S	H

M78 - M81

ISZD07

- | $a_{p\,max}$ [in] .039 | ø D [in] .625-1.250

FEED ZD

	P	M	K
ZD 0703			
			H

M82 - M85

ISZD09

- | $a_{p\,max}$ [in] .039 | ø D [in] 1.000-1.500

FEED ZD

	P	M	K
ZD 09T3			
			H

M82 - M87

ISZD12

- | $a_{p\,max}$ [in] .063 | ø D [in] 1.500-3.000

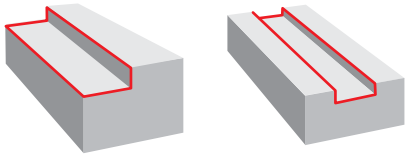
FEED ZD

	P	M	K
ZD 1204			
			H

M82 - M87

PRAMET

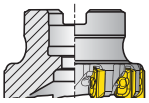
MILLING LOW SHOULDERS AND SLOTS



IC90AD15

90° | $a_{p\,max}$ [in] .394 | ø D [in] 1.000-3.000

MULTISIDE AD

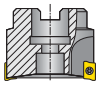


AD 15T3 — P M K / S — M46 - M51

IS90AD11E

90° | $a_{p\,max}$ [in] .354 | ø D [in] .625-5.000

FORCE AD

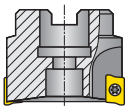


AD 11T3 — P M K / N S H — M28 - M38

IS90AD16E

90° | $a_{p\,max}$ [in] .512 | ø D [in] 1.000-6.000

FORCE AD

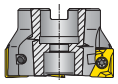


AD 1606 — P M K / N S H — M40 - M45

IS90LN12

90° | $a_{p\,max}$ [in] .354 | ø D [in] 1.000-5.000

ECON LN

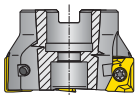


LN 1205 — P M K / N H — M52 - M57

IS90LN16

90° | $a_{p\,max}$ [in] .512 | ø D [in] 2.500-6.000

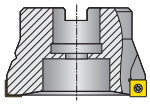
ECON LN



LN 1607 — P M K / N H — M58 - M59

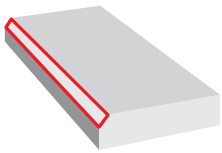
IS90SO09

90° | $a_{p\,max}$ [in] .315 | ø D [in] 1.000-5.000



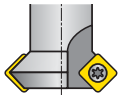
SO 09T3 — P M K / N S H — M60 - M63

CHAMFER MILLING



SSD09

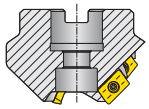
45° | $a_{p\,max}$ [in] .177 | ø D [in] .375-1.000



SD 0903 — P M K / N S H — M88 - M89

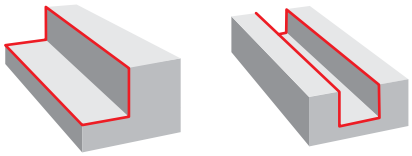
SxxXP

30-60° | $a_{p\,max}$ [in] .551-.984 | ø D [in] 1.500-2.000



XP 1604 — P M K / N S — M90 - M91

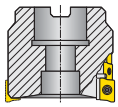
MILLING DEEP SHOULDERS AND SLOTS



J-ISAD11E

90° | $a_{p\,max}$ [in] 1.496 - 2.205 | ø D [in] 1.000-2.000

FORCE AD



	P	M	K
AD 11T3	N	S	H

M64 - M67

IS90SN

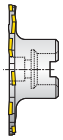
90° | $a_{p\,max}$ [in] .156-.375 | ø D [in] 3.000-6.000

	P	M	K
SN 11 SN 12	N	S	H

M68 - M69

IS90SN-R

90° | $a_{p\,max}$ [in] .156-.375 | ø D [in] 2.500-6.000



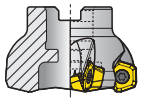
	P	M	K
SN 11 SN 12	N	S	H

M70 - M71

IS19PD09

19° | $a_{p\,max}$ [in] .079 | ø D [in] 1.250-4.000

PENTA HF



	P	M	K
PD 0905	N	S	H

M78 - M81

ISZD07

- | $a_{p\,max}$ [in] .039 | ø D [in] .625-1.250

FEED ZD

	P	M	K
ZD 0703			H

M82 - M85

ISZD09

- | $a_{p\,max}$ [in] .039 | ø D [in] 1.000-1.500

FEED ZD

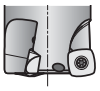
	P	M	K
ZD 09T3			H

M82 - M87

ISZD12

- | $a_{p\,max}$ [in] .063 | ø D [in] 1.500-3.000

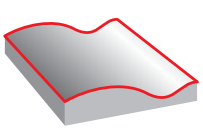
FEED ZD

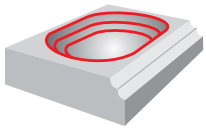


	P	M	K
ZD 1204			H

M82 - M87

MILLING SHAPED SURFACES (COPY MILLING)





ISRD07

-	$a_{p\,max}$ [in]	.071
	ø D [in]	.625-1.000

	RD.. 0702	P	M	K
		N		H

M74 - M75

ISRD10

-	$a_{p\,max}$ [in]	.100
	ø D [in]	.750-1.500

	RD 1003	P	M	K
		N		H

M72 - M75

IS(C)RD12

-	$a_{p\,max}$ [in]	.118
	ø D [in]	1.000-3.000

	RD 12T3	P	M	K
		N		H

M74 - M77

ISCMORD16

-	$a_{p\,max}$ [in]	.157
	ø D [in]	2.500-4.000

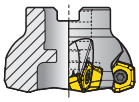
	RD 1604	P	M	K
		N		H

M76 - M77

IS19PD09

19°	$a_{p\,max}$ [in]	.079
	ø D [in]	1.250-4.000

PENTA HF



	PD 0905	P	M	K
		N	S	H

M78 - M81

ISZD07

-	$a_{p\,max}$ [in]	.039
	ø D [in]	.625-1.250

FEED ZD

	ZD 0703	P	M	K
				H

M82 - M85

ISZD09

-	$a_{p\,max}$ [in]	.039
	ø D [in]	1.000-1.500

FEED ZD

	ZD 09T3	P	M	K
				H

M82 - M87

ISZD12

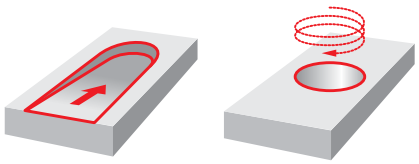
-	$a_{p\,max}$ [in]	.063
	ø D [in]	1.500-3.000

FEED ZD

	ZD 1204	P	M	K
				H

M82 - M87

RAMPING AND HELICAL INTERPOLATION



ISRD07

-	$a_{p\,max}$ [in]	.071
	ø D [in]	.625-1.000

	RD.. 0702	P	M	K
		N		H
		M74 - M75		

ISRD10

-	$a_{p\,max}$ [in]	.100
	ø D [in]	.750-1.500

	RD 1003	P	M	K
		N		H
		M72 - M75		

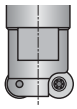
IS(C)RD12

-	$a_{p\,max}$ [in]	.118
	ø D [in]	1.000-3.000

	RD 12T3	P	M	K
		N		H
		M74 - M77		

ISCMORD16

-	$a_{p\,max}$ [in]	.157
	ø D [in]	2.500-4.000

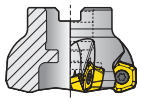


	RD 1604	P	M	K
		N		H
		M76 - M77		

IS19PD09

19°	$a_{p\,max}$ [in]	.079
	ø D [in]	1.250-4.000

PENTA *HF*



	PD 0905	P	M	K
		N	S	H
		M78 - M81		

ISZD07

-	$a_{p\,max}$ [in]	.039
	ø D [in]	.625-1.250

FEED *ZD*

	ZD 0703	P	M	K
				H
		M82 - M85		

ISZD09

-	$a_{p\,max}$ [in]	.039
	ø D [in]	1.000-1.500

FEED *ZD*

	ZD 09T3	P	M	K
				H
		M82 - M87		

ISZD12

-	$a_{p\,max}$ [in]	.063
	ø D [in]	1.500-3.000

FEED *ZD*

	ZD 1204	P	M	K
				H
		M82 - M87		

IS90AD11E

90°	$a_{p\,max}$ [in]	.354
	ø D [in]	.625-5.000

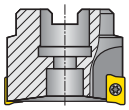
FORCE *AD*

	AD 11T3	P	M	K
		N	S	H
		M28 - M38		

IS90AD16E

90°	$a_{p\,max}$ [in]	.512
	ø D [in]	1.000-6.000

FORCE *AD*

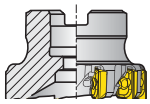


	AD 1606	P	M	K
		N	S	H
		M40 - M45		

IC90AD15

90°	$a_{p\,max}$ [in]	.394
	ø D [in]	1.000-3.000

MULTISIDE *AD*

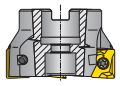


	AD 15T3	P	M	K
			S	
		M46 - M51		

IS90LN12

90°	$a_{p\,max}$ [in]	.354
	ø D [in]	1.000-5.000

ECON *LN*

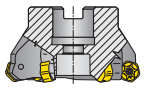


	LN 1205	P	M	K
		N		H
		M52 - M57		

IS45HN06C

45°	$a_{p\,max}$ [in]	.118
	ø D [in]	1.000 - 5.000

ECON *HN*

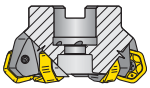


	HN 0604	P	M	K
	XN 0604	N		H
		M10 - M15		

IS45HN09C

45°	$a_{p\,max}$ [in]	.197
	ø D [in]	2.000-12.000

ECON *HN*



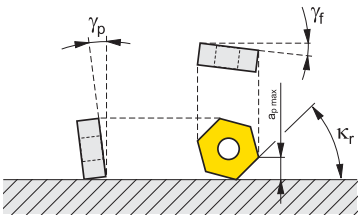
	HN 0906	P	M	K
	XN 0906	N		H
		M16 - M17		

PRAMET

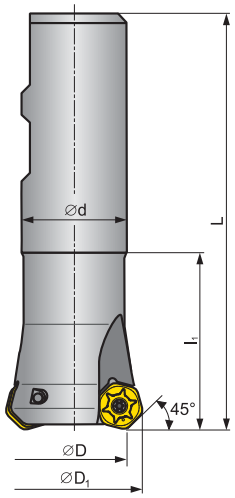
ISHN06

NEGATIVE FACE MILLING CUTTER

γ_p	-7°	κ_r	45°
γ_f	-7°	$a_{p\,max}$	.118 in



ECON HN



Z* - Number of teeth

Dimensions [in].

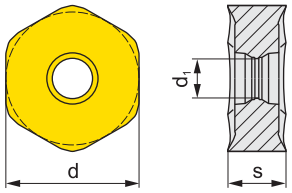
Designation	Assortment	Dimensions											Cooling	[lbs]
		D	D_1	d	L	l_1	Z*							
100N2R128W100-ISHN06C-C	●	1.000	1.283	1.000	3.819	1.280	2						+	.71
125N3R150W125-ISHN06C-C	●	1.250	1.537	1.250	4.039	1.500	3						+	1.23

PRAMET

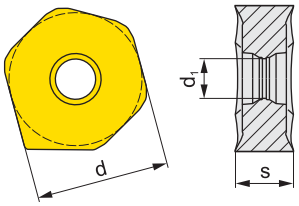
● stocked as standard /○ not stocked as standard
See price list for current availability.

ISHN06

INSERTS FOR NEGATIVE FACE MILLING CUTTER



HNGX 06

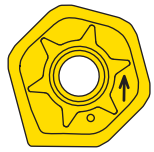


XNGX 06

HNGX 06 -F

HNGX 06 -M

HNGX 06 -R



XNGX 06 ANSN

INDEXABLE CUTTING INSERTS

Designation	Grades							Dimensions		
	M5315	M9315	M9325	M9340	M8340	8215	8230	d	s	d_1
HNGX 0604ANSN-F				●	●	●	●	.413	.207	.146
HNGX 0604ANSN-M	●	●	●	●	●	●	●	.413	.207	.146
HNGX 0604ANSN-R	●	●	●		●	●	●	.413	.207	.146
XNGX 0604ANSN						●		.413	.207	.146

SPARE PARTS

*) For screw torques see pages: M191 – M193.

Diameter of cutter	Clamping screw*	Screwdriver
1.000 – 1.250	US 3007-T09P	FLAG T09P

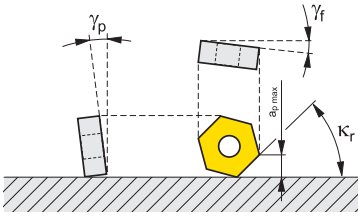
● stocked as standard /○ not stocked as standard
See price list for current availability.

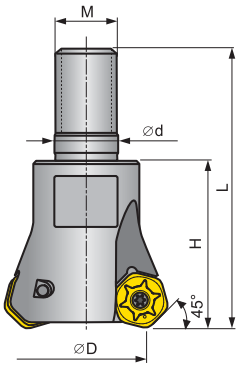
ISHN06

EXCHANGEABLE HEADS FOR NEGATIVE FACE MILL CUTTERS

ECON HN

γ_p	-7°	κ_r	45°
γ_f	-7°	$a_{p\,max}$	.118 in





Z* - Number of teeth

Dimensions [in].

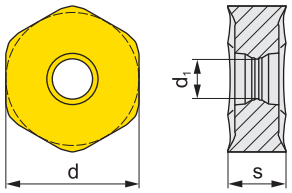
Designation	Assortment	Dimensions											Cooling	[lbs]
		D	D_1	d	M	H	L	Z*						
100N2R138M12-ISHN06C-C	●	1.000	1.283	.492	M12	1.378	2.244	2					+	.22
125N3R169M16-ISHN06C-C	●	1.250	1.537	.669	M16	1.693	2.598	3					+	.49
150N4R169M16-ISHN06C-C	●	1.500	1.787	.669	M16	1.693	2.598	4					+	.60

PRAMET

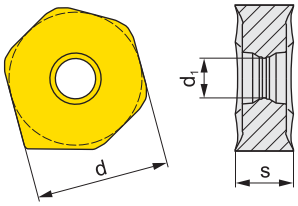
● stocked as standard /○ not stocked as standard
See price list for current availability.

ISHN06

INSERTS FOR NEGATIVE FACE MILL CUTTERS



HNGX 06

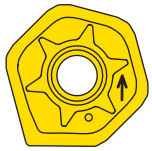


XNGX 06

HNGX 06 -F

HNGX 06 -M

HNGX 06 -R



XNGX 06 ANSN

INDEXABLE CUTTING INSERTS

Designation	Grades							Dimensions					
	M5315	M9315	M9325	M9340	M8340	8215	8230	d	s	d_1			
HNGX 0604ANSN-F				●	●	●	●	.413	.207	.146			
HNGX 0604ANSN-M	●	●	●	●	●	●	●	.413	.207	.146			
HNGX 0604ANSN-R	●	●	●		●	●	●	.413	.207	.146			
XNGX 0604ANSN						●		.413	.207	.146			

SPARE PARTS

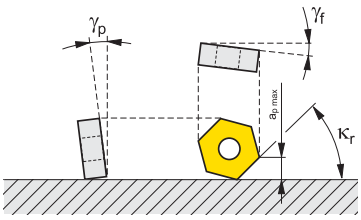
*) For screw torques see pages: M191 – M193.

Diameter of cutter	Clamping screw*	Screwdriver
1.000 – 1.500	US 3007-T09P	FLAG T09P

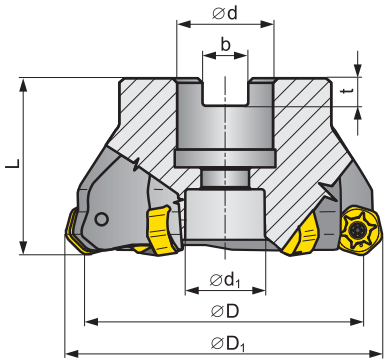
● stocked as standard /○ not stocked as standard
See price list for current availability.

IS45HN06

γ_p	-7°	κ_r	45°
γ_f	-7°	$a_{p\,max}$	.118 in



ECON HN



Z* - Number of teeth

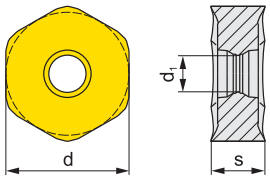
Dimensions [in].

Designation	Assortment	Dimensions											Cooling	[lbs]
		D	D_1	d	d_1	L	b	t	Z*					
150A05R-IS45HN06C-C	●	1.500	1.787	.500	.433	1.575	.258	.165	5				+	.55
200A04R-IS45HN06C-C	●	2.000	2.287	.750	.630	1.575	.321	.193	4				+	.93
200A06R-IS45HN06C-C	●	2.000	2.287	.750	.630	1.575	.321	.193	6				+	.88
250A06R-IS45HN06C-C	●	2.500	2.787	.750	.630	1.575	.321	.193	6				+	1.21
250A08R-IS45HN06C-C	●	2.500	2.787	.750	.630	1.575	.321	.193	8				+	1.21
300A07R-IS45HN06C-C	●	3.000	3.268	1.000	.827	1.969	.382	.224	7				+	2.40
300A10R-IS45HN06C-C	●	3.000	3.268	1.000	.827	1.969	.382	.224	10				+	2.38
400A08R-IS45HN06C-C	●	4.000	4.280	1.500	1.260	1.969	.630	.382	8				+	3.99
400A12R-IS45HN06C-C	●	4.000	4.280	1.500	1.260	1.969	.630	.382	12				+	3.92
500A10R-IS45HN06C-C	●	5.000	5.283	1.500	1.260	2.480	.630	.382	10				+	7.39
500A16R-IS45HN06C-C	●	5.000	5.283	1.500	1.260	2.480	.630	.382	16				+	7.30

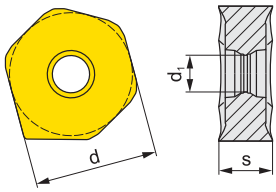
PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

IS45HN06



HNGX 06

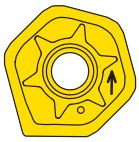


XNGX 06

HNGX 06-F

HNGX 06-M

HNGX 06-R



XNGX 06 ANSN

INDEXABLE CUTTING INSERTS

Designation	Grades							Dimensions		
	M5315	M9315	M9325	M9340	M8340	8215	8230	d	s	d_1
HNGX 0604ANSN-F				●	●	●	●	.413	.207	.146
HNGX 0604ANSN-M	●	●	●	●	●	●	●	.413	.207	.146
HNGX 0604ANSN-R	●	●	●		●	●	●	.413	.207	.146
XNGX 0604ANSN						●		.413	.207	.146

SPARE PARTS

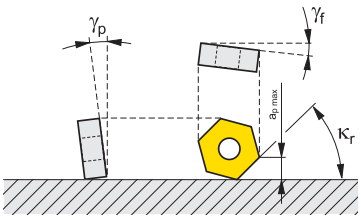
*) For screw torques see pages: M191 – M193.

Diameter of cutter	Clamping screw*	Driver	Driver handle	Screw for taper clamping
1.500	US 3007-T09P	D-T07P/T09P	FG-15	HS 025100
2.000 – 2.500	US 3007-T09P	D-T07P/T09P	FG-15	HS 037100
3.000	US 3007-T09P	D-T07P/T09P	FG-15	HS 050125
4.000	US 3007-T09P	D-T07P/T09P	FG-15	HCS 075200
5.000	US 3007-T09P	D-T07P/T09P	FG-15	HS 075125

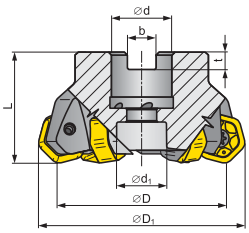
● stocked as standard /○ not stocked as standard
See price list for current availability.

IS45HN09

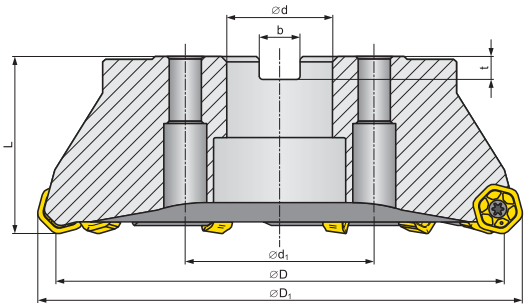
γ_p	-7°	κ_r	45°
γ_f	-7°	$a_{p\,max}$	.197 in



ECON HN



ø 2.000 – 6.000 in



ø 8.000 – 12.000 in

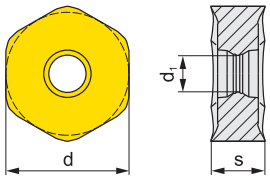
Z* - Number of teeth

Dimensions [in].

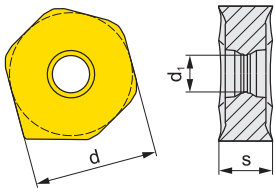
Designation	Assortment	Dimensions D	D_1	d	d_1	L	b	t	Z*				Cooling	[lbs]
200A04R-IS45HN09C-CF	●	2.000	2.461	.750	.630	1.575	.321	.193	4				+	.77
250A06R-IS45HN09C-CF	●	2.500	2.961	.750	.630	1.575	.321	.193	6				+	1.08
300A06R-IS45HN09C-CF	●	3.000	3.461	1.000	.827	1.969	.382	.224	6				+	2.34
300A08R-IS45HN09C-CF	●	3.000	3.461	1.000	.827	1.969	.382	.224	8				+	2.34
400A06R-IS45HN09C-CF	●	4.000	4.461	1.500	1.260	1.969	.630	.382	6				+	3.84
400A08R-IS45HN09C-CF	●	4.000	4.461	1.500	1.260	1.969	.630	.382	8				+	3.84
400A10R-IS45HN09C-CF	●	4.000	4.461	1.500	1.260	1.969	.630	.382	10				+	3.84
500A06R-IS45HN09C-CF	●	5.000	5.461	1.500	1.260	2.480	.630	.382	6				+	7.14
500A10R-IS45HN09C-CF	●	5.000	5.461	1.500	1.260	2.480	.630	.382	10				+	7.14
500A12R-IS45HN09C-CF	●	5.000	5.461	1.500	1.260	2.480	.630	.382	12				+	7.14
600B08R-IS45HN09CF	●	6.000	6.461	2.000	3.465	2.480	.756	.445	8					12.57
600B12R-IS45HN09CF	●	6.000	6.461	2.000	3.465	2.480	.756	.445	12					12.57
800C10R-IS45HN09CF	●	8.000	8.461	2.500	4.000	2.480	1.000	.559	14					19.85
1000C14R-IS45HN09CF	○	10.000	10.461	2.500	4.000	2.480	1.000	.559	10					28.22
1200C16R-IS45HN09CF	○	12.000	12.461	2.500	4.000	3.150	1.000	.559	14					71.00

● stocked as standard /○ not stocked as standard
See price list for current availability.

IS45HN09



HNGX 09



XNGX 09

HNGX 09-FF

HNGX 09-F

HNGX 09-M

HNGX 09-R

XNGX 09 ANSN

INDEXABLE CUTTING INSERTS

Designation	Grades							Dimensions		
	M5315	M9315	M9325	M9340	M8340	8215	8230	d	s	d_1
HNGX 0906ANEN-FF				●		●	●	.650	.250	.193
HNGX 0906ANSN-F				●	●	●	●	.650	.250	.193
HNGX 0906ANSN-M	●	●	●	●	●	●	●	.650	.250	.193
HNGX 0906ANSN-R	●	●	●		●	●	●	.650	.250	.193
XNGX 0906ANSN						●		.650	.250	.193

SPARE PARTS

*) For screw torques see pages: M191 – M193.

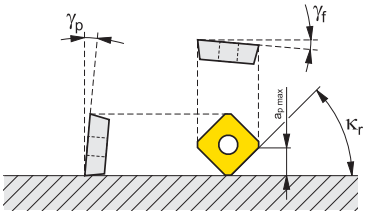
Diameter of cutter	Clamping screw*	Driver	Driver handle	Screw for taper clamping
2.000 – 2.500	US 54511-T15P	D-T08P/T15P	FG-15	HS 037100
3.000	US 54511-T15P	D-T08P/T15P	FG-15	HS 050125
4.000	US 54511-T15P	D-T08P/T15P	FG-15	HCS 075200
5.000	US 54511-T15P	D-T08P/T15P	FG-15	HS 075125
6.000 – 12.000	US 54511-T15P	D-T08P/T15P	FG-15	-

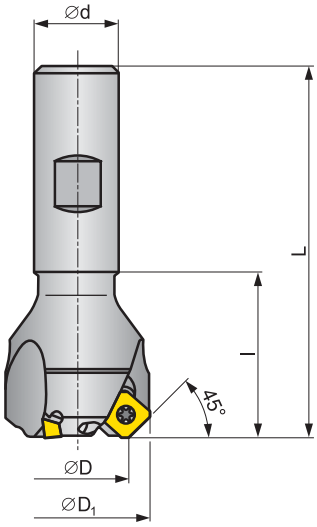
● stocked as standard /○ not stocked as standard
See price list for current availability.

ISSE09

HIGH POSITIVE FACE MILLING CUTTERS

γ_p	+20°	κ_r	45°
γ_f	-5°	$a_{p\,max}$	.177 in





Z* - Number of teeth

Dimensions [in].

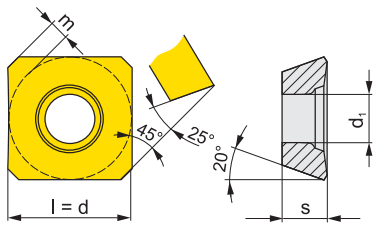
Designation	Assortment	Dimensions											Cooling	[lbs]
		D	D_1	d	L	l	Z*							
075N2R126W075-ISSE09-C	●	.750	1.136	.750	3.331	1.260	2						+	.22
100N3R128W100-ISSE09-C	●	1.000	1.386	1.000	3.819	1.280	3						+	.66
125N4R150W125-ISSE09-C	●	1.250	1.644	1.250	4.039	1.500	4						+	1.32

PRAMET

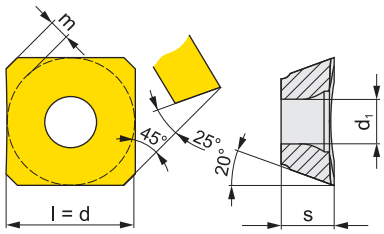
● stocked as standard /○ not stocked as standard
See price list for current availability.

ISSE09

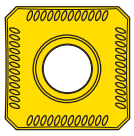
INSERTS FOR HIGH POSITIVE FACE MILLING CUTTERS



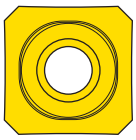
SEMT



SEET



SEMT AFSN



SEET AFEN

INDEXABLE CUTTING INSERTS

Designation	Grades					Dimensions				
	M9325	M9340	M8340	8215	8230	l	d	s	d_1	m
SEMT 09T3AFSN	●	●	●	●	●	.375	.375	.156	.138	.048
SEET 09T3AFEN	●	●	●	●	●	.375	.375	.156	.138	.048

SPARE PARTS

*) For screw torques see pages: M191 – M193.

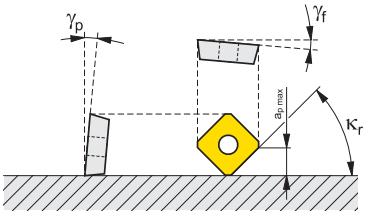
Diameter of cutter	Clamping screw*	Screwdriver
.750 – 1.250	US 3007-T09P	FLAG T09P

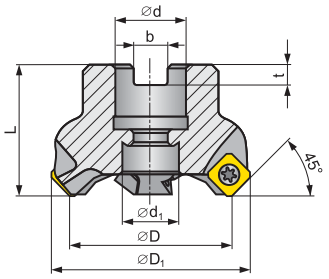
● stocked as standard /○ not stocked as standard
See price list for current availability.

IS45SE09F

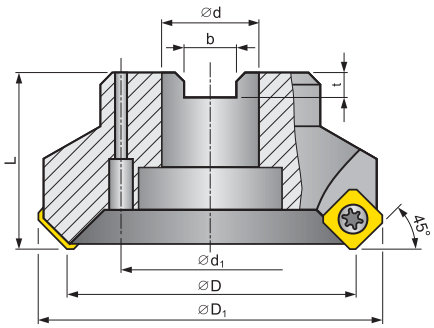
HIGH POSITIVE FACE MILLING CUTTERS

γ_p	+20°	κ_r	45°
γ_f	-5°	$a_{p\,max}$	.177 in





ø 1.500 – 5.000 in



ø 6.000 in

Z* - Number of teeth

Dimensions [in].

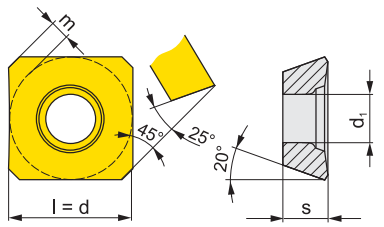
Designation	Assortment	Dimensions											Cooling	[lbs]
		D	D_1	d	d_1	L	b	t	Z*					
150A04R-IS45SE09F-C	●	1.500	1.878	.500	.433	1.575	.258	.165	4				+	.75
200A05R-IS45SE09F-C	●	2.000	2.378	.750	.630	1.575	.321	.193	5				+	.84
250A05R-IS45SE09F-C	●	2.500	2.878	.750	.630	1.575	.321	.193	5				+	1.19
250A06R-IS45SE09F-C	●	2.500	2.878	.750	.630	1.575	.321	.193	6				+	1.23
300A06R-IS45SE09F-C	●	3.000	3.378	1.000	.827	1.969	.382	.224	6				+	2.21
300A08R-IS45SE09F-C	●	3.000	3.378	1.000	.827	1.969	.382	.224	8				+	2.43
400A08R-IS45SE09F-C	●	4.000	4.394	1.500	1.260	1.969	.630	.382	8				+	3.04
400A10R-IS45SE09F-C	●	4.000	4.394	1.500	1.260	1.969	.630	.382	10				+	3.37
500A09R-IS45SE09F-C	●	5.000	5.374	1.500	1.260	2.480	.630	.382	9				+	6.02
500A12R-IS45SE09F-C	●	5.000	5.374	1.500	1.260	2.480	.630	.382	12				+	6.88
600B10R-IS45SE09F	●	6.000	6.378	2.000	3.465	2.480	.756	.445	10					10.43
600B14R-IS45SE09F	●	6.000	6.378	2.000	3.465	2.480	.756	.445	14					11.25

● stocked as standard /○ not stocked as standard
See price list for current availability.

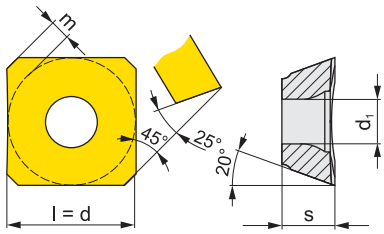
PRAMET

IS45SE09F

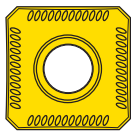
INSERTS FOR HIGH POSITIVE FACE MILLING CUTTERS



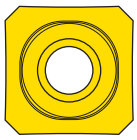
SEMT



SEET



SEMT AFSN



SEET AFEN

INDEXABLE CUTTING INSERTS

Designation	Grades					Dimensions				
	M9325	M9340	M8340	8215	8230	l	d	s	d_1	m
SEMT 09T3AFSN	●	●	●	●	●	.375	.375	.156	.138	.048
SEET 09T3AFEN	●	●	●	●	●	.375	.375	.156	.138	.048

SPARE PARTS

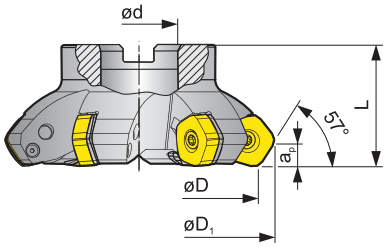
*) For screw torques see pages: M191 – M193.

Diameter of cutter	Clamping screw*	Driver	Driver handle	Screw for taper clamping			
1.500	US 3007-T09P	D-T07P/T09P	FG-15	HS 025100			
2.000 – 2.500	US 3007-T09P	D-T07P/T09P	FG-15	HS 037100			
3.000	US 3007-T09P	D-T07P/T09P	FG-15	HS 050125			
4.000	US 3007-T09P	D-T07P/T09P	FG-15	HCS 075175			
5.000	US 3007-T09P	D-T07P/T09P	FG-15	HS 075125			
6.000	US 3007-T09P	D-T07P/T09P	FG-15	-			

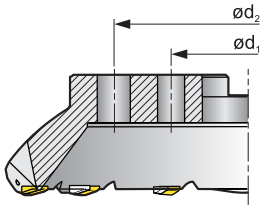
● stocked as standard /○ not stocked as standard
See price list for current availability.

IS57PN13

PENTA HD

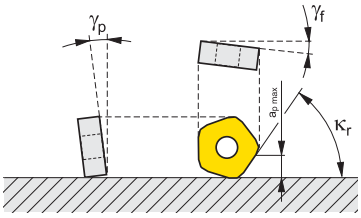


ø 4.000 – 6.000 in



ø 8.000 – 12.000 in

γ_p	-4°	κ_r	57°
γ_f	-8° – -5°	$a_{p\,max}$	.394 in



Z* - Number of teeth

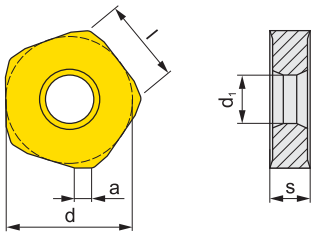
Dimensions [in].

Designation	Assortment	Dimensions											Cooling	[lbs]
		D	D_1	d	d_1	d_2	L	Z*						
400A05R-IS57PN13	●	4.000	4.629	1.500	-	-	1.969	5						2.63
500B06R-IS57PN13	●	5.000	5.629	1.500	2.205	-	2.480	6						5.03
600B08R-IS57PN13	●	6.000	6.628	2.000	3.465	-	2.480	8						7.04
800C10R-IS57PN13	●	8.000	8.627	2.500	4.000	-	2.480	10						14.73
1000C12R-IS57PN13	○	10.000	10.627	2.500	4.000	-	2.480	12						27.54
1200C14R-IS57PN13	○	12.000	12.627	2.500	4.000	7.000	3.150	14						45.52

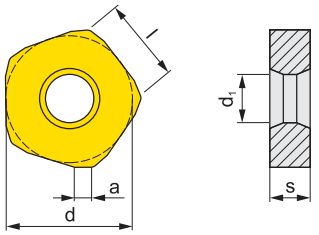
● stocked as standard /○ not stocked as standard
See price list for current availability.

PRAMET

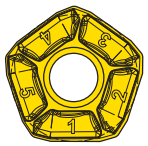
IS57PN13



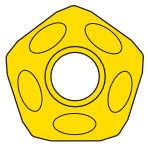
PNMU



PNMQ



PNMU-M



PNMQ

INDEXABLE CUTTING INSERTS

Designation	Grades				Dimensions				
	M9340	M8345	8215	8230	l	d	s	d_1	a
PNMU 1308DNSR-M	●	●	●	●	.512	.961	.313	.394	.118
PNMQ 1308DNSN	●	●		●	.512	.961	.313	.394	.118

SPARE PARTS

*) For screw torques see pages: M191 – M193.

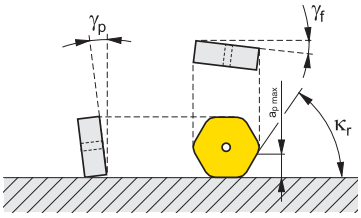
Diameter of cutter	Shim	Shim Clamping screw*	Screwdriver	Insert Clamping Screw*	Screwdriver	Screw for taper clamping
4.000	SPN 13T3DN	US 64010-T15P	SDR T15P	US 68026-T30P	SDR T30P-T	HCS 075200
5.000 – 12.000	SPN 13T3DN	US 64010-T15P	SDR T15P	US 68026-T30P	SDR T30P-T	-

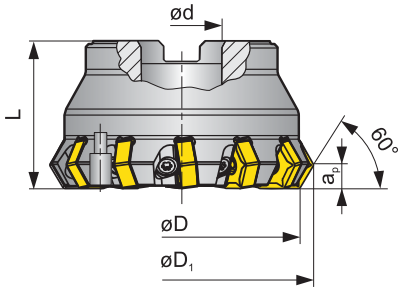
● stocked as standard /○ not stocked as standard
See price list for current availability.

IC60HN09

ECON HN

γ_p	-7°	κ_r	60°
γ_f	-5°	$a_{p\,max}$	.236 in





Z* - Number of teeth

Dimensions [in].

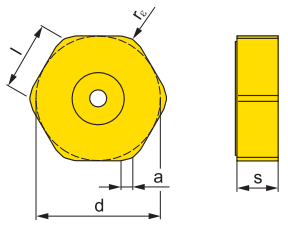
Designation	Assortment	Dimensions											Cooling	[lbs]
		D	D_1	d	d_1	L	b	t	Z*					
300A08R-IC60HN09	●	3.000	3.370	1,000	-	1.969	.382	.224	8					2.89
300A12R-IC60HN09	●	3.000	3.370	1,000	-	1.969	.382	.224	12					2.69
400A10R-IC60HN09	●	4.000	4.370	1.500	-	1.969	.630	.382	10					4.56
400A16R-IC60HN09	●	4.000	4.370	1.500	-	1.969	.630	.382	16					4.33
500B12R-IC60HN09	●	5.000	5.370	1.500	-	2.480	.630	.382	12					8.46
500B20R-IC60HN09	●	5.000	5.370	1.500	-	2.480	.630	.382	20					8.04
600B16R-IC60HN09	●	6.000	6.370	2.000	3.465	2.480	.756	.445	16					12.82
600B24R-IC60HN09	○	6.000	6.370	2.000	3.465	2.480	.756	.445	24					12.47
800C20R-IC60HN09	●	8.000	8.370	2.500	4.000	2.480	1,000	.559	20					20.10
800C32R-IC60HN09	○	8.000	8.370	2.500	4.000	2.480	1,000	.559	32					19.59
1000C24R-IC60HN09	○	10.000	10.370	2.500	4.000	2.480	1,000	.559	24					27.08
1000C40R-IC60HN09	○	10.000	10.370	2.500	4.000	2.480	1,000	.559	40					26.41

PRAMET

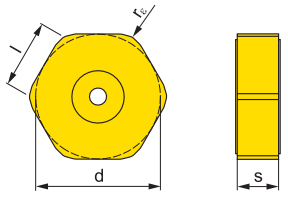
● stocked as standard /○ not stocked as standard
See price list for current availability.

IC60HN09

INSERTS FOR NEGATIVE FACE MILLING CUTTERS



HNEF



HNMF

HNEF-F

HNEF-M

HNEF-W

HNMF-R

INDEXABLE CUTTING INSERTS

Designation	Grades				Dimensions					
	M5315	M9325	M8310	8215	l	d	s	a		r_ε
HNEF 0905DNFN-F	●	○	●	●	.370	.638	.222	.063		.016
HNEF 090508EN-M	●	○		●	.370	.638	.222	-		.031
HNMF 090516SN-R	●	●		●	.370	.638	.222	-		.063
HNEF 0905ZZL-W	○			○	.133	.640	.222	.197		.031
HNEF 0905ZZR-W	●	○	●	●	.133	.640	.222	.197		.031

SPARE PARTS

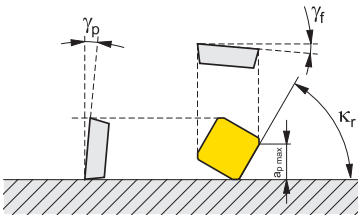
*) For screw torques see pages: M191 – M193.

Diameter of cutter	Clamping screw*	Driver	Driver handle	Screw for taper clamping			
3.000	US 74016-T15P	D-T08P/T15P	FG-15	HS 050125			
4.000	US 74016-T15P	D-T08P/T15P	FG-15	HCS 075200			
5.000 – 10.000	US 74016-T15P	D-T08P/T15P	FG-15	-			

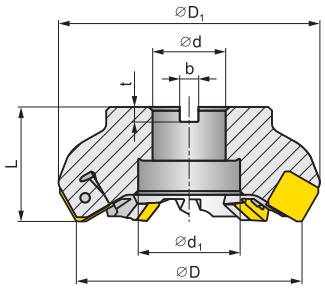
● stocked as standard /○ not stocked as standard
See price list for current availability.

IF60SB22X

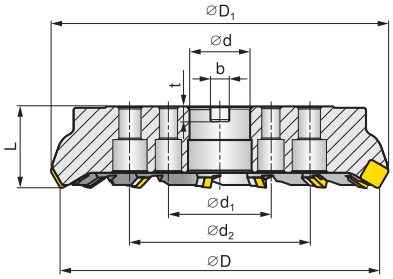
γ_p	+9°	κ_r	60°
γ_f	-9°	$a_{p\,max}$	.590 in



ROUGH SB



ø 5.000 – 6.000 in



ø 8.000 – 12.000 in

Z* - Number of teeth

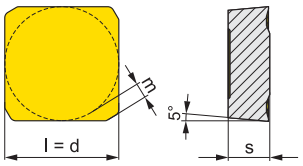
Dimensions [in].

Designation	Assortment	Dimensions											Cooling	[lbs]
		D	D_1	d	d_1	d_2	L	b	t	Z*				
500B07R-IF60SB22X	●	5.000	5.764	1.500	2.205	-	2.480	.630	.382	7				7.06
600B08R-IF60SB22X	●	6.000	6.736	2.000	3.465	-	2.480	.756	.445	8				12.57
800C10R-IF60SB22X	●	8.000	8.705	2.500	4.000	-	2.480	1.000	.559	10				19.40
1000C12R-IF60SB22X	○	10.000	10.685	2.500	4.000	-	2.480	1.000	.559	12				33.52
1200C14R-IF60SB22X	○	12.000	12.661	2.500	4.000	7.000	3.150	1.000	.559	14				73.21

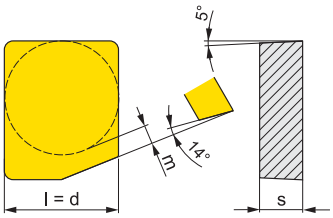
● stocked as standard /○ not stocked as standard
See price list for current availability.

PRAMET

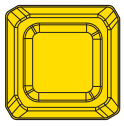
IF60SB22X



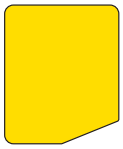
SBMR



SBKX



SBMR DZSR



SBKX DZER

Smothing inserts

INDEXABLE CUTTING INSERTS

Designation	Grades		Dimensions			
	M8326	M8346	l	d	s	m
SBMR 2207DZSR	●	●	.866	.866	.335	.111
SBKX 2207DZER	●		.866	.866	.335	.127

SPARE PARTS

*) For screw torques see pages: M191 – M193.

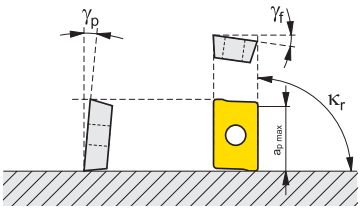
Diameter of cutter	Shim	Shim Clamping screw*	Key	Wedge	Differential screw	Key
5.000 – 12.000	LNX 220616	US 6013-T20P	SDR T20P-T	KU SBMR 2207	DS 01Z	KL 04

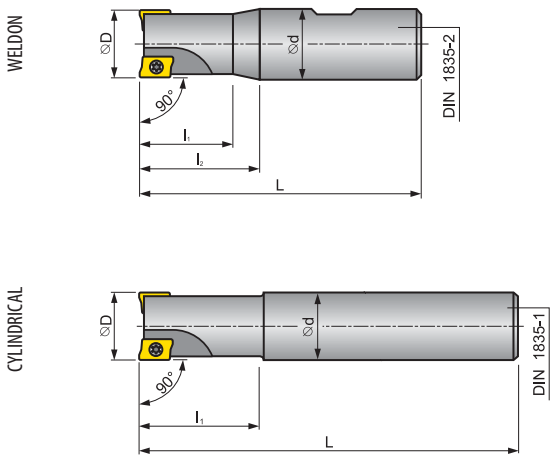
● stocked as standard /○ not stocked as standard
See price list for current availability.

ISAD11E

FORCE AD

γ_p	+4° – +11°	κ_r	90°
γ_f	-5.2° – -8.1°	$a_{p\,max}$	.354 in





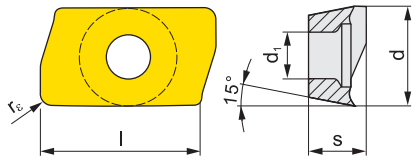
Z* - Number of teeth

Dimensions [in].

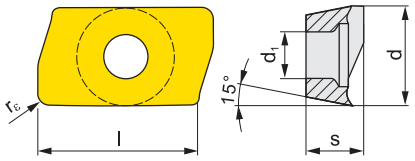
Designation	Assortment	Dimensions D	L	l_1	d	Z_*	Cooling	[lbs]
WELDON								
062A2R106W062-ISAD11E-C	●	.625	2.969	1.063	.625	2	+	.22
075A2R126W075-ISAD11E-C	●	.750	3.291	1.260	.750	2	+	.44
075A3R126W075-ISAD11E-C	●	.750	3.291	1.260	.750	3	+	.44
100A3R128W100-ISAD11E-C	●	1.000	3.780	1.280	1.000	3	+	.66
100A4R128W100-ISAD11E-C	●	1.000	3.780	1.280	1.000	4	+	.66
125A4R150W125-ISAD11E-C	●	1.250	4.000	1.500	1.250	4	+	.88
125A5R150W125-ISAD11E-C	●	1.250	4.000	1.500	1.250	5	+	.88
CYLINDRICAL								
062A2R094C062-ISAD11E-C	●	.625	5.315	.945	.625	2	+	.44
062A2R197C062-ISAD11E-C	●	.625	5.315	1.969	.625	2	+	.44
075A2R114C075-ISAD11E-C	●	.750	5.906	1.142	.750	2	+	.66
075A2R276C075-ISAD11E-C	●	.750	5.906	2.756	.750	2	+	.66
075A3R114C075-ISAD11E-C	●	.750	5.906	1.142	.750	3	+	.66
100A3R134C100-ISAD11E-C	●	1.000	6.693	1.339	1.000	3	+	1.10
100A3R315C100-ISAD11E-C	●	1.000	6.693	3.150	1.000	3	+	1.10
100A4R134C100-ISAD11E-C	●	1.000	6.693	1.339	1.000	4	+	1.10
125A3R354C125-ISAD11E-C	●	1.250	7.677	3.543	1.250	3	+	1.98
125A5R134C125-ISAD11E-C	●	1.250	7.677	1.339	1.250	5	+	1.98

● stocked as standard /○ not stocked as standard
See price list for current availability.

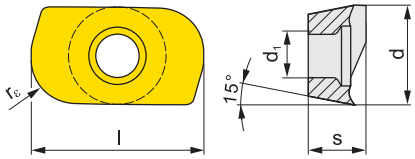
ISAD11E



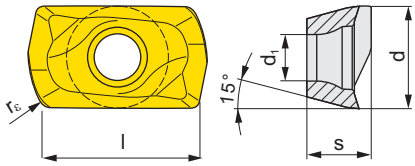
ADMX 11



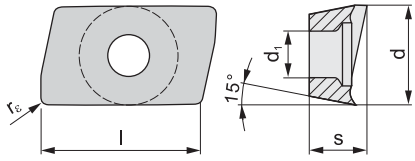
ADMX 11 (16)



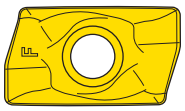
ADMX 11 (30)



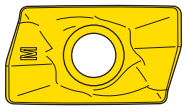
ADEX 11



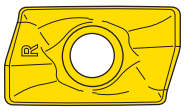
ADEX 11



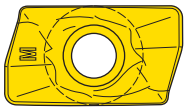
ADMX 11SR-F



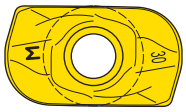
ADMX 11SR-M



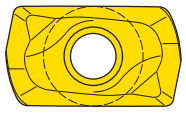
ADMX 11PR-R



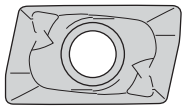
ADMX 11T316SR-M



ADMX 11T330SR-M



ADEX HF



ADEX FR-FA

● stocked as standard /○ not stocked as standard
See price list for current availability.

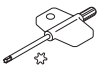
ISAD11E

INDEXABLE CUTTING INSERTS

Designation	Grades															Dimensions				
	M0315	M5315	M9315	M9325	M9340	M8340	8215	8230	HF7							(l)	d	s	d_1	r_ε
ADMX 11T304SR-F					●	●	●	●								.433	.257	.156	.114	.016
ADMX 11T308SR-F					●	●	●	●								.433	.257	.156	.114	.031
ADMX 11T302SR-M						●		●								.433	.257	.156	.114	.008
ADMX 11T304SR-M				●	●	●	●	●								.433	.257	.156	.114	.016
ADMX 11T308SR-M		●	●	●	●	●	●	●								.433	.257	.156	.114	.031
ADMX 11T310SR-M						●		●								.433	.257	.156	.114	.039
ADMX 11T312SR-M						●	●	●								.433	.257	.156	.114	.047
ADMX 11T316SR-M						●	●	●								.433	.257	.156	.114	.063
ADMX 11T320SR-M						●		●								.433	.257	.156	.114	.079
ADMX 11T325SR-M						●		●								.433	.257	.156	.114	.098
ADMX 11T330SR-M						●		●								.433	.257	.156	.114	.118
ADMX 11T308PR-R		●	●	●		●	●	●								.433	.257	.156	.114	.031
ADMX 11T316PR-R				●		●	●	●								.433	.257	.156	.114	.063
ADEX 11T308SR-HF						●	●	●								.433	.257	.156	.114	.031
ADEX 11T304FR-FA	●								●							.433	.257	.156	.114	.016
ADEX 11T308FR-FA	●								●							.433	.257	.156	.114	.031
ADEX 11T316FR-FA									●							.433	.257	.156	.114	.063

SPARE PARTS

*) For screw torques see pages: M191 – M193.

Diameter of cutter	Clamping screw*	Screwdriver
		
.625 – 1.250	US 2505-T08P	FLAG T08P

PRAMET

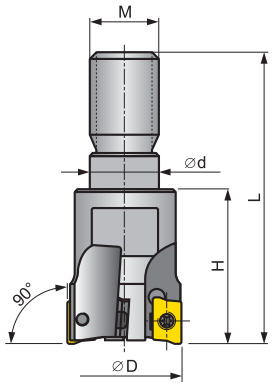
● stocked as standard /○ not stocked as standard
See price list for current availability.

FORCE AD

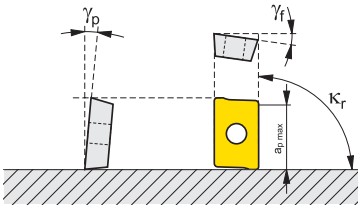
ISAD11E

EXCHANGEABLE HEAD FOR SQUARE SHOULDER AND SLOT MILLING CUTTERS

FORCE *AD*



γ_p	+4° – +11°	κ_r	90°
γ_f	-5.2° – -8.1°	$a_{p\,max}$	.354 in



Z* - Number of teeth

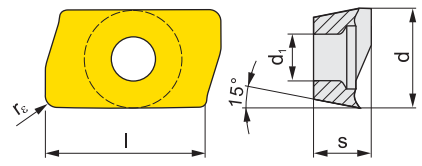
Dimensions [in].

Designation	Assortment	Dimensions											Cooling	[lbs]
		D	L	H	M	d	Z*							
062A2R094M08-ISAD11E-C	●	.625	1.496	.945	M8	.335	2						+	.22
075A2R102M10-ISAD11E-C	●	.750	1.772	1.024	M10	.413	2						+	.22
075A3R102M10-ISAD11E-C	●	.750	1.772	1.024	M10	.413	3						+	.22
100A3R138M12-ISAD11E-C	●	1.000	2.244	1.378	M12	.492	3						+	.22
100A4R138M12-ISAD11E-C	●	1.000	2.244	1.378	M12	.492	4						+	.22
125A4R169M16-ISAD11E-C	●	1.250	2.598	1.693	M16	.669	4						+	.22
125A5R169M16-ISAD11E-C	●	1.250	2.598	1.693	M16	.669	5						+	.22
150A4R169M16-ISAD11E-C	●	1.500	2.598	1.693	M16	.669	4						+	.44
150A6R169M16-ISAD11E-C	●	1.500	2.598	1.693	M16	.669	6						+	.44

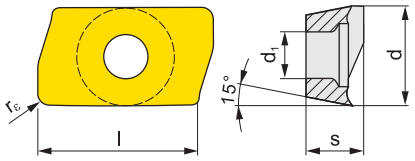
PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

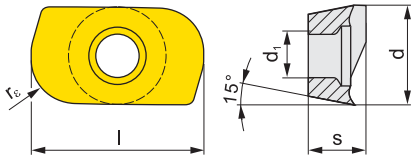
ISAD11E



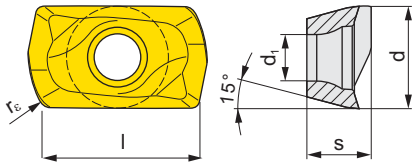
ADMX 11



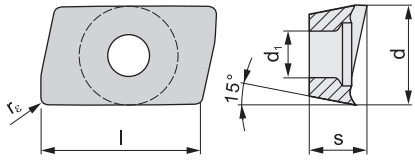
ADMX 11 (16)



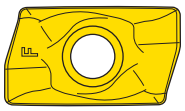
ADMX 11 (30)



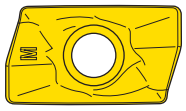
ADEX 11



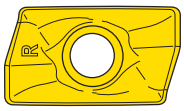
ADEX 11



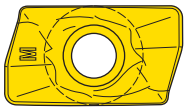
ADMX 11SR-F



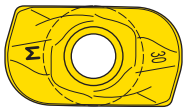
ADMX 11SR-M



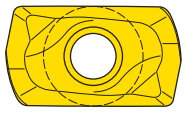
ADMX 11PR-R



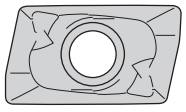
ADMX 11T316SR-M



ADMX 11T330SR-M



ADEX HF



ADEX FR-FA

● stocked as standard /○ not stocked as standard
See price list for current availability.

ISAD11E

EXCHANGEABLE HEAD FOR SQUARE SHOULDER AND SLOT MILLING CUTTERS

INDEXABLE CUTTING INSERTS

Designation	Grades															Dimensions				
	M0315	M5315	M9315	M9325	M9340	M8340	8215	8230	HF7							(l)	d	s	d_1	r_ε
ADMX 11T304SR-F					●	●	●	●								.433	.257	.156	.114	.016
ADMX 11T308SR-F					●	●	●	●								.433	.257	.156	.114	.031
ADMX 11T302SR-M						●		●								.433	.257	.156	.114	.008
ADMX 11T304SR-M				●	●	●	●	●								.433	.257	.156	.114	.016
ADMX 11T308SR-M		●	●	●	●	●	●	●								.433	.257	.156	.114	.031
ADMX 11T310SR-M						●		●								.433	.257	.156	.114	.039
ADMX 11T312SR-M						●	●	●								.433	.257	.156	.114	.047
ADMX 11T316SR-M						●	●	●								.433	.257	.156	.114	.063
ADMX 11T320SR-M						●		●								.433	.257	.156	.114	.079
ADMX 11T325SR-M						●		●								.433	.257	.156	.114	.098
ADMX 11T330SR-M						●		●								.433	.257	.156	.114	.118
ADMX 11T308PR-R		●	●	●		●	●	●								.433	.257	.156	.114	.031
ADMX 11T316PR-R				●		●	●	●								.433	.257	.156	.114	.063
ADEX 11T308SR-HF						●	●	●								.433	.257	.156	.114	.031
ADEX 11T304FR-FA	●								●							.433	.257	.156	.114	.016
ADEX 11T308FR-FA	●								●							.433	.257	.156	.114	.031
ADEX 11T316FR-FA									●							.433	.257	.156	.114	.063

SPARE PARTS

*) For screw torques see pages: M191 – M193.

Diameter of cutter	Clamping screw*	Screwdriver
.625 – 1.500	US 2505-T08P	FLAG T08P

PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

ISAD11E

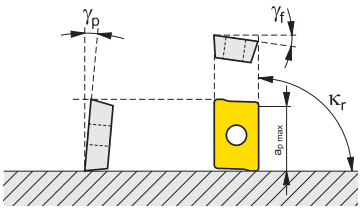
EXCHANGEABLE HEAD FOR SQUARE SHOULDER AND SLOT MILLING CUTTERS

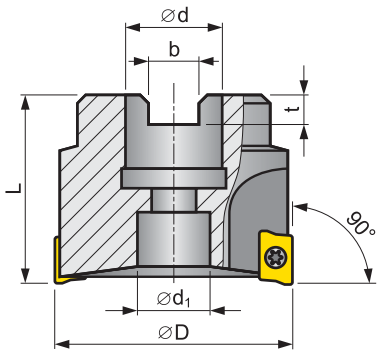
FORCE AD

IS90AD11E

FORCE AD

γ_p	+11° – +12°	κ_r	90°
γ_f	-5.2° – -8.1°	$a_{p\,max}$	.354 in





Z* - Number of teeth

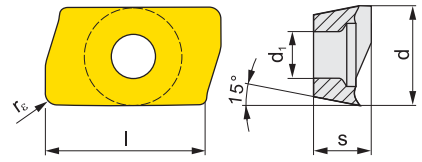
Dimensions [in].

Designation	Assortment	Dimensions											Cooling	[lbs]
		D	d	d_1	L	b	t	Z*						
150A04R-IS90AD11E-C	●	1.500	.500	.433	1.575	.258	.165	4					+	.44
150A06R-IS90AD11E-C	●	1.500	.500	.433	1.575	.258	.165	6					+	.44
200A05R-IS90AD11E-C	●	2.000	.750	.630	1.575	.321	.193	5					+	.66
200A07R-IS90AD11E-C	●	2.000	.750	.630	1.575	.321	.193	7					+	.66
250A06R-IS90AD11E-C	●	2.500	.750	.630	1.575	.321	.193	6					+	1.10
250A09R-IS90AD11E-C	●	2.500	.750	.630	1.575	.321	.193	9					+	1.10
300A10R-IS90AD11E-C	●	3.000	1.000	.827	1.969	.382	.224	10					+	2.21
400A11R-IS90AD11E-C	●	4.000	1.500	1.260	1.969	.630	.382	11					+	3.75
500A12R-IS90AD11E-C	●	5.000	1.500	1.260	2.480	.630	.382	12					+	7.72

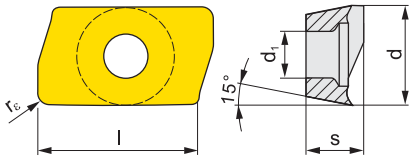
● stocked as standard /○ not stocked as standard
See price list for current availability.

PRAMET

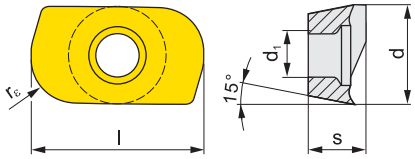
IS90AD11E



ADMX 11



ADMX 11 (16)



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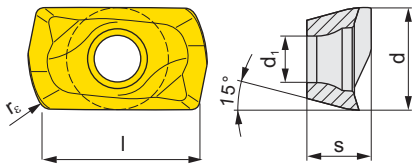
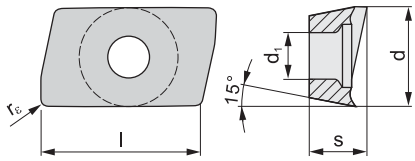
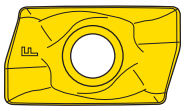


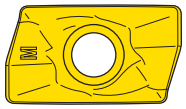
ADEX 11



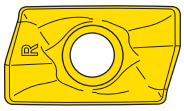
ADEX 11



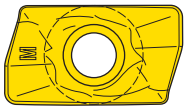
ADMX 11SR-F



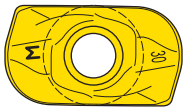
ADMX 11SR-M



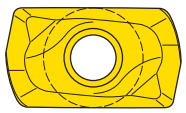
ADMX 11PR-R



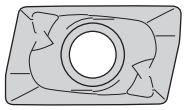
ADMX 11T316SR-M



ADMX 11T330SR-M



ADEX HF



ADEX FR-FA

● stocked as standard /○ not stocked as standard
See price list for current availability.

IS90AD11E

INDEXABLE CUTTING INSERTS

Designation	Grades															Dimensions				
	M0315	M5315	M9315	M9325	M9340	M8340	8215	8230	HF7							(l)	d	s	d_1	r_ε
ADMX 11T304SR-F					●	●	●	●								.433	.257	.156	.114	.016
ADMX 11T308SR-F					●	●	●	●								.433	.257	.156	.114	.031
ADMX 11T302SR-M						●		●								.433	.257	.156	.114	.008
ADMX 11T304SR-M				●	●	●	●	●								.433	.257	.156	.114	.016
ADMX 11T308SR-M		●	●	●	●	●	●	●								.433	.257	.156	.114	.031
ADMX 11T310SR-M						●		●								.433	.257	.156	.114	.039
ADMX 11T312SR-M						●	●	●								.433	.257	.156	.114	.047
ADMX 11T316SR-M						●	●	●								.433	.257	.156	.114	.063
ADMX 11T320SR-M						●		●								.433	.257	.156	.114	.079
ADMX 11T325SR-M						●		●								.433	.257	.156	.114	.098
ADMX 11T330SR-M						●		●								.433	.257	.156	.114	.118
ADMX 11T308PR-R		●	●	●		●	●	●								.433	.257	.156	.114	.031
ADMX 11T316PR-R				●		●	●	●								.433	.257	.156	.114	.063
ADEX 11T308SR-HF						●	●	●								.433	.257	.156	.114	.031
ADEX 11T304FR-FA	●								●							.433	.257	.156	.114	.016
ADEX 11T308FR-FA	●								●							.433	.257	.156	.114	.031
ADEX 11T316FR-FA									●							.433	.257	.156	.114	.063

SPARE PARTS

*) For screw torques see pages: M191 – M193.

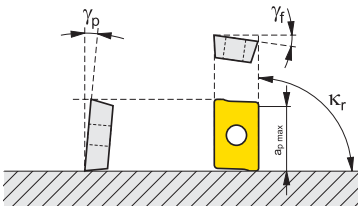
Diameter of cutter	Clamping screw*	Driver	Driver handle	Screw for taper clamping			
							
1.500	US 2505-T08P	D-T08P/T15P	FG-15	HS 025100			
2.000 – 2.500	US 2505-T08P	D-T08P/T15P	FG-15	HS 037100			
3.000	US 2505-T08P	D-T08P/T15P	FG-15	HS 050125			
4.000 – 5.000	US 2505-T08P	D-T08P/T15P	FG-15	HS 075125			

● stocked as standard /○ not stocked as standard
See price list for current availability.

FORCE AD

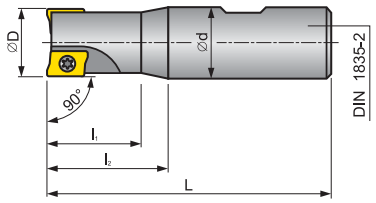
ISAD16E

γ_p	+5° – 10.5°	κ_r	90°
γ_f	-8.2° – -13°	$a_{p\,max}$	.512 in

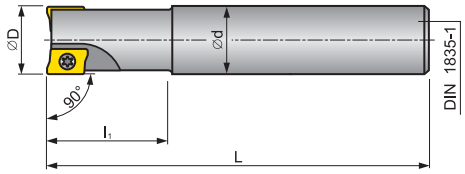


FORCE AD

WELDON



CYLINDRICAL



Z* - Number of teeth

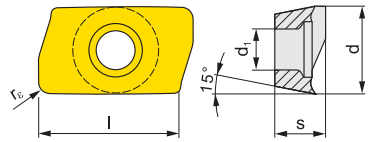
Dimensions [in].

Designation	Assortment	Dimensions D	L	l_1	d	Z*	Cooling	[lbs]
WELDON								
100A2R128W100-ISAD16E-C	●	1.000	3.780	1.280	1.000	2	+	.66
125A3R150W125-ISAD16E-C	●	1.250	4.000	1.500	1.250	3	+	1.10
150A3R160W125-ISAD16E-C	●	1.500	4.350	1.600	1.250	3	+	1.32
150A4R160W125-ISAD16E-C	●	1.500	4.350	1.600	1.250	4	+	1.32
CYLINDRICAL								
100A2R130C100-ISAD16E-C	●	1.000	6.496	1.300	1.000	2	+	1.10
125A3R130C125-ISAD16E-C	●	1.250	7.677	1.300	1.250	3	+	1.98

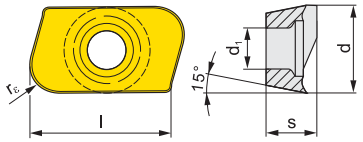
● stocked as standard /○ not stocked as standard
See price list for current availability.

PRAMET

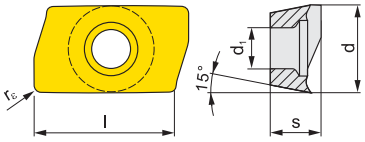
ISAD16E



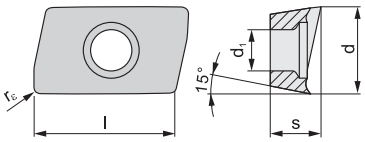
ADMX 16



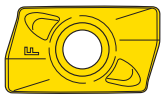
ADMX 16 (16/32)



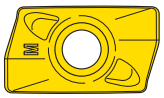
ADEX 16



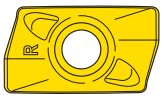
ADEX 16



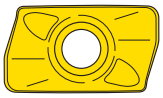
ADMX 16SR-F



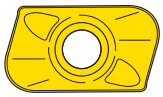
ADMX 16SR-M



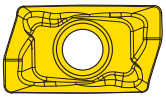
ADMX 16PR-R



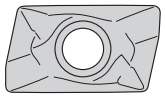
ADMX 160616SR-M



ADMX 160632SR-M



ADEX 16 SR-FM



ADEX 16 FR-FA

INDEXABLE CUTTING INSERTS

Designation	Grades															Dimensions				
	M5315	M9315	M9325	M9340	M8340	8215	8230	HF7								(l)	d	s	d_1	r_ε
ADMX 160608SR-F				●	●	●	●									.630	.392	.246	.177	.031
ADMX 160608SR-M	●	●	●	●	●	●	●									.630	.392	.246	.177	.031
ADMX 160608PR-R	●	●	●		●	●	●									.630	.392	.246	.177	.031
ADMX 160616SR-M			●		●	●	●									.630	.392	.246	.177	.063
ADMX 160632SR-M			●		●	●	●									.630	.392	.246	.177	.126
ADEX 160608SR-FM			●	●	●	●	●									.630	.392	.246	.177	.031
ADEX 160608FR-FA								●								.630	.392	.246	.177	.031

SPARE PARTS

*) For screw torques see pages: M191 – M193.

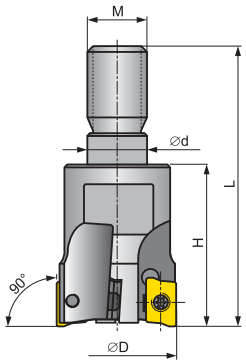
Diameter of cutter	Clamping screw*	Screwdriver
1.000 – 1.500	US 4008-T15P	FLAG T15P

● stocked as standard / ○ not stocked as standard
See price list for current availability.

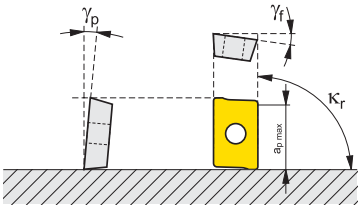
ISAD16E

EXCHANGEABLE HEADS FOR SQUARE SHOULDER AND SLOT MILLING CUTTERS

FORCE AD



γ_p	+7° – +10.5°	κ_r	90°
γ_f	-8.2° – -12°	$a_{p\,max}$	.512 in



Z* - Number of teeth

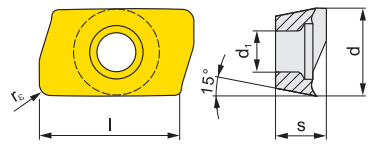
Dimensions [in].

Designation	Assortment	Dimensions											Cooling	[lbs]
		D	L	H	M	d	Z*							
125A3R169M16-ISAD16E-C	●	1.250	2.596	1.690	M16	.669	3						+	.44
150A4R169M16-ISAD16E-C	●	1.500	2.596	1.690	M16	.669	4						+	.44

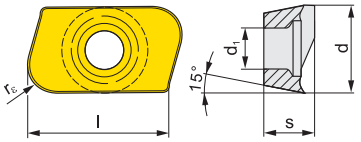
PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

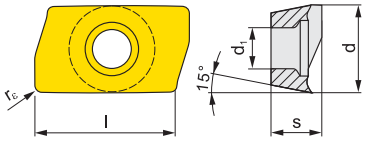
ISAD16E



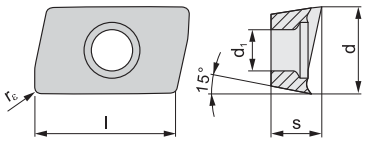
ADMX 16



ADMX 16 (16/32)

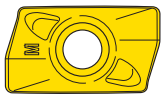


ADEX 16

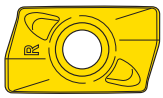


ADEX 16

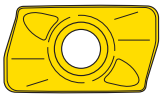
ADMX 16SR-F



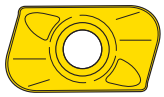
ADMX 16SR-M



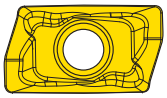
ADMX 16PR-R



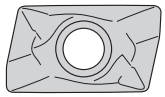
ADMX 160616SR-M



ADMX 160632SR-M



ADEX 16 SR-FM



ADEX 16 FR-FA

INDEXABLE CUTTING INSERTS

Designation	Grades															Dimensions				
	M5315	M9315	M9325	M9340	M8340	8215	8230	HF7								(l)	d	s	d_1	r_ε
ADMX 160608SR-F				●	●	●	●									.630	.392	.246	.177	.031
ADMX 160608SR-M	●	●	●	●	●	●	●									.630	.392	.246	.177	.031
ADMX 160608PR-R	●	●	●		●	●	●									.630	.392	.246	.177	.031
ADMX 160616SR-M			●		●	●	●									.630	.392	.246	.177	.063
ADMX 160632SR-M			●		●	●	●									.630	.392	.246	.177	.126
ADEX 160608SR-FM			●	●	●	●	●									.630	.392	.246	.177	.031
ADEX 160608FR-FA								●								.630	.392	.246	.177	.031

SPARE PARTS

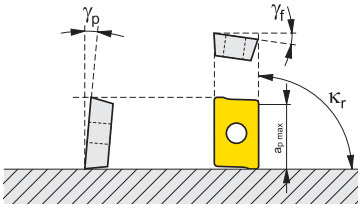
*) For screw torques see pages: M191 – M193.

Diameter of cutter	Clamping screw*	Screwdriver
1.250 – 1.500	US 4008-T15P	FLAG T15P

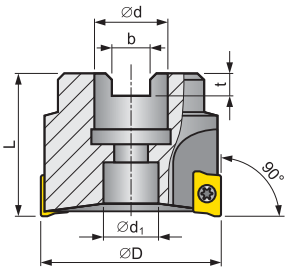
● stocked as standard /○ not stocked as standard
See price list for current availability.

IS90AD16E

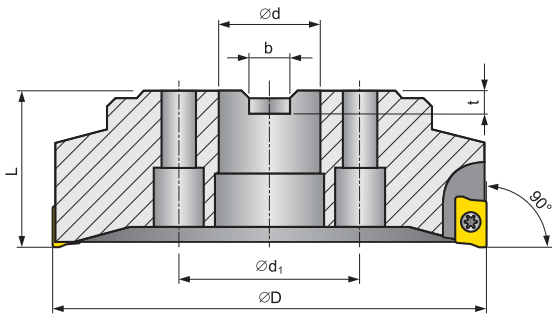
γ_p	+10.5° – 12°	κ_r	90°
γ_f	-3.8° – -8.2°	$a_{p\,max}$	.512 in



FORCE AD



ø 1.500 – 5.000 in



ø 6.000 in

Z* - Number of teeth

Dimensions [in].

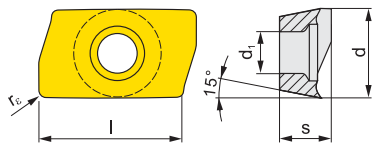
Designation	Assortment	Dimensions D	d	d_1	L	b	t	Z*					Cooling	[lbs]
150A04R-IS90AD16E-C	●	1.500	.500	.433	1.575	.258	.165	4					+	.44
200A03R-IS90AD16E-C	●	2.000	.750	.630	1.575	.321	.193	3					+	.66
200A05R-IS90AD16E-C	●	2.000	.750	.630	1.575	.321	.193	5					+	.66
250A04R-IS90AD16E-C	●	2.500	.750	.630	1.575	.321	.193	4					+	1.10
250A06R-IS90AD16E-C	●	2.500	.750	.630	1.575	.321	.193	6					+	1.10
300A05R-IS90AD16E-C	●	3.000	1.000	.827	1.969	.382	.224	5					+	2.21
300A07R-IS90AD16E-C	●	3.000	1.000	.827	1.969	.382	.224	7					+	2.21
400A06R-IS90AD16E-C	●	4.000	1.500	1.260	1.969	.630	.382	6					+	3.97
400A08R-IS90AD16E-C	●	4.000	1.500	1.260	1.969	.630	.382	8					+	3.75
500A09R-IS90AD16E-C	●	5.000	1.500	1.260	2.480	.630	.382	9					+	7.72
600B10R-IS90AD16E	●	6.000	1.575	3.465	2.480	.756	.445	10						12.57

PRAMET

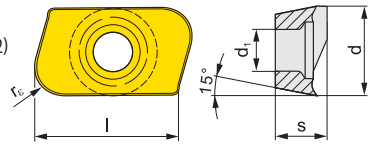
● stocked as standard /○ not stocked as standard
See price list for current availability.

IS90AD16E

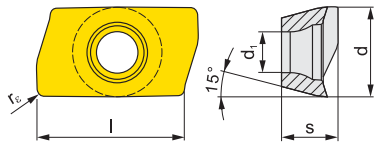
ADMX 16



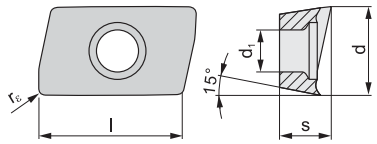
ADMX 16 (16, 32)

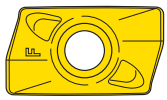


ADEX 16

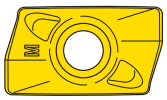


ADEX 16

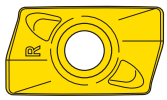




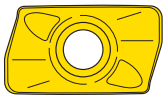
ADMX 16SR-F



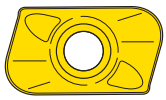
ADMX 16SR-M



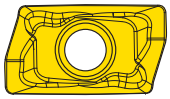
ADMX 16PR-R



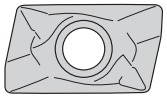
ADMX 160616SR-M



ADMX 160632SR-M



ADEX 16SR-FM



ADEX 16FR-FA

INDEXABLE CUTTING INSERTS

Designation	Grades								Dimensions				
	M5315	M9315	M9325	M9340	M8340	8215	8230	HF7	(l)	d	s	d_1	r_ε
ADMX 160608SR-F				●	●	●	●		.630	.392	.246	.177	.031
ADMX 160608SR-M	●	●	●	●	●	●	●		.630	.392	.246	.177	.031
ADMX 160608PR-R	●	●	●		●	●	●		.630	.392	.246	.177	.031
ADMX 160616SR-M			●		●	●	●		.630	.392	.246	.177	.063
ADMX 160632SR-M			●		●	●	●		.630	.392	.246	.177	.126
ADEX 160608SR-FM			●	●	●	●	●		.630	.392	.246	.177	.031
ADEX 160608FR-FA								●	.630	.392	.246	.177	.031

SPARE PARTS

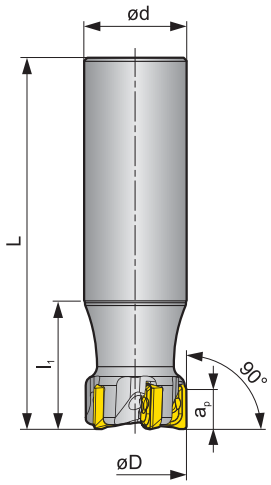
*) For screw torques see pages: M191 – M193.

Diameter of cutter	Clamping screw*	Driver	Driver handle	Screw for taper clamping
1.500	US 4008-T15P	D-T08P/T15P	FG-15	HS 025100
2.000 – 2.500	US 4011-T15P	D-T08P/T15P	FG-15	HS 037100
3.000	US 4011-T15P	D-T08P/T15P	FG-15	HS 050125
4.000 – 5.000	US 4011-T15P	D-T08P/T15P	FG-15	HS 075125
6.000	US 4011-T15P	D-T08P/T15P	FG-15	-

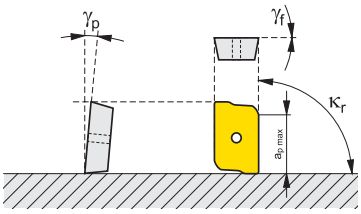
● stocked as standard /○ not stocked as standard
See price list for current availability.

ICAD15

MULTISIDE AD



γ_p	2°	κ_r	90°
γ_f	0°	$a_{p\,max}$	.394 in



Z* - Number of teeth

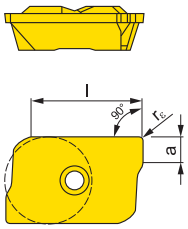
Dimensions [in].

Designation	Assortment	Dimensions											Cooling	[lbs]
		D	L	l_1	d	Z*								
100A3R157C100-ICAD15-C	●	1,000	6.299	1.575	1.000	3							+	1.09
125A5R157C125-ICAD15-C	●	1.250	7.874	1.575	1.250	5							+	2.29

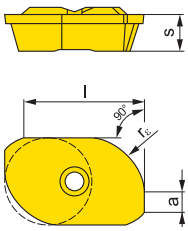
PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

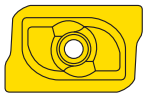
ICAD15



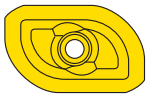
ADKX 15 (04, 08)



ADKX 15 (30, 40, 60)



ADKX 15 (04, 08)



ADKX 15 (30, 40, 60)

INDEXABLE CUTTING INSERTS

Designation	Grades															Dimensions					
	M8345	8230														l	d	s	a		r_ε
ADKX 15T304ER-F	●	●														.480	.375	.156	.102		.016
ADKX 15T308ER-F	●	●														.480	.375	.156	.087		.031
ADKX 15T330ER-F	●	●														.488	.375	.156	.100		.118
ADKX 15T340ER-F	●	●														.492	.375	.156	.100		.157
ADKX 15T360ER-F*	●	●														.496	.375	.156	.079		.236

*) When using inserts with corner radius r_ε = 6.0 mm, the cutter body must be modified!

SPARE PARTS

*) For screw torques see pages: M191 – M193.

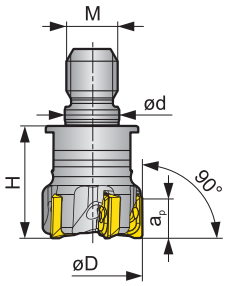
Diameter of cutter	Clamping screw*	Screwdriver
1.000 – 1.250	US 63511D-T15P	FLAG T15P

● stocked as standard /○ not stocked as standard
See price list for current availability.

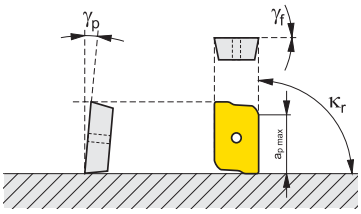
ICAD15

EXCHANGEABLE HEADS FOR SQUARE SHOULDER AND SLOT MILLING CUTTERS

MULTISIDE AD



γ_p	2°	κ_r	90°
γ_f	0°	$a_{p\,max}$	.394 in



Z* - Number of teeth

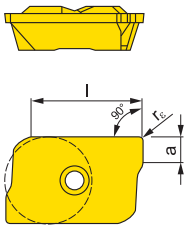
Dimensions [in].

Designation	Assortment	Dimensions											Cooling	[lbs]
		D	d	M	H	Z*								
100A3R118M12-ICAD15-C	●	1.000	.492	M12	1.181	3							+	.15
125A5R138M16-ICAD15-C	●	1.250	.669	M16	1.378	5							+	.33
150A6R138M16-ICAD15-C	●	1.500	.669	M16	1.378	6							+	.40

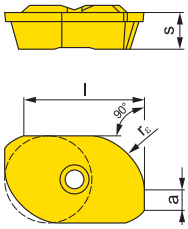
PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

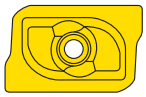
ICAD15



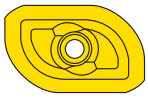
ADKX 15 (04, 08)



ADKX 15 (30, 40, 60)



ADKX 15 (04, 08)



ADKX 15 (30, 40, 60)

INDEXABLE CUTTING INSERTS

Designation	Grades															Dimensions					
	M8345	8230														l	d	s	a		r_ε
ADKX 15T304ER-F	●	●														.480	.375	.156	.102		.016
ADKX 15T308ER-F	●	●														.480	.375	.156	.087		.031
ADKX 15T330ER-F	●	●														.488	.375	.156	.100		.118
ADKX 15T340ER-F	●	●														.492	.375	.156	.100		.157
ADKX 15T360ER-F*	●	●														.496	.375	.156	.079		.236

*) When using inserts with corner radius r_ε = 6.0 mm, the cutter body must be modified!

SPARE PARTS

*) For screw torques see pages: M191 – M193.

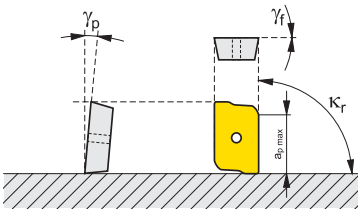
Diameter of cutter	Clamping screw*	Screwdriver
1.000 – 1.500	US 63511D-T15P	FLAG T15P

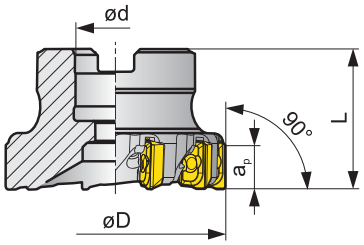
● stocked as standard /○ not stocked as standard
See price list for current availability.

IC90AD15

MULTISIDE AD

γ_p	2°	κ_r	90°
γ_f	0°	$a_{p\,max}$	.394 in





Z* - Number of teeth

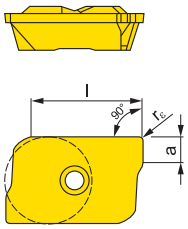
Dimensions [in].

Designation	Assortment	Dimensions											Cooling	[lbs]
		D	d	d_1	L	b	t	Z*						
150A06R-IC90AD15-C	●	1.500	.750	.630	1.575	.321	.193	6					+	.36
200A08R-IC90AD15-C	●	2.000	1,000	.827	1.575	.382	.224	8					+	.57
250A10R-IC90AD15-C	●	2.500	1,000	.827	1.575	.382	.224	10					+	.87
300A10R-IC90AD15-C	●	3.000	1.250	1.063	1.969	.508	.287	10					+	1.57
300A14R-IC90AD15-C	●	3.000	1.250	1.063	1.969	.508	.287	14					+	1.57

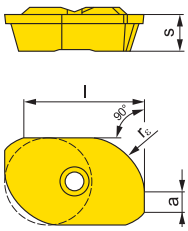
PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

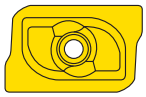
IC90AD15



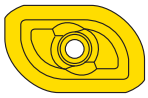
ADKX 15 (04, 08)



ADKX 15 (30, 40, 60)



ADKX 15 (04, 08)



ADKX 15 (30, 40, 60)

INDEXABLE CUTTING INSERTS

Designation	Grades																Dimensions					
	M8345	8230															l	d	s	a		r_ε
ADKX 15T304ER-F	●	●															.480	.375	.156	.102		.016
ADKX 15T308ER-F	●	●															.480	.375	.156	.087		.031
ADKX 15T330ER-F	●	●															.488	.375	.156	.100		.118
ADKX 15T340ER-F	●	●															.492	.375	.156	.100		.157
ADKX 15T360ER-F	●	●															.496	.375	.156	.079		.236

*) When using inserts with corner radius r_ε = 6.0 mm, the cutter body must be modified!

SPARE PARTS

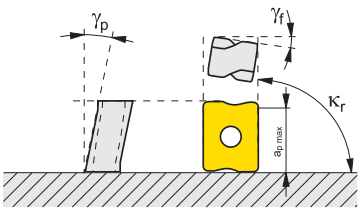
*) For screw torques see pages: M191 – M193.

Diameter of cutter	Clamping screw*	Driver	Driver handle	Screw for taper clamping			
1.500	US 63511D-T15P	D-T08P/T15P	FG-15	HS 037100			
2.000 – 2.500	US 63511D-T15P	D-T08P/T15P	FG-15	HS 050125			
3.000	US 63511D-T15P	D-T08P/T15P	FG-15	HS 062125			

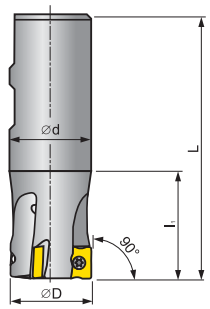
● stocked as standard /○ not stocked as standard
See price list for current availability.

ISLN12

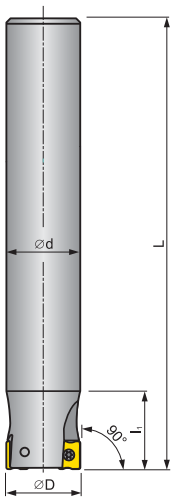
γ_p	-6° – -8°	κ_r	90°
γ_f	-15° – -23°	$a_{p\,max}$	.354 in



ECON LN



WELDON



CYLINDRICAL

Z* - Number of teeth

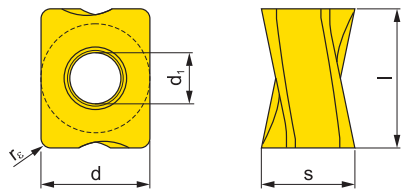
Dimensions [in].

Designation	Assortment	Dimensions D	d	L	l_1	Z*							Cooling	[lbs]
WELDON														
100A2R128W100-ISLN12-C	●	1.000	1.000	3.819	1.280	2							+	.22
125A3R150W125-ISLN12-C	●	1.250	1.250	4.039	1.500	3							+	1.10
150A4R160W125-ISLN12-C	●	1.500	1.250	.452	1.600	4							+	1.32
CYLINDRICAL														
100A2R134C100-ISLN12-C	●	1.000	1.000	6.693	1.340	2							+	1.10
100A2R315C100-ISLN12-C	●	1.000	1.000	6.693	3.150	2							+	1.10
125A2R134C125-ISLN12-C	●	1.250	1.250	7.677	1.340	2							+	1.98
125A2R354C125-ISLN12-C	●	1.250	1.250	7.677	3.543	2							+	1.98

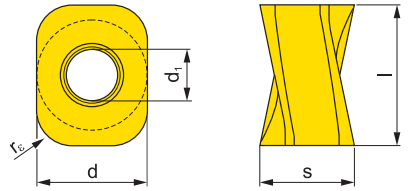
PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

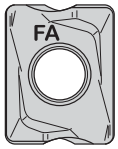
ISLN12



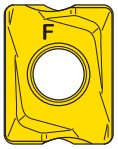
LNGX 12



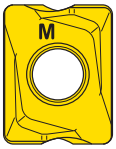
LNGU 12



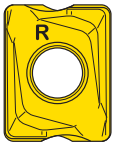
LNGX 12-FA



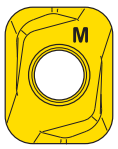
LNGX 12-F



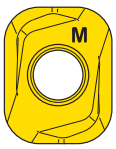
LNGX 12-M



LNGX 12-R



LNGU 120525ER-M



LNGU 120530ER-M

INDEXABLE CUTTING INSERTS

Designation	Grades															Dimensions				
	M0315	M5315	M9315	M9325	M9340	M8340	8215	8230	HF7							(l)	d	s	d_1	r_ε
LNGX 120504ER-F						●	●	●								.472	.374	.280	.177	.016
LNGX 120508ER-F						●	●	●								.472	.374	.280	.177	.031
LNGX 120504ER-M						●		●								.472	.374	.280	.177	.016
LNGX 120508ER-M			●	●	●	●	●	●								.472	.374	.280	.177	.031
LNGX 120512ER-M						●		●								.472	.374	.280	.177	.047
LNGX 120516ER-M						●		●								.472	.374	.280	.177	.063
LNGX 120520ER-M						●		●								.472	.374	.280	.177	.079
LNGU 120525ER-M						●		●								.472	.374	.280	.177	.098
LNGU 120530ER-M						●		●								.472	.374	.280	.177	.118
LNGX 120508SR-R		●	●	●	●	●	●	●								.472	.374	.280	.177	.031
LNGX 120516SR-R				●		●	●	●								.472	.374	.280	.177	.063
LNGX 120504FR-FA									●							.472	.374	.280	.177	.016
LNGX 120508FR-FA	●								●							.472	.374	.280	.177	.031

SPARE PARTS

*) For screw torques see pages: M191 – M193.

Diameter of cutter	Clamping screw*	Screwdriver
1.000 – 1.500	US 44012-T15P	FLAG T15P

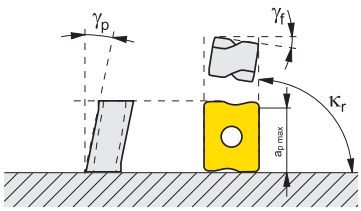
● stocked as standard /○ not stocked as standard
See price list for current availability.

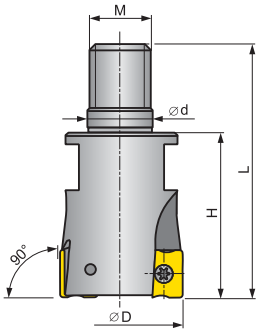
ISLN12

EXCHANGEABLE HEADS FOR SQUARE SHOULDER AND SLOT MILLING CUTTERS

ECON *LN*

γ_p	-6°	κ_r	90°
γ_f	-15°	$a_{p\,max}$	.354 in





Z* - Number of teeth

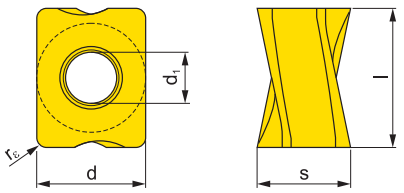
Dimensions [in].

Designation	Assortment	Dimensions											Cooling	[lbs]
		D	d	M	H	L	Z*							
100A2R138M12-ISLN12-C	●	1.000	.492	M12	1.378	2.244	2						+	.22
125A2R169M16-ISLN12-C	●	1.250	.669	M16	1.693	2.598	2						+	.44
125A3R169M16-ISLN12-C	●	1.250	.669	M16	1.693	2.598	3						+	.44
150A3R169M16-ISLN12-C	●	1.500	.669	M16	1.693	2.598	3						+	.44

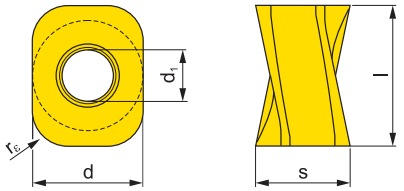
● stocked as standard /○ not stocked as standard
See price list for current availability.

PRAMET

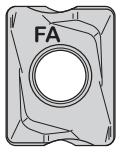
ISLN12



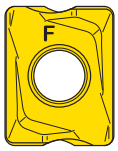
LNGX 12



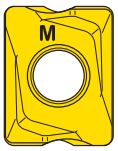
LNGU 12



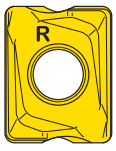
LNGX 12-FA



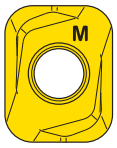
LNGX 12-F



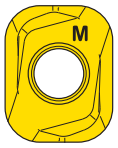
LNGX 12-M



LNGX 12-R



LNGU 120525ER-M



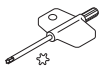
LNGU 120530ER-M

INDEXABLE CUTTING INSERTS

Designation	Grades									Dimensions				
	M0315	M5315	M9315	M9325	M9340	M8340	8215	8230	HF7	(l)	d	s	d_1	r_ε
LNGX 120504ER-F						●	●	●		.472	.374	.280	.177	.016
LNGX 120508ER-F						●	●	●		.472	.374	.280	.177	.031
LNGX 120504ER-M						●		●		.472	.374	.280	.177	.016
LNGX 120508ER-M			●	●	●	●	●	●		.472	.374	.280	.177	.031
LNGX 120512ER-M						●		●		.472	.374	.280	.177	.047
LNGX 120516ER-M						●		●		.472	.374	.280	.177	.063
LNGX 120520ER-M						●		●		.472	.374	.280	.177	.079
LNGU 120525ER-M						●		●		.472	.374	.280	.177	.098
LNGU 120530ER-M						●		●		.472	.374	.280	.177	.118
LNGX 120508SR-R		●	●	●	●	●	●	●		.472	.374	.280	.177	.031
LNGX 120516SR-R				●		●	●	●		.472	.374	.280	.177	.063
LNGX 120504FR-FA									●	.472	.374	.280	.177	.016
LNGX 120508FR-FA	●								●	.472	.374	.280	.177	.031

SPARE PARTS

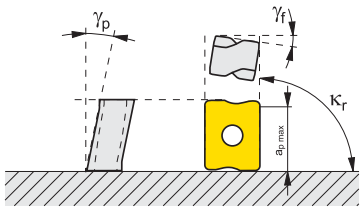
*) For screw torques see pages: M191 – M193.

Diameter of cutter	Clamping screw*	Screwdriver
		
1.000 – 1.500	US 44012-T15P	FLAG T15P

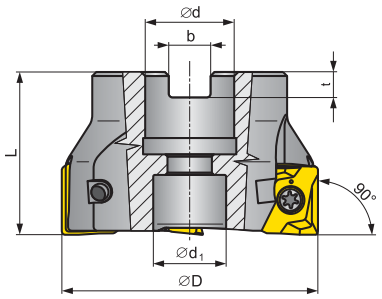
● stocked as standard /○ not stocked as standard
See price list for current availability.

IS90LN12

γ_p	-6°	κ_r	90°
γ_f	-14° – -15°	$a_{p\,max}$	.354 in



ECON LN



Z* - Number of teeth

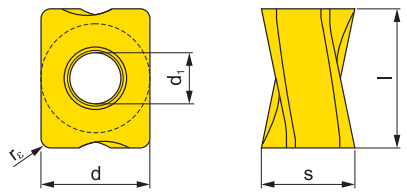
Dimensions [in].

Designation	Assortment	Dimensions											Cooling	[lbs]
		D	d	d_1	L	b	t	Z*						
150A04R-IS90LN12-C	●	1.500	.500	.433	1.575	.258	.165	4					+	.44
200A04R-IS90LN12-C	●	2.000	.750	.630	1.575	.321	.193	4					+	.66
200A05R-IS90LN12-C	●	2.000	.750	.630	1.575	.321	.193	5					+	.66
250A04R-IS90LN12-C	●	2.500	.750	.630	1.575	.321	.193	4					+	1.10
250A06R-IS90LN12-C	●	2.500	.750	.630	1.575	.321	.193	6					+	1.10
300A05R-IS90LN12-C	●	3.000	1.000	.827	1.969	.382	.224	5					+	2.21
300A07R-IS90LN12-C	●	3.000	1.000	.827	1.969	.382	.224	7					+	2.21
400A06R-IS90LN12-C	●	4.000	1.500	1.260	1.969	.630	.382	6					+	3.75
400A08R-IS90LN12-C	●	4.000	1.500	1.260	1.969	.630	.382	8					+	3.75
500A07R-IS90LN12-C	●	5.000	1.500	1.260	2.480	.630	.382	7					+	7.06
500A09R-IS90LN12-C	●	5.000	1.500	1.260	2.480	.630	.382	9					+	7.06

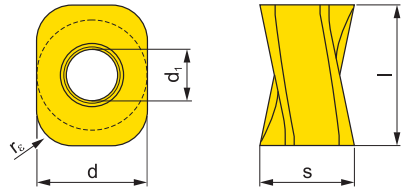
PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

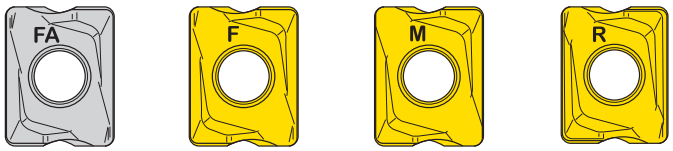
IS90LN12



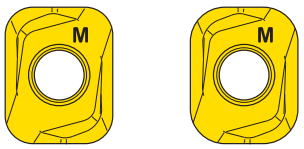
LNGX 12



LNGU 12



LNGX 12-FA | LNGX 12-F | LNGX 12-M | LNGX 12-R



LNGU 120525ER-M | LNGU 120530ER-M

INDEXABLE CUTTING INSERTS

Designation	Grades															Dimensions				
	M0315	M5315	M9315	M9325	M9340	M8340	8215	8230	HF7							(l)	d	s	d_1	r_ε
LNGX 120504ER-F						●	●	●								.472	.374	.280	.177	.016
LNGX 120508ER-F						●	●	●								.472	.374	.280	.177	.031
LNGX 120504ER-M						●		●								.472	.374	.280	.177	.016
LNGX 120508ER-M			●	●	●	●	●	●								.472	.374	.280	.177	.031
LNGX 120512ER-M						●		●								.472	.374	.280	.177	.047
LNGX 120516ER-M						●		●								.472	.374	.280	.177	.063
LNGX 120520ER-M						●		●								.472	.374	.280	.177	.079
LNGU 120525ER-M						●		●								.472	.374	.280	.177	.098
LNGU 120530ER-M						●		●								.472	.374	.280	.177	.118
LNGX 120508SR-R		●	●	●	●	●	●	●								.472	.374	.280	.177	.031
LNGX 120516SR-R				●		●	●	●								.472	.374	.280	.177	.063
LNGX 120504FR-FA									●							.472	.374	.280	.177	.016
LNGX 120508FR-FA	●								●							.472	.374	.280	.177	.031

SPARE PARTS

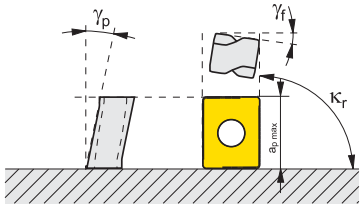
*) For screw torques see pages: M191 – M193.

Diameter of cutter	Clamping screw*	Driver	Driver handle	Screw for taper clamping
1.500	US 2505-T08P	D-T08P/T15P	FG-15	HS 025100
2.000 – 2.500	US 2505-T08P	D-T08P/T15P	FG-15	HS 037100
3.000	US 2505-T08P	D-T08P/T15P	FG-15	HS 050125
4.000	US 2505-T08P	D-T08P/T15P	FG-15	HCS 075200
5.000	US 2505-T08P	D-T08P/T15P	FG-15	HS 075125

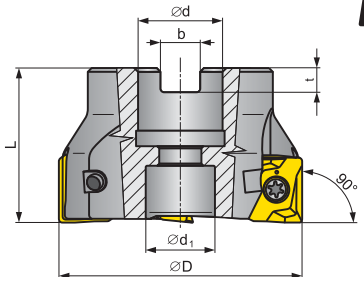
● stocked as standard /○ not stocked as standard
See price list for current availability.

IS90LN16

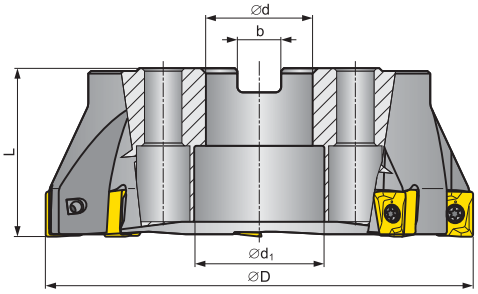
γ_p	-6°	κ_r	90°
γ_f	-10.5°	$a_{p\,max}$	.512 in



ECON *LN*



ø 2.500 – 5.000 in



ø 6.000 in

Z* - Number of teeth

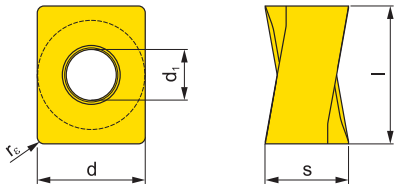
Dimensions [in].

Designation	Assortment	Dimensions											Cooling	[lbs]
		D	d	d_1	L	b	t	Z*						
250A04R-IS90LN16-C	●	2.500	.750	.630	1.575	.321	.193	4					+	1.10
250A05R-IS90LN16-C	●	2.500	.750	.630	1.575	.321	.193	5					+	1.10
300A04R-IS90LN16-C	●	3.000	1.000	.827	1.969	.382	.224	4					+	2.21
300A06R-IS90LN16-C	●	3.000	1.000	.827	1.969	.382	.224	6					+	2.21
400A05R-IS90LN16-C	●	4.000	1.260	1.260	1.969	.630	.382	5					+	3.97
400A07R-IS90LN16-C	●	4.000	1.260	1.260	1.969	.630	.382	7					+	3.75
500A06R-IS90LN16-C	○	5.000	1.575	1.260	2.480	.630	.382	6					+	7.72
500A08R-IS90LN16-C	○	5.000	1.575	1.260	2.480	.630	.382	8					+	7.28
600B08R-IS90LN16	○	6.000	1.575	2.205	2.480	.756	.445	8						12.57

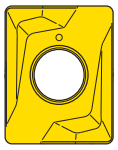
PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

IS90LN16



LNGU 16



LNGU 16-M

INDEXABLE CUTTING INSERTS

Designation	Grades						Dimensions				
	M9315	M9325	M8340	M8340	8215	8230	l	d	s	d_1	r_ε
LNGU 160708SR-M	●	●	●	●	●	●	.654	.520	.394	.224	.031

SPARE PARTS

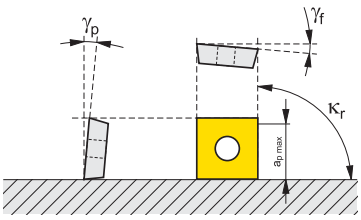
*) For screw torques see pages: M191 – M193.

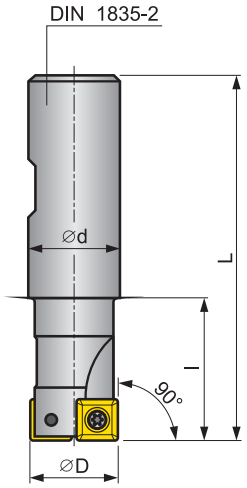
Diameter of cutter	Clamping screw*	Screwdriver	Screw for taper clamping
2.500	US 45012-T20P	SDR T20P-T	HS 037100
3.000	US 45012-T20P	SDR T20P-T	HS 050125
4.000	US 45012-T20P	SDR T20P-T	HCS 075200
5.000	US 45012-T20P	SDR T20P-T	HS 075125
6.000	US 45012-T20P	SDR T20P-T	-

● stocked as standard /○ not stocked as standard
See price list for current availability.

ISSO09

γ_p	+6 – +10°	κ_r	90°
γ_f	-10° – -12°	$a_{p\,max}$	.315 in





Z* - Number of teeth

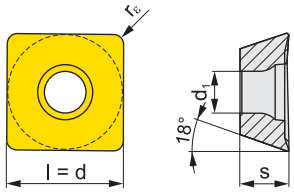
Dimensions [in].

Designation	Assortment	Dimensions											Cooling	[lbs]
		D	L	l_1	d	Z*								
100A3R128W100-ISSO09-C	●	1.000	3.780	1.280	1.000	3							+	.66
125A4R150W125-ISSO09-C	●	1.250	4.000	1.500	1.250	4							+	1.54

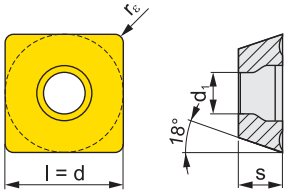
● stocked as standard /○ not stocked as standard
See price list for current availability.

PRAMET

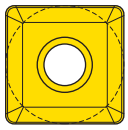
ISSO09



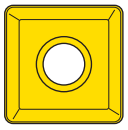
SOMT-P



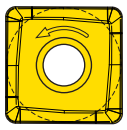
SOMT



SOMT-P



SOMT-MI



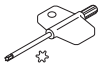
SOMT-M

INDEXABLE CUTTING INSERTS

Designation	Grades								Dimensions				
	M5315	M9315	M9325	M9340	M8310	M8340	8215	8230	(l)	d	s	d_1	r_ε
SOMT 09T304-P			●			●		●	.376	.376	.156	.138	.016
SOMT 09T304-MI		●		●	●	●	●	●	.376	.376	.156	.138	.016
SOMT 09T308-M	●	●				●	●	●	.376	.376	.156	.138	.031

SPARE PARTS

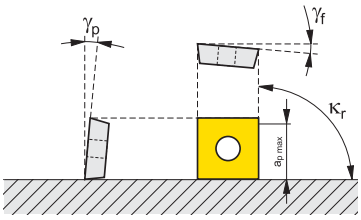
*) For screw torques see pages: M191 – M193.

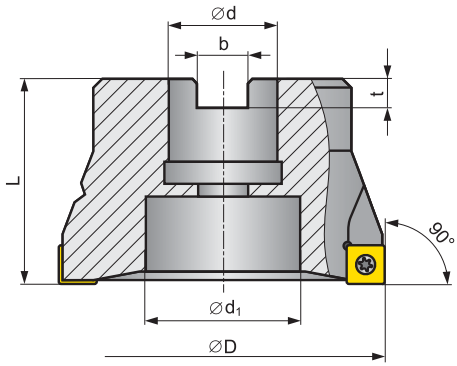
Diameter of cutter	Clamping screw*	Screwdriver
		
1.000 – 1.250	US 3006-T09P	FLAG T09P

● stocked as standard /○ not stocked as standard
See price list for current availability.

IS90SO09

γ_p	+10°	κ_r	90°
γ_f	-8° – -9°	$a_{p\,max}$	.315 in





Z* - Number of teeth

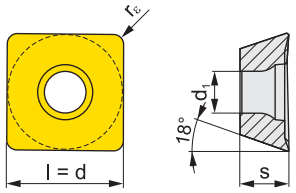
Dimensions [in].

Designation	Assortment	Dimensions											Cooling	[lbs]
		D	d	d_1	L	b	t	Z*						
150A05R-IS90SO09-C	●	1.500	.500	.433	1.575	.258	.165	5					+	.33
200A06R-IS90SO09-C	●	2.000	.750	.630	1.575	.321	.193	6					+	.66
250A07R-IS90SO09-C	●	2.500	.750	.630	1.575	.321	.193	7					+	1.12
300A09R-IS90SO09-C	●	3.000	1.000	.827	1.969	.382	.224	9					+	2.14
400A10R-IS90SO09-C	●	4.000	1.500	1.260	1.969	.630	.382	10					+	3.55
500A12R-IS90SO09-C	●	5.000	1.500	1.260	2.480	.630	.382	12					+	6.55

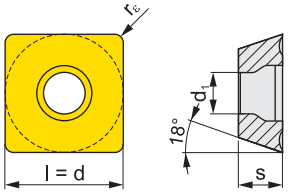
PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

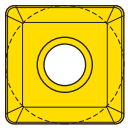
IS90SO09



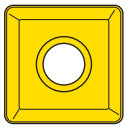
SOMT-P



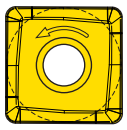
SOMT



SOMT-P



SOMT-MI



SOMT-M

INDEXABLE CUTTING INSERTS

Designation	Grades								Dimensions				
	M5315	M9315	M9325	M9340	M8310	M8340	8215	8230	(l)	d	s	d_1	r_ε
SOMT 09T304-P			●			●		●	.376	.376	.156	.138	.016
SOMT 09T304-MI		●		●	●	●	●	●	.376	.376	.156	.138	.016
SOMT 09T308-M	●	●				●	●	●	.376	.376	.156	.138	.031

SPARE PARTS

*) For screw torques see pages: M191 – M193.

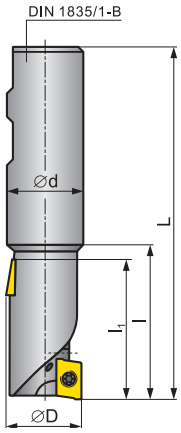
Diameter of cutter	Clamping screw*	Driver	Driver handle	Screw for taper clamping
1.500	US 3006-T09P	D-T07P/T09P	FG-15	HS 025100
2.000 – 2.500	US 3006-T09P	D-T07P/T09P	FG-15	HS 037100
3.000	US 3006-T09P	D-T07P/T09P	FG-15	HS 050125
4.000 – 5.000	US 3006-T09P	D-T07P/T09P	FG-15	HS 075125

PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

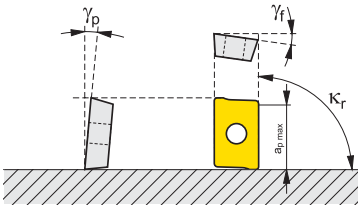
J-ISAD11E

FORCE AD



WELDON

γ_p	+11° – +12°	κ_r	90°
γ_f	-5.2° – -8.1°	$a_{p\,max}$	l_1



Z* - Number of teeth
ZN* - Number of inserts
Note: Inserts with radius r_ε more than .031 in can be used only for face insert seats.

Dimensions [in].

Designation	Assortment	Dimensions											Cooling	[lbs]
		D	d	L	l	l_1	Z*	ZN*						
100J2R197W100-ISAD11E150	●	1.000	1.000	4.508	1.969	1.496	2	8					+	.66
125J2R236W125-ISAD11E185	●	1.250	1.250	4.902	2.362	1.850	2	10					+	1.32
150J3R276W125-ISAD11E220	●	1.500	1.250	5.295	2.756	2.205	3	18					+	2.21

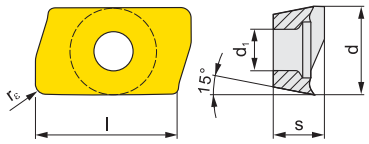
PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

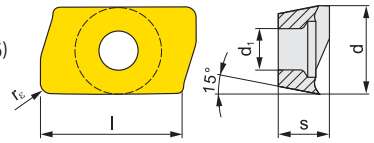
J-ISAD11E

INSERTS FOR HELICAL END MILLING CUTTERS FOR ROUGHING

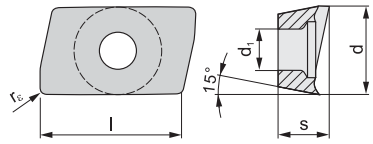
ADMX 11

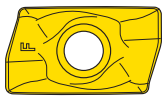


ADMX 11(16)

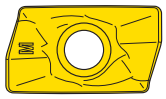


ADEX 11

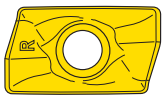




ADMX 11SR-F

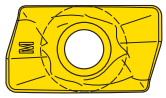


ADMX 11SR-M

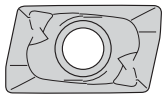


ADMX 11PR-R

ADMX 11T316SR-M



ADEX 11 FR-FA



INDEXABLE CUTTING INSERTS

Designation	Grades															Dimensions				
	M0315	M5315	M9315	M9315	M9340	M8340	8215	8230	HF7							(l)	d	s	d_1	r_ε
ADMX 11T304SR-F					●	●	●	●								.433	.257	.156	.114	.016
ADMX 11T308SR-F					●	●	●	●								.433	.257	.156	.114	.031
ADMX 11T302SR-M						●		●								.433	.257	.156	.114	.008
ADMX 11T304SR-M					●	●	●	●								.433	.257	.156	.114	.016
ADMX 11T308SR-M		●	●	●	●	●	●	●								.433	.257	.156	.114	.031
ADMX 11T310SR-M						●		●								.433	.257	.156	.114	.039
ADMX 11T312SR-M						●	●	●								.433	.257	.156	.114	.047
ADMX 11T316SR-M						●	●	●								.433	.257	.156	.114	.063
ADMX 11T308PR-R		●	●	●		●	●	●								.433	.257	.156	.114	.031
ADMX 11T316PR-R						●	●	●								.433	.257	.156	.114	.063
ADEX 11T304FR-FA	●								●							.433	.257	.156	.114	.016
ADEX 11T308FR-FA	●								●							.433	.257	.156	.114	.031
ADEX 11T316FR-FA									●							.433	.257	.156	.114	.063

SPARE PARTS

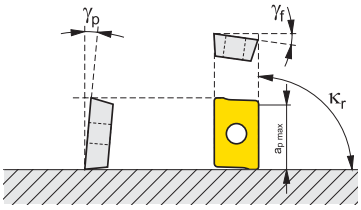
*) For screw torques see pages: M191 - M193.

Diameter of cutter	Clamping screw*	Screwdriver
1.000 – 1.500	US 2506-T08P	FLAG T07P

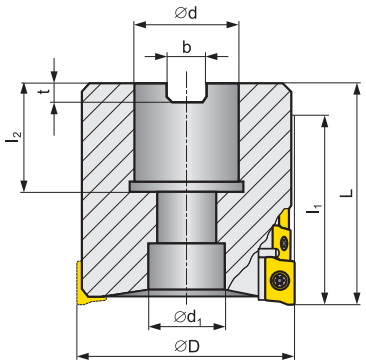
● stocked as standard / ○ not stocked as standard
See price list for current availability.

T-IS90AD11E

γ_p	+11° – +12°	κ_r	90°
γ_f	-5.2° – -8.1°	$a_{p\,max}$	l_1



FORCE AD



Z* - Number of teeth
ZN* - Number of inserts
Note: Inserts with radius r_ε more than .031 in can be used only for face insert seats.

Dimensions [in].

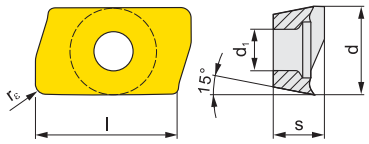
Designation	Assortment	Dimensions											Cooling	[lbs]
		D	d	d_1	L	l_1	l_2	Z*	ZN*					
200T03R-IS90AD11E146-C	●	2.000	.750	.630	2.362	1.457	.827	3	12				+	1.10

PRAMET

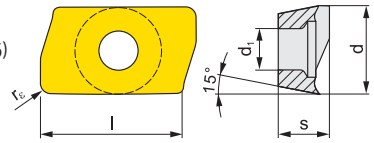
● stocked as standard /○ not stocked as standard
See price list for current availability.

T-IS90AD11E

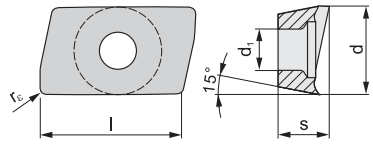
ADMX 11

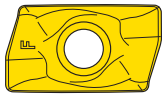


ADMX 11(16)

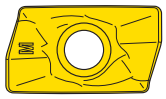


ADEX 11

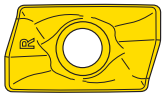




ADMX 11SR-F

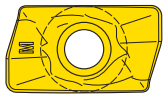


ADMX 11SR-M

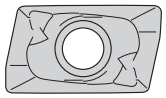


ADMX 11PR-R

ADMX 11T316SR-M



ADEX 11 FR-FA



INDEXABLE CUTTING INSERTS

Designation	Grades									Dimensions				
	M0315	M5315	M9315	M9325	M9340	M8340	8215	8230	HF7	(l)	d	s	d_1	r_ε
ADMX 11T304SR-F					●	●	●	●		.433	.257	.156	.114	.016
ADMX 11T308SR-F					●	●	●	●		.433	.257	.156	.114	.031
ADMX 11T302SR-M						●		●		.433	.257	.156	.114	.008
ADMX 11T304SR-M				●	●	●	●	●		.433	.257	.156	.114	.016
ADMX 11T308SR-M		●	●	●	●	●	●	●		.433	.257	.156	.114	.031
ADMX 11T310SR-M						●		●		.433	.257	.156	.114	.039
ADMX 11T312SR-M						●	●	●		.433	.257	.156	.114	.047
ADMX 11T316SR-M						●	●	●		.433	.257	.156	.114	.063
ADMX 11T308PR-R		●	●	●		●	●	●		.433	.257	.156	.114	.031
ADMX 11T316PR-R				●		●	●	●		.433	.257	.156	.114	.063
ADEX 11T304FR-FA	●								●	.433	.257	.156	.114	.016
ADEX 11T308FR-FA	●								●	.433	.257	.156	.114	.031
ADEX 11T316FR-FA									●	.433	.257	.156	.114	.063

SPARE PARTS

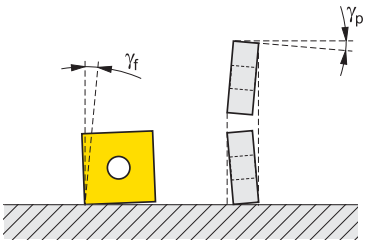
*) For screw torques see pages: M191 - M193.

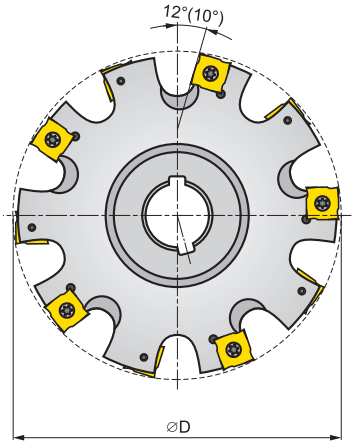
Diameter of cutter	Clamping screw*	Driver	Driver handle	Screw for taper clamping
2.000	US 2506-T07P	D-T07P/T09P	FG-15	HS 037100

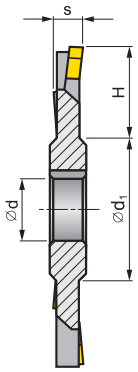
● stocked as standard / ○ not stocked as standard
See price list for current availability.

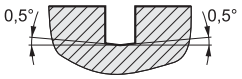
IS90SN

γ_p	-0°30´	κ_r	90°
γ_f	+2°30´	$a_{\varepsilon\,max}$	H









Z* - Number of teeth
ZN* - Number of inserts

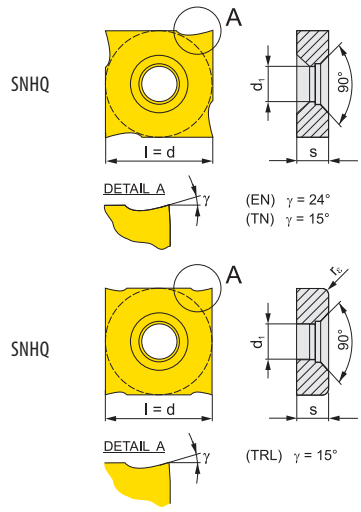
Dimensions [in].

Designation	Assortment	Dimensions											Cooling	[lbs]
		D	d	H	s	d_1	Z*	ZN*						
300F04N-IS90SN11N2.5	●	3.000	1.000	.630	.156	1.480	4	8						.44
300F04N-IS90SN12N4	●	3.000	1.000	.630	.250	1.480	4	8						.44
300F04N-IS90SN12N5	●	3.000	1.000	.630	.313	1.480	4	8						.66
400G05N-IS90SN12N4	●	4.000	1.250	.945	.250	1.750	5	10						.66
400G05N-IS90SN12N5	●	4.000	1.250	.945	.313	1.750	5	10						.88
400G05N-IS90SN12N6	●	4.000	1.250	.945	.375	1.750	5	10						1.10
500H06N-IS90SN12N4	○	5.000	1.250	1.220	.250	2.000	6	12						1.10
500H06N-IS90SN12N5	●	5.000	1.250	1.220	.313	2.000	6	12						1.32
600H08N-IS90SN12N4	●	6.000	1.250	1.693	.250	2.000	8	16						2.21
600H08N-IS90SN12N5	○	6.000	1.250	1.693	.313	2.000	8	16						2.43
600H08N-IS90SN12N6	○	6.000	1.250	1.693	.375	2.000	8	16						2.65

PRAMET

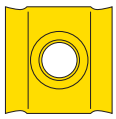
● stocked as standard /○ not stocked as standard
See price list for current availability.

IS90SN



SNHQ AZEN/AZTN

(EN) γ = 24° for machining aluminium
(TN) γ = 15° for machining steel and cast iron



SNHQ TRL

(TN) γ = 15° for machining steel and cast iron

INDEXABLE CUTTING INSERTS

Designation	Grades			Dimensions				
	M8340	8215	8230	l	s	d_1	g	r_ε
s = .156"								
SNHQ 1102AZTN	●		●	.433	.091	.169	15°	-
s = .250"								
SNHQ 12T3AZEN	●			.500	.134	.197	24°	-
SNHQ 12T3AZTN	●		●	.500	.134	.197	15°	-
SNHQ 12T305TRL	●			.500	.134	.197	15°	.020
SNHQ 12T310TRL	●			.500	.134	.197	15°	.039
SNHQ 12T315TRL	●			.500	.134	.197	15°	.059
s = .313"								
SNHQ 1204AZEN	●	●		.500	.177	.197	24°	-
SNHQ 1204AZTN	●		●	.500	.177	.197	15°	-
SNHQ 120405TRL	●			.500	.177	.197	15°	.020
SNHQ 120410TRL	●			.500	.177	.197	15°	.039
SNHQ 120415TRL	●			.500	.177	.197	15°	.059
s = .375"								
SNHQ 1205AZEN	●	●		.500	.213	.197	24°	-
SNHQ 1205AZTN	●		●	.500	.213	.197	15°	-
SNHQ 120505TRL	●			.500	.213	.197	15°	.020
SNHQ 120510TRL	●			.500	.213	.197	15°	.039
SNHQ 120515TRL	●			.500	.213	.197	15°	.059

SPARE PARTS

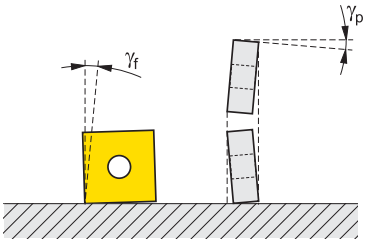
*) For screw torques see pages: M191 - M193.

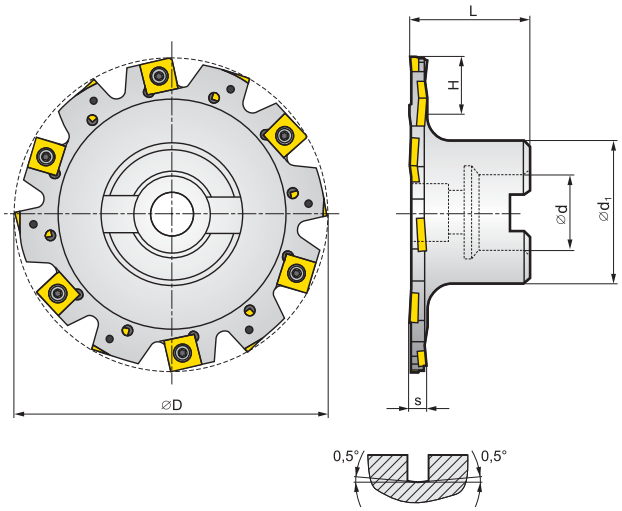
Width of cutter "s"	Clamping screw*	Screwdriver
.156	US 3504-T09P	SDR T09P
.250	US 94006-T15	SDR T15
.313	US 71	SDR T15
.375	US 94008-T15	SDR T15

● stocked as standard / ○ not stocked as standard
See price list for current availability.

IS90SN-R

γ_p	-0°30´	κ_r	90°
γ_f	+2°30´	$a_{\varepsilon\,max}$	H





Z* - Number of teeth
ZN* - Number of inserts
K* - Effective number of teeth

Dimensions [in].

Designation	Assortment	Dimensions										Cooling	[lbs]
		D	d	H	s	d_1	Z*	ZN*	L				
250A03R-IS90SN11N2.5	●	2.500	.750	.413	.156	1.378	3	6	1.575				1.10
250A03R-IS90SN12N4	●	2.500	.750	.413	.250	1.319	3	6	1.575				1.10
300A04R-IS90SN11N3	●	3.000	.750	.610	.187	1.575	4	8	1.575				1.32
300A04R-IS90SN12N4	●	3.000	.750	.610	.250	1.575	4	8	1.575				1.32
400A05R-IS90SN12N4	●	4.000	1.000	.945	.250	1.890	5	10	1.969				1.54
600B08R-IS90SN12N6	●	6.000	1.500	1.457	.375	2.756	8	16	1.969				4.63

SPARE PARTS

*) For screw torques see pages: M191 - M193.

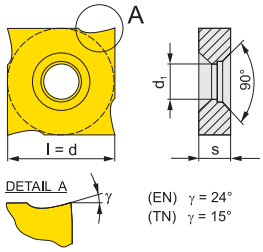
Designation of cutter	Clamping screw*	Screwdriver	Screw for taper clamping			
250A03R-IS90SN11N2.5	US 3504-T09P	SDR T09P	HS 037100			
250A03R-IS90SN12N4	US 94006-T15	SDR T15	HS 037100			
300A04R-IS90SN11N3	US 3505-T09P	SDR T09P	HS 037100			
300A04R-IS90SN12N4	US 94006-T15	SDR T15	HS 037100			
400A05R-IS90SN12N4	US 94006-T15	SDR T15	HS 050125			
600B08R-IS90SN12N6	US 94008-T15	SDR T15	-			

● stocked as standard /○ not stocked as standard
See price list for current availability.

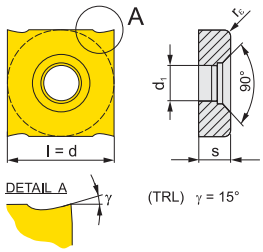
PRAMET

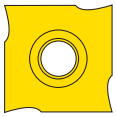
IS90SN-R

SNHQ



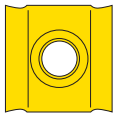
SNHQ





SNHQ AZEN/AZTN

(EN) γ = 24° for machining aluminium
(TN) γ = 15° for machining steel and cast iron



SNHQ TRL

(TN) γ = 15° for machining steel and cast iron

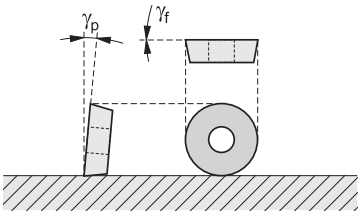
INDEXABLE CUTTING INSERTS

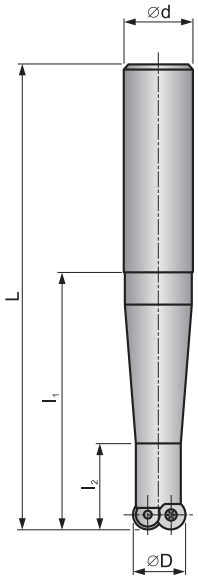
Designation	Grades			Dimensions				
	M8340	8215	8230	l	s	d_1	g	r_ε
s = .156″								
SNHQ 1102AZTN	●		●	.433	.091	.169	15°	-
s = .187″								
SNHQ 1103AZTN	●		●	.433	.106	.169	15°	-
s = .250″								
SNHQ 12T3AZEN	●			.500	.134	.197	24°	-
SNHQ 12T3AZTN	●		●	.500	.134	.197	15°	-
SNHQ 12T305TRL	●			.500	.134	.197	15°	.020
SNHQ 12T310TRL	●			.500	.134	.197	15°	.039
SNHQ 12T315TRL	●			.500	.134	.197	15°	.059
s = .375″								
SNHQ 1205AZEN	●	●		.500	.213	.197	24°	-
SNHQ 1205AZTN	●		●	.500	.213	.197	15°	-
SNHQ 120505TRL	●			.500	.213	.197	15°	.020
SNHQ 120510TRL	●			.500	.213	.197	15°	.039
SNHQ 120515TRL	●			.500	.213	.197	15°	.059

● stocked as standard / ○ not stocked as standard
See price list for current availability.

W-ISRD

γ_p	+3°	κ_r	
γ_f	0°	$a_{p\,max}$	.098 in





Z* - Number of teeth

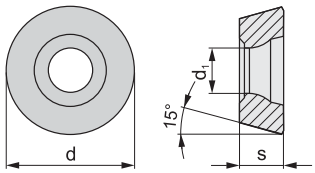
Dimensions [in].

Designation	Assortment	Dimensions										Cooling	[lbs]
		D	L	l_1	d	Z*	Inserts						
075E2R175W075-ISRD10-C	●	.750	3.780	1.750	.750	2	RD.. 1003					+	.44
075E2R250W075-ISRD10-C	●	.750	4.528	2.500	.750	2	RD.. 1003					+	.66
075E2R325W100-ISRD10-C	●	.750	5.315	3.250	.750	2	RD.. 1003					+	1.32
075E2R400W100-ISRD10-C	●	.750	6.024	4.000	.750	2	RD.. 1003					+	1.76
075E2R475W100-ISRD10-C	●	.750	6.772	4.750	.750	2	RD.. 1003					+	2.21

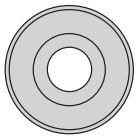
PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

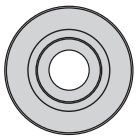
W-ISRD



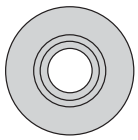
RD..



RDHX MOT



RDGT MOT



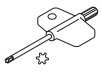
RDHT-FA

INDEXABLE CUTTING INSERTS

Designation	Grades						Dimensions		
	M9340	M8310	M8325	M8345	7205	HF7	d	d_1	s
RDHX 1003M0T		●	●	●	●		.394	.154	.125
RDGT 1003M0T	●	●	●	●			.394	.154	.125
RDHT 1003M0-FA						●	.394	.154	.125

SPARE PARTS

*) For screw torques see pages: M191 - M193.

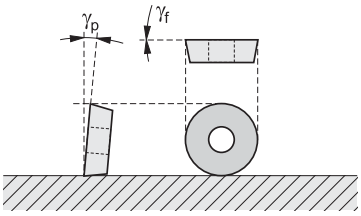
Diameter of cutter	Clamping screw*	Screwdriver
		
.750	US 3507-T15	FLAG T15P

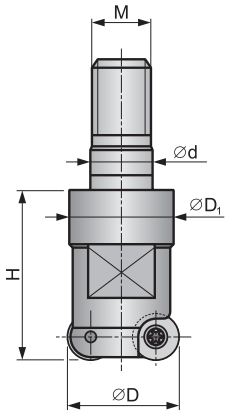
● stocked as standard /○ not stocked as standard
See price list for current availability.

ISCRD

EXCHANGEABLE HEADS FOR COPY MILLING CUTTERS

γ_p	+3°	κ_r	
γ_f	0°	$a_{p\,max}$	.078 – .157 in





Z* - Number of teeth

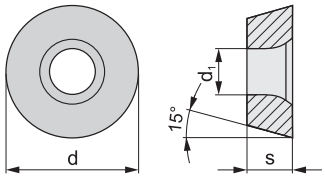
Dimensions [in].

Designation	Assortment	Dimensions [in] D	d	M	H	D_1	Z*	Inserts				Cooling	[lbs]
062E2R110M08-ISRD07-C	●	.625	.335	M8	1.100	.512	2	RD.. 0702				+	.22
075E2R118M10-ISRD07-C	●	.750	.413	M10	1.180	.709	2	RD.. 0702				+	.66
100E3R150M12-ISRD07-C	●	1.000	.492	M12	1.500	.827	3	RD.. 0702				+	.88
075E2R118M10-ISRD10-C	●	.750	.413	M10	1.180	.709	2	RD.. 1003				+	.66
100E2R150M12-ISRD10-C	●	1.000	.492	M12	1.500	.827	2	RD.. 1003				+	.88
100E3R150M12-ISRD10-C	●	1.000	.492	M12	1.500	.827	3	RD.. 1003				+	.77
125E4R175M16-ISRD10-C	●	1.250	.669	M16	1.750	1.142	4	RD.. 1003				+	1.10
150E5R175M16-ISRD10-C	●	1.500	.669	M16	1.750	1.142	5	RD.. 1003				+	1.21
100E2R150M12-ISCRD12-C	●	1.000	.492	M12	1.500	.827	2	RD.. 12T3				+	.77
150E3R175M16-ISCRD12-C	●	1.500	.669	M16	1.750	1.142	3	RD.. 12T3				+	1.21

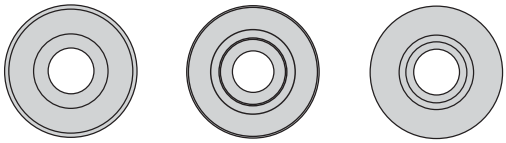
PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

ISCRD



RD..



RDHX MOT RDGT MOT RDHT-FA

INDEXABLE CUTTING INSERTS

Designation	Grades																Dimensions						
	M9340	M8310	M8325	M8345	7205	HF7											d	d_1	s				
RDHX 0702M0T		●	●		●												.276	.110	.094				
RDHX 1003M0T		●	●	●	●												.394	.154	.125				
RDHX 12T3M0T		●	●	●	●												.472	.154	.156				
RDGT 0702M0T		○	○	○													.276	.110	.094				
RDGT 1003M0T	●	●	●	●													.394	.154	.125				
RDGT 12T3M0T	●	●	●	●													.472	.154	.156				
RDHT 0702M0-FA						●											.276	.110	.094				
RDHT 1003M0-FA						●											.394	.154	.125				
RDHT 12T3M0-FA						●											.472	.154	.156				

SPARE PARTS

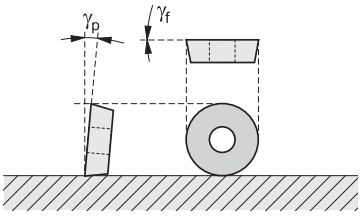
*) For screw torques see pages: M191 - M193.

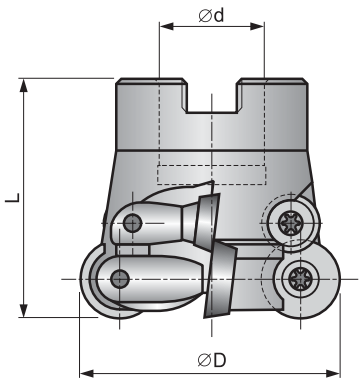
Marking of cutter	Clamping screw*	Clamping screw	Screwdriver
..ISRD07	US 25	-	FLAG T07
..ISRD10	US 3507-T15	-	FLAG T15
..ISCRD12	US 3507-T15	CS12	FLAG T15

● stocked as standard /○ not stocked as standard
See price list for current availability.

ISCMORD

γ_p	+5°	κ_r	
γ_f	0°	$a_{p\,max}$	.118; .157 in





Z* - Number of teeth

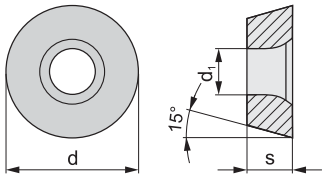
Dimensions [in].

Designation	Assortment	Dimensions [in] D	d	d_1	L	Z*	Inserts					Cooling	[lbs]
200A05R-ISCMORD12-C	●	2.000	.750	.630	1.630	5	RD.. 12T3					+	1.54
250A06R-ISCMORD12-C	●	2.500	1.000	.827	1.750	6	RD.. 12T3					+	1.98
300A07R-ISCMORD12-C	●	3.000	1.000	.827	2.000	7	RD.. 12T3					+	3.09
250A04R-ISCMORD16-C	●	2.500	1.000	.827	1.750	4	RD.. 1604					+	1.98
300A05R-ISCMORD16-C	●	3.000	1.000	.827	2.000	5	RD.. 1604					+	3.09
400A06R-ISCMORD16-C	●	4.000	1.250	1.063	2.000	6	RD.. 1604					+	4.41

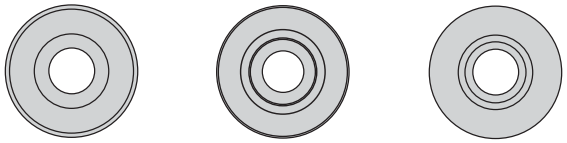
PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

ISCMORD



RD..



RDHX MOT | RDGT MOT | RDHT-FA

INDEXABLE CUTTING INSERTS

Designation	Grades						Dimensions [in]		
	M9340	M8310	M8325	M8345	7205	HF7	d	d_1	s
RDHX 12T3M0T		●	●	●	●		.472	.154	.156
RDHX 1604M0T		●	●	●			.630	.205	.187
RDGT 12T3M0T	●	●	●	●			.472	.154	.156
RDGT 1604M0T	●	●	●	●			.630	.205	.187
RDHT 12T3M0-FA						●	.472	.154	.156
RDHT 1604M0-FA						●	.630	.205	.187

SPARE PARTS

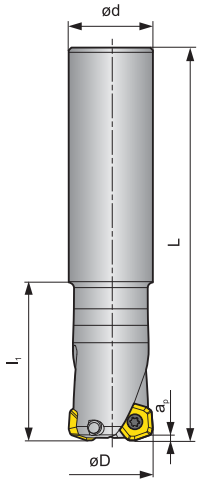
*) For screw torques see pages: M191 - M193.

Designation of cutter	Clamping screw*	Clamping screw	Clamp	Screwdriver
200A05R-ISCM0RD12-C	US 3507-T15	CS 12	-	SDR T15
250A06R-ISCM0RD12-C	US 3507-T15	CS 12	-	SDR T15
300A07R-ISCM0RD12-C	US 3507-T15	CS 12	-	SDR T15
250A04R-ISCM0RD16-C	US 4511-T20	-	LA 12T3	SDR T20
300A05R-ISCM0RD16-C	US 4511-T20	-	LA 12T3	SDR T20
400A06R-ISCM0RD16-C	US 4511-T20	-	LA 12T3	SDR T20

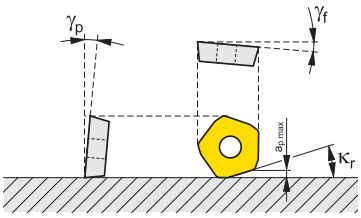
● stocked as standard /○ not stocked as standard
See price list for current availability.

ISPD09

PENTA HF



γ_p	10°	κ_r	19°
γ_f	-10° – -24°	$a_{p\,max}$	.079 in



Z* - Number of teeth

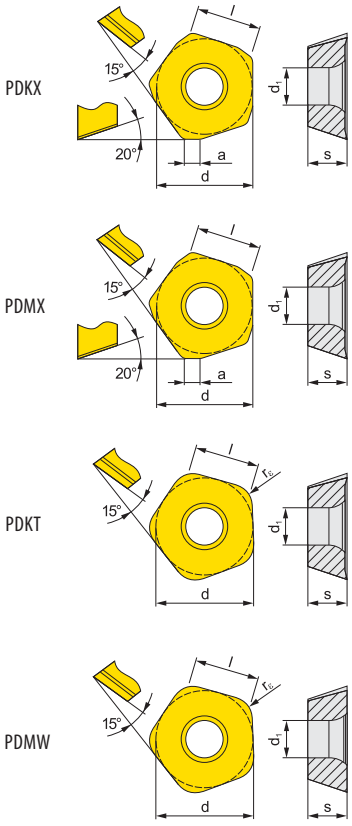
Dimensions [in].

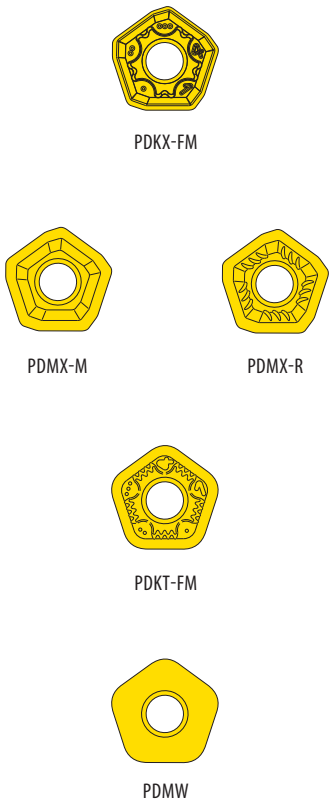
Designation	Assortment	Dimensions											Cooling	[lbs]
		D	d	L	l_1	Z*								
125E2R236C125-ISPD09-C	●	1.250	1.250	9.843	2.362	2							+	3.13
150E3R236C125-ISPD09-C	●	1.500	1.250	9.843	2.362	3							+	3.31

PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

ISPD09





INDEXABLE CUTTING INSERTS

Designation	Grades					Dimensions					
	M9325	M9340	M8345	8215	8230	l	d	s	d_1	a	r_ε
PDKX 0905ZEER-FM		●	●			.354	.531	.215	.217	.079	-
PDMX 0905ZEER-M		●	●	●	●	.354	.531	.215	.217	.079	-
PDMX 0905ZESR-R			●	●	●	.354	.531	.215	.217	.079	-
PDKT 090530ER-FM			●	●	●	.354	.531	.215	.217	-	.118
PDMW 090530SR	●		●			.354	.531	.215	.217	-	.118

SPARE PARTS

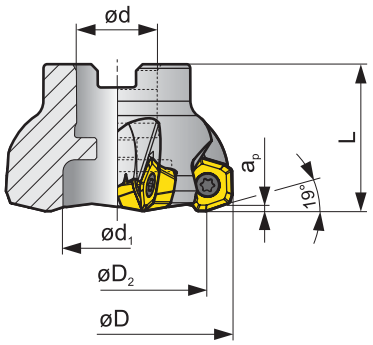
*) For screw torques see pages: M191 - M193.

Diameter of cutter	Clamping screw*	Screwdriver
1.250 – 1.500	US 45011-T20P	FLAG T20P

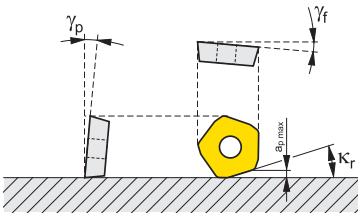
● stocked as standard /○ not stocked as standard
See price list for current availability.

IS19PD09

PENTA HF



γ_p	10°	κ_r	19°
γ_f	-1° – -24°	$a_{p\,max}$	.079 in



Z* - Number of teeth

Dimensions [in].

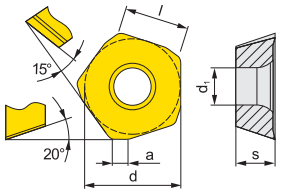
Designation	Assortment	Dimensions											Cooling	[lbs]
		D	D$_2$	d	d$_1$	L	b	t	Z*					
200A04R-IS19PD09-C	●	2.000	1.433	.750	.630	1.575	.321	.193	4				+	.50
250A05R-IS19PD09-C	●	2.500	1.931	.750	.630	1.575	.321	.193	5				+	.68
300A05R-IS19PD09-C	●	3.000	2.432	1.000	.827	1.969	.382	.224	5				+	1.83
400A06R-IS19PD09-C	●	4.000	3.431	1.500	1.417	1.969	.630	.382	6				+	3.09
400A08R-IS19PD09-C	●	4.000	3.431	1.500	1.417	1.969	.630	.382	8				+	3.04

PRAMET

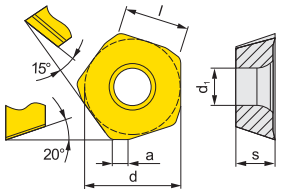
● stocked as standard /○ not stocked as standard
See price list for current availability.

IS19PD09

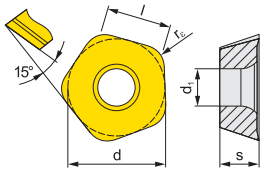
PDKX



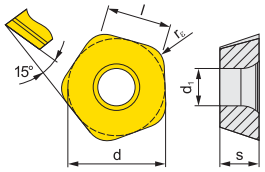
PDMX



PDKT



PDMW

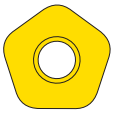


PDKX-FM

PDMX-M

PDMX-R

PDKT-FM



PDMW

INDEXABLE CUTTING INSERTS

Designation	Grades					Dimensions					
	M9325	M9340	M8345	8215	8230	l	d	s	d_1	a	r_ε
PDKX 0905ZEER-FM		●	●			.354	.531	.215	.217	.079	-
PDMX 0905ZEER-M		●	●	●	●	.354	.531	.215	.217	.079	-
PDMX 0905ZESR-R			●	●	●	.354	.531	.215	.217	.079	-
PDKT 090530ER-FM			●	●	●	.354	.531	.215	.217	-	.118
PDMW 090530SR	●		●			.354	.531	.215	.217	-	.118

SPARE PARTS

*) For screw torques see pages: M191 - M193.

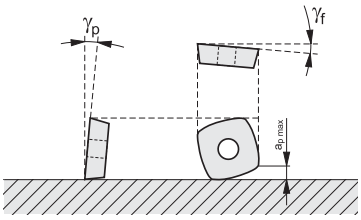
Diameter of cutter	Clamping screw*	Screwdriver	Screw for taper clamping
2.000 – 2.500	US 45011-T20P	SDR T20P-T	HS 037100
3.000	US 45011-T20P	SDR T20P-T	HS 050125
4.000	US 45011-T20P	SDR T20P-T	HCS 075175

PRAMET

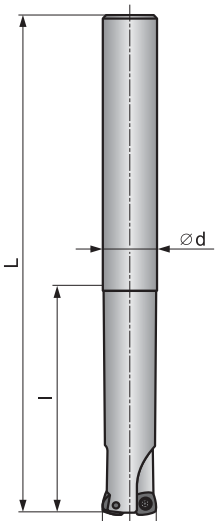
● stocked as standard /○ not stocked as standard
See price list for current availability.

ISZD

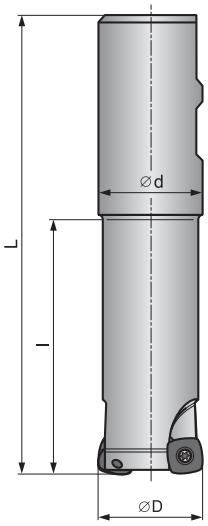
γ_p	+8°; +10°	κ_r	
γ_f	-5°; -6°	$a_{p\,max}$	.039; .063 in



FEED ZD



CYLINDRICAL



WELDON

Z* - Number of teeth

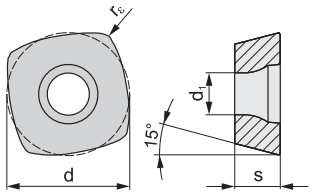
Dimensions [in].

Designation	Assortment	Dimensions D	d	L	l	Z*	Inserts	Cooling	[lbs]
CYLINDRICAL									
062E2R118C062-ISZD07-C	●	.625	.625	3.937	1.181	2	ZD.. 0703	+	.22
062E2R256C062-ISZD07-C	●	.625	.625	5.709	2.559	2	ZD.. 0703	+	.44
075E3R157C075-ISZD07-C	●	.750	.750	4.724	1.575	3	ZD.. 0703	+	.66
075E3R315C075-ISZD07-C	●	.750	.750	6.496	3.150	3	ZD.. 0703	+	.66
100E3R197C100-ISZD07-C	●	1.000	1.000	5.512	1.969	3	ZD.. 0703	+	1.10
100E3R394C100-ISZD07-C	●	1.000	1.000	7.480	3.937	3	ZD.. 0703	+	1.32
WELDON									
100E2R315W100-ISZD09-C	●	1.000	1.000	5.512	3.150	2	ZD.. 09T3	+	.99
100E2R551W100-ISZD09-C	●	1.000	1.000	7.874	5.512	2	ZD.. 09T3	+	1.43
125E2R315W125-ISZD09-C	●	1.250	1.250	5.512	3.150	2	ZD.. 09T3	+	1.65
125E2R551W125-ISZD09-C	●	1.250	1.250	7.874	5.512	2	ZD.. 09T3	+	2.43
150E4R315W125-ISZD12-C	●	1.500	1.250	5.512	3.150	4	ZD.. 1204	+	1.76
150E4R551W125-ISZD12-C	●	1.500	1.250	7.874	5.512	4	ZD.. 1204	+	2.43

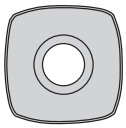
● stocked as standard /○ not stocked as standard
See price list for current availability.

PRAMET

ISZD



ZDCW / ZDEW



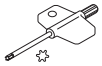
ZDCW / ZDEW

INDEXABLE CUTTING INSERTS

Designation	Grades						Dimensions				
	M8310	M8325	M8345	7205	7215	7230	l	d	s	d_1	r_ε
ZDCW 070304		●	●		●	●	.268	.268	.125	.102	.016
ZDCW 09T304	●	●	●	●	●	●	.375	.375	.156	.134	.016
ZDEW 120408	●	●	●	●			.500	.500	.187	.173	.031

SPARE PARTS

*) For screw torques see pages: M191 - M193.

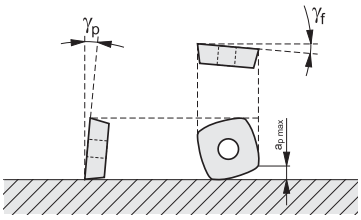
Marking of cutter	Clamping screw*	Screwdriver
		
..ISZD07	US 2205-T07P	FLAG T07P
..ISZD09	US 3006-T09P	FLAG T09P
..ISZD12	US 4011-T15P	FLAG T15P

● stocked as standard /○ not stocked as standard
See price list for current availability.

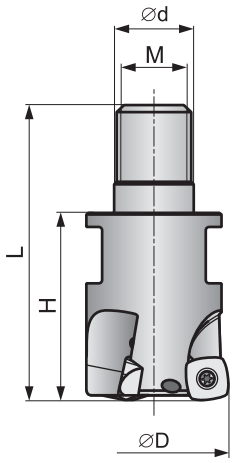
ISZD

EXCHANGEABLE HEADS FOR HIGH FEED MILLING

γ_p	+8°; +10°	κ_r	
γ_f	-5°; -6°	$a_{p\,max}$	.039; .063 in



FEED ZD



Z* - Number of teeth

Dimensions [in].

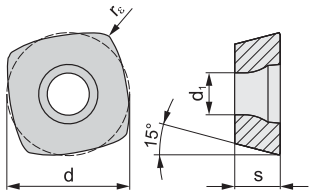
Designation	Assortment	Dimensions										Cooling	[lbs]
		D	d	M	H	L	Z*	Inserts					
062E2R118M08-ISZD07-C	●	.625	.335	M8	1.181	1.890	2	ZD.. 0703				+	.22
075E3R118M10-ISZD07-C	●	.750	.413	M10	1.181	1.929	3	ZD.. 0703				+	.22
100E3R130M12-ISZD07-C	●	1.000	.492	M12	1.300	2.165	3	ZD.. 0703				+	.22
100E4R130M12-ISZD07-C	●	1.000	.492	M12	1.300	2.165	4	ZD.. 0703				+	.22
125E4R157M16-ISZD07-C	●	1.250	.669	M16	1.575	2.480	4	ZD.. 0703				+	.44
100E2R130M12-ISZD09-C	●	1.000	.492	M12	1.300	2.165	2	ZD.. 09T3				+	.22
100E3R130M12-ISZD09-C	●	1.000	.492	M12	1.300	2.165	3	ZD.. 09T3				+	.22
125E3R157M16-ISZD09-C	●	1.250	.669	M16	1.575	2.480	3	ZD.. 09T3				+	.44
125E3R157M16-ISZD12-C	●	1.250	.669	M16	1.575	2.480	3	ZD.. 1204				+	.37
150E4R157M16-ISZD12-C	●	1.500	.669	M16	1.575	2.480	4	ZD.. 1204				+	.44

PRAMET

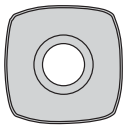
● stocked as standard /○ not stocked as standard
See price list for current availability.

ISZD

INSERTS FOR EXCHANGEABLE HEADS FOR HIGH FEED MILLING



ZDCW / ZDEW



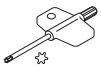
ZDCW / ZDEW

INDEXABLE CUTTING INSERTS

Designation	Grades						Dimensions				
	M8310	M8325	M8345	7205	7215	7230	l	d	s	d_1	r_ε
ZDCW 070304		●	●		●	●	.268	.268	.125	.102	.016
ZDCW 09T304	●	●	●	●	●	●	.375	.375	.156	.134	.016
ZDEW 120408	●	●	●	●			.500	.500	.187	.173	.031

SPARE PARTS

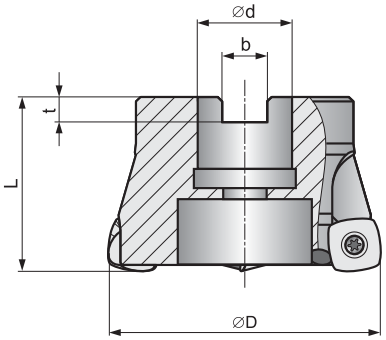
*) For screw torques see pages: M191 - M193.

Marking of cutter	Clamping screw*	Screwdriver
		
..ISZD07	US 2205-T07P	FLAG T07P
..ISZD09	US 3006-T09P	FLAG T09P
..ISZD12	US 4011-T15P	FLAG T15P

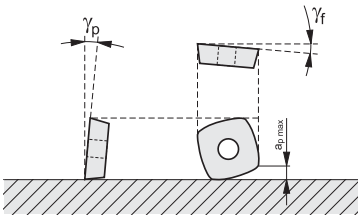
● stocked as standard /○ not stocked as standard
See price list for current availability.

ISMOZD

FEED ZD



γ_p	+10°	κ_r	
γ_f	-6°	$a_{p\,max}$	.039; .063 in



Z* - Number of teeth

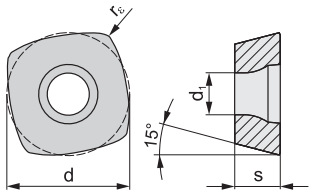
Dimensions [in].

Designation	Assortment	Dimensions										Cooling	[lbs]
		D	d	d_1	L	b	t	Z*	Inserts				
150A04R-ISMOZD09-C	●	1.500	.500	.433	1.575	.258	.165	4	ZD.. 09T3			+	.44
200A04R-ISMOZD12-C	●	2.000	.750	.630	1.575	.321	.193	4	ZD.. 1204			+	.49
250A05R-ISMOZD12-C	●	2.500	.750	.630	1.575	.321	.193	5	ZD.. 1204			+	.93
300A05R-ISMOZD12-C	●	3.150	1.063	.827	1.969	.382	.224	5	ZD.. 1204			+	2.21

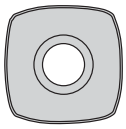
PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

ISMOZD



ZDCW / ZDEW



ZDCW / ZDEW

INDEXABLE CUTTING INSERTS

Designation	Grades						Dimensions				
	M8310	M8325	M8345	7205	7215	7230	l	d	s	d_1	r_ε
ZDCW 09T304	●	●	●	●	●	●	.375	.375	.156	.134	.016
ZDEW 120408	●	●	●	●			.500	.500	.187	.173	.031

SPARE PARTS

*) For screw torques see pages: M191 - M193.

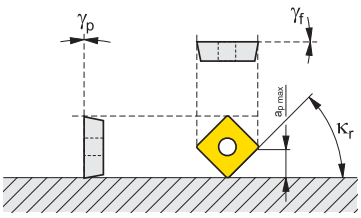
Diameter of cutter	Clamping screw*	Driver	Driver handle	Screw for taper clamping
1.500	US 3006-T09P	D-T07P/T09P	FG-15	HS 025100
2.000 – 2.500	US 4011-T15P	D-T08P/T15P	FG-15	HS 037100
3.000	US 4011-T15P	D-T08P/T15P	FG-15	HS 050125

● stocked as standard /○ not stocked as standard
See price list for current availability.

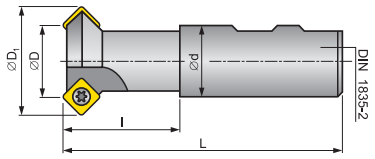
ISSD09

SHANK CUTTERS FOR 45° CHAMFERING

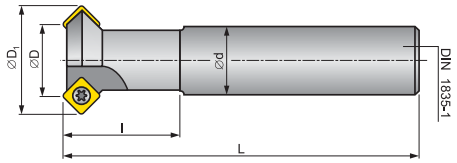
γ_p	0°	κ_r	45°
γ_f	0°	$a_{p\,max}$	.177 in



WELDON



CYLINDRICAL



Z* - Number of teeth

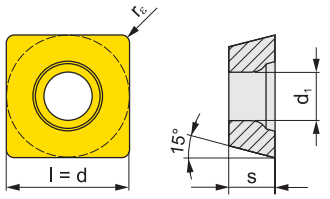
Dimensions [in].

Designation	Assortment	Dimensions											Cooling	[lbs]
		D	D_1	d	L	l_1	Z*							
WELDON														
037N1R106W062-ISSD09	●	.375	.847	.625	2.969	1.063	1							.26
062N2R106W062-ISSD09	●	.625	1.097	.625	2.969	1.063	2							.44
100N3R128W100-ISSD09	●	1.000	1.472	1.000	3.780	1.280	3							.88
CYLINDRICAL														
062N2R106C062-ISSD09	●	.625	1.097	.625	7.874	1.063	2							.88
100N3R128C100-ISSD09	●	1.000	1.472	1.000	7.874	1.280	3							1.54

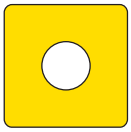
● stocked as standard /○ not stocked as standard
See price list for current availability.

PRAMET

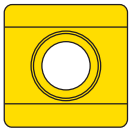
ISSD09



SDEW / SDEX



SDEW EN/SN



SDEX-74

INDEXABLE CUTTING INSERTS

Designation	Grades			Dimensions				
	M8340	8215	8230	l	d	s	d_1	r_ε
SDEW 322EN	●		●	.375	.375	.125	.173	.031
SDEW 322SN	●	●	●	.375	.375	.125	.173	.031
SDEX 322FN-74			●	.375	.375	.125	.173	.031

SPARE PARTS

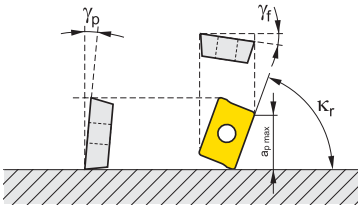
*) For screw torques see pages: M191 - M193.

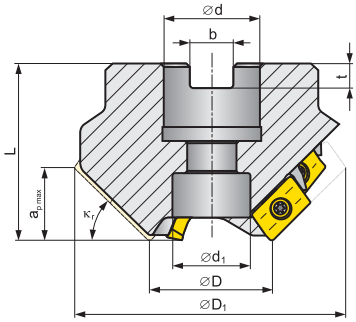
Diameter of cutter	Clamping screw*	Screwdriver
.375 - .625	US 3507-T15	FLAG T15P
1.000	US 3509-T15	FLAG T15P

● stocked as standard /○ not stocked as standard
See price list for current availability.

ISxxXP

γ_p	-1° - +5°	κ_r	30° - 60°
γ_f	-6° - -4°	$a_{p\,max}$	-





Z* - Number of teeth
ZN* - Number of inserts

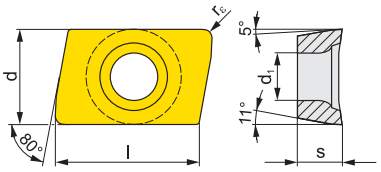
Dimensions [in].

Designation	Assortment	Dimensions											Cooling	[lbs]
		D	k_r	$a_{p\,max}$	d	d_1	L	D_1	b	t	Z*	ZN*		
150T03R-IS30XP16-C	●	1.500	30	.551	1.000	.827	1.969	3.350	.382	.224	3	6		2.14
150T03R-IS45XP16-C	●	1.500	45	.787	1.000	.827	1.969	3.035	.382	.224	3	6		1.70
150T03R-IS60XP16-C	●	1.500	60	.984	1.000	.827	1.969	2.642	.382	.224	3	6		1.17
200T04R-IS30XP16-C	●	2.000	30	.551	1.000	.827	1.969	3.850	.382	.224	4	8		2.38
200T04R-IS45XP16-C	●	2.000	45	.787	1.000	.827	1.969	3.575	.382	.224	4	8		1.98
200T04R-IS60XP16-C	●	2.000	60	.984	1.000	.827	1.969	3.102	.382	.224	4	8		1.50

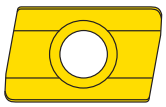
PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

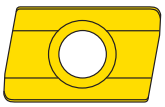
ISxxXP



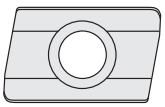
XPHT



XPHT 16-E



XPHT 16-S



XPHT 16-FA

INDEXABLE CUTTING INSERTS

Designation	Grades							Dimensions				
	M9325	M9340	M8340	8215	8230	8240	HF7	l	d	d_1	s	r_ε
XPHT 160412E				●	●			.625	.375	.173	.187	.047
XPHT 160412S	●	●	●	●	●			.625	.375	.173	.187	.047
XPHT 160408F-FA							●	.625	.375	.173	.187	.031

SPARE PARTS

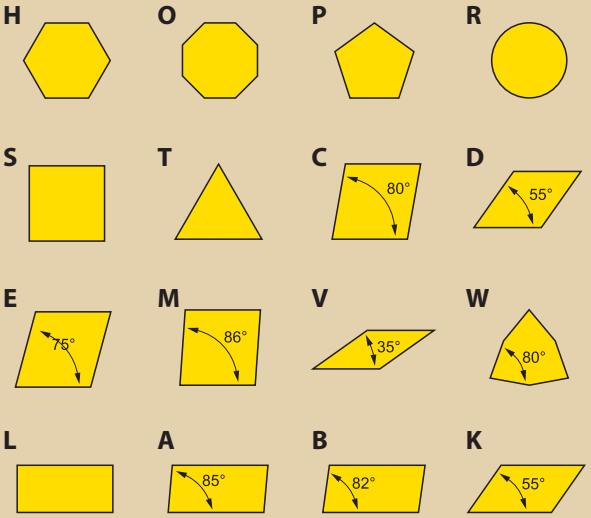
*) For screw torques see pages: M191 - M193.

Diameter of cutter	Clamping screw*	Driver	Driver handle	Screw for taper clamping
1.500 - 2.000	US 3509-T15	D-T07P/T15	FG-15	HS 050125

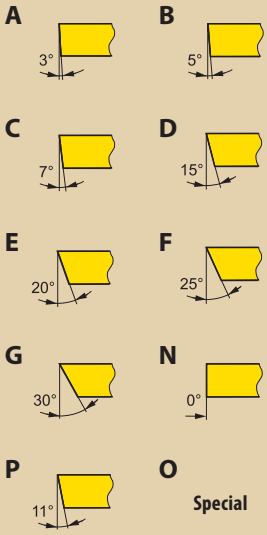
● stocked as standard /○ not stocked as standard
See price list for current availability.

CODE DESIGNATION - INDEXABLE CUTTING INSERTS FOR MILLING

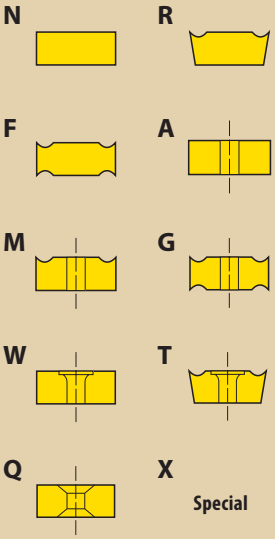
1 Insert shape

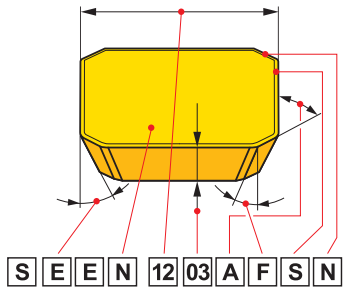


2 Clearance angle



4 Insert type

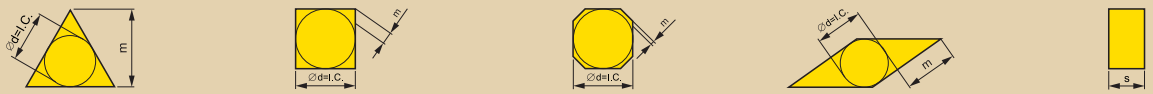




	1	2	3	4
ISO	S	P	G	N
	S	E	E	N
ANSI	S	P	G	
	S	E	E	N

3 Tolerances

Symbol	Tolerances [mm]			Tolerances [in]		
	m (±)	s (±)	d = I.C. (±)	m (±)	s (±)	d = I.C. (±)
A	0,005	0,025	0,025	0,0002	0,001	0,0010
F	0,005	0,025	0,013	0,0002	0,001	0,0005
C	0,013	0,025	0,025	0,0005	0,001	0,0010
H	0,013	0,025	0,013	0,0005	0,001	0,0005
E	0,025	0,025	0,025	0,0010	0,001	0,0010
G	0,025	0,130	0,025	0,0010	0,005	0,0010
J	0,005	0,025	0,05 – 0,13	0,0002	0,001	0,002 – 0,005
K	0,013	0,025	0,05 – 0,13	0,0005	0,001	0,002 – 0,005
L	0,025	0,025	0,05 – 0,13	0,0010	0,001	0,002 – 0,005
M	0,08 – 0,18	0,130	0,05 – 0,13	0,003 – 0,007	0,005	0,002 – 0,005
N	0,08 – 0,18	0,025	0,05 – 0,13	0,003 – 0,007	0,001	0,002 – 0,005
U	0,05 – 0,38	0,130	0,05 – 0,13	0,005 – 0,015	0,005	0,003 – 0,010



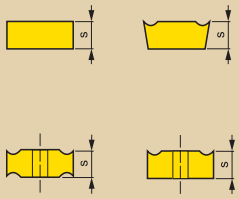
5

Cutting edge length

d = I.C. mm	d = I.C. [in]	R	S	T	C	D	V	W
3,97	5/32"			06				
5,00	-	05						
5,56	7/32"			09				03
6,00	-	06						
6,35	1/4"			11	06	07		04
8,00	-	08						
9,525	3/8"	09	09	16	09	11	16	06
10,0	-	10						
12,0	-	12						
12,7	1/2"	12	12	22	12	15		08
15,875	5/8"	15	15	27	16			
16,0	-	16						
19,05	3/4"	19	19	33	19			
20,0	-	20						
25,0	-	25						
25,4	1"	25	25		25			
31,75	1 1/4"	31						
32,0	-	32						

6

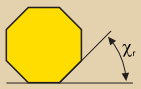
Thickness



Symbol	s [mm]	s [in]
01	1,59	1/16"
T1	1,98	5,64"
02	2,38	3/32"
03	3,18	1/8"
T3	3,97	5,32"
04	4,76	3/16"
05	5,56	7/32"
06	6,35	1/4"
07	7,94	5/16"
09	9,52	3/8"

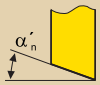
7

Cutting edge angles



	χ_r
A	45°
D	60°
E	75°
F	85°
P	90°
Z	Special

Clearance angle



	α'_n
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
Z	Special

ZZ - Special

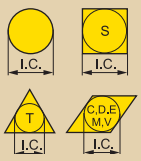
5	6	7	8	9
12	03	08		
12	03	AF	S	N

5a	6a	7a	8	9
4	2	2		
4	2	AF	S	N

ANSI

5a

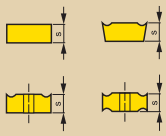
Inscribed circle



Symbol	d = I.C. [mm]	d = I.C. [in]
1	3,175	1/8"
(1.2)	3,969	5/32"
(1.5)	4,763	3/16"
(1.8)	5,556	7/32"
2	6,350	1/4"
(2.5)	7,938	5/16"
3	9,525	3/8"
4	12,700	1/2"
5	15,875	5/8"
6	19,050	3/4"
7	22,225	7/8"
8	25,400	1"
10	31,750	5/8"

6a

Thickness



Symbol	s [mm]	s [in]
1	1,588	1/16"
(1.2)	1,984	5/64"
(1.5)	2,381	3/32"
(1.8)	3,175	1/8"
2	3,969	5/32"
(2.5)	4,763	3/16"
3	5,556	7/32"
4	6,350	1/4"
5	7,938	5/16"
6	9,525	3/8"
7	11,113	7/16"
8	12,700	1/2"
9	14,288	9/16"
10	15,875	5/8"

7a

Nose radius

Symbol	r_ε [mm]	r_ε [in]
0	0,050	1/512"
(0.2)	0,099	1/256"
(0.5)	0,198	1/128"
1	0,397	1/64"
2	0,794	1/32"
3	1,191	3/64"
4	1,588	1/16"
5	1,984	5/64"
6	2,381	3/32"
7	2,778	7/64"
8	3,175	1/8"
10	3,969	5/32"
12	4,763	3/16"
14	5,556	7/32"
16	6,350	1/4"
x	ostat.	

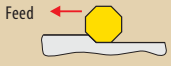
8

Cutting edge design

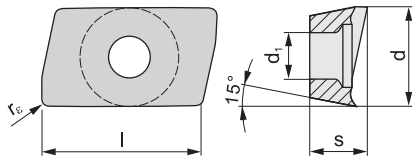
F	Sharp edges	E	Rounded edges
T	Edges with facet	S	Rounded edges with facet
K	Edges with double facet	P	Rounded edges with double facet

9

Feed direction

R	
L	
N	

ADEX-FA



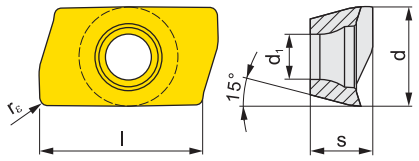
Dimensions	l	d	d_1	s		
11T3	.382	.250	.114	.138		
1606	.630	.392	.177	.246		

Dimensions [in]

See tools on pages: M28, M32, M36, M40, M42, M44, M64, M66

Geometry	Designation	Grades															Radius	Feed/rev.		Depth of cut	
		M0315	HF7														r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**ADEX 11T304FR-FA**	●	●														.016	.001	.012	.016	.354
	ADEX 11T308FR-FA	●	●														.031	.001	.012	.031	.354
	ADEX 11T316FR-FA		●														.063	.001	.012	.063	.354
	ADEX 160608FR-FA		●														.031	.002	.014	.039	.512

ADEX 16-FM



Dimensions	l	d	d_1	s		
1606	.630	.392	.177	.246		

Dimensions [in]

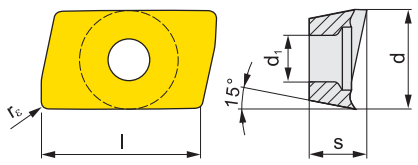
See tools on pages: M40, M42, M44

Geometry	Designation	Grades															Radius	Feed/rev.		Depth of cut	
		M9325	M9340	M8340	8215	8230											r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**ADEX 160608SR-FM**	●	●	●	●	●											.031	.004	.008	.039	.512

● stocked as standard /○ not stocked as standard
See price list for current availability.

PRAMET

ADEX-HF

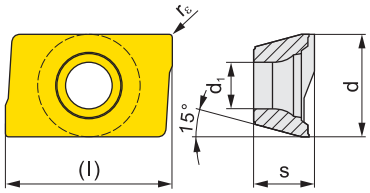


Dimensions	l	d	d_1	s		
11T3	.433	.257	.114	.156		

See tools on pages: M28, M32, M36

Geometry	Designation	Grades														Radius	Feed/rev.		Depth of cut	
		M8340	8215	8230												r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**ADEX 11T308SR-HF**	●	●	●												.031	.024	.051	.006	.024

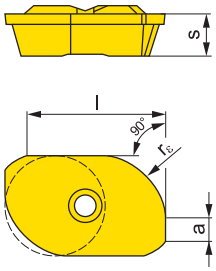
ADKT 15



Dimensions	l	d	d_1	s		
1505	.612	.375	.173	.220		

Geometry	Designation	Grades														Radius	Feed/rev.		Depth of cut	
		M9315	M9325	M8340	8230											r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**ADKT 1505PDER-M**	●	●	●	●												.006	.009	.039	.512

ADKX 15



Dimensions	l	d	s	a		
15T3	.480	.375	.156	.102		

Dimensions [in]

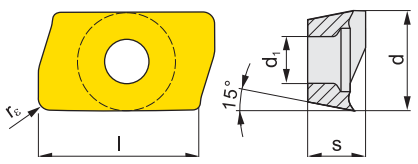
See tools on pages: M46, M48, M50

Geometry	Designation	Grades		Radius	Feed/rev.		Depth of cut	
		M8345	8230	r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**ADKX 15T304ER-F**	●	●	.016	.002	.004	.012	.394
	ADKX 15T308ER-F	●	●	.031	.002	.005	.012	.394
	**ADKX 15T330ER-F**	●	●	.118	.002	.006	.012	.394
	ADKX 15T340ER-F	●	●	.157	.002	.007	.012	.394
	ADKX 15T360ER-F	●	●	.236	.002	.010	.012	.394

PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

ADMX 11



Dimensions	l	d	d_1	s		
11T3	.433	.257	.114	.156		

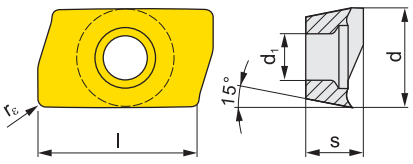
Dimensions [in]

See tools on pages: M28, M32, M36, M64, M66

Geometry	Designation	Grades							Radius	Feed/rev.		Depth of cut	
		M5315	M9315	M9325	M9340	M8340	8215	8230	r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
F	**ADMX 11T304SR-F**				●	●	●	●	.016	.003	.004	.016	.354
F	**ADMX 11T308SR-F**				●	●	●	●	.031	.003	.004	.031	.354
M	**ADMX 11T302SR-M**					●		●	.008	.004	.007	.008	.354
M	**ADMX 11T304SR-M**			●	●	●	●	●	.016	.004	.006	.016	.354
M	**ADMX 11T308SR-M**	●	●	●	●	●	●	●	.031	.004	.006	.031	.354
M	**ADMX 11T310SR-M**					●		●	.039	.004	.009	.031	.354
M	**ADMX 11T312SR-M**					●	●	●	.047	.004	.009	.031	.354
M	**ADMX 11T316SR-M**					●	●	●	.063	.004	.009	.031	.354
M	**ADMX 11T320SR-M**					●		●	.079	.004	.009	.031	.354
M	**ADMX 11T325SR-M**					●		●	.098	.004	.009	.031	.354
M	**ADMX 11T330SR-M**					●		●	.118	.004	.009	.031	.354
R	**ADMX 11T308PR-R**	●	●	●		●	●	●	.031	.006	.008	.031	.354
R	**ADMX 11T316PR-R**			●		●	●	●	.063	.004	.007	.031	.354

● stocked as standard /○ not stocked as standard
See price list for current availability.

ADMX 16



Dimensions	l	d	d_1	s		
1606	.630	.392	.177	.246		

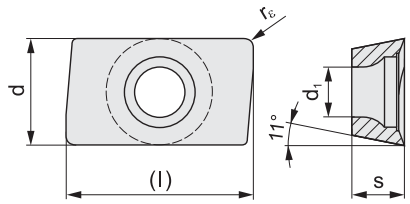
Dimensions [in]

See tools on pages: M40, M42, M44

Geometry	Designation	Grades							Radius	Feed/rev.		Depth of cut	
		M5315	M9315	M9325	M9340	M8340	8215	8230	r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
F	**ADMX 160608SR-F**				●	●	●	●	.031	.003	.005	.039	.512
M	**ADMX 160608SR-M**	●	●	●	●	●	●	●	.031	.004	.008	.039	.512
M	**ADMX 160616SR-M**			●		●	●	●	.063	.004	.009	.039	.512
M	**ADMX 160632SR-M**			●		●	●	●	.126	.004	.009	.039	.512
R	**ADMX 160608PR-R**	●	●	●		●	●	●	.031	.007	.011	.039	.512

● stocked as standard /○ not stocked as standard
See price list for current availability.

APET 16-FA

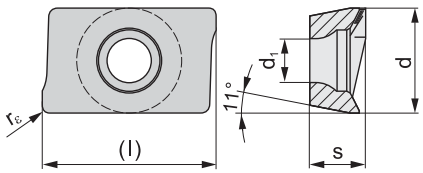


Dimensions	l	d	d_1	s		
1604	.669	.378	.177	.187		

Dimensions [in]

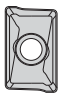
Geometry	Designation	Grades															Radius	Feed/rev.		Depth of cut	
		HF7															r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**APET 160408FR-FA**	●															.031	.002	.016	.031	.591

APKT 10-FA

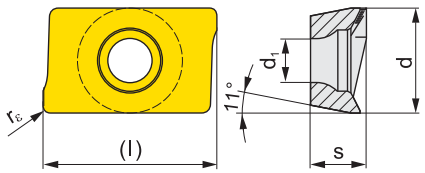


Dimensions	l	d	d_1	s		
1003	.433	.264	.113	.138		

Dimensions [in]

Geometry	Designation	Grades															Radius	Feed/rev.		Depth of cut	
		HF7															r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**APKT 1003PDFR-FA**	●																.002	.012	.031	.354

APKT 10-M

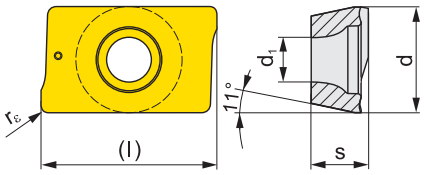


Dimensions	l	d	d_1	s		
1003	.433	.264	.113	.138		

Dimensions [in]

Geometry	Designation	Grades						Radius	Feed/rev.		Depth of cut	
		M9315	M9325	M9340	M8340	8215	8230	r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**APKT 1003PDER-M**	●	●	●	●	●	●		.004	.008	.039	.354

APKT 16



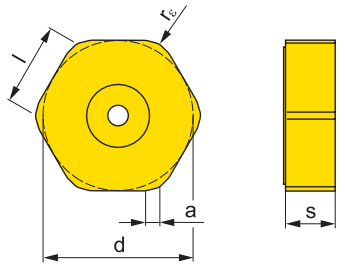
Dimensions	l	d	d_1	s		
1604	.669	.372	.181	.223		

Dimensions [in]

Geometry	Designation	Grades							Radius	Feed/rev.		Depth of cut	
		M5315	M9315	M9325	M9340	M8340	8215	8230	r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**APKT 1604PDR-GM**		●	●	●	●		●		.006	.009	.039	.512
	APKT 1604PDR-HM	●	●	●		●	●	●		.008	.014	.039	.512
	**APKT 160404-HM**					●			.016	.008	.014	.039	.512
	APKT 160416-HM					●			.063	.008	.014	.039	.512
	APKT 160431-HM					●			.122	.008	.014	.039	.512

● stocked as standard /○ not stocked as standard
See price list for current availability.

HNEF 09



Dimensions	l	d	s	a		
0905	.370	.638	.222	.063		

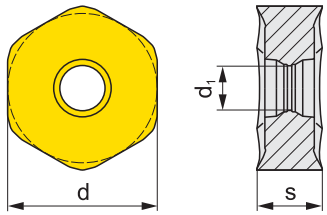
Dimensions [in]

See tools on pages: M24

Geometry	Designation	Grades					Radius	Feed/rev.		Depth of cut	
		M5315	M9325	M8310	8215		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**HNEF 0905DNFN-F**	●	○	●	●			.003	.008	.012	.118
	**HNEF 090508EN-M**	●	○		●		.031	.007	.012	.039	.157
	**HNEF 0905ZZL-W**	○			○			.003	.008	.012	.118
	HNEF 0905ZZR-W	●	○	●	●			.003	.008	.012	.118

● stocked as standard / ○ not stocked as standard
See price list for current availability.

HNGX 06



Dimensions	d	s	d_1			
0604	.413	.207	.146			

Dimensions [in]

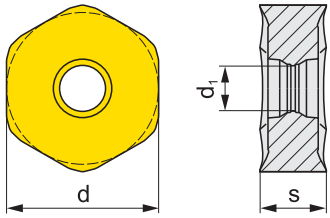
See tools on pages: M10, M12, M14

Geometry	Designation	Grades							Radius	Feed/rev.		Depth of cut	
		M5315	M9315	M9325	M9340	M8340	8215	8230	r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**HNGX 0604ANSN-F**				●	●	●	●		.003	.007	.012	.118
	**HNGX 0604ANSN-M**	●	●	●	●	●	●	●		.005	.010	.024	.118
	**HNGX 0604ANSN-R**	●	●	●		●	●	●		.007	.012	.039	.118

● stocked as standard /○ not stocked as standard
See price list for current availability.

PRAMET

HNGX 09



Dimensions	d	s	d_1			
0906	.650	.250	.193			

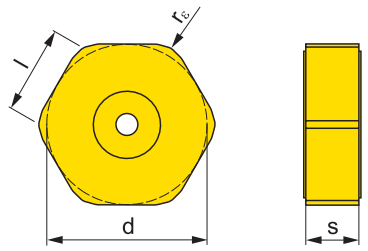
Dimensions [in]

See tools on pages: M16

Geometry	Designation	Grades							Radius	Feed/rev.		Depth of cut	
		M5315	M9315	M9325	M9340	M8340	8215	8230	r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**HNGX 0906ANEN-FF**				●		●	●		.002	.008	.020	.197
	**HNGX 0906ANSN-F**				●	●	●	●		.004	.008	.020	.197
	**HNGX 0906ANSN-M**	●	●	●	●	●	●	●		.007	.014	.031	.197
	**HNGX 0906ANSN-R**	●	●	●		●	●	●		.012	.020	.039	.197

● stocked as standard /○ not stocked as standard
See price list for current availability.

HNMF 09



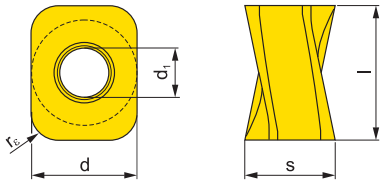
Dimensions	l	d	s			
0905	.370	.638	.222			

Dimensions [in]

See tools on pages: M24

Geometry	Designation	Grades				Radius	Feed/rev.		Depth of cut	
		M5315	M9325	8215		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**HNMF 090516SN-R**	●	●	●		.063	.009	.020	.059	.236

LNGU 12-M



Dimensions	l	d	s	d_1		
1205	.472	.374	.280	.177		

Dimensions [in]

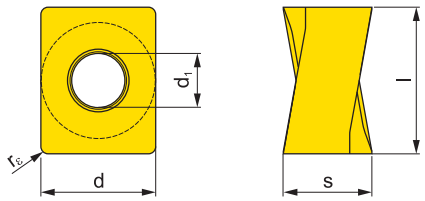
See tools on pages: M52, M54, M56

Geometry	Designation	Grades				Radius	Feed/rev.		Depth of cut	
		M8340	8230			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**LNGU 120525ER-M**	●	●			.098	.002	.010	.039	.354
	LNGU 120530ER-M	●	●			.118	.002	.010	.039	.354

PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

LNGU 16-M



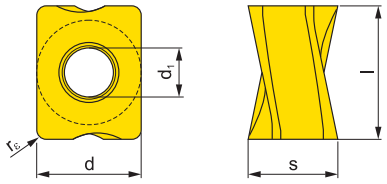
Dimensions	l	d	s	d_1		
1607	.654	.520	.394	.224		

Dimensions [in]

See tools on pages: M58

Geometry	Designation	Grades					Radius	Feed/rev.		Depth of cut	
		M9315	M9325	M8340	8215	8230	r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**LNGU 160708SR-M**	●	●	●	●	●	.031	.004	.010	.039	.512

LNGX 12-FA



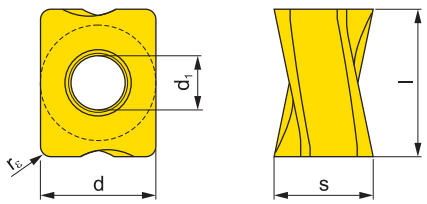
Dimensions	l	d	s	d_1		
1205	.472	.374	.280	.177		

Dimensions [in]

See tools on pages: M52, M54, M56

Geometry	Designation	Grades					Radius	Feed/rev.		Depth of cut	
		M0315	HF7				r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**LNGX 120504FR-FA**		●				.016	.001	.014	.016	.354
	LNGX 120508FR-FA	●	●				.031	.001	.014	.031	.354

LNGX 12-M



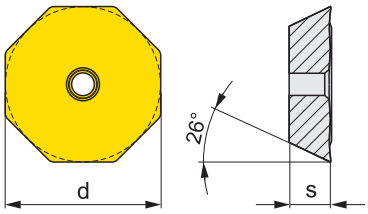
Dimensions	l	d	s	d_1		
1205	.472	.374	.280	.177		

Dimensions [in]

See tools on pages: M52, M54, M56

Geometry	Designation	Grades							Radius	Feed/rev.		Depth of cut	
		M5315	M9315	M9325	M9340	M8340	8215	8230	r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**LNGX 120504ER-F**					●	●	●	.016	.002	.006	.016	.354
	LNGX 120508ER-F					●	●	●	.031	.002	.006	.031	.354
	LNGX 120504ER-M					●		●	.016	.002	.010	.039	.354
	LNGX 120508ER-M		●	●	●	●	●	●	.031	.002	.006	.039	.354

OFKR 07-M



Dimensions	d	s				
0704	.703	.180				

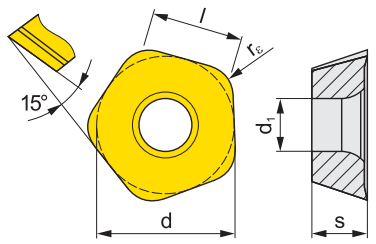
Dimensions [in]

Geometry	Designation	Grades							Radius	Feed/rev.		Depth of cut	
		M9340	M8340	8230					r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**OFKR 0704SN-M**	●	●	●						.004	.012	.020	.472

PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

PDKT 09-FM



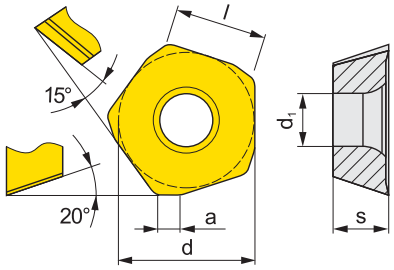
Dimensions	l	d	s	d_1		
0905	.354	.531	.215	.217		

Dimensions [in]

See tools on pages: M78, M80

Geometry	Designation	Grades															Radius	Feed/rev.		Depth of cut	
		M8345	8215	8230													r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	PDKT 090530ER-FM	●	●	●													.118	.020	.098	.012	.079

PDKX 09-FM



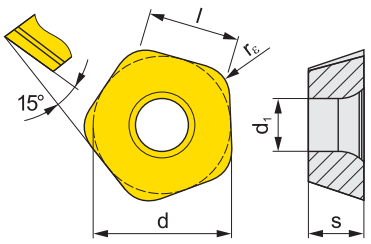
Dimensions	l	d	s	d_1	a	
0905	.354	.531	.215	.217	.079	

Dimensions [in]

See tools on pages: M78, M80

Geometry	Designation	Grades															Radius	Feed/rev.		Depth of cut	
		M9340	M8345														r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	PDKX 0905ZEER-FM	●	●															.020	.069	.012	.079

PDMW 09



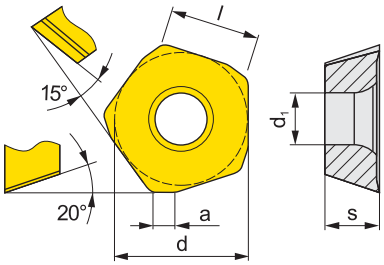
Dimensions	l	d	s	d_1		
0905	.354	.531	.215	.217		

Dimensions [in]

See tools on pages: M78, M80

Geometry	Designation	Grades														Radius	Feed/rev.		Depth of cut	
		M9325	M8345													r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**PDMW 090530SR**	●	●													.118	.020	.069	.012	.079

PDMX 09



Dimensions	l	d	s	d_1	a	
0905	.354	.531	.215	.217	.079	

Dimensions [in]

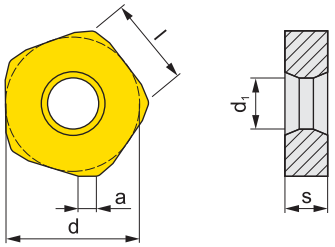
See tools on pages: M78, M80

Geometry	Designation	Grades														Radius	Feed/rev.		Depth of cut	
		M9340	M8345	8215	8230											r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**PDMX 0905ZEER-M**	●	●	●	●												.020	.069	.012	.079
	**PDMX 0905ZESR-R**		●	●	●												.020	.098	.012	.079

● stocked as standard /○ not stocked as standard
See price list for current availability.

PRAMET

PNMQ 13



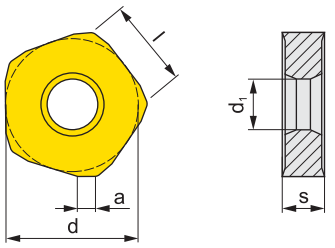
Dimensions	l	d	s	d_1	a	
1308	.512	.961	.313	.394	.118	

Dimensions [in]

See tools on pages: M22

Geometry	Designation	Grades															Radius	Feed/rev.		Depth of cut	
		M9340	M8345	8230													r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**PNMQ 1308DNSN**	●	●	●														.012	.023	.020	.394

PNMU 13-M



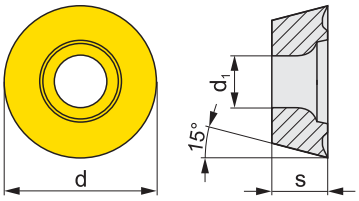
Dimensions	l	d	s	d_1	a	
1308	.512	.961	.313	.394	.118	

Dimensions [in]

See tools on pages: M22

Geometry	Designation	Grades															Radius	Feed/rev.		Depth of cut	
		M9340	M8345	8215	8230												r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**PNMU 1308DNSR-M**	●	●	●	●													.010	.023	.020	.394

RDET

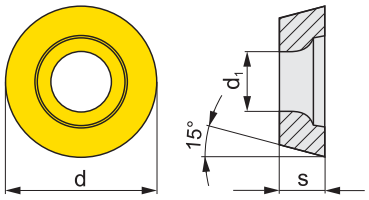


Dimensions	d	d1	s			
1003	.394	.173	.125			
10T3	.394	.173	.156			
12T3	.472	.173	.156			

Dimensions [in]

Geometry	Designation	Grades															Radius	Feed/rev.		Depth of cut	
		M8340	8230														r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**RDET 1003MOSN**	●	●															.004	.012	.020	.098
	RDET 10T3MOSN	●																.004	.014	.020	.098
	RDET 12T3MOSN	●	●															.004	.014	.020	.118

RDEW



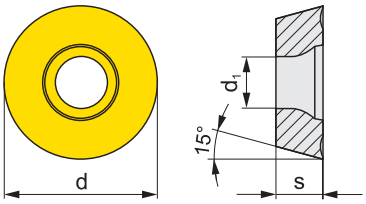
Dimensions	d	d1	s			
1003	.394	.173	.125			
10T3	.394	.173	.156			
12T3	.472	.173	.156			

Dimensions [in]

Geometry	Designation	Grades															Radius	Feed/rev.		Depth of cut	
		8215	8230														r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**RDEW 1003MOSN**	●	●															.004	.014	.020	.098
	RDEW 10T3MOSN		●															.004	.014	.020	.098
	RDEW 12T3MOSN		●															.005	.016	.020	.118

● stocked as standard /○ not stocked as standard
See price list for current availability.

RDEX-12

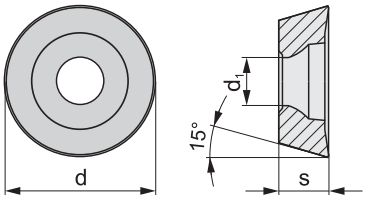


Dimensions	d	d1	s			
1204	.472	.173	.187			

Dimensions [in]

Geometry	Designation	Grades															Radius	Feed/rev.		Depth of cut	
		M8340	8230														r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**RDEX 1204M0SN-12**	●	●															.005	.016	.020	.118

RDGT



Dimensions	d	d1	s			
0702	.276	.110	.094			
1003	.394	.154	.125			
12T3	.472	.154	.156			
1604	.630	.205	.187			

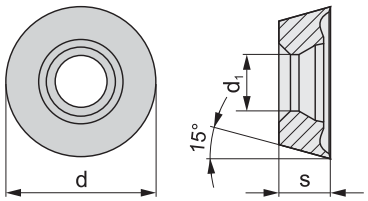
Dimensions [in]

See tools on pages: M74, M74, M76

Geometry	Designation	Grades															Radius	Feed/rev.		Depth of cut	
		M9340	M8310	M8325	M8345												r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**RDGT 0702M0T**		○	○	○													.004	.008	.012	.079
	RDGT 1003M0T	●	●	●	●													.004	.009	.020	.098
	RDGT 12T3M0T	●	●	●	●													.004	.010	.039	.118
	RDGT 1604M0T	●	●	●	●													.004	.012	.039	.157

● stocked as standard /○ not stocked as standard
See price list for current availability.

RDHT-FA



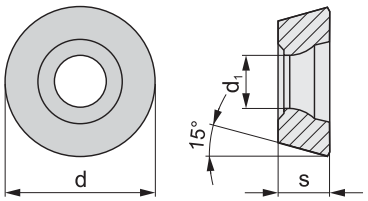
Dimensions	d	d1	s
0702	.276	.110	.094
1003	.394	.154	.125
12T3	.472	.154	.156
1604	.630	.205	.187

Dimensions [in]

See tools on pages: M74, M74, M76

Geometry	Designation	Grades															Radius	Feed/rev.		Depth of cut	
		HF7															r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**RDHT 0702M0-FA**	●																.004	.008	.012	.079
	RDHT 1003M0-FA	●																.004	.012	.012	.098
	RDHT 12T3M0-FA	●																.004	.012	.012	.118
	RDHT 1604M0-FA	●																.004	.016	.012	.157

RDHX M0T



Dimensions	d	d1	s
0702	.276	.110	.094
1003	.394	.154	.125
12T3	.472	.154	.156
1604	.630	.205	.187
2006	.787	.205	.250

Dimensions [in]

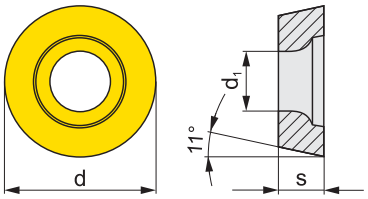
See tools on pages: M74, M74, M76

Geometry	Designation	Grades															Radius	Feed/rev.		Depth of cut	
		M8310	M8325	M8345	7205												r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**RDHX 0702M0T**	●	●		●													.004	.007	.020	.079
	RDHX 1003M0T	●	●	●	●													.004	.012	.012	.098
	RDHX 12T3M0T	●	●	●	●													.004	.014	.039	.118
	RDHX 1604M0T	●	●	●														.008	.016	.039	.157
	RDHX 2006M0T	●	●															.008	.024	.039	.197

● stocked as standard /○ not stocked as standard
See price list for current availability.

PRAMET

RPET 12

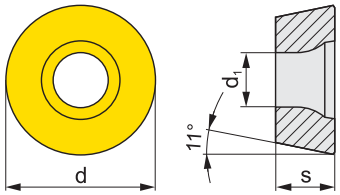


Dimensions	d	d1	s			
1204	.472	.173	.187			

Dimensions [in]

Geometry	Designation	Grades			Radius	Feed/rev.		Depth of cut	
		M8340	8215	8230	r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**RPET 1204M0SN**	●	●	●		.005	.016	.020	.118

RPEW 12

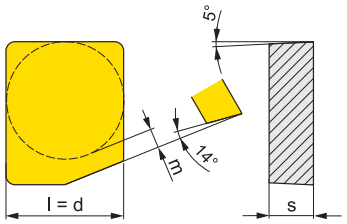


Dimensions	d	d_1	s			
1204	.472	.173	.187			

Dimensions [in]

Geometry	Designation	Grades			Radius	Feed/rev.		Depth of cut	
		M8325	8215	8230	r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**RPEW 1204M0SN**	●	●	●		.004	.016	.020	.118

SBKX 22



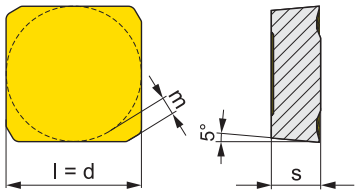
Dimensions	l	d	s	m		
2207	.866	.866	.335	.127		

Dimensions [in]

See tools on pages: M26

Geometry	Designation	Grades															Radius	Feed/rev.		Depth of cut	
		M8326															r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**SBKX 2207DZER**	●																.014	.031	.020	.118

SBMR 22



Dimensions	l	d	s	m		
2207	.866	.866	.335	.111		

Dimensions [in]

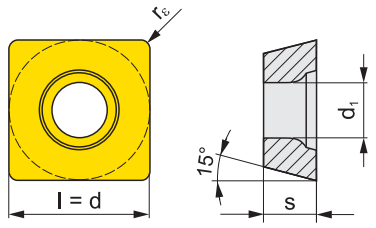
See tools on pages: M26

Geometry	Designation	Grades															Radius	Feed/rev.		Depth of cut	
		M8326	M8346														r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**SBMR 2207DZSR**	●	●															.014	.031	.047	.591

PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

SDEW 09



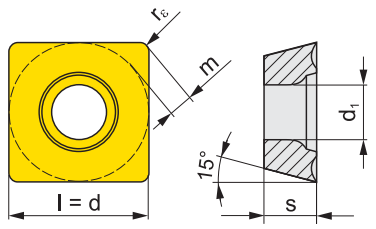
Dimensions	l	d	s	d_1
322E	.375	.375	.125	.173
322S	.375	.375	.125	.173

Dimensions [in]

See tools on pages: M88

Geometry	Designation	Grades			Radius	Feed/rev.		Depth of cut	
		M8340	8215	8230	r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	SDEW 322EN	●		●	.031	.004	.012	.039	.177
	SDEW 322SN	●	●	●	.031	.004	.012	.039	.177

SDEX 09-74



Dimensions	l	d	s	d_1
322F	.375	.375	.125	.173

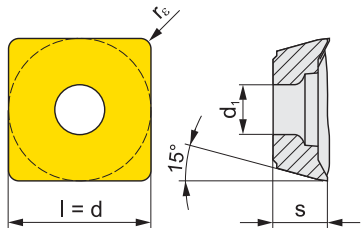
Dimensions [in]

See tools on pages: M88

Geometry	Designation	Grades	Radius	Feed/rev.		Depth of cut	
		8230	r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	SDEX 322FN-74	●	.031	.004	.012	.020	.177

● stocked as standard /○ not stocked as standard
See price list for current availability.

SDMT 12



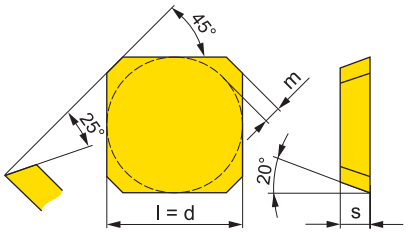
Dimensions	l	d	s	d_1		
1205	.500	.500	.197	.173		

Dimensions [in]

Geometry	Designation	Grades					Radius	Feed/rev.		Depth of cut	
		M9315	M9325	M8340	8215	8230	r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**SDMT 120508SR-F**			●		●	.031	.003	.010	.039	.197
	**SDMT 120508SR-M**		●	●	●	●	.031	.004	.007	.039	.394
	**SDMT 120508PR-R**	●	●	●		●	.031	.004	.010	.039	.394

● stocked as standard /○ not stocked as standard
See price list for current availability.

SEEN

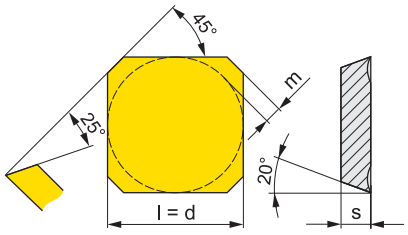


Dimensions	l	d	s	m		
42AF	.500	.500	.125	.063		
53AF	.625	.625	.187	.079		

Dimensions [in]

Geometry	Designation	Grades						Radius	Feed/rev.		Depth of cut	
		M9315	M9325	M9340	M8340	8215	8230	r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	SEEN 42AFFN			●	●		●		.002	.010	.020	.256
	SEEN 42AFSN	●	●	●	●	●	●		.006	.012	.039	.256
	SEEN 53AFSN	●	●	●	●		●		.008	.013	.039	.354

SEER



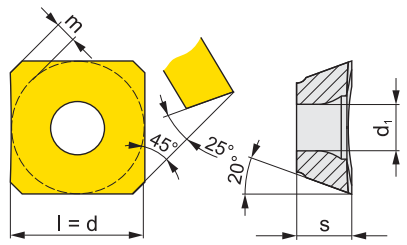
Dimensions	l	d	s	m		
42AF	.500	.500	.125	.063		
53AF	.625	.625	.187	.079		

Dimensions [in]

Geometry	Designation	Grades						Radius	Feed/rev.		Depth of cut	
		M9325	M9340	M8340	8230			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	SEER 42AFEN				●				.008	.016	.020	.256
	SEER 42AFSN	●	●	●	●				.008	.012	.039	.256
	SEER 53AFEN				●				.008	.016	.020	.354
	SEER 53AFSN	●	●	●	●				.008	.012	.020	.354

● stocked as standard /○ not stocked as standard
See price list for current availability.

SEET 09



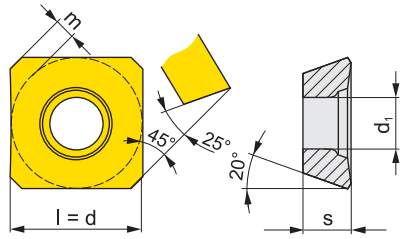
Dimensions	l	d	s	d_1		
09T3	.375	.375	.156	.138		

Dimensions [in]

See tools on pages: M18, M20

Geometry	Designation	Grades					Radius	Feed/rev.		Depth of cut	
		M9325	M9340	M8340	8215	8230	r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**SEET 09T3AFEN**	●	●	●	●	●		.003	.010	.012	.177

SEMT 09



Dimensions	l	d	s	m	d_1	
09T3	.375	.375	.156	.048	.138	

Dimensions [in]

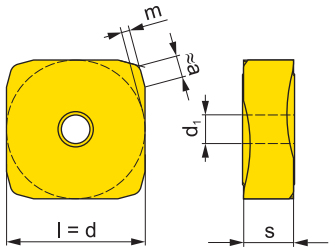
See tools on pages: M18, M20

Geometry	Designation	Grades					Radius	Feed/rev.		Depth of cut	
		M9325	M9340	M8340	8215	8230	r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**SEMT 09T3AFSN**	●	●	●	●	●		.005	.010	.020	.177

PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

SNHF-M

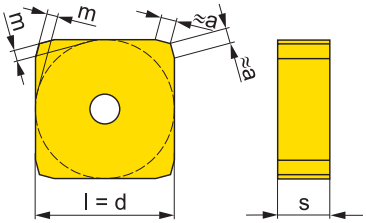


Dimensions	l	d	s	m	a	
43EN	.500	.500	.187	.020	.079	
53EN	.625	.625	.187	.043	.055	

Dimensions [in]

Geometry	Designation	Grades																Radius	Feed/rev.		Depth of cut	
		M9325	M8340	8230														r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**SNHF 43ENSR-M**	●	●	●															.006	.012	.039	.236
	SNHF 53ENSR-M		●	●															.006	.016	.039	.354

SNHN

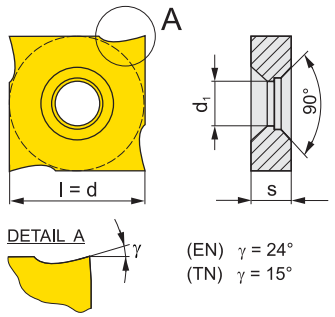


Dimensions	l	d	s	m	a	
43EN	.500	.500	.187	.037	.055	
53EN	.625	.625	.187	.051	.055	

Dimensions [in]

Geometry	Designation	Grades																Radius	Feed/rev.		Depth of cut	
		M9315	M9325	M8340	8215	8230												r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**SNHN 43ENEN**	●	●	●	●	●													.004	.013	.020	.354
	SNHN 53ENEN			●	●	●													.004	.016	.020	.531

SNHQ AZ



Dimensions	l	d	s	d_1		
1102	.433	.433	.091	.169		
1103	.433	.433	.106	.169		
1204	.500	.500	.177	.197		
1205	.500	.500	.213	.197		
12T3	.500	.500	.157	.197		

Dimensions [in]

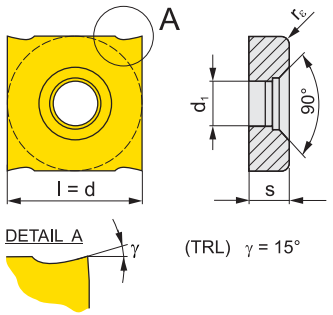
See tools on pages: M68, M70

Geometry	Designation	Grades			Radius	Feed/rev.		Depth of cut	
		M8340	8215	8230	r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	SNHQ 1102AZTN	●		●		.008	.020	-	-
	SNHQ 1103AZTN	●		●		.008	.020	-	-
	SNHQ 12X4AZEN	●							
	**SNHQ 12X4AZTN**	●		●					
	SNHQ 1204AZEN	●	●			.008	.016	-	-
	SNHQ 1204AZTN	●		●		.008	.016	-	-
	SNHQ 1205AZEN	●	●			.008	.020	-	-
	SNHQ 1205AZTN	●		●		.008	.020	-	-

PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

SNHQ 12 TRL



Dimensions	l	d	s	d_1	γ°	
1204	.500	.500	.177	.197	15	
1205	.500	.500	.213	.197	15	
12T3	.500	.500	.157	.197	15	

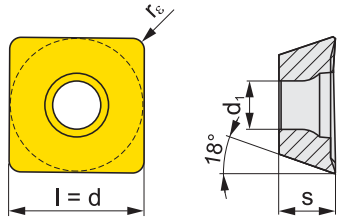
Dimensions [in]

See tools on pages: M68, M70

Geometry	Designation	Grades															Radius	Feed/rev.		Depth of cut	
		M8340															r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**SNHQ 12T305TRL**	●															.020	.008	.020	-	-
	SNHQ 12T310TRL	●															.039	.008	.020	-	-
	SNHQ 12T315TRL	●															.059	.008	.020	-	-
	SNHQ 120405TRL	●															.020	.008	.020	-	-
	SNHQ 120410TRL	●															.039	.008	.020	-	-
	SNHQ 120415TRL	●															.059	.008	.020	-	-
	SNHQ 120505TRL	●															.020	.008	.020	-	-
	SNHQ 120510TRL	●															.039	.008	.020	-	-
	SNHQ 120515TRL	●															.059	.008	.020	-	-

● stocked as standard /○ not stocked as standard
See price list for current availability.

SOMT 09



Dimensions	l	d	s	d_1		
09T3	.376	.376	.156	.138		

Dimensions [in]

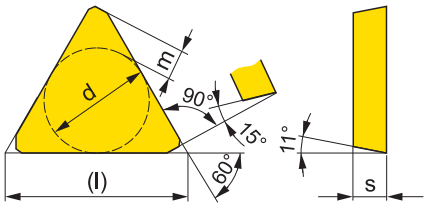
See tools on pages: M60, M62

Geometry	Designation	Grades								Radius	Feed/rev.		Depth of cut	
		M5315	M9315	M9325	M9340	M8310	M8340	8215	8230	r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**SOMT 09T308-M**	●	●				●	●	●	.031	.005	.012	.039	.315
	**SOMT 09T304-MI**		●		●	●	●	●	●	.016	.003	.010	.020	.315
	**SOMT 09T304-P**			●			●		●	.016	.003	.010	.020	.315

PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

TPKN ER

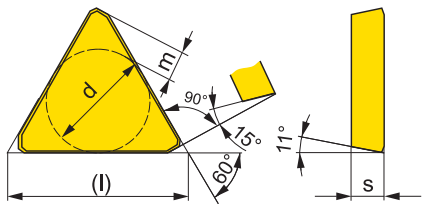


Dimensions	l	d	s	m		
32PD	.650	.375	.125	.096		
43PD	.866	.500	.187	.140		

Dimensions [in]

Geometry	Designation	Grades															Radius	Feed/rev.		Depth of cut	
		M8340	8215	8230													r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	TPKN 32PDER	●		●														.004	.008	.039	.630
	TPKN 43PDER	●	●	●														.004	.010	.039	.866

TPKN SR



Dimensions	l	d	s	m		
32PD	.650	.375	.125	.096		
43PD	.866	.500	.187	.140		

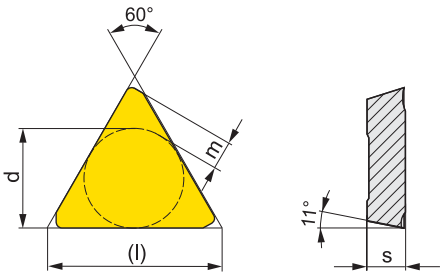
Dimensions [in]

Geometry	Designation	Grades															Radius	Feed/rev.		Depth of cut	
		M9325	M8340	8230													r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	TPKN 32PDSR		●	●														.008	.010	.039	.630
	TPKN 43PDSR	●	●	●														.008	.010	.039	.866

PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

TPKR

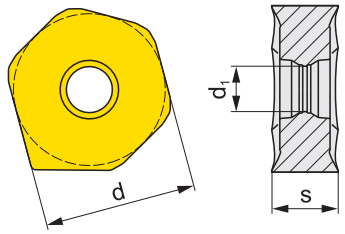


Dimensions	l	d	s	m		
32PD	.650	.375	.125	.096		
43PD	.866	.500	.187	.140		

Dimensions [in]

Geometry	Designation	Grades				Radius	Feed/rev.		Depth of cut	
		M9325	M9340	M8340	8230	r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	TPKR 32PDSR		●	●	●		.004	.009	.039	.630
	TPKR 43PDSR	●	●	●	●		.004	.012	.039	.866

XNGX



Dimensions	d	s	d_1			
0604	.413	.207	.146			
0906	.650	.250	.193			

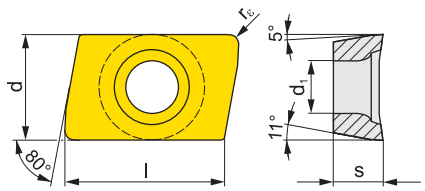
Dimensions [in]

See tools on pages: M10, M12, M14, M16

Geometry	Designation	Grades	Radius	Feed/rev.		Depth of cut	
		8215	r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	XNGX 0604ANSN	●		.005	.010	.028	.118
	XNGX 0906ANSN	●		.007	.020	.031	.197

● stocked as standard /○ not stocked as standard
See price list for current availability.

XPHT 16



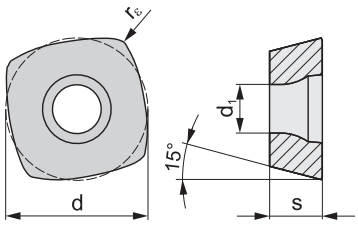
Dimensions	l	d	d_1	s		
1604	.625	.375	.173	.187		

Dimensions [in]

See tools on pages: M90

Geometry	Designation	Grades						Radius	Feed/rev.		Depth of cut	
		M9325	M9340	M8340	8215	8230	HF7	r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**XPHT 160412E**				●	●		.047	.002	.012	.047	.591
	XPHT 160412S	●	●	●	●	●		.047	.004	.009	.047	.591
	**XPHT 160408F-FA**						●	.031	.002	.012	.031	.591

ZDCW



Dimensions	l	d	s	d_1		
0703	.268	.268	.125	.094		
09T3	.375	.375	.156	.134		

Dimensions [in]

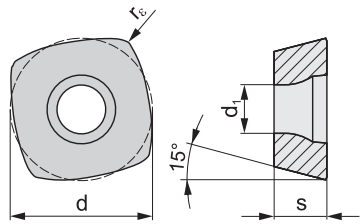
See tools on pages: M82, M84, 86

Geometry	Designation	Grades						Radius	Feed/rev.		Depth of cut	
		M8310	M8325	M8345	7205	7215	7230	r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**ZDCW 070304**		●	●		●	●	.016	.006	.059	.012	.039
	ZDCW 09T304	●	●	●	●	●	●	.016	.012	.079	.012	.039

PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

ZDEW 12



Dimensions	l	d	s	d_1		
1204	.500	.500	.187	.173		

Dimensions [in]

See tools on pages: M84, M86

Geometry	Designation	Grades					Radius	Feed/rev.		Depth of cut	
		M8310	M8325	M8345	7205		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	**ZDEW 120408**	●	●	●	●		.031	.008	.059	.012	.039

PRAMET

● stocked as standard /○ not stocked as standard
See price list for current availability.

TECHNICAL INFORMATION

Correctly identifying the machined material is one of the most important factors when choosing the tool and the initial machining conditions. To facilitate this, the machined materials are divided into six basic groups, or into twenty-four subgroups, combining materials that qualitatively cause the same type of loading (straining) on the cutting edge and therefore a similar type of wear.

Thus the first step is to assign the workpiece material to one of the (sub)groups - see table 1. below.

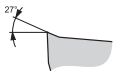
Table 1

Group	Subgroup	Subgroup definition	Example ANSII/SAE	Correction to standard	DORMER AMG	VDI 3323
P	P1	Steel and cast steel with very good (enhanced) machinability; automatic steel and low-carbon steel	1213	1.33	**1.1, 1.2**	**1**
	P2	Non-alloy and low-alloy cast steel and steel with a medium carbon content (.25<C<.55); rigidity of up to 900 MPa and hardness of 160-255 HB	Gr.1043	1.00	**1.3**	**2, 3, 6**
	P3	Less machinable non-alloy and low-alloy cast steel and steel with a medium carbon content; rigidity of up to 1000 MPa and hardness of up to 300 HB	Cl. A	.80	**1.4**	**4, 5, 7, 8, (10)**
	P4	Medium- to high-alloy cast steel and steel (usually with a carbon content of .55 <C); rigidity of up to 1270 MPa and hardness of up to 375HB (resp. 40 HRC)	D3	.60	**1.5**	**9, (10), 11**
M	M1	Ferritic corrosion-resistant steel	Type 430	1.09	**2.1**	**12**
	M2	Martensitic corrosion-resistant steel	440 C	1.06	**(2.1,2.4)**	**13.1, 13.2**
	M3	Austenitic corrosion-resistant steel	Type 321	1.00	**2.2**	**14.1**
	M4	Ferritic-austenitic (duplex) and super-austenitic corrosion-resistant steel	EV 12	.93	**2.3, 2.4**	**14.2, 14.3, 14.4**
K	K1	Grey cast iron	C1.35B	1.00	**3.1, 3.2**	**15, 16**
	K2	Tempered cast iron	Gr.45006	.95	**3.1, 3.2**	-
	K3	Ductile cast iron ferritic and ferrite-pearlite	Gr.60-40-18	.90	**3.3**	**17, 19**
	K4	Ductile cast iron pearlite-ferritic, pearlite-sorbitic and pearlite	Gr.100-70-03	.85	**3.4**	**18, 20**
N	N1	Aluminium and its soft alloys (with a low Si content), particularly formed and cast (non-hardened); hardness of up to 100 HB	A96061	1.00	**7.1**	**21, 22**
	N2	Hard Al alloys, particularly cast and hardened (with a high Si content)	A04130	.65	**7.2, 7.3, 7.4**	**23, 24, 25**
	N3	Soft Cu alloys, automatic brass and other types of soft brass and bronze	C83600	.60	**6.1,6.2, 6.3**	**26, (27)**
	N4	Less machinable and hard Cu alloys	C95200	.40	**6.4**	**(27), 28**
S	S1	Technically pure Ti, alloys a , a+b and b, refined and aged alloys	TiAl6V4, AMS R56400	1.75	**4.1, 4.2, 4.3**	**36, 37**
	S2	Fe-based alloys	INCOLOY 800, B 163	1.20	**(9.1)**	**31, 32**
	S3	Ni-based alloys	INCONEL 718, AMS 5589	1.00	**5.1, 5.2, 5.3**	**33, 34, 35**
	S4	Co-based alloys	Haynes 25, AMS 5759	.75	**(9.1)**	**33, 34, 35**
H	H1	Highly rigid and hard tool steel and hardened and refined steel with a hardness of 40-50 HRC	T 4	1.15	**1.6**	**38.1**
	H2	Hardened and white cast iron 350-600 HV	Gr.1	1.10	-	**40.1, 40.2 41.1, 41.2**
	H3	Hardened and refined steel with hardness in the 50-55 HRC range	H11	1.00	**1.7**	**38.2**
	H4	Hardened and refined (mostly tool) steel with hardness of more than 55 HRC	D3	.95	**1.8**	**39.1, 39.2**

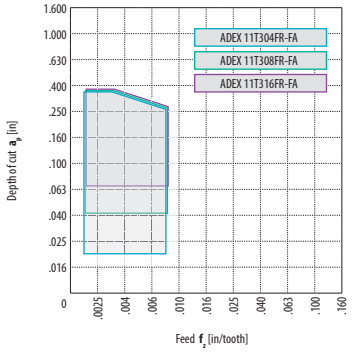
ADEX11-FA

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Profile of cutting edge



Finishing	■
Medium	■
Roughing	■



Applied to inserts: ADEX 11T304FR-FA, ADEX 11T308FR-FA, ADEX 11T316FR-FA

- High positive geometry with a sharp cutting edge
- Main application is machining materials in group N
- Polished insert face to reduce sticking of the machined material

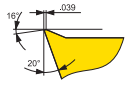
Range of cutting conditions:

f_z	.001 – .008 [in/tooth]
a_p	according to dimension of cutting insert

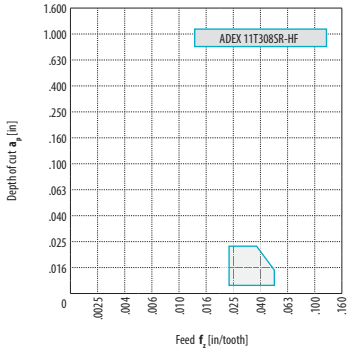
ADEX 11-HF

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Profile of cutting edge



Finishing	■ ■ □ ◪
Medium	■ ◪ □ □
Roughing	



Applied to inserts: ADEX 11T308SR-HF

- Special geometry for HFC technology
- Suitable for machining material groups P, M, K and S
- Particularly suited to light and medium machining

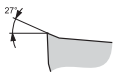
Range of cutting conditions:

f_z	.024 – .051 [in/tooth]
a_p	.006 – .024 [in]

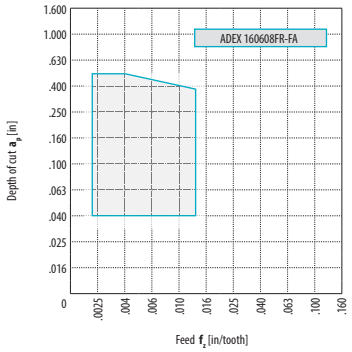
ADEX16-FA

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Profile of cutting edge



Finishing	■
Medium	■
Roughing	■



Applied to inserts: ADEX 160608FR-FA

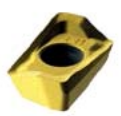
- High positive geometry with a sharp cutting edge
- Main application is machining materials in group N
- Polished insert face to reduce sticking of the machined material

Range of cutting conditions:

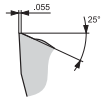
f_z	.002 – .014 [in/tooth]
a_p	.04 – .511 [in]

ADEX16-FM

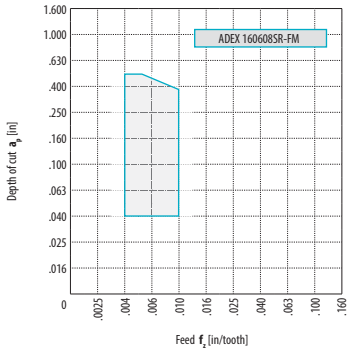
Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description



Profile of cutting edge



Finishing	■ ■ ■ ◪
Medium	■ ■ ■ □
Roughing	◪ ◪ ◪ □



Applied to inserts: ADEX 160608SR-FM

- High positive geometry with medium T-land
- Suitable for machining material groups P, M, K, and S
- For medium machining conditions
- Special adjustment for better surface quality

Range of cutting conditions:

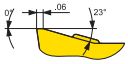
f_z	.004 – .01 [in/tooth]
a_p	.04 – .511 [in]

■ Main application ◪ Secondary application □ Supplementary application

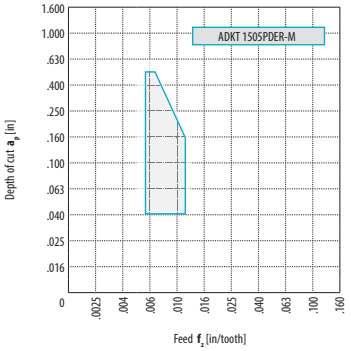
ADKT

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Profile of cutting edge



	Finishing	Medium	Roughing
P	■	■	◥
M	■	■	◥
K	■	■	◥
N			
S	◥	□	□
H			



Applied to inserts: ADKT 1505PDER-M

- Geometry with a high positive face angle and ribs to reduce contact between the chip and the face
- Suitable for machining material groups P, M, and K; can also be used with material group S

Range of cutting conditions:

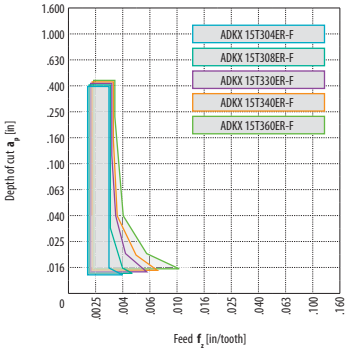
f_z	.006 – .0118 [in/tooth]
a_p	.04 – .511 [in]

ADKX-F

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Profile of cutting edge

	Finishing	Medium	Roughing
P	■	■	◥
M	■	■	◥
K	□	□	
N	□	□	◥
S	■	◥	□
H			



Applied to inserts: ADKX 15T3..ER-F

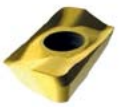
- Very positive and sharp cutting geometry
- Suitable for machining material groups P, M, and S; potentially for material groups K and N
- Particularly suited to light and medium machining

Range of cutting conditions:

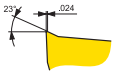
f_z	according to dimension of cutting insert
a_p	according to dimension of cutting insert

ADMX11-F

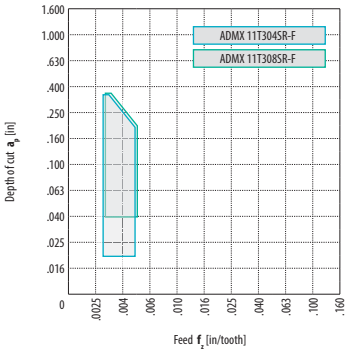
Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description



Profile of cutting edge



	Finishing	Medium	Roughing
P	■	■	□
M	■	■	□
K	◥	□	□
N	■	◥	◥
S	◥	□	□
H			



Applied to inserts: ADMX 11T304SR-F, ADMX 11T308SR-F

- Very positive geometry with a narrow peripheral chamfered edge
- Suitable for machining material groups P, M, and N; also for groups K and S
- Particularly suited to light machining

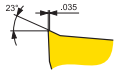
Range of cutting conditions:

f_z	.003 – .005 [in/tooth]
a_p	(.02) .04 – .354 [in]

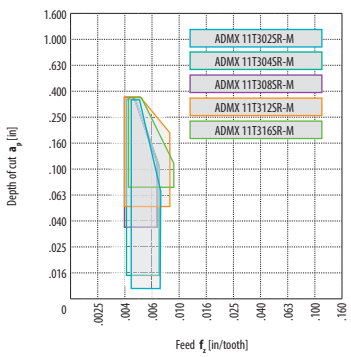
ADMX 11-M (02-16)

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Profile of cutting edge



	Finishing	Medium	Roughing
P	■	■	◥
M	■	■	◥
K	■	■	◥
N		◥	◥
S	◥	□	□
H			



Applied to inserts: ADMX 11T302SR-M, ADMX 11T304SR-M, ADMX 11T308SR-M, ADMX 11T312SR-M, ADMX 11T316SR-M

- Very positive geometry with a medium peripheral chamfered edge
- Suitable for machining material groups P, M, K, and S; potentially also group N
- Particularly suited to light and medium machining

Range of cutting conditions:

f_z	.004 – .009 [in/tooth]
a_p	.008 – .354 [in]

■ Main application ◥ Secondary application □ Supplementary application

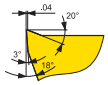
PRAMET

ADMX 11-M (20-30)

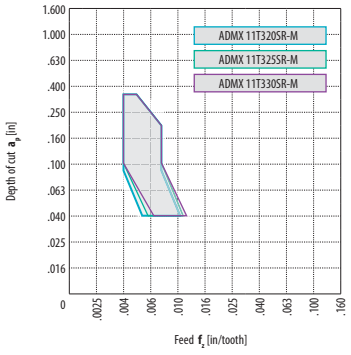
Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Applied to inserts:
ADMX 11T320SR-M, ADMX 11T325SR-M, ADMX 11T330SR-M

Profile of cutting edge



Milling	P	M	K	N	S	H
Finishing	■	■	◪		□	
Medium	■	■	◪		□	
Roughing	◪	◪	◪			



- High positive geometry
- Suitable for machining material groups P, M, S and K
- For medium machining

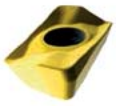
Range of cutting conditions:

f_z	.004 – .012 [in/tooth]
a_p	.04 – .354 [in]

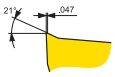
ADMX 11-R

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

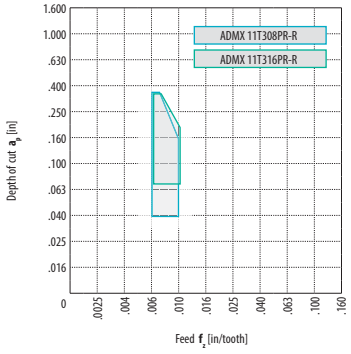
Applied to inserts:
ADMX 11T308PR-R, ADMX 11T316PR-R



Profile of cutting edge



Milling	P	M	K	N	S	H
Finishing	■	◪	■		◪	◪
Medium	■	◪	■		□	□
Roughing	■	◪	■		□	□



- Positive geometry with a double T-land
- Suitable for machining material groups P, M, K, and S
- Geometry also suited to less stable working conditions

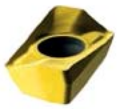
Range of cutting conditions:

f_z	.006 – .01 [in/tooth]
a_p	.04 – .354 [in]

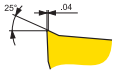
ADMX16-F

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

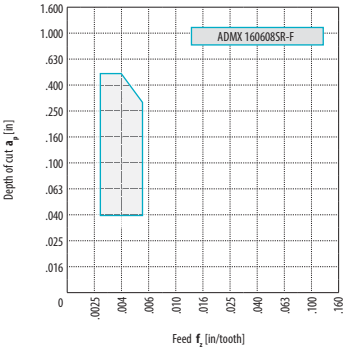
Applied to inserts:
ADMX 160608SR-F



Profile of cutting edge



Milling	P	M	K	N	S	H
Finishing	■	■	◪	■	◪	
Medium	■	■	◪	◪	□	
Roughing	□	□	□	◪	□	



- High positive geometry with a narrow T-land
- Suitable for machining materials in all groups except for group H
- Particularly suited to light and medium machining conditions

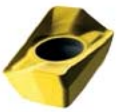
Range of cutting conditions:

f_z	.003 – .006 [in/tooth]
a_p	.04 – .512 [in]

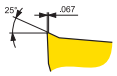
ADMX16-M

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

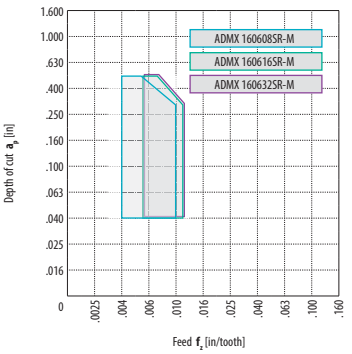
Applied to inserts:
ADMX 160608SR-M, ADMX 160616SR-M
ADMX 160632SR-M



Profile of cutting edge



Milling	P	M	K	N	S	H
Finishing	■	■	■		◪	
Medium	■	■	■		□	
Roughing	◪	◪	◪		□	



- High positive geometry with a medium T-land
- Suitable for machining material groups P, M, K, and S
- Suited to medium machining conditions
- Also available with corner radii of .063 and .126 in

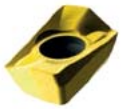
Range of cutting conditions:

f_z	.004 (.006) – .01 (.0118) [in/tooth]
a_p	.04 – .512 [in]

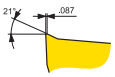
■ Main application ◪ Secondary application □ Supplementary application

ADMX16-R

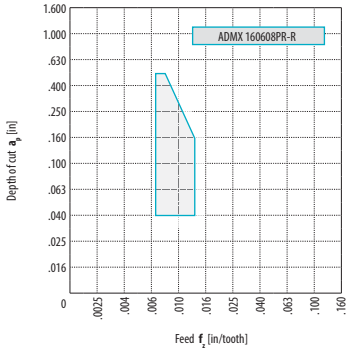
Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: ADMX 160608PR-R



Profile of cutting edge



	P	M	K	N	S	H
Finishing	■	◪	■		◪	◪
Medium	■	◪	■		□	◪
Roughing	■	◪	■		□	



- Positive geometry with a double peripheral chamfered edge
- Suitable for machining material groups P, M, K, and also S and H
- Geometry also suited to medium and heavier machining conditions

Range of cutting conditions:

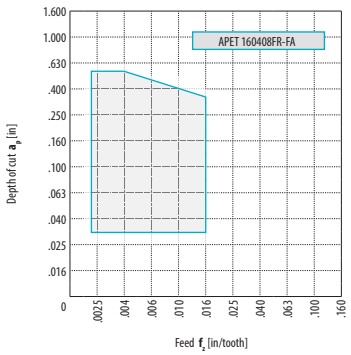
f_z	.007 – .014 [in/tooth]
a_p	.04 – .512 [in]

APET-FA

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: APET 160408FR-FA

Profile of cutting edge

	P	M	K	N	S	H
Finishing				■		
Medium				■		
Roughing				■		



- Geometry with a positive face angle and a sharp cutting edge
- Suitable for machining non-ferrous, i.e. in material group N

Range of cutting conditions:

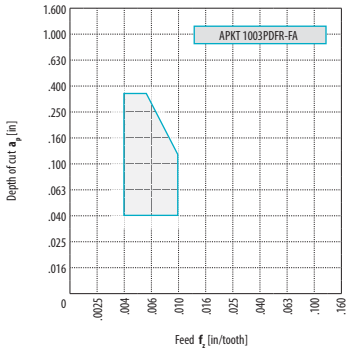
f_z	.002 – .0157 [in/tooth]
a_p	.0315 – .59 [in]

APKT 10-FA

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: APKT 1003PDFR-FA

Profile of cutting edge

	P	M	K	N	S	H
Finishing				■		
Medium				■		
Roughing						



- Geometry with a positive face angle and minimum cutting edge roundness
- Suitable for machining non-ferrous, i.e. in material group N
- Light to medium machining conditions

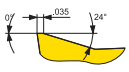
Range of cutting conditions:

f_z	.004 – .01 [in/tooth]
a_p	.04 – .354 [in]

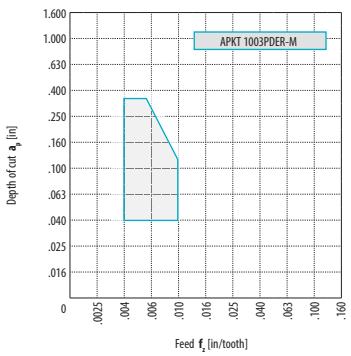
APKT 10-M

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: APKT 1003PDER-M

Profile of cutting edge



	P	M	K	N	S	H
Finishing	■	■	■		◪	
Medium	■	■	■		◪	
Roughing	◪	◪	◪		□	



- Geometry with a high positive face angle and a narrow peripheral chamfered edge
- Suitable for machining material groups P, M, and K; can also be used for material group S
- Light to heavier machining conditions

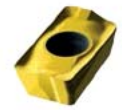
Range of cutting conditions:

f_z	.004 – .01 [in/tooth]
a_p	.04 – .354 [in]

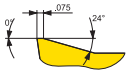
■ Main application ◪ Secondary application □ Supplementary application

APKT-GM

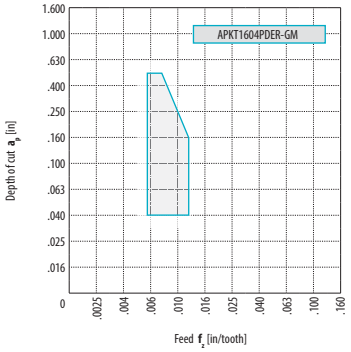
Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description



Profile of cutting edge



Finishing: ■ ■ ■ ◪
Medium: ■ ■ ■ ◪
Roughing: ◪ ◪ ◪ □



Applied to inserts: APKT 1604PDER-GM

- Geometry with a high positive face angle and a narrow peripheral chamfered edge
- Suitable for machining material groups P, M, and K; can also be used for material group S
- Light to heavier machining conditions

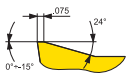
Range of cutting conditions:

f_z	.006 – .0118 [in/tooth]
a_p	.04 – .512 [in]

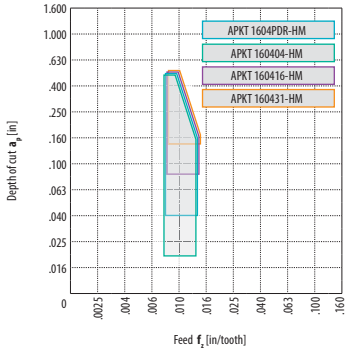
APKT-HM

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Profile of cutting edge



Finishing: ■ ■ ■ □
Medium: ■ ■ ■ ◪
Roughing: ■ ■ ■ ◪



Applied to inserts: APKT 1604PDER-HM, APKT 160404-HM, APKT 160416-HM, APKT 160431-HM

- Geometry with a high positive face angle and a medium peripheral chamfered edge
- Suitable for machining material groups P, M, and K; can also be used for material group S
- Offered with radii of .016, .063, .126
- Light to heavier machining conditions

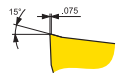
Range of cutting conditions:

f_z	.0079 – .0138 [in/tooth]
a_p	.0197 – .512 [in]

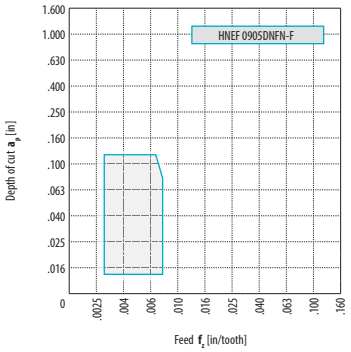
HNEF-F

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Profile of cutting edge



Finishing: ◪ ■ ◪ ◪
Medium: □ ◪ □ □
Roughing:



Applied to inserts: HNEF 0905DNFN-F

- Positive geometry without chamfered edge
- Specially designed for machining material group K and potentially for material groups P, N, and S (due to the fine pitch of the cutters on the milling cutters, there is a danger of the chip space being clogged by a continuous chip)
- Particularly suited to light machining

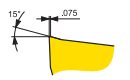
Range of cutting conditions:

f_z	.003 – .008 [in/tooth]
a_p	.012 – .118 [in]

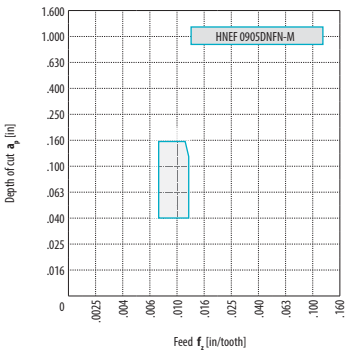
HNEF-M

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Profile of cutting edge



Finishing: ◪ ■
Medium: □ ■
Roughing:



Applied to inserts: HNEF 0905DNFN-M

- Positive geometry with a medium peripheral chamfered edge
- Specially designed for machining material group K and potentially material group P (due to the fine pitch of the cutters on the milling cutters, there is a danger of the chip space being clogged by a continuous chip)
- Particularly suited to light and medium machining

Range of cutting conditions:

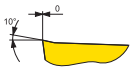
f_z	.007 – .012 [in/tooth]
a_p	.04 – .157 [in]

■ Main application ◪ Secondary application □ Supplementary application

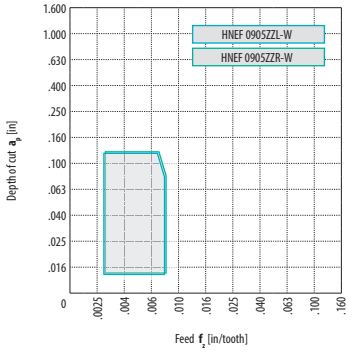
HNEF-W

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: HNEF 0905ZZL-W, HNEF 0905ZZR-W

Profile of cutting edge



Finishing: ■ ◪ ■ ◪ ◪
Medium: □ ◪ □ □
Roughing:



- Finishing geometry
- Specially designed for machining material group K and potentially material groups P, N, and S (due to the fine pitch of the cutters on the milling cutters, there is a danger of the chip space being clogged by a continuous chip)
- One insert is fixed to a millling cutter (normal inserts are to be attached to the remaining positions)
- Particularly suited to light machining

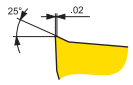
Range of cutting conditions:

f_z	.003 – .008 [in/tooth]
a_p	.012 – .118 [in]

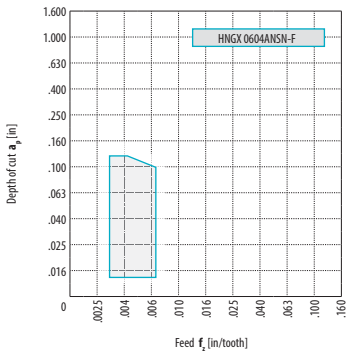
HNGX 06-F

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: HNGX 0604ANSN-F

Profile of cutting edge



Finishing: ■ ◪ □ □ □
Medium: ■ ◪ □ □ □
Roughing: ◪ □



- High positive geometry with a narrow peripheral chamfered edge
- Suitable for machining material group P and potentially material groups M, K, N, and S
- Particularly suited to light machining and stable machining conditions

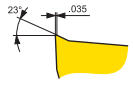
Range of cutting conditions:

f_z	.0003 – .007 [in/tooth]
a_p	.012 – .118 [in]

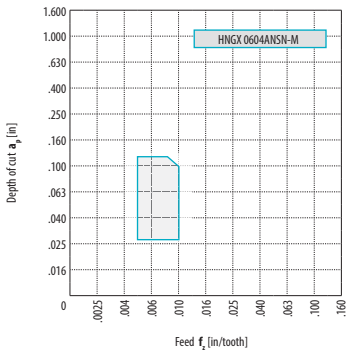
HNGX 06-M

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: HNGX 0604ANSN-M

Profile of cutting edge



Finishing: ■ ◪ ■ □
Medium: ■ ◪ ■ □ □
Roughing: ◪ ◪ ◪ □



- High positive geometry with medium T-land
- Suitable for machining material groups P and K, potentially groups M, N, and S
- Particularly suited to medium machining

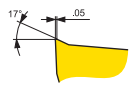
Range of cutting conditions:

f_z	.005 – .01 [in/tooth]
a_p	.028 – .118 [in]

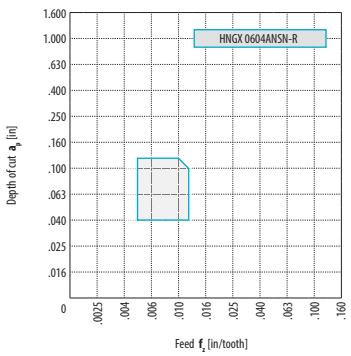
HNGX 06-R

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: HNGX 0604ANSN-R

Profile of cutting edge



Finishing: ■ □ ■ □ ◪
Medium: ■ ◪ ■ ◪ ◪
Roughing: ■ ◪ ■ □ □



- High positive geometry with medium T-land
- Suitable for machining material groups P and K, potentially groups M, S, and H
- Particularly suited to medium to heavy machining

Range of cutting conditions:

f_z	.005 – .012 [in/tooth]
a_p	.04 – .118 [in]

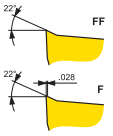
■ Main application ◪ Secondary application □ Supplementary application

PRAMET

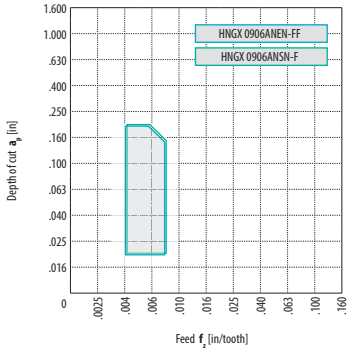
HNGX 09 -FF/-F

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Profile of cutting edge



Workpiece material group	P	M	K	N	S	H
Finishing	■	■	□	□	□	
Medium	■	■	□	□	□	
Roughing	◪	□				



Applied to inserts: HNGX 0906ANEN-FF, HNGX 0906ANSN-F

- High positive geometry with a narrow peripheral chamfered edge (geometry F) or without peripheral chamfered edge (geometry FF)
- Suitable for machining material groups P and M; potentially also material groups K, N, and S
- Particularly suited to light and medium machining

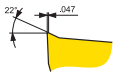
Range of cutting conditions:

f_z	.004 – .008 [in/tooth]
a_p	.02 – .197 [in]

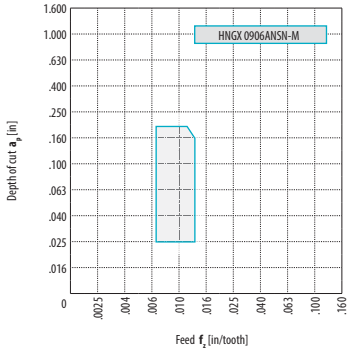
HNGX 09 -M

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Profile of cutting edge



Workpiece material group	P	M	K	N	S	H
Finishing	■	■	■		□	
Medium	■	■	■	□	□	
Roughing	◪	◪	◪		□	



Applied to inserts: HNGX 0906ANSN-M

- High positive geometry with a medium T-land
- Suitable for machining material groups P, M, and K; potentially groups N and S
- Particularly suited to medium machining

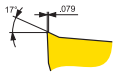
Range of cutting conditions:

f_z	.007 – .014 [in/tooth]
a_p	.032 – .197 [in]

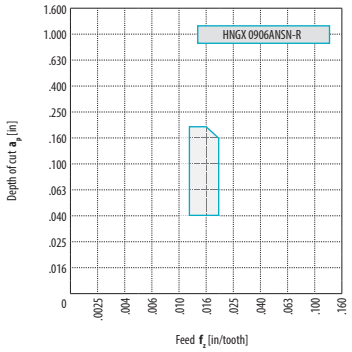
HNGX 09 -R

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Profile of cutting edge



Workpiece material group	P	M	K	N	S	H
Finishing	■	□	■		□	◪
Medium	■	◪	■		◪	◪
Roughing	■	◪	■		□	□



Applied to inserts: HNGX 0906ANSN-R

- Positive geometry with a medium T-land
- Suitable for machining material groups P and K, and also groups M, S, and H
- Particularly suited to medium and heavy machining

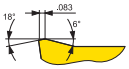
Range of cutting conditions:

f_z	.012 – .02 [in/tooth]
a_p	.04 – .197 [in]

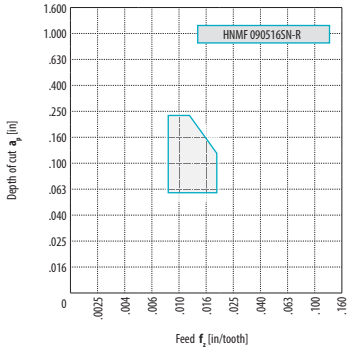
HNMF-R

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Profile of cutting edge



Workpiece material group	P	M	K	N	S	H
Finishing			◪			◪
Medium	□		■			□
Roughing			■			



Applied to inserts: HNMF 090516SN-R

- Positive but stable cutting geometry with a little negative chamfered edge
- Specially designed for machining material group K and potentially material groups P and H (due to the fine pitch of the cutters on the milling cutters, there is a danger of the chip space being clogged by a continuous chip)
- Particularly suited to light and heavy machining

Range of cutting conditions:

f_z	.009 – .0197 [in/tooth]
a_p	.059 – .236 [in]

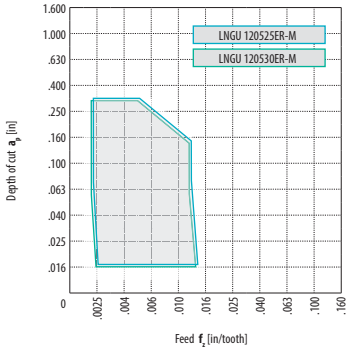
LNGU 12-M

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Applied to inserts: LNGU 120525ER-M, LNGU 120530ER-M

Profile of cutting edge

Finishing	■ □ ■
Medium	■ □ ■
Roughing	



- Positive geometry without a peripheral stabilizing chamfered edge
- Suitable for machining material groups P and K, and some materials in group M
- Suited to light and medium machining

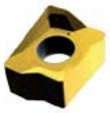
Range of cutting conditions:

f_z	.002 – .015 [in/tooth]
a_p	.016 – .354 [in]

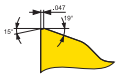
LNGU 16-M

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

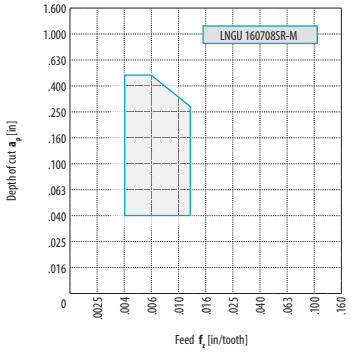
Applied to inserts: LNGU 160708SR-M



Profile of cutting edge



Finishing	■ □ ■ ◪
Medium	■ □ ■ □
Roughing	◪ □ ■



- High positive geometry
- Suitable for machining material groups P and K, potentially group H
- For medium machining
- Geometry suited to less stable machining conditions

Range of cutting conditions:

f_z	.004 – .012 [in/tooth] (.004 – .01 for MT-CVD)
a_p	.04 – .512 [in]

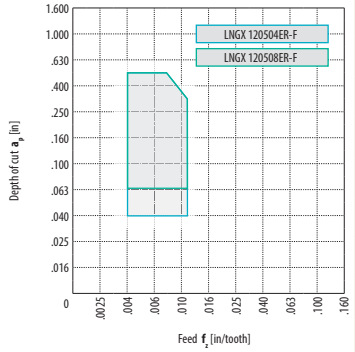
LNGX-F

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Applied to inserts: LNGX 120504ER-F, LNGX 120508ER-F

Profile of cutting edge

Finishing	■ ◪ ◪ □
Medium	◪ ◪ ◪ □
Roughing	



- Positive geometry without a peripheral stabilizing chamfered edge
- Suitable for machining material groups P, potentially also group K, M and S
- Particularly suited to light machining

Range of cutting conditions:

f_z	.002 – .006 [in/tooth]
a_p	.04 – .512 [in]

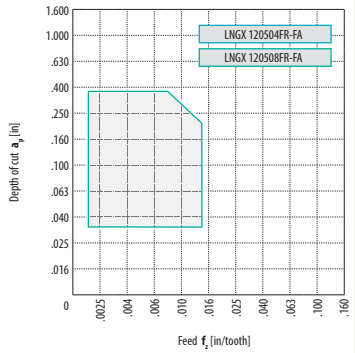
LNGX-FA

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Applied to inserts: LNGX 120504FR-FA, LNGX 120508FR-FA

Profile of cutting edge

Finishing	◪ ■ ◪
Medium	□ ◪ □
Roughing	



- High positive geometry
- Suitable for machining material groups N, potentially also group M and S
- Polished insert face to reduce sticking of the machined material

Range of cutting conditions:

f_z	.001 – .014 [in/tooth]
a_p	.04 – .512 [in]

■ Main application ◪ Secondary application □ Supplementary application

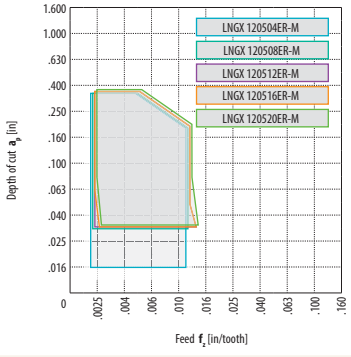
PRAMET

LNGX-M

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Profile of cutting edge

Milling	P	M	K	N	S	H
Finishing	■	□	■			
Medium	■	□	■			
Roughing						



Applied to inserts:
LNGX 120504ER-M, LNGX 120508ER-M,
LNGX 120512ER-M, LNGX 120516ER-M, LNGX 120520ER-M

- Positive geometry without a peripheral stabilizing chamfered edge
- Suitable for machining material groups P and K, and some materials in group M
- Suited to light and medium machining

Range of cutting conditions:

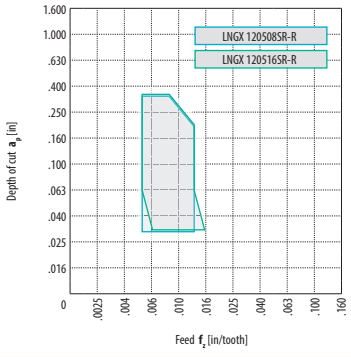
f_z	.002 – .0015 [in/tooth]
a_p	.0016 – .354 [in]

LNGX-R

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Profile of cutting edge

Milling	P	M	K	N	S	H
Finishing	■	◪	■		□	□
Medium	■	◪	■		□	□
Roughing	■	◪	■		□	□



Applied to inserts:
LNGX 120508SR-R, LNGX 120516SR-R

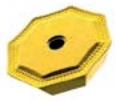
- Positive geometry with a peripheral stabilizing chamfered edge
- Suitable for machining material groups P, M, K, and also S and H
- Suited for less stable machining conditions

Range of cutting conditions:

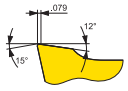
f_z	.005 – .016 [in/tooth]
a_p	.031 – .354 [in]

OFKR-M

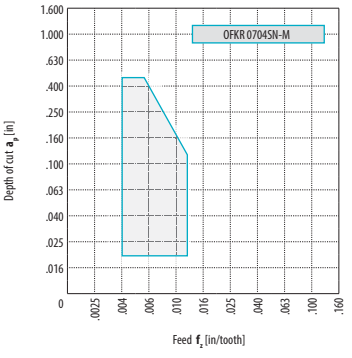
Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description



Profile of cutting edge



Milling	P	M	K	N	S	H
Finishing	■	■	◪			
Medium	■	■	◪			
Roughing						



Applied to inserts:
OFKR 0704SN-M

- Geometry with a slightly positive face angle and a narrow peripheral chamfered edge
- Suitable for machining material groups P and M, can also be used for material group K
- Up to eight edges can be used depending on the maximum depth of the cut
- Suited to light to slightly impaired machining conditions

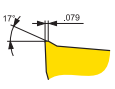
Range of cutting conditions:

f_z	.004 – .0118 [in/tooth]
a_p	.0197 – .472 [in]

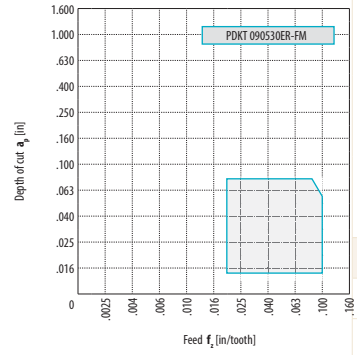
PDKT-FM

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Profile of cutting edge



Milling	P	M	K	N	S	H
Finishing	■	■	◪		□	□
Medium	■	■	□		□	□
Roughing	□	□				



Applied to inserts:
PDKT 090530ER-FM

- High positive geometry with a medium peripheral chamfered edge with an insert corner radius of r = .118 in
- Suitable for machining material groups P and M, potentially for material groups K, N, and S
- Particularly suited to light and medium machining

Range of cutting conditions:

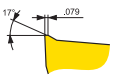
f_z	.0197 – .098 [in/tooth]
a_p	.0118 – .079 [in]

■ Main application ◪ Secondary application □ Supplementary application

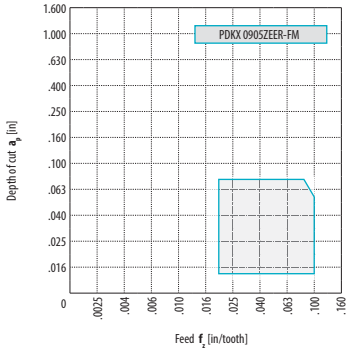
PDKX-FM

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: PDKX 0905ZEER-FM

Profile of cutting edge



	P	M	K	N	S	H
Finishing	■	■	■	□	□	
Medium	■	■	■	□	□	
Roughing	■	◪	■			



- High positive geometry with a finishing auxiliary chamfered edge with a length of .079 in
- Suitable for machining material groups P, M, and K, potentially for material groups N and S
- Particularly suited to medium machining

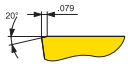
Range of cutting conditions:

f_z	.02 – .098 [in/tooth]
a_p	.012 – .079 [in]

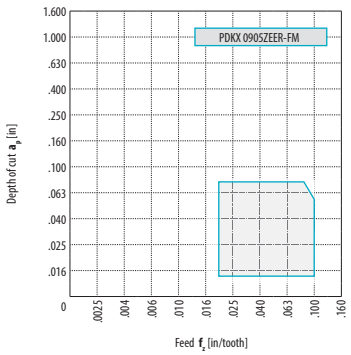
PDMW

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: PDMW 090530SR

Profile of cutting edge



	P	M	K	N	S	H
Finishing	□		■			■
Medium	◪	□	■			◪
Roughing	◪	□	■			



- High positive geometry with a zero face angle and a large negative chamfered edge with an insert corner radius of r = .018 in
- Suitable for machining material groups K and H, potentially for material groups P and M
- Particularly suited to medium to heavy machining conditions

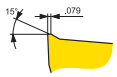
Range of cutting conditions:

f_z	.02 – .098 [in/tooth]
a_p	.012 – .079 [in]

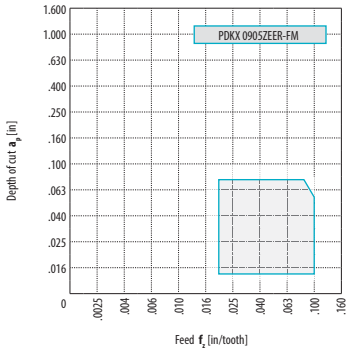
PDMX-M

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: PDMX 0905ZEER-M

Profile of cutting edge



	P	M	K	N	S	H
Finishing	□		■			◪
Medium	◪	□	■		□	□
Roughing	◪	□	■		□	



- Geometry with a negative peripheral chamfered edge with a finishing cutting edge with a length of .079 in
- Suitable for machining material group K, potentially for material groups P, H, M, and S
- Particularly suited to medium to heavy machining conditions

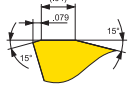
Range of cutting conditions:

f_z	.02 – .098 [in/tooth]
a_p	.012 – .079 [in]

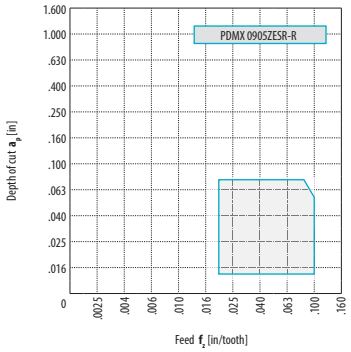
PDMX-R

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: PDMX 0905ZESR-R

Profile of cutting edge



	P	M	K	N	S	H
Finishing	□		■			◪
Medium	◪	□	■		□	□
Roughing	◪	□	■		□	



- Geometry with a negative peripheral chamfered edge with a finishing cutting edge with a length of .079 in
- Suitable for machining material group K, potentially for material groups P, H, M, and S
- Particularly suited to medium to heavy machining conditions

Range of cutting conditions:

f_z	.02 – .098 [in/tooth]
a_p	.012 – .079 [in]

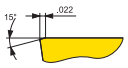
■ Main application ◪ Secondary application □ Supplementary application

PRAMET

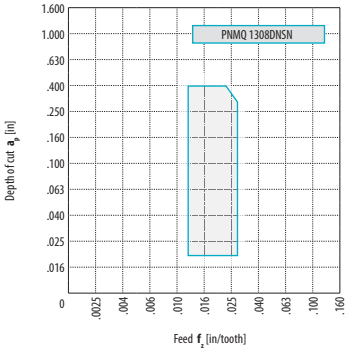
PNMQ

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: PNMQ 1308DNSN

Profile of cutting edge



Finishing: K, H
Medium: K
Roughing: P, K



- Highly stable cutting geometry with a zero face angle with a very large negative chamfered edge
- Suitable for machining material group K, potentially for material groups P and H
- Particularly suited to roughing

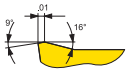
Range of cutting conditions:

f_z	.012 – .028 [in/tooth]
a_p	.02 – .394 [in]

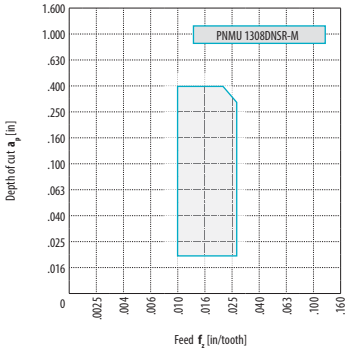
PNMU-M

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: PNMU 1308DNSR-M

Profile of cutting edge



Finishing: P, M, K, H
Medium: P, K
Roughing: P, K, S



- Positive but stable cutting geometry with a slightly negative chamfered edge
- Suitable for machining material groups P and K, potentially for material groups M, S, and H
- Particularly suited to roughing

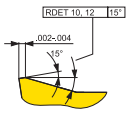
Range of cutting conditions:

f_z	.01 – .028 [in/tooth]
a_p	.02 – .394 [in]

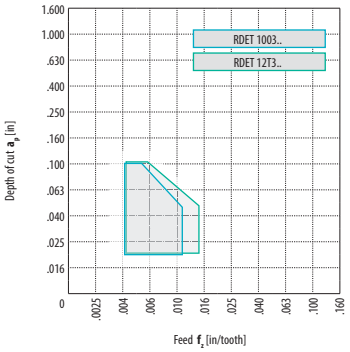
RDET

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: RDET 10.., 12..

Profile of cutting edge



Finishing: P, M, K, S
Medium: P, M, K, S
Roughing: P, M, K, S



- Cutting geometry with a positive rake angle
- Suitable for machining material groups P and M; can also be used with groups K and S, and potentially group H
- Diameters .315 and .393 in are supplied in two different thicknesses

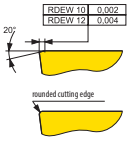
Range of cutting conditions:

f_z	according to dimension of cutting insert
a_p	according to dimension of cutting insert

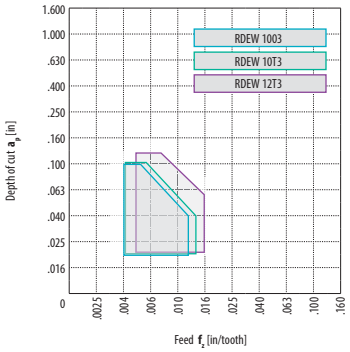
RDEW

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: RDEW 10.., 12..

Profile of cutting edge



Finishing: P, M, K, H
Medium: P, M, K, H
Roughing: P, M, K, H



- Flat top
- Suitable for machining material groups K and H; can also be used with group P and potentially group M
- Diameters .315 and .393 in are supplied in two different thicknesses

Range of cutting conditions:

f_z	according to dimension of cutting insert
a_p	according to dimension of cutting insert

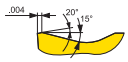
■ Main application ◪ Secondary application □ Supplementary application

RDEX-12

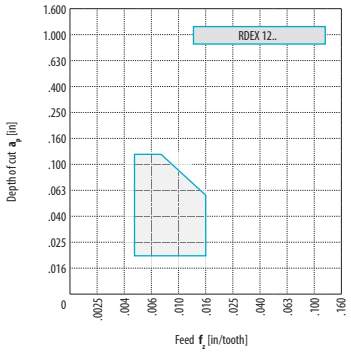
Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Applied to inserts: RDEX 12..

Profile of cutting edge



Finishing ■ ■ ◥ ◥ □
Medium ■ ■ ◥ ◥ □
Roughing ■ ■ ◥ ◥ □



- Cutting geometry with a positive rake angle and a negative T-land
- Suitable for machining material groups P and M; can also be used with groups K and S, and potentially group H

Range of cutting conditions:

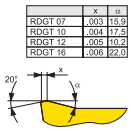
f_z	.005 – .0157 [in/tooth]
a_p	.0197 – .1574 [in]

RDGT

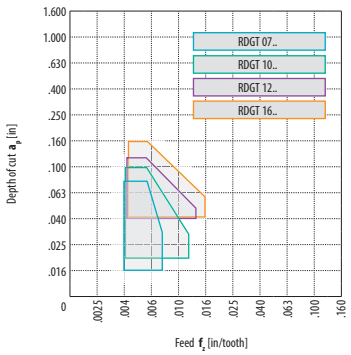
Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Applied to inserts: RDGT 07.. (10.., 12.., 16..) MOT

Profile of cutting edge



Finishing ■ ■ ◥ ◥ □
Medium ■ ■ ◥ ◥ □
Roughing ■ ■ ◥ ◥ □



- Cutting geometry with a positive rake angle and a negative T-land
- Suitable for machining material groups P and M; can also be used with groups K and S, and potentially group H

Range of cutting conditions:

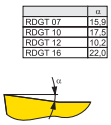
f_z	according to dimension of cutting insert
a_p	according to dimension of cutting insert

RDHT-FA

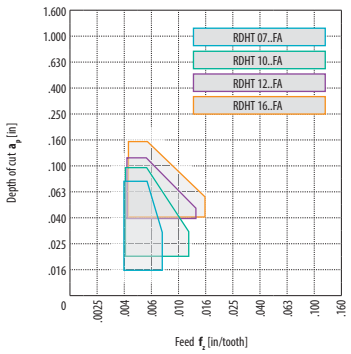
Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Applied to inserts: RDHT 07.. (10.., 12.., 16..) MO-FA

Profile of cutting edge



Finishing ■
Medium ■
Roughing ■



- Geometry with a positive rake angle and sharp geometry
- Suitable for machining non-iron materials in group N

Range of cutting conditions:

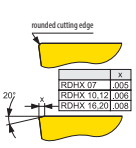
f_z	according to dimension of cutting insert
a_p	according to dimension of cutting insert

RDHX

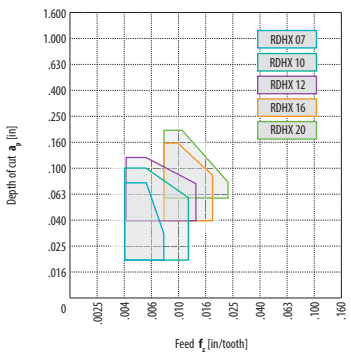
Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Applied to inserts: RDHX (07.., 10.., 12.., 16.., 20..) MOT

Profile of cutting edge



Finishing ◥ □ ■ ■
Medium ◥ □ ■ ■
Roughing ◥ □ ■ ■



- Flat top
- Suitable for machining material groups K and H; can also be used with group P and potentially group M

Range of cutting conditions:

f_z	according to dimension of cutting insert
a_p	according to dimension of cutting insert

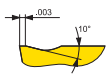
■ Main application ◥ Secondary application □ Supplementary application

PRAMET

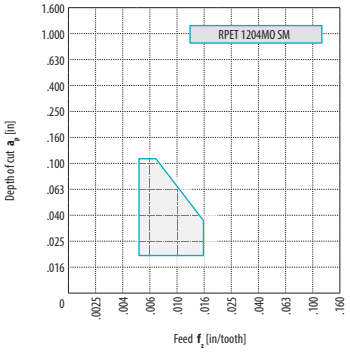
RPET

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: RPET 1204MOSM

Profile of cutting edge



	P	M	K	N	S	H
Finishing	■	■	◪		◪	□
Medium	■	■	◪		◪	□
Roughing	■	■	◪		◪	□



- Geometry with a positive rake angle and zero T-land rake
- Suitable for machining material groups P and M; can also be used with groups K and S, and potentially group H

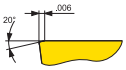
Range of cutting conditions:

f_z	.005 – .016 [in/tooth]
a_p	.020 – .118 [in]

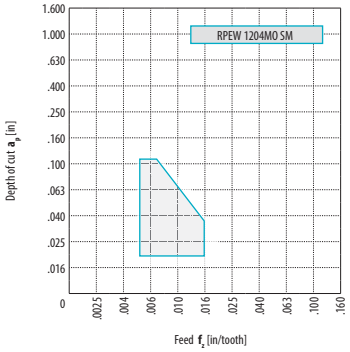
RPEW

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: RPEW 1204MOS

Profile of cutting edge



	P	M	K	N	S	H
Finishing	◪	□	■			■
Medium	◪	□	■			■
Roughing	◪	□	■			■



- Flat top
- Suitable for machining material groups K and H; can also be used with group P and potentially group M

Range of cutting conditions:

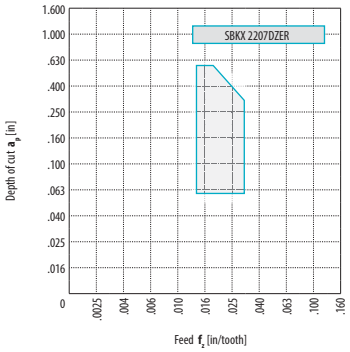
f_z	.005 – .016 [in/tooth]
a_p	.020 – .118 [in]

SBKX

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: SBKX 2207DZER

Profile of cutting edge

	P	M	K	N	S	H
Finishing	■	□	■			
Medium	■	□	■			
Roughing	■	□	■			



- Wiper flat top
- Accessory for SBMR indexable cutting inserts
- Suitable for machining material groups P, K, and M

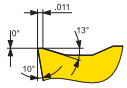
Range of cutting conditions:

f_z	.014 – .031 [in/tooth]
a_p	.059 – .59 [in]

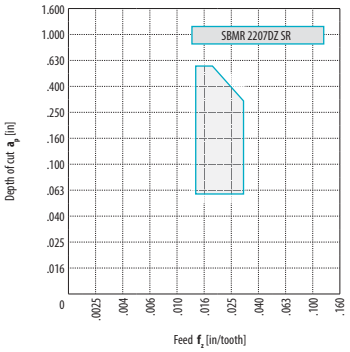
SBMR

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: SBMR 2207DZ SR

Profile of cutting edge



	P	M	K	N	S	H
Finishing	■	■	■		◪	
Medium	■	■	■		■	
Roughing	■	■	■		■	



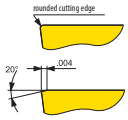
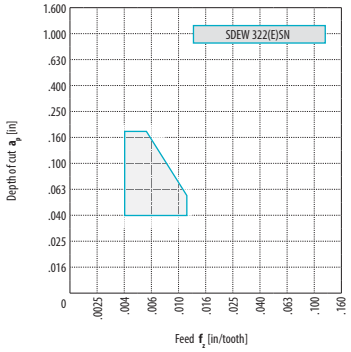
- Stable cutting geometry
- Suitable for machining material groups P, M, K, and S
- Suited to roughing and finishing

Range of cutting conditions:

f_z	.014 – .031 [in/tooth]
a_p	.059 – .59 [in]

■ Main application ◪ Secondary application □ Supplementary application

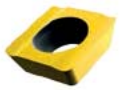
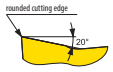
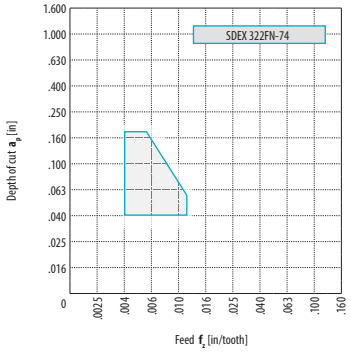
SDEW

Geometry	Insert	Workpiece material group (Milling)	Application range	Description	Applied to inserts:
SDEW	 Profile of cutting edge 	P M K N S H Finishing ■ □ ■ Medium ■ □ ■ ■ Roughing ■ □ ■ ■		- Flat top - Suitable for machining material groups K and H; can also be used with group P and potentially group M - Inserts are manufactured for end milling cutters with a setting angle of 45° - Supplied with "E" and "S" cutting edge designs	SDEW 322(E)SN

Range of cutting conditions:

f_z	.004 – .012 [in/tooth]
a_p	.04 – .177 [in]

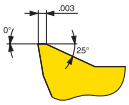
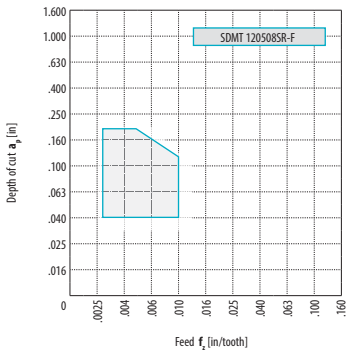
SDEX-74

Geometry	Insert	Workpiece material group (Milling)	Application range	Description	Applied to inserts:
SDEX-74	 Profile of cutting edge 	P M K N S H Finishing ■ ■ ■ ■ ■ Medium ■ ■ ■ ■ ■ Roughing ■ ■ ■ ■ ■		- Geometry with a positive rake angle - Ground chip-forming geometry - Suitable for machining material groups P, M, and N; can also be used for groups K and S - Inserts are manufactured for end milling cutters with a setting angle of 45°	SDEX 322FN-74

Range of cutting conditions:

f_z	.004 – .012 [in/tooth]
a_p	.04 – .177 [in]

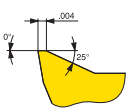
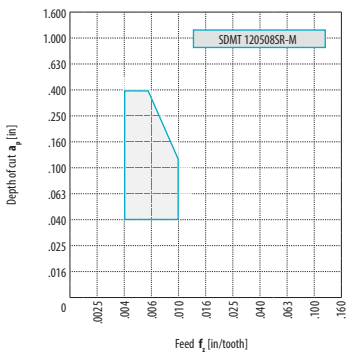
SDMT-F

Geometry	Insert	Workpiece material group (Milling)	Application range	Description	Applied to inserts:
SDMT-F	 Profile of cutting edge 	P M K N S H Finishing ■ ■ ■ ■ ■ Medium ■ ■ ■ ■ ■ Roughing ■		- Geometry with a positive rake angle, which ensures minimum cutting resistance - For light to medium cutting conditions - Suitable for machining material groups P, M, K, and S, and potentially group N - Stable working conditions	SDMT 120508SR-F

Range of cutting conditions:

f_z	.003 – .01 [in/tooth]
a_p	.02 – .197 [in]

SDMT-M

Geometry	Insert	Workpiece material group (Milling)	Application range	Description	Applied to inserts:
SDMT-M	 Profile of cutting edge 	P M K N S H Finishing ■ ■ ■ ■ ■ Medium ■ ■ ■ ■ ■ Roughing □ □ ■ ■		- Geometry with a positive rake angle, which ensures minimum cutting resistance - For light to medium cutting conditions - Suitable for machining material groups P, M, K, and S, and potentially group N	SDMT 120508SR-M

Range of cutting conditions:

f_z	.004 – .01 [in/tooth]
a_p	.04 – .394 [in]

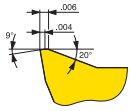
■ Main application ◪ Secondary application □ Supplementary application

SDMT-R

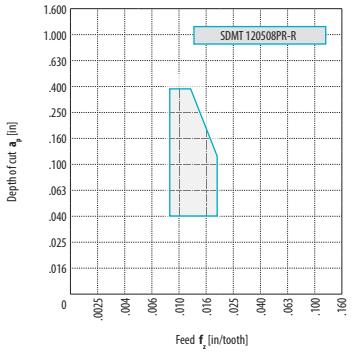
Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Applied to inserts: SDMT 120508PR-R

Profile of cutting edge



Finishing ■ ■ ◪ ◪
Medium ■ ■ ◪ ◪
Roughing ■ ■ ◪ ◪



- Positive cutting geometry with very stable cutting edge
- Suitable for machining material groups P, M, K, and S, and potentially group N
- Geometry suited to less stable working conditions

Range of cutting conditions:

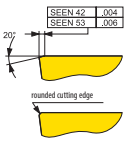
f_z	.008 – .018 [in/tooth]
a_p	.04 – .394 [in]

SEEN

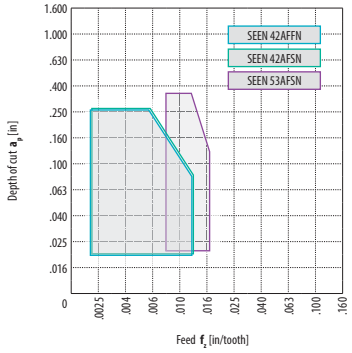
Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Applied to inserts: SEEN 42AFFN, SEEN 42AFSN, SEEN 53AFSN

Profile of cutting edge



Finishing ◪ □ ■ ■
Medium ◪ □ ■ ■
Roughing ◪ □ ■ ■



- Flat top
- Suitable for machining material groups K and H; can also be used with group P and potentially group M
- Supplied with "E" and "S" cutting edge designs

Range of cutting conditions:

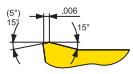
f_z	according to cutting edge condition and dimension of cutting insert
a_p	according to cutting edge condition and dimension of cutting insert

SEER

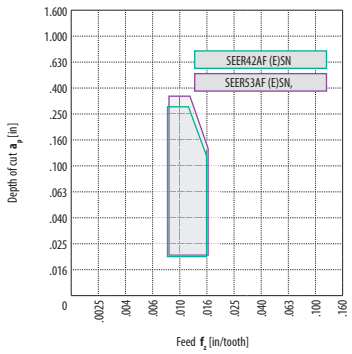
Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Applied to inserts: SEER 42AFFN, SEER 42AFSN SEER 53AFFN, SEER 53AFSN

Profile of cutting edge



Finishing ■ ■ ◪ ◪ □
Medium ■ ■ ◪ ◪ □
Roughing ■ ■ ◪ ◪ □



- Geometry with a positive rake angle
- Suitable for machining material groups P and M; can also be used with groups K and S, and potentially group H

Range of cutting conditions:

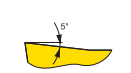
f_z	according to cutting edge condition and dimension of cutting insert
a_p	according to cutting edge condition and dimension of cutting insert

SEET 09

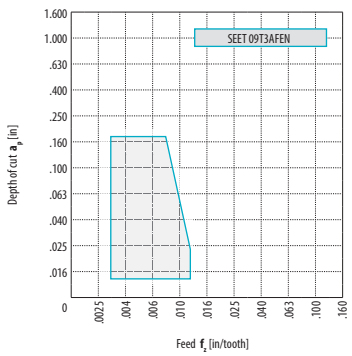
Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Applied to inserts: SEET 09T3AFEN

Profile of cutting edge



Finishing ■ ■ □ ■
Medium ■ ■ □ ■
Roughing



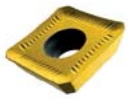
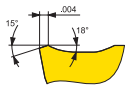
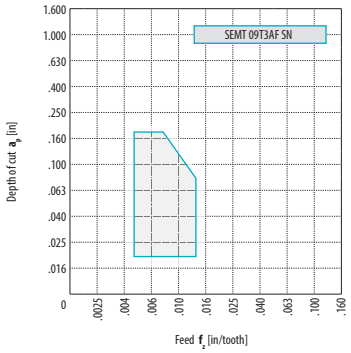
- Geometry with a positive face angle
- Suitable for milling material groups P, M, and S
- Particularly suited to light to medium milling

Range of cutting conditions:

f_z	.0003 – .012 [in/tooth]
a_p	.012 – .177 [in]

■ Main application ◪ Secondary application □ Supplementary application

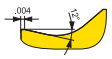
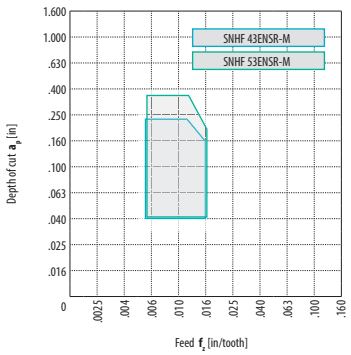
SEMT

Geometry	Insert	Workpiece material group (Milling)	Application range	Description	Applied to inserts:
SEMT	 Profile of cutting edge 	P M K N S H Finishing ■ ■ ■ □ ◪ Medium ■ ■ ■ □ ◪ Roughing ◪ ◪ ◪ □		- Geometry with a positive rake angle - Suitable for machining material groups P, M, and K; can also be used with group S and potentially group N - Particularly suited to light and medium machining conditions	SEMT 09T3AFSN

Range of cutting conditions:

f_z	.005 – .014 [in/tooth]
a_p	.02 – .177 [in]

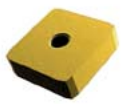
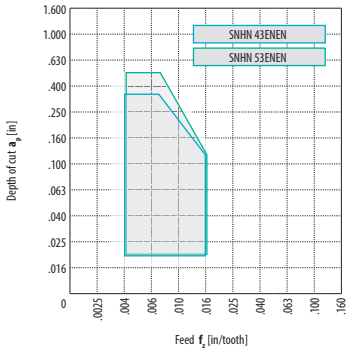
SNHF-M

Geometry	Insert	Workpiece material group (Milling)	Application range	Description	Applied to inserts:
SNHF-M	 Profile of cutting edge 	P M K N S H Finishing ■ □ ■ Medium ■ □ ■ Roughing ■ □ ■		- Geometry with a positive face angle - Suitable for machining material groups P and K - Particularly suited to light and medium milling	SNHF 43ENSR-M, SNHF 53ENSR-M

Range of cutting conditions:

f_z	.006 – .016 [in/tooth]
a_p	.04 – (.236) .354 [in]

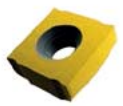
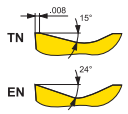
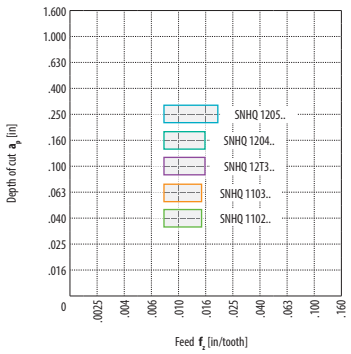
SNHN

Geometry	Insert	Workpiece material group (Milling)	Application range	Description	Applied to inserts:
SNHN	 Profile of cutting edge 	P M K N S H Finishing ◪ ■ ■ Medium ◪ ■ ■ Roughing ◪ ■ ■		- Standard negative milling geometry - Suitable for machining material groups K and H; can also be used for group P - Inserts are manufactured for milling cutters with a setting angle of 75°	SNHN 43ENEN, SNHN 53ENEN

Range of cutting conditions:

f_z	(.004) – .016 [in/tooth]
a_p	.02 – (.354) 13,5 [in]

SNHQ

Geometry	Insert	Workpiece material group (Milling)	Application range	Description	Applied to inserts:
SNHQ	 Profile of cutting edge 	P M K N S H Finishing ■ ■ ■ ◪ ◪ □ Medium ■ ■ ■ ◪ ◪ □ Roughing ■ ■ ■ □ ◪ □		- On-edge inserts for disc milling cutters with ground chip-forming geometry - This geometry can be used with all types of materials - The recommended feed range is for information only: a_e/D ratio is very important	SNHQ 11.., SNHQ 12..

Range of cutting conditions:

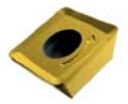
f_z	.008 – (.016) .02 [in/tooth]
a_p	-

■ Main application ◪ Secondary application □ Supplementary application

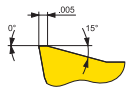
PRAMET

SOMT-M

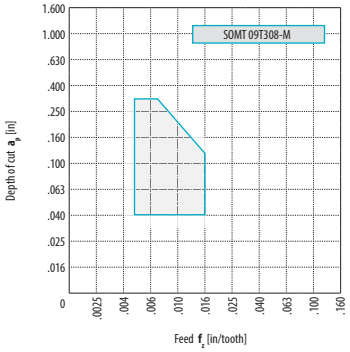
Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: SOMT 09T308-M



Profile of cutting edge



	P	M	K	N	S	H
Finishing	■	◪	■		□	□
Medium	■	◪	■		□	□
Roughing	■	◪	■		□	□



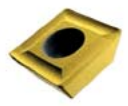
- Positive geometry with a medium T-land
- Suitable for machining material groups P and K; can also be used with group M and potentially groups S and H
- For medium machining conditions on hard materials
- For unstable machining conditions

Range of cutting conditions:

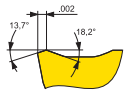
f_z	.005 – .016 [in/tooth]
a_p	.04 – .315 [in]

SOMT-MI

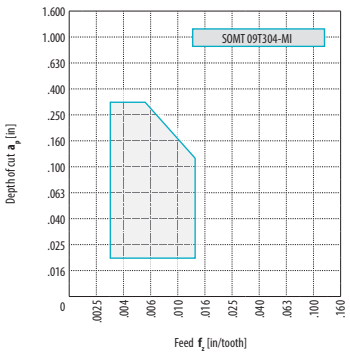
Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: SOMT 09T304-MI



Profile of cutting edge



	P	M	K	N	S	H
Finishing	◪	■	■	□	◪	
Medium	■	■	■	□	◪	
Roughing	■	■	■		□	



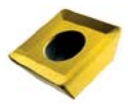
- Stable cutting geometry with a positive rake angle and a negative T-land
- Suitable for machining material groups P, M, and K; can also be used with group S and potentially group N

Range of cutting conditions:

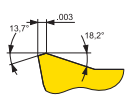
f_z	.0003 – .014 [in/tooth]
a_p	.02 – .315 [in]

SOMT-P

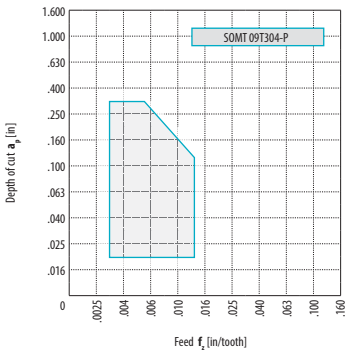
Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: SOMT 09T304-P



Profile of cutting edge



	P	M	K	N	S	H
Finishing	■	■	◪	□	◪	
Medium	■	■	◪	□	◪	
Roughing	■	■	□		□	



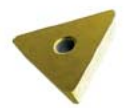
- High positive milling geometry with a negative T-land
- Suitable for machining material groups P, M, and K; can also be used with group S and potentially group N

Range of cutting conditions:

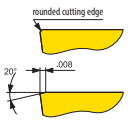
f_z	.0003 – .014 [in/tooth]
a_p	.02 – .315 [in]

TPKN

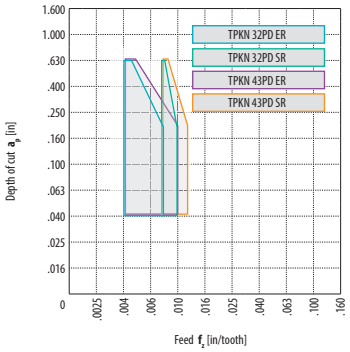
Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: TPKN 32PD(E)SR, TPKN 43PD(E)SR



Profile of cutting edge



	P	M	K	N	S	H
Finishing	◪	□	■			■
Medium	◪	□	■			■
Roughing						



- Flat top
- Suitable for machining material groups K and H; can also be used with group P and potentially group M
- For milling cutters with a setting angle of 90°
- Supplied with "E" and "S" cutting edge designs, for right feed direction on dimensions .650 and .866 in

Range of cutting conditions:

f_z	according to cutting edge condition and dimension of cutting insert
a_p	according to cutting edge condition and dimension of cutting insert

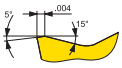
■ Main application ◪ Secondary application □ Supplementary application

TPKR

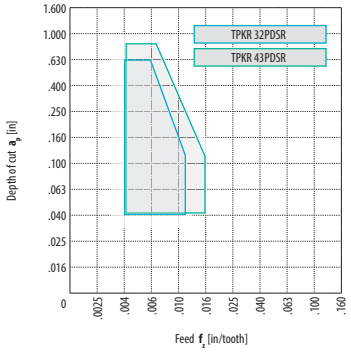
Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Applied to inserts: TPKR 32PDSR, TPKR 43PDSR

Profile of cutting edge



Finishing ■ ◪ ■
Medium ■ ◪ ■
Roughing



- Geometry with a positive rake angle
- Suitable for machining material groups P, K, and potentially group M
- For milling cutters with a setting angle of 90°
- Supplied with "E" and "S" cutting edge designs, for right feed direction on dimensions .650 and .866 in

Range of cutting conditions:

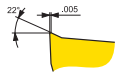
f_z	.004 – (.012) .016 [in/tooth]
a_p	.04 – (.63) .866 [in]

XNGX 06

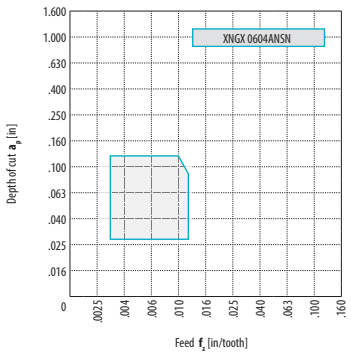
Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Applied to inserts: XNGX 0604ANSN

Profile of cutting edge



Finishing ■ ■
Medium ■ ■
Roughing □ □



- Smooth geometry
- Suitable for machining material groups P and K
- Particularly suited to finishing and medium machining

Range of cutting conditions:

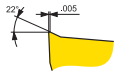
f_z	.005 – .012 [in/tooth]
a_p	.028 – .118 [in]

XNGX 09

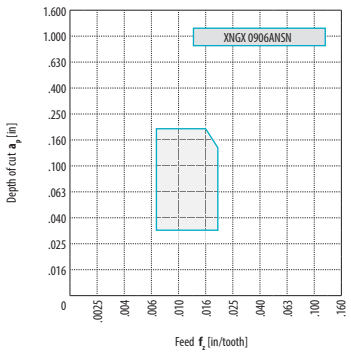
Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Applied to inserts: XNGX 0906ANSN

Profile of cutting edge



Finishing ■ ■
Medium ■ ■
Roughing □ □



- Smoothing geometry
- Suitable for machining material groups P and K
- Suited to light and medium milling

Range of cutting conditions:

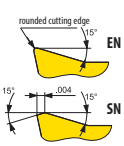
f_z	.007 – .02 [in/tooth]
a_p	.032 – .197 [in]

XPHT

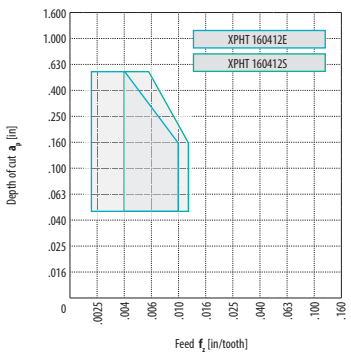
Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description

Applied to inserts: XPHT 160412, XPHT 160412S

Profile of cutting edge



Finishing ■ ■ ◪ □
Medium ■ ■ ◪ □
Roughing ■ ■ ◪ □



- High positive milling geometry
- Supplied with "EN" and "SN" cutting edge designs
- Suitable for machining material groups P and M; can also be used with group K and potentially group S

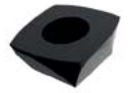
Range of cutting conditions:

f_z	.002(.004) – .012 [in/tooth]
a_p	.047 – .59 [in]

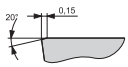
■ Main application ◪ Secondary application □ Supplementary application

ZDCW 07

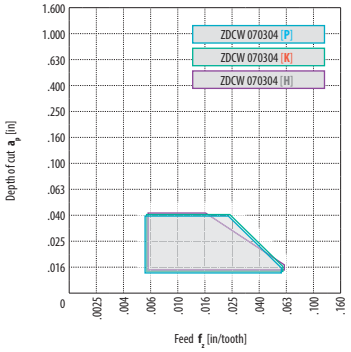
Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: ZDCW 070304



Profile of cutting edge



	P	M	K	N	S	H
Finishing	■	□	■			■
Medium	■	□	■			■
Roughing	■	□	■			◥



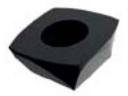
- Special geometry for HFC technology
- Suitable for machining material groups P, K, and H
- Suitable for finishing and medium milling at low depths of cut

Range of cutting conditions:

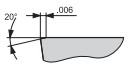
f_z	.006 – .059 [in/tooth]
$a_{p\ max}$	.012 – .04 [in]

ZDCW 09

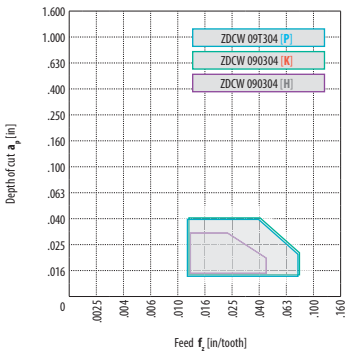
Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: ZDCW 09T304



Profile of cutting edge



	P	M	K	N	S	H
Finishing	■	□	■			■
Medium	■	□	■			■
Roughing	■	□	■			◥



- Special geometry for HFC technology
- Suitable for machining material groups P, K, and H
- Suitable for finishing and medium milling
- Suitable for copy and general machining

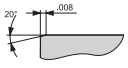
Range of cutting conditions:

f_z	.012 – .079 [in/tooth]
$a_{p\ max}$	.04 [in]

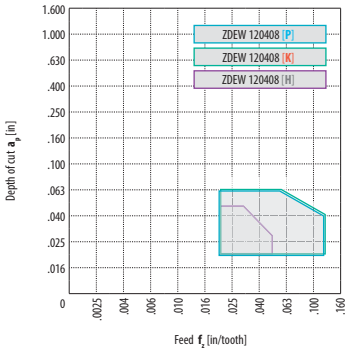
ZDEW

Geometry | Insert | Workpiece material group (Milling: P M K N S H) | Application range | Description | Applied to inserts: ZDEW 120408

Profile of cutting edge



	P	M	K	N	S	H
Finishing	■	□	■			■
Medium	■	□	■			■
Roughing	■	□	■			◥



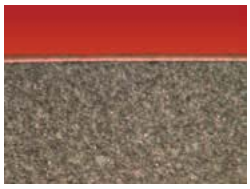
- Special geometry for HFC technology
- Suitable for machining material groups P, K, and H
- Suitable for finishing and medium milling
- Suitable for copy milling and general applications

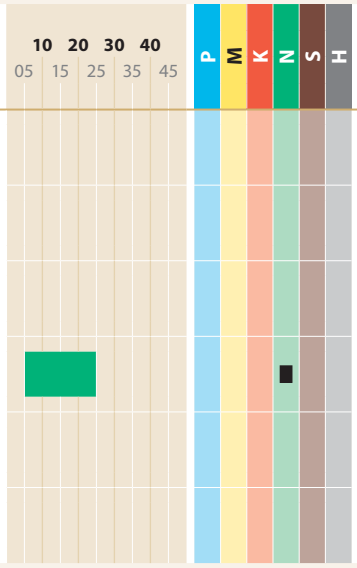
Range of cutting conditions:

f_z	.02 – .118 [in/tooth]
$a_{p\ max}$	.063 [in]

Designation and microstructure	Applications areas	Workpiece material group	Grade description and recommended application

M0315

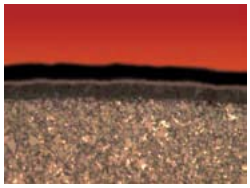


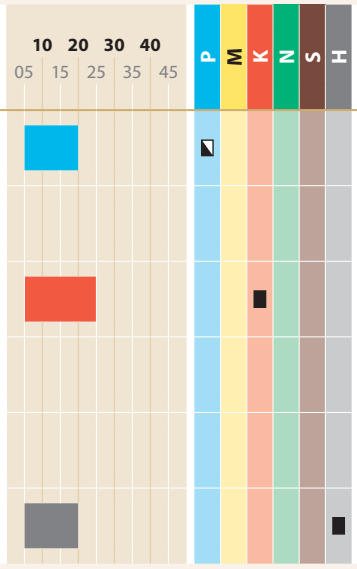


UP! GRADE®

- Sub-micron substrate with a relatively low bonding agent content
- Coating with a very small friction coefficient, applied by PVD method
- Specific cutting edge finish
- Special material for machining non-ferrous metals
- Finishing, semi-roughing work
- Suited to stable machining conditions

M5315

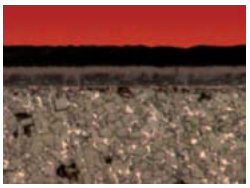


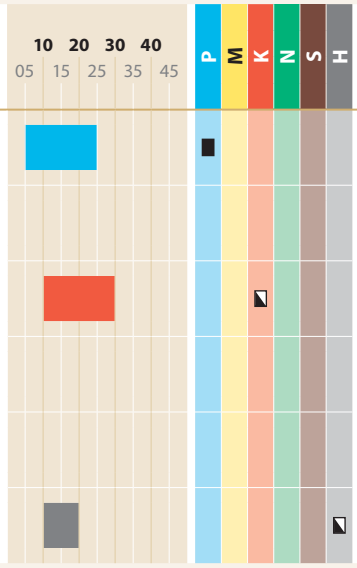


UP! GRADE®

- Type H substrate with a relatively low cobalt content
- Thin MT-CVD coating with a unique Al_2O_3 layer
- First choice for milling grey and ductile cast iron and hardened and heat-treated materials; can also be used for milling harder materials in group P
- High wear resistance
- Suited to stable machining conditions
- Suited to medium to high cutting speeds
- Can be used with dry machining

M9315





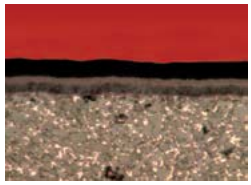
UP! GRADE®

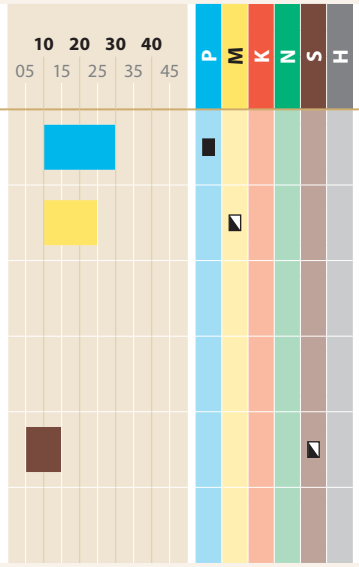
- Fine-grained substrate with a lower content of bonding cobalt phase
- Thin MT-CVD coating with a unique Al_2O_3 layer
- Suitable for machining material group P, potentially for groups K and H
- Suited to medium to high cutting speeds
- High abrasion resistance while retaining a good level of strength
- Can be used with dry machining

■ Main application ◥ Secondary application ☐ Supplementary application

Designation and microstructure	Applications areas	Workpiece material group	Grade description and recommended application

M9325

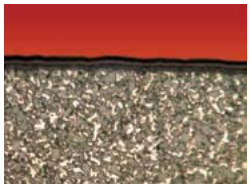


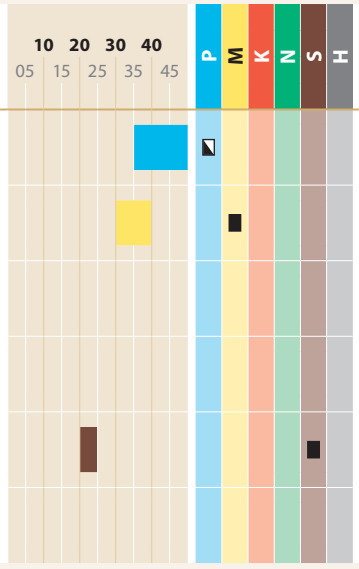


UP! GRADE®

- Fine-grained substrate with a higher content of bonding cobalt phase
- Thin MT-CVD coating with a unique Al_2O_3 layer
- Suitable for machining material group P, potentially also groups M and S
- Suited to medium to higher cutting speeds
- High strength and operational reliability
- Good wear resistance
- Can be used with dry machining; however, when the cutting conditions are ideal, coolant can also be used

M9340

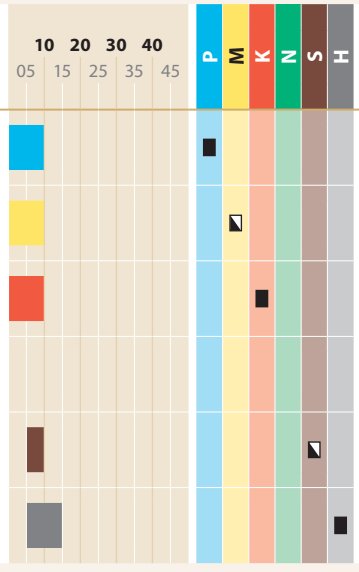




UP! GRADE®

- Substrate with a medium grain size and a high content of bonding cobalt phase
- Thin coating applied by the MT-CVD method with a unique Al_2O_3 layer
- Suitable for machining material groups M, S, and potentially also group P
- Suited to low to medium cutting speeds
- M9300 series material with the highest strength
- For machining with or without a coolant

M8310



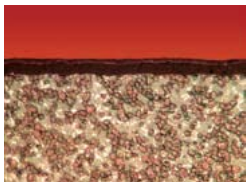
UP! GRADE®

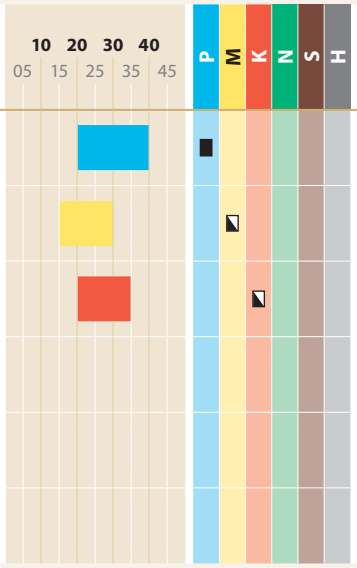
- Highly abrasion-resistant material of the M8300 series
- Ultra sub-micron substrate with a relatively low bonding agent content
- New multi layer AlTiN and TiAlSiN based PVD coating
- Special final coating finish
- Suitable for machining material groups P, K, H, and potentially groups M and S
- Suited to stable machining conditions
- For finishing and semi-finishing operations

■ Main application ◥ Secondary application ☐ Supplementary application

Designation and microstructure	Applications areas	Workpiece material group	Grade description and recommended application

M8325

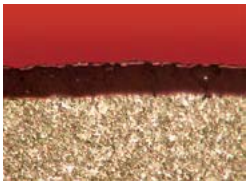


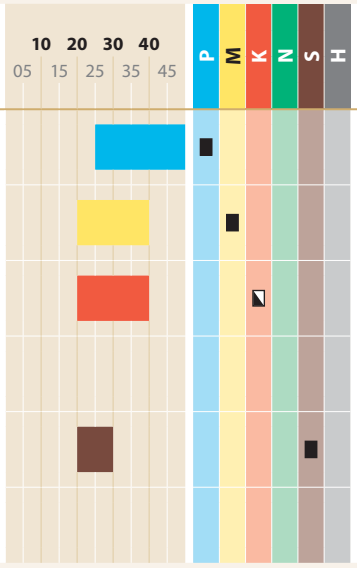


UP! GRADE®

- Type S substrate with a high cubic carbide content
- High level of thermal stability
- New multi layer AlTiN and TiAlSiN based PVD coating
- Special final coating finish
- Suitable for machining material group P, and potentially groups M and K
- Suited to stable machining conditions
- Suited to medium to high cutting speeds and feeds

M8340

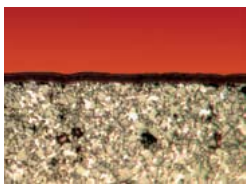


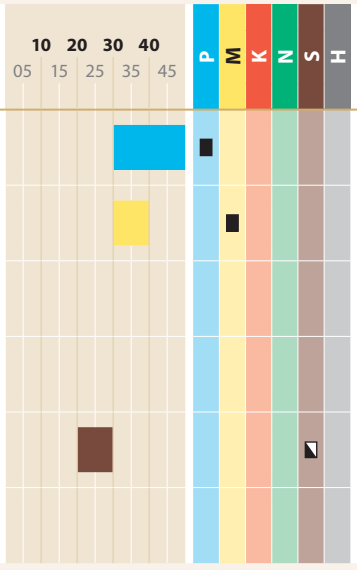


UP! GRADE®

- Wear resistant type H sub-micron substrate
- New pvd coating based on altin layers
- Multilayer coating system for enhanced toughness
- Reduces the occurrence and spreading of comb micro cracks
- Suitable for operations with a high thermal load
- Larger chip cross-sections, wide range of cutting speeds
- Suitable for machining group P, M, S materials, conditionally group K
- Applications with coolant
- Unstable working conditions

M8345





UP! GRADE®

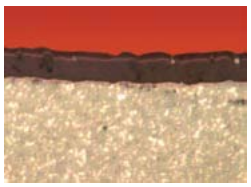
- Fine-grained substrate with a high content of bonding cobalt phase
- High operational reliability (the highest toughness of the 83xx series)
- New multi layer AlTiN and TiAlSiN based PVD coating
- Special final coating finish
- Suitable for machining material groups P and M, and potentially group S
- Suited to unstable machining conditions
- For roughing applications

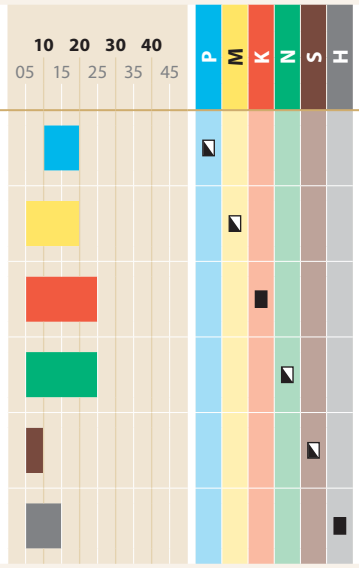
■ Main application ◥ Secondary application ☐ Supplementary application

PRAMET

Designation and microstructure	Applications areas	Workpiece material group	Grade description and recommended application

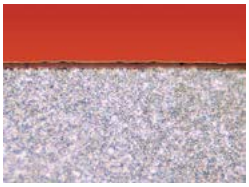
8215

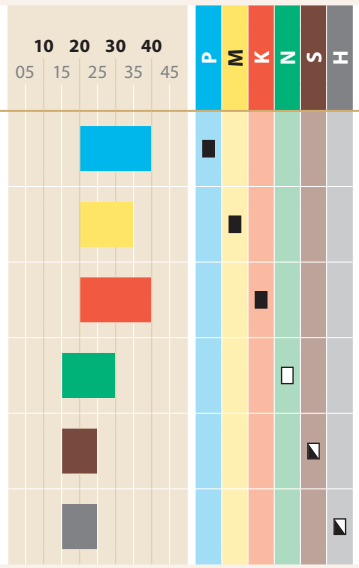




- Type H sub-micron substrate with a relatively low cobalt content
- High abrasion resistance
- New multi layer AlTiN and TiAlSiN based PVD coating
- Very good resistance to spreading micro fissures
- Suitable for a wide range of applications, can be used with almost all machined material groups
- Suitable for operations with a high thermal load
- Suited to high cutting speeds
- Suited to stable machining conditions

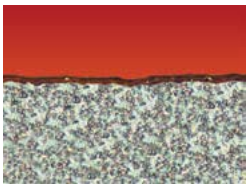
8230

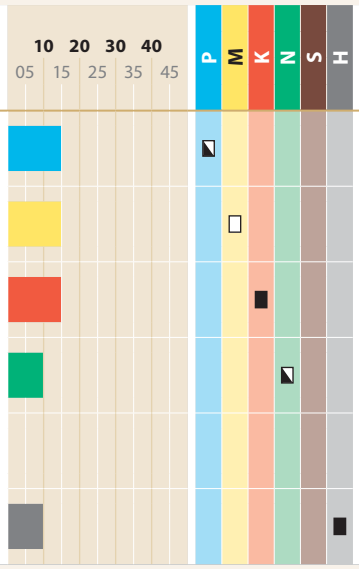




- Type H sub-micron substrate
- Nano-structure thin coating with a high content of Al, applied by PVD method
- Highly versatile cutting material
- Combines good abrasion resistance with good operative reliability
- Can be used with all groups of machined materials
- Medium cutting speeds
- Also suited to unstable machining conditions

7205

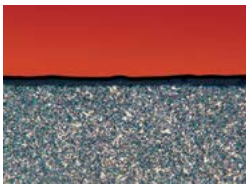


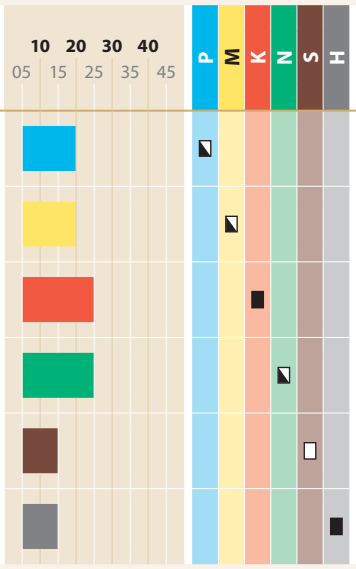


- Ultra sub-micron substrate without cubic carbides (type H) and with a very low cobalt content
- High hardness while maintaining flexural strength
- Very good resistance to mechanical wear
- New type of PVD coating with enhanced resistance to oxidation and unique friction properties
- High speeds and lower to medium chip cross-sections
- Suited to stable machining conditions
- Can be used with practically all groups of machined materials, with the exception of super-alloys (group S)

Designation and microstructure	Applications areas	Workpiece material group	Grade description and recommended application

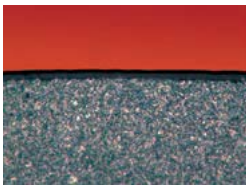
7215

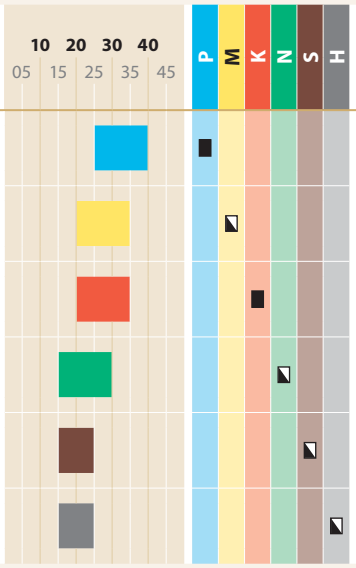




- Sub-micron substrate without cubic carbides (type H) and with a low cobalt content
- New gradient coating applied with the PVD method
- Medium to higher cutting speeds and small to medium chip cross-sections
- Enhanced oxidation resistance
- Unique friction properties
- Suited to stable machining conditions
- Can be used with practically all groups of machined materials

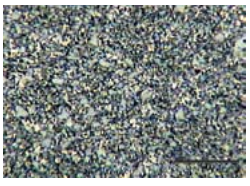
7230

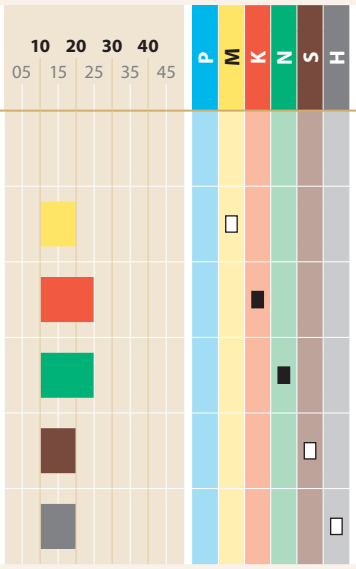




- Sub-micron substrate without cubic carbides (type H) and with a higher cobalt content
- New gradient coating with enhanced resistance to oxidation applied with the PVD method
- Unique friction properties
- Medium cutting speeds and smaller to medium chip cross-sections
- Suited to less favourable machining conditions
- Can be used with practically all groups of machined materials

HF7





- Sub-micron material without cubic carbides (type H) and with a low cobalt content
- Very versatile in terms of machined materials
  (recommended for all material groups with the exception of group P)
- Small to medium chip cross-sections
- Suited to stable machining conditions

■ Main application ◪ Secondary application □ Supplementary application

1. The first step is to assign the material to be machined into one of six groups – see table 1. on page M128.
2. Specify the cutting conditions (light-, medium-, or heavy-duty milling).

   Light milling – one interruption per revolution, good cutting conditions, workpiece with pre-machined surface or surface of rolled blanks and forgings without major defects or roughness in depth of cut $a_p \leq .079$ in.

   Medium milling – one or two interruptions per revolution. Not possible to choose the optimal cutting conditions. Surface of workpiece with skin of rolled blanks, forgings and castings or with minor defects in depth of cut $a_p = .079 – .0157$ in.

   Heavy milling – multiple interruptions per revolution. Unfavourable cutting conditions (negative rake of working angle). Surface of work piece with rough skin of castings, forgings and burnt parts. Variable depth of cut $a_p = .118 – .394$ in.

   Feed range for each group dependent on cutting conditions. At the worsening of cutting conditions, it is necessary to reduce the upper limit of feed.
3. In accordance with tables 2a – 7a on pages M154 – M164, choose the suitable combination of grade and cutting edge with regard to the machined material and the pre-chosen cutting insert and tool. There are three possible solutions for each group of machined materials.
4. Use tables 2b – 7b on pages M155 – M165 to choose the initial cutting speed with regard to type of tool or cutting insert, cutting conditions and milling grade.
5. In tables 2b – 7b on pages M155 – M165 are the speed factors for recalculating the cutting speed with regard to the machine's condition, the tool and cutting edge service life, and the hardness of the workpiece material. If needed, however, the following can be used to calculate the actual speed:

$$v_c = v_{30} \cdot k_{VX} \cdot k_{VT} \cdot k_{VHB} \cdot (k_{VM})$$

Note: The cutting speed calculated in this way is the initial value (default), which is used to establish the basic cutting speed for a given operation.

Variations in the machinability of the workpiece material are the main reason for needing to adjust the cutting speed.

PRAMET

Table 2a

CHOICE OF MILLING CUTTER AND INITIAL CUTTING CONDITIONS

Group	P																	
	Type of tool											Type of insert	Cutting conditions					
													Finishing		Medium		Roughing	
1												HNGX 06 HNGX 09 HNEF 0905…….	I	M9315 M5315 S (E)	I	M9325 S	I	M9340 S
	S45HN06C S45HN09C	SNH06	SNH06	C60HN09									II	8215 M8310	II	8215 M8310 S	II	8230 S
													III	8230 S (E)	III	8230 S	III	M8340 S
2												SEMT 09 SDEW, SDEX 09.. SOMT 09T3.. XPHT 1604..	I	8215 M9315 S (E)	I	8230 M9325 S	I	M8340 M9340 S
	S45SE09F	SSE09	SSD09		SXP16								II	8230 S (E)	II	8230 S	II	M8340 S
													III	8230 S (E)	III	M8340 S	III	M8340 S
3												ADMX, ADEX 11T3.. ADMX, ADEX 1606.. APKT 1003PD, APKT 1604.. LNGX 12, LNGU 16 SOMT 09T30.. SDMT 120508SR.. ADKX 15T3…..	I	8215 M9315 S (E)	I	8230 M9325 S	I	M8340 M9340 S, P
	S90AD11E S90AD16E	SAD11E SAD16E	SAD11E SAD16E	S90LN12 S90LN16	SLN12	SLN12	S90S009	SS009	C90AD15	CAD15	CAD15		II	8215 S (E)	II	8230 S	II	M8340 S, P
													III	8230 S (E)	III	M8340 S	III	M8340 S, P
4												RDHX, RDGT, RDHT 0702.., RDHX, RDGT, RDHT 1003.. RDHX, RDGT, RDHT 12T3.. RDHX, RDGT, RDHT 1604.. ZDCW 07, ZDCW 09, ZDEW 12 PD..0905	I	M8310 7205 E (S)	I	M8325 7215 S (E)	I	M8345 7230 S
	SCRD12, 16	SRD07, 10, 12, 16	W-SRD10	SMORC12, 16	SMOZD09, 12	SZD07, 09, 12	SZD07 SZD09, SZD12	S19SPD09	SPD09				II	M8310 8215 E (S)	II	M8325 8230 S (E)	II	M8345 M8340 S
													III	8215 E (S)	III	8230 S (E)	III	M8340 S
5												SN.. 11 (12)	I	8215 E (S)	I	8230 S (E)	I	M8340 S
	S90SN	S90SN-R											II	8230 S (E)	II	8230 S (E)	II	8230 S (E)
													III	–	III	–	III	–
6												ADMX, ADEX 11T3..	I	8230 M9315 S (E)	I	8230 M9325 S (E)	I	M8340 M9340 S
	S90AD11E	SAD11E											II	8230 S	II	8230 S	II	M8340 S
													III	–	III	–	III	–
7												SBMR 22 PNMU 1308..	I	8230 S	I	M8345 S	I	M8345 S
	F60SB22	S57PN13											II	8215 S	II	8230 S	II	–
													III	–	III	–	III	–

Group	Feed range according to the cutting conditions			M5315	M9315	M9325	M9340	M8310	M8325	M8326	M8340	M8345	M8346	8215	8230	7205	7215	7230
				P														
1	Finishing	.004	.008	1425	1395	1345	885	985	-	-	1150	-	-	1200	1050	-	-	-
	Medium	.004	.010	1330	1280	1215	855	885	-	-	1015	-	-	1015	920	-	-	-
	Roughing	.004	.012	1215	1150	1065	835	770	-	-	885	-	-	855	785	-	-	-
2	Finishing	.004	.008	1330	1310	1295	785	950	-	-	1100	-	-	1180	1015	-	-	-
	Medium	.004	.012	1215	1180	1150	755	835	-	-	970	-	-	1000	885	-	-	-
	Roughing	.004	.014	1165	1100	1015	805	740	-	-	835	-	-	805	755	-	-	-
3	Finishing	.004	.006	1245	1215	1180	770	855	-	-	985	740	-	1035	920	-	-	-
	Medium	.004	.010	1200	1150	1085	770	805	-	-	920	690	-	920	835	-	-	-
	Roughing	.004	.012	1130	1065	985	770	720	-	-	820	625	-	785	740	-	-	-
4	Finishing	-	-	-	-	1380	985	1015	870	-	1165	870	-	1165	1050	1035	950	805
	Medium	-	-	-	-	1265	900	935	805	-	1065	805	-	1065	970	950	870	740
	Roughing	-	-	-	-	1150	755	855	720	-	970	720	-	1015	885	855	785	675
5	Finishing	.004	.008	-	-	-	-	-	-	-	970	-	-	970	885	-	-	-
	Medium	.004	.012	-	-	-	-	-	-	-	870	-	-	885	805	-	-	-
	Roughing	.004	.020	-	-	-	-	-	-	-	770	-	-	805	720	-	-	-
6	Finishing	.004	.006	820	770	720	540	540	460	-	605	460	-	605	560	-	-	-
	Medium	.004	.008	720	675	605	490	460	395	-	510	395	-	475	460	-	-	-
	Roughing	.003	.010	-	-	490	460	-	-	-	410	310	-	-	360	-	-	-
7	Finishing	.010	.016	-	-	-	-	-	-	705	-	625	590	885	820	-	-	-
	Medium	.010	.020	-	-	-	-	-	-	575	-	510	460	690	640	-	-	-
	Roughing	.010	.024	-	-	-	-	-	-	510	-	445	395	-	560	-	-	-

P

CORRECTION v_c

Subgroup	P1	P2	P3	P4
Workpiece hardness factor				
Hardness	kv_{HBP1}	kv_{HBP2}	kv_{HBP3}	kv_{HBP4}
120	**1.53**	1.18	.94	.71
140	**1.46**	1.12	.90	.67
160	**1.37**	1.05	.84	.63
180	**1.30**	**1.00**	.80	.60
200	**1.24**	**.95**	.76	.57
220	**1.17**	**.90**	**.72**	.54
240	**1.12**	**.86**	**.69**	.52
260	**1.07**	**.82**	**.66**	**.49**
280	1.04	**.80**	**.64**	**.48**
300	1.00	**.77**	**.62**	**.46**
320	.96	.74	**.59**	**.44**
340	.92	.71	**.57**	**.43**
360	.88	.68	.54	**.41**
375	.85	.65	.52	**.39**

Correction for durability (general machining)

Durability [min]	k_{vT}
15	1.23
20	1.13
30	1.00
45	.89
60	.81
90	.72

Correction for durability (heavy roughing)

Durability [min]	k_{vT}
30	1.23
60	1.00
90	.89
120	.81

Speed factor k_{vx}

Forged and cast piece skin	.70 - .90
Good machine conditions	1.05 - 1.20
Bad machine conditions	.85 - .95

PRAMET

Table 3a

CHOICE OF MILLING CUTTER AND INITIAL CUTTING CONDITIONS

M

Group	Type of tool											Type of insert	Cutting conditions					
													Finishing		Medium		Roughing	
1												HNGX 06 HNGX 09 HNEF 0905…….	I	M9325 S (E)	I	8215 S	I	M9340 S
													II	8215 (M8310) S (E)	II	8230 S	II	8230 S
	S45HN06C S45HN09C	SNH06	SNH06	C60HN09									III	M9340 S (E)	III	8230 S	III	M8340 S
2												SEMT 09 SDEW, SDEX 09.. SOMT 09T3.. XPHT 1604..	I	8215 S (E)	I	8230 M9325 S	I	M8340 M9340 S
													II	8230 S (E)	II	8230 S	II	M8340 S
	S45SE09F	SSE09	SSD09		SXP16								III	8230 S (E)	III	M8340 S	III	M8340 S
3												ADMX, ADEX 11T3.. ADMX ,ADEX 1606.. APKT 1003PD, APKT 1604.. LNGX 12, LNGU 16 SOMT 09T30.. SDMT 120508SR.. ADKX 15T3…..	I	8215 M8310 S (E)	I	8230 M9325 S	I	M8340 M9340 S, P
													II	8215 M8310 S (E)	II	8230 S	II	M8340 S, P
	S90AD11E S90AD16E	SAD11E SAD16E	SAD11E SAD16E	S90LN12 S90LN16	SLN12	SLN12	S90S009	SS009	C90AD15	CAD15	CAD15		III	8230 M8325 S (E)	III	M8340 S	III	M8340 S, P
4												RDHX, RDGT, RDHT 0702.., RDHX, RDGT, RDHT 1003.. RDHX, RDGT, RDHT 12T3.. RDHX, RDGT, RDHT 1604.. ZDCW 07, ZDCW 09, ZDEW 12 PD..0905	I	M8310 7205 E (S)	I	M8325 7215 S (E)	I	M8345 7230 S
													II	M8310 8215 E (S)	II	M8325 8230 S (E)	II	M8345 M8340 S
	SCRD12, 16	SRD07, 10, 12, 16	W-SRD10	SMORC12, 16	SMOZD09, 12	SZD07, 09, 12	SZD07 SZD09, SZD12	S19SPD09	SPD09				III	8215 E (S)	III	8230 S (E)	III	M8340 S
5												SN.. 11 (12)	I	8215 E (S)	I	8230 S (E)	I	M8340 S
													II	8230 S (E)	II	M8340 S	II	M8340 S
	S90SN	S90SN-R											III	–	III	–	III	–
6												ADMX, ADEX 11T3..	I	8230 M9325 S (E)	I	8230 M9325 S (E)	I	M8340 M9340 S
													II	8230 S	II	8230 S	II	M8340 S
	S90AD11E	SAD11E											III	–	III	–	III	–
7												SBMR 22 PNMU 1308..	I	8230 S	I	M8345 S	I	M8345 S
													II	8215 S	II	8230 S	II	–
	F60SB22	S57PN13											III	–	III	–	III	–

Group	M															
	Feed range according to the cutting conditions			M9325	M9340	M8310	M8325	M8340	M8345	M8346	8215	8230	7205	7215	7230	HF7
1	Finishing	.004	.008	805	525	590	-	690	-	-	705	625	-	-	-	-
	Medium	.004	.010	720	510	525	-	605	-	-	605	540	-	-	-	-
	Roughing	.004	.012	640	490	460	-	525	-	-	510	460	-	-	-	-
2	Finishing	.004	.008	770	460	560	-	655	-	-	705	605	-	-	-	245
	Medium	.004	.012	690	445	490	-	575	-	-	590	525	-	-	-	215
	Roughing	.004	.014	605	475	445	-	490	-	-	475	445	-	-	-	-
3	Finishing	.004	.006	705	460	510	-	590	445	-	605	540	-	-	-	215
	Medium	.004	.010	640	460	475	-	540	410	-	540	490	-	-	-	215
	Roughing	.004	.012	590	460	425	-	490	360	-	460	445	-	-	-	-
4	Finishing	-	-	820	590	605	510	690	510	-	690	625	605	560	475	260
	Medium	-	-	755	540	560	475	640	475	-	640	575	560	510	445	245
	Roughing	-	-	690	445	510	425	575	425	-	605	525	510	460	395	-
5	Finishing	.004	.008	-	-	-	-	575	-	-	575	525	-	-	-	-
	Medium	.004	.012	-	-	-	-	510	-	-	525	475	-	-	-	-
	Roughing	.004	.020	-	-	-	-	460	-	-	475	425	-	-	-	-
6	Finishing	.004	.006	425	310	310	260	360	260	-	360	330	-	-	-	130
	Medium	.004	.008	360	295	260	230	295	230	-	280	260	-	-	-	115
	Roughing	.003	.010	295	260	-	-	245	180	-	-	215	-	-	-	-
7	Finishing	.010	.016	-	-	-	-	-	360	345	525	490	-	-	-	-
	Medium	.010	.020	-	-	-	-	-	295	260	410	375	-	-	-	-
	Roughing	.010	.024	-	-	-	-	-	260	230	-	330	-	-	-	-

M

CORRECTION v_c

Subgroup	M1	M2	M3	M4
Workpiece hardness factor				
Hardness	kv_{HBP1}	kv_{HBP2}	kv_{HBP3}	kv_{HBP4}
120	**1.35**	1.31	1.24	1.15
140	**1.28**	**1.24**	1.18	1.10
160	**1.22**	**1.18**	**1.12**	1.04
180	**1.14**	**1.11**	**1.05**	.98
200	**1.09**	**1.06**	**1.00**	.93
220	**1.03**	**1.00**	**.95**	.88
240	.98	**.95**	**.90**	**.84**
260	.93	**.91**	**.86**	**.80**
280	.89	**.87**	**.82**	**.76**
300	.87	**.84**	**.80**	**.74**
320	.84	**.81**	.77	**.72**
340	.80	.78	.74	**.69**
360	.77	.75	.71	**.66**
375	.74	.72	.68	**.63**

Correction for durability (general machining)

Durability [min]	k_{vT}
15	1.23
20	1.13
30	1.00
45	.89
60	.81
90	.72

Correction for durability (heavy roughing)

Durability [min]	k_{vT}
30	1.23
60	1.00
90	.89
120	.81

Speed factor k_{vx}

Forged and cast piece skin	.70 - .90
Good machine conditions	1.05 - 1.20
Bad machine conditions	.85 - .95

PRAMET

Table 4a

CHOICE OF MILLING CUTTER AND INITIAL CUTTING CONDITIONS

K

Group	Type of tool											Type of insert	Cutting conditions					
													Finishing		Medium		Roughing	
1												HNGX 06 HNGX 09 HNEF 0905…….	I	M5315 S (E)	I	M9315 S	I	M9325 S
	S45HN06C S45HN09C	SNH06	SNH06	C60HN09									II	8215 M8310	II	8215 M8310 S	II	8230 S
													III	8230 S (E)	III	8230 S	III	M8340 S
2												SEMT 09 SDEW, SDEX 09.. SOMT 09T3.. XPHT 1604..	I	8215 M5315 S (E)	I	8230 M9315 S	I	M8340 M9325 S
	S45SE09F	SSE09	SSD09		SXP16								II	8230 S (E)	II	8230 S	II	M8340 S
													III	8230 S (E)	III	M8340 S	III	M8340 S
3												ADMX, ADEX 11T3.. ADMX, ADEX 1606.. APKT 1003PD, APKT 1604.. LNGX 12, LNGU 16 SOMT 09T30.. SDMT 120508SR.. ADKX 15T3…..	I	8215 M5315 S (E)	I	8230 M9315 S	I	M8340 M9325 S, P
	S90AD11E S90AD16E	SAD11E SAD16E	SAD11E SAD16E	S90LN12 S90LN16	SLN12	SLN12	S90S009	SS009	C90AD15	CAD15	CAD15		II	8215 S (E)	II	8230 S	II	M8340 S, P
													III	8230 S (E)	III	8230 S	III	M8340 S, P
4												RDHX, RDGT, RDHT 0702.., RDHX, RDGT, RDHT 1003.. RDHX, RDGT, RDHT 12T3.. RDHX, RDGT, RDHT 1604.. ZDCW 07, ZDCW 09, ZDEW 12 PD.. 0905	I	M8310 7205 E (S)	I	M8325 7215 S (E)	I	M8345 7230 S
	SCRD12, 16	SRD07, 10, 12, 16	W-SRD10	SMORC12, 16	SMOZD09, 12	SZD07, 09, 12	SZD07 SZD09, SZD12	S19SPD09	SPD09				II	M8310 8215 E (S)	II	M8325 8230 S (E)	II	M8325 M8340 S
													III	8215 E (S)	III	8230 S (E)	III	M8340 S
5												SN.. 11 (12)	I	8215 E (S)	I	8230 S (E)	I	M8340 S
	S90SN	S90SN-R											II	–	II	–	II	–
													III	–	III	–	III	–
6												ADMX, ADEX 11T3..	I	8230 M9315 S (E)	I	8230 M9325 S (E)	I	M8340 M9325 S
	S90AD11E	SAD11E											II	8230 S	II	8230 S	II	M8340 S
													III	–	III	–	III	–
7												SBMR 22 PNMU 1308..	I	8230 S	I	M8345 S	I	M8345 S
	F60SB22	S57PN13											II	8215 S	II	8230 S	II	–
													III	–	III	–	III	–

Group	K														
	Feed range according to the cutting conditions			M5315	M9315	M9325	M8310	M8325	M8340	8215	8230	7205	7215	7230	HF7
1	Finishing	.004	.008	1345	1310	1265	935	-	1085	1130	985	-	-	-	-
	Medium	.004	.010	1245	1215	1150	835	-	950	950	870	-	-	-	-
	Roughing	.004	.012	1150	1085	1000	720	-	835	805	740	-	-	-	-
2	Finishing	.004	.008	1245	1245	1230	900	-	1035	1115	950	-	-	-	395
	Medium	.004	.012	1150	1115	1085	785	-	920	935	835	-	-	-	345
	Roughing	.004	.014	1100	1035	950	690	-	785	755	705	-	-	-	-
3	Finishing	.004	.006	1180	1150	1115	805	-	935	970	870	-	-	-	345
	Medium	.004	.010	1130	1085	1015	755	-	870	870	785	-	-	-	330
	Roughing	.004	.012	1065	1000	935	675	-	770	740	690	-	-	-	-
4	Finishing	-	-	-	-	1295	950	820	1100	1100	985	970	900	755	410
	Medium	-	-	-	-	1200	885	755	1000	1000	920	900	820	690	375
	Roughing	-	-	-	-	1085	805	675	920	950	835	805	740	625	-
5	Finishing	.004	.008	-	-	-	-	-	920	920	835	-	-	-	-
	Medium	.004	.012	-	-	-	-	-	820	835	755	-	-	-	-
	Roughing	.004	.020	-	-	-	-	-	720	755	675	-	-	-	-
6	Finishing	.004	.006	770	720	675	510	425	575	575	525	-	-	-	215
	Medium	.004	.008	675	625	575	425	360	475	445	425	-	-	-	180
	Roughing	.003	.010	-	-	460	-	-	375	-	330	-	-	-	-
7	Finishing	.010	.016	-	-	-	-	-	-	835	770	-	-	-	-
	Medium	.010	.020	-	-	-	-	-	-	640	605	-	-	-	-
	Roughing	.010	.024	-	-	-	-	-	-	-	525	-	-	-	-

K

CORRECTION v_c

Subgroup	K1	K2	K3	K4
Workpiece hardness factor				
Hardness	kv_{HBP1}	kv_{HBP2}	kv_{HBP3}	kv_{HBP4}
120	1.60	1.52	1.44	1.36
140	1.45	1.38	1.31	1.23
160	1.35	**1.28**	1.22	1.15
180	1.25	**1.19**	**1.13**	1.06
200	**1.10**	**1.05**	**.99**	.94
220	**1.00**	**.95**	**.90**	.85
240	**.90**	**.86**	**.81**	.77
260	**.80**	.76	.72	.68
280	**.70**	.67	.63	**.60**
300	.65	.62	.59	**.55**
320	.60	.57	.54	**.51**
340	.55	.52	.50	**.47**
360	.50	.48	.45	.43
380	.40	.38	.36	.34

Correction for durability (general machining)	
Durability [min]	k_{vT}
15	1.23
20	1.13
30	1.00
45	.89
60	.81
90	.72

Correction for durability (heavy roughing)	
Durability [min]	k_{vT}
30	1.23
60	1.00
90	.89
120	.81

Speed factor k_{vx}	
Forged and cast piece skin	.70 - .90
Good machine conditions	1.05 - 1.20
Bad machine conditions	.85 - .95

PRAMET

Table 5a

CHOICE OF MILLING CUTTER AND INITIAL CUTTING CONDITIONS

N

Group	Type of tool											Type of insert	Cutting conditions					
													Finishing		Medium		Roughing	
1												HNGX 06 HNGX 09 HNEF 0905…….	I	8215 (M8310) F (E)	I	8215 (M8310) F (E)	I	8215 (M8310) E (F)
													II	–	II	–	II	–
	S45HN06C S45HN09C	SNH06	SNH06	C60HN09									III	–	III	–	III	–
2												SEMT 09 SDEW, SDEX 09.. SOMT 09T3.. XPHT 1604..	I	8215 (M8310) F (E)	I	8215 (M8310) F (E)	I	8215 (M8310) E (F)
													II	HF7 F (E)	II	HF7 F (E)	II	HF7 F (E)
	S45SE09F	SSE09	SSD09		SXP16								III	–	III	–	III	–
3												ADMX, ADEX 11T3.. ADMX, ADEX 1606.. APKT 1003PD, APKT 1604.. LNGX 12, LNGU 16 SOMT 09T30.. SDMT 120508SR.. ADKX 15T3….	I	8215 M8310 F (E)	I	8215 M8310 F (E)	I	8215 M8310 F (E)
													II	–	II	–	II	–
	S90AD11E S90AD16E	SAD11E SAD16E	SAD11E SAD16E	S90LN12 S90LN16	SLN12	SLN12	S90S009	SS009	C90AD15	CAD15	CAD15		III	–	III	–	III	–
4												RDHX, RDGT, RDHT 0702.., RDHX, RDGT, RDHT 1003.. RDHX, RDGT, RDHT 12T3.. RDHX, RDGT, RDHT 1604.. ZDCW 07, ZDCW 09, ZDEW 12 PD.. 0905	I	HF7 F (E)	I	HF7 F (E)	I	HF7 F (E)
													II	M8310 F (E)	II	M8310 F (E)	II	M8310 F (E)
	SCRD12, 16	SRD07, 10, 12, 16	W-SRD10	SMORC12, 16	SMOZD09, 12	SZD07, 09, 12	SZD07 SZD09, SZD12	S19SPD09	SPD09				III	–	III	–	III	–
5												SN.. 11 (12)	I	8215 8230 E	I	8215 8230 E	I	8215 8230 E
													II	–	II	–	II	–
	S90SN	S90SN-R											III	–	III	–	III	–
6												ADMX, ADEX 11T3..	I	–	I	–	I	–
													II	–	II	–	II	–
	S90AD11E	SAD11E											III	–	III	–	III	–
7												SBMR 22 PNMU 1308..	I	–	I	–	I	–
													II	–	II	–	II	–
	F60SB22	S57PN13											III	–	III	–	III	–

CHOICE OF MILLING CUTTER AND INITIAL CUTTING CONDITIONS

Group	N								
	Feed range according to the cutting conditions			M0315	8215	8230	7205	7215	7230	HF7
1	Finishing	.004	.008	-	2985	2625	-	-	-	-
	Medium	.004	.010	-	2545	2295	-	-	-	-
	Roughing	.004	.012	-	2135	1970	-	-	-	-
2	Finishing	.004	.008	2380	2955	2545	-	-	-	1065
	Medium	.004	.012	2085	2495	2215	-	-	-	935
	Roughing	.004	.014	1835	2000	1885	-	-	-	-
3	Finishing	.004	.006	2135	2575	2295	-	-	-	935
	Medium	.004	.010	2000	2295	2085	-	-	-	900
	Roughing	.004	.012	1805	1970	1835	-	-	-	-
4	Finishing	-	-	2545	2905	2625	2575	2380	2000	1100
	Medium	-	-	2330	2660	2410	2380	2165	1835	1015
	Roughing	-	-	2135	2545	2215	2135	1970	1675	-
5	Finishing	.004	.008	-	2410	2215	-	-	-	-
	Medium	.004	.012	-	2215	2000	-	-	-	-
	Roughing	.004	.020	-	2000	1805	-	-	-	-
6	Finishing	.004	.006	-	-	-	-	-	-	-
	Medium	.004	.008	-	-	-	-	-	-	-
	Roughing	.003	.010	-	-	-	-	-	-	-
7	Finishing	.010	.016	-	-	-	-	-	-	-
	Medium	.010	.020	-	-	-	-	-	-	-
	Roughing	.010	.024	-	-	-	-	-	-	-

N

CORRECTION v_c

Subgroup	N1	N2	N3	N4

Workpiece hardness factor

Legierungsarten / Alloy type	k_{vx}	Sub-group
Electrotechnical aluminium	2.00	N1
Al alloys formed. unhardened HB 60	1.50	
Al alloys formed. hardened HB100	**1.00**	
Al alloys cast. unhardened HB75	.90	N2
Al alloys cast. hardened HB90	.65	
Al alloys cast. unhardened HB 130 >12% Si	1.0 PKD / .20	
Highly machinable alloys (>1%Pb)	.90	N3
Brass and lead bronze (<1%Pb)	.75	
Other brass HB <90	.60	
Other brass HB >90	.54	N4
Bronze electrolytic Cu	.40	
Hard and very hard bronze	.6 PKD / .20	

Correction for durability (general machining)

Durability [min]	k_{VT}
15	1.23
20	1.13
30	1.00
45	.89
60	.81
90	.72

Speed factor k_{vx}

Forged and cast piece skin	.70 - .90
Good machine conditions	1.05 - 1.20
Bad machine conditions	.85 - .95

PRAMET

Table 6a

CHOICE OF MILLING CUTTER AND INITIAL CUTTING CONDITIONS

S

Group	Type of tool											Type of insert	Cutting conditions					
													Finishing		Medium		Roughing	
1												HNGX 06 HNGX 09 HNEF 0905…….	I	M9325 S (E)	I	8215 S	I	–
													II	8215 (M8310) S (E)	II	8230 S	II	–
	S45HN06C S45HN09C	SNH06	SNH06	C60HN09									III	M9340 S (E)	III	8230 S	III	–
2												SEMT 09 SDEW, SDEX 09.. SOMT 09T3.. XPHT 1604..	I	8215 S (E)	I	8230 M9325 S	I	–
													II	8230 S (E)	II	8230 S	II	–
	S45SE09F	SSE09	SSD09		SXP16								III	8230 S (E)	III	M8340 S	III	–
3												ADMX, ADEX 11T3.. ADMX, ADEX 1606.. APKT 1003PD, APKT 1604.. LNGX 12, LNGU 16 SOMT 09T30.. SDMT 120508SR.. ADKX 15T3…..	I	8215 M8310 S (E)	I	8230 M9325 S	I	–
													II	8215 M8310 S (E)	II	8230 S	II	–
	S90AD11E S90AD16E	SAD11E SAD16E	SAD11E SAD16E	S90LN12 S90LN16	SLN12	SLN12	S90S009	SS009	C90AD15	CAD15	CAD15		III	8230 M8325 S (E)	III	M8340 S	III	–
4												RDHX, RDGT, RDHT 0702.., RDHX, RDGT, RDHT 1003.. RDHX, RDGT, RDHT 12T3.. RDHX, RDGT, RDHT 1604.. ZDCW 07, ZDCW 09, ZDEW 12 PD.. 0905	I	M8310 7205 E (S)	I	M8325 7215 S (E)	I	–
													II	M8310 8215 E (S)	II	M8325 8230 S (E)	II	–
	SCRD12, 16	SRD07, 10, 12, 16	W-SRD10	SMORC12, 16	SMOZD09, 12	SZD07, 09, 12	SZD07 SZD09˝, SZD12	S19SPD09	SPD09				III	8215 E (S)	III	8230 S (E)	III	–
5												SN.. 11 (12)	I	8215 E (S)	I	8230 S (E)	I	–
													II	8230 S (E)	II	M8340 S	II	–
	S90SN	S90SN-R											III	–	III	–	III	–
6												ADMX, ADEX 11T3..	I	–	I	–	I	–
													II	–	II	–	II	–
	S90AD11E	SAD11E											III	–	III	–	III	–
7												SBMR 22 PNMU 1308..	I	–	I	–	I	–
													II	–	II	–	II	–
	F60SB22	S57PN13											III	–	III	–	III	–

Group	S											
	Feed range according to the cutting conditions			M9325	M9340	M8310	M8340	M8345	8215	8230	7215	7230	HF7
1	Finishing	.004	.008	395	260	295	345	-	345	310	-	-	-
	Medium	.004	.010	360	245	260	295	-	295	260	-	-	-
	Roughing	.004	.012	-	-	-	260	-	-	-	-	-	-
2	Finishing	.004	.008	375	230	280	330	-	345	295	-	-	115
	Medium	.004	.012	345	215	245	280	-	295	260	-	-	100
	Roughing	.004	.014	-	-	-	245	-	-	-	-	-	-
3	Finishing	.004	.006	345	230	245	295	215	295	260	-	-	100
	Medium	.004	.010	310	230	230	260	195	260	245	-	-	100
	Roughing	.004	.012	-	-	-	245	-	-	-	-	-	-
4	Finishing	-	-	410	295	295	345	245	345	310	280	230	130
	Medium	-	-	375	260	280	310	230	310	280	245	215	115
	Roughing	-	-	-	-	-	280	-	-	-	-	-	-
5	Finishing	.004	.008	-	-	-	280	-	280	260	-	-	-
	Medium	.004	.012	-	-	-	245	-	260	230	-	-	-
	Roughing	.004	.020	-	-	-	230	-	-	-	-	-	-
6	Finishing	.004	.006	-	-	-	180	-	-	-	-	-	-
	Medium	.004	.008	-	-	-	150	-	-	-	-	-	-
	Roughing	.003	.010	-	-	-	115	-	-	-	-	-	-
7	Finishing	.010	.016	-	-	-	-	-	-	-	-	-	-
	Medium	.010	.020	-	-	-	-	-	-	-	-	-	-
	Roughing	.010	.024	-	-	-	-	-	-	-	-	-	-

S

CORRECTION v_c

Subgroup	S1	S2	S3	S4
Workpiece hardness factor				
Hardness	kv_{HBP1}	kv_{HBP2}	kv_{HBP3}	kv_{HBP4}
180	**2.14**	**1.46**	1.22	.92
200	**2.01**	**1.38**	1.15	**.93**
210	**1.93**	**1.32**	1.10	**.83**
220	**1.89**	**1.30**	1.08	**.81**
230	**1.84**	**1.26**	**1.05**	**.79**
240	**1.80**	**1.24**	**1.03**	**.77**
250	**1.75**	**1.20**	**1.00**	**.75**
260	**1.70**	**1.16**	**.97**	**.73**
280	**1.61**	**1.10**	**.92**	**.69**
300	**1.54**	1.06	**.88**	**.66**
320	**1.47**	1.01	**.84**	**.63**
340	**1.40**	.96	**.80**	.60
350	**1.37**	.94	**.78**	.59
360	**1.30**	.89	.74	.56

Correction for durability (general machining)

Durability [min]	k_{vT}
15	1.23
20	1.13
30	1.00
45	.89
60	.81
90	.72

Speed factor k_{vx}

Forged and cast piece skin	.70 - .90
Good machine conditions	1.05 - 1.20
Bad machine conditions	.85 - .95

PRAMET

Table 7a

CHOICE OF MILLING CUTTER AND INITIAL CUTTING CONDITIONS

H

Group	Type of tool											Type of insert	Cutting conditions					
													Finishing		Medium		Roughing	
1												HNGX 06 HNGX 09 HNEF 0905……	I	M5315 S (E)	I	M9315 S	I	–
													II	8215 M8310	II	8215 M8310 S	II	–
	S45HN06C S45HN09C	SNH06	SNH06	C60HN09									III	8230 S (E)	III	8230 S	III	–
2												SEMT 09 SDEW, SDEX 09.. SOMT 09T3.. XPHT 1604..	I	8215 M5315 S (E)	I	8230 M9315 S	I	–
													II	8230 S (E)	II	8230 S	II	–
	S45SE09F	SSE09	SSD09		SXP16								III	8230 S (E)	III	M8340 S	III	–
3												ADMX, ADEX 11T3.. ADMX, ADEX 1606.. APKT 1003PD, APKT 1604.. LNGX 12, LNGU 16 SOMT 09T30.. SDMT 120508SR.. ADKX 15T3…..	I	8215 M5315 S (E)	I	8230 M9315 S	I	–
													II	8215 S (E)	II	8230 S	II	–
	S90AD11E S90AD16E	SAD11E SAD16E	SAD11E SAD16E	S90LN12 S90LN16	SLN12	SLN12	S90S009	SS009	C90AD15	CAD15	CAD15		III	8230 S (E)	III	8230 S	III	–
4												RDHX, RDGT, RDHT 0702.., RDHX, RDGT, RDHT 1003.. RDHX, RDGT, RDHT 12T3.. RDHX, RDGT, RDHT 1604.. ZDCW 07, ZDCW 09, ZDEW 12 PD.. 0905	I	M8310 7205 E (S)	I	M8325 7215 S (E)	I	–
													II	M8310 8215 E (S)	II	M8325 8230 S (E)	II	–
	SCRD12, 16	SRD07, 10, 12, 16	W-SRD10	SMORC12, 16	SMOZD09, 12	SZD07, 09, 12	SZD07 SZD09, SZD12	S19SPD09	SPD09				III	8215 E (S)	III	8230 S (E)	III	–
5												SN.. 11 (12)	I	8215 E (S)	I	8230 S (E)	I	–
													II	–	II	–	II	–
	S90SN	S90SN-R											III	–	III	–	III	–
6												ADMX, ADEX 11T3..	I	–	I	–	I	–
													II	–	II	–	II	–
	S90AD11E	SAD11E											III	–	III	–	III	–
7												SBMR 22 PNMU 1308..	I	–	I	–	I	–
													II	–	II	–	II	–
	F60SB22	S57PN13											III	–	III	–	III	–

Group	H											
	Feed range according to the cutting conditions			M5315	M9315	M9325	M8310	8215	8230	7205	7215	7230	HF7
1	Finishing	.004	.008	280	280	260	195	230	195	-	-	-	-
	Medium	.004	.010	260	245	230	165	195	180	-	-	-	-
	Roughing	.004	.012	-	-	-	-	-	-	-	-	-	-
2	Finishing	.004	.008	260	260	245	180	230	195	-	-	-	80
	Medium	.004	.012	230	230	230	165	195	165	-	-	-	65
	Roughing	.004	.014	-	-	-	-	-	-	-	-	-	-
3	Finishing	.004	.006	245	230	230	165	195	180	-	-	-	65
	Medium	.004	.010	230	230	215	150	180	165	-	-	-	65
	Roughing	.004	.012	-	-	-	-	-	-	-	-	-	-
4	Finishing	-	-	-	-	260	195	230	195	195	180	150	80
	Medium	-	-	-	-	245	180	215	180	180	165	150	80
	Roughing	-	-	-	-	-	-	-	-	-	-	-	-
5	Finishing	.004	.008	-	-	-	-	180	165	-	-	-	-
	Medium	.004	.012	-	-	-	-	165	150	-	-	-	-
	Roughing	.004	.020	-	-	-	-	-	-	-	-	-	-
6	Finishing	.004	.006	-	-	-	-	-	-	-	-	-	-
	Medium	.004	.008	-	-	-	-	-	-	-	-	-	-
	Roughing	.003	.010	-	-	-	-	-	-	-	-	-	-
7	Finishing	.010	.016	-	-	-	-	-	-	-	-	-	-
	Medium	.010	.020	-	-	-	-	-	-	-	-	-	-
	Roughing	.010	.024	-	-	-	-	-	-	-	-	-	-

H

CORRECTION v_c

Subgroup	H1	H2	H3	H4
Workpiece hardness factor				
Hardness	kv_{HBP1}	kv_{HBP2}	kv_{HBP3}	kv_{HBP4}
380 / 4.8	**1.84**	**1.76**	1.60	1.52
400 / 42.7	**1.73**	**1.65**	1.50	1.43
420 / 44.6	**1.61**	**1.54**	1.40	1.33
440 / 46.5	**1.50**	**1.43**	1.30	1.24
460 / 48.1	**1.38**	**1.32**	1.20	1.14
500 / 5.8	**1.15**	**1.10**	**1.00**	.95
520 / 52.0	1.09	1.05	**.95**	.90
540 / 53.5	1.04	.99	**.90**	.96
560 / 54.7	.98	.94	**.85**	.81
580 / 55.7	.92	.88	**.80**	**.76**
600 / 56.8	.86	.93	.75	**.71**
620 / 57.9	.81	.77	.70	**.67**
640 / 59.0	.75	.72	.65	**.62**
>640 / >59	.69	.66	.60	**.57**

Correction for durability (general machining)

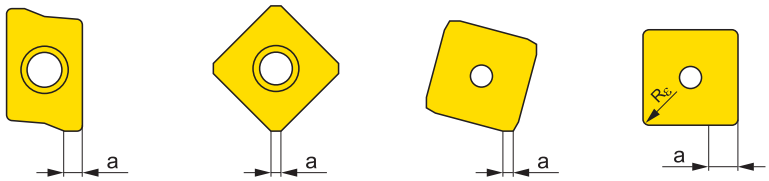
Durability [min]	k_{vT}
15	1.23
20	1.13
30	1.00
45	.89
60	.81
90	.72

Speed factor k_{vx}

Forged and cast piece skin	.70 - .90
Good machine conditions	1.05 - 1.20
Bad machine conditions	.85 - .95

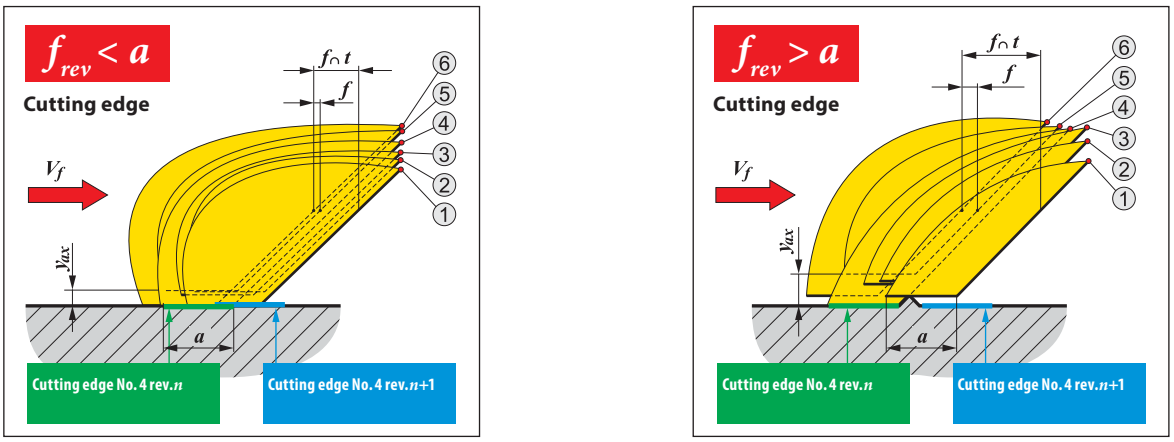
Milling inserts are produced with a wiper edge as a part of the minor cutting edge (with specific width and setting angle $\kappa_r = 0°$) to achieve the best quality surface finish. See picture No.1

Picture 1



However, the wiper edge is no guarantee of a good quality surface finish. In milling, the surface is cut by more than one edge and therefore surface quality can be affected by the axial run-out of the cutter. The surface finish can be affected by the most prominent axial edge (see picture No. 2). In this case the feed per revolution f_{rev} is lower than the width of wiper edge a, the surface finish is influenced by the most prominent axial edge and therefore the surface quality is good.

Picture 2



As there is only 1 wiper insert per cutter it is necessary to follow the maximum feed per tooth depending on the amount of inserts on the cutter.

If the total feed per rev (f_z) exceeds the wiper edge width (a) then you will lose the effectiveness of the wiper insert and will not achieve the desired quality of surface finish.

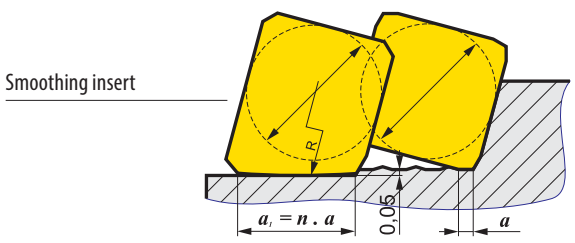
In the following table No.8 you will find the maximum values of feed per tooth (f_z) in relation to the number of teeth on the milling cutter.

Table 8

TYPE OF INSERT	ADMX 16 LNGU 16	PNMQ 13 PNMU 13	SBMR 22 SEEN 53 SEER 53	ADKX 15 APKT 16 SDMT 12	ADKX 15 LNGX 12 PDKT 09 PDMT 09 PDMW 09 SEEN 42 SEER 42	OFKR 07 SOMT09-M SOMT09-MI SOMT09-P	ADMX 11 HNEF 09-F HNGX 09 SEMT 09 SNHF 42 SNHF 53 SNHN 43 TPKN 32 TPKN 43 TPKR 32 TPKR 43
Width of wiper edge (segment) a [in]	.125	.110	.098	.086	.078	.063	.055
Number of teeth	max f_z						
1	.1004	.0878	.0784	.0690	.0627	.0502	.0439
2	.0502	.0439	.0392	.0345	.0314	.0251	.0220
3	.0333	.0294	.0263	.0231	.0208	.0169	.0145
4	.0251	.0220	.0196	.0173	.0157	.0125	.0110
5	.0200	.0176	.0157	.0137	.0125	.0102	.0086
6	.0169	.0145	.0129	.0114	.0106	.0082	.0075
7	.0145	.0125	.0114	.0098	.0090	.0071	.0063
8	.0125	.0110	.0098	.0086	.0078	.0063	.0055
9	.0110	.0098	.0086	.0078	.0071	.0055	.0047
10	.0102	.0086	.0078	.0071	.0063	.0051	.0043
11	.0090	.0078	.0071	.0063	.0059	.0047	.0039
12	.0082	.0075	.0067	.0059	.0051	.0043	.0035
13	.0078	.0067	.0059	.0055	.0047	.0039	.0035
14	.0071	.0063	.0055	.0051	.0043	.0035	.0031
15	.0067	.0059	.0051	.0047	.0043	.0035	.0027
16	.0063	.0055	.0051	.0043	.0039	.0031	.0027
17	.0059	.0051	.0047	.0039	.0035	.0031	.0027
18	.0055	.0047	.0043	.0039	.0035	.0027	.0024

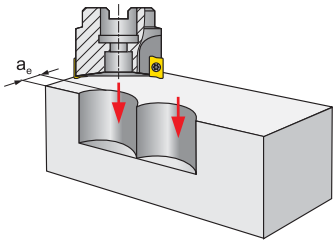
Using a special wiper insert is an effective way of improving the quality of the machined surface – simply fit a wiper insert into the milling cutter instead of an indexable cutting insert. See picture 3.

Picture 3



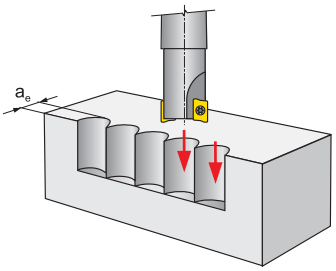
PLUNGE MILLING

SHELL CUTTER BODIES



Tool		Inserts	Diameter of cutter [in]	a_{emax}
	IS90AD11E	ADMX 11....	1.500 - 5.000	.175
	IS90AD16E	ADMX 16....	1.500 - 6.000	.295
	IS90LN12	LN.. 12....	1.500 - 5.000	.135
	IS90LN16	LN.. 16....	2.500 - 6.000	.275
	IS90S009	SOMT 09....	1.500 - 5.000	.235
	IS19PD09	PD.. 0905..	1.500	.195
			2.000	.235
			2.500	.275
			3.000 - 4.000	.315
	ISM0ZD09	ZDCW 09....	1.500	.235
	ISM0ZD12	ZDEW 12....	2.000 - 3.000	.355

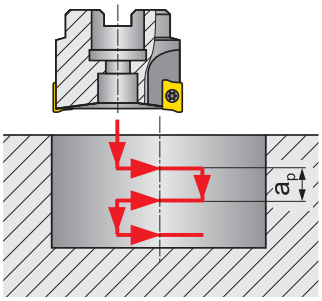
END MILLING CUTTERS



	ISAD11E	ADMX 11....	.625 - 1.500	.175
	ISAD16E	ADMX 16....	1.000 - 1.500	.295
	ISLN12	LN.. 12....	1.000 - 1.500	.135
	ISS009	SOMT 09....	.750 - 1.250	.235
	ISPD09	PD.. 0905..	1.250 - 1.500	.155
	ISZD09	ZDCW 09....	1.000, 1.250	.235
	ISZD12	ZDEW 12....	1.250, 1.500	.355

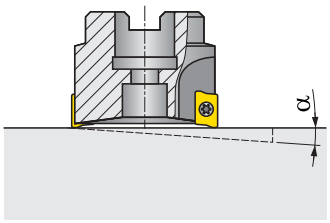
PRAMET

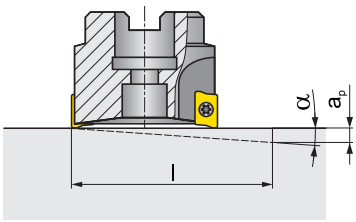
PROGRESSIVE PLUNGING

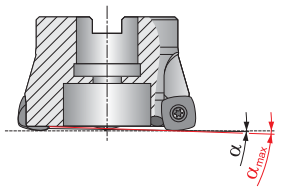


Tool		Inserts	Diameter of cutter [in]	a_{emax}
SHELL CUTTER BODIES				
	**IS90AD11E**	**ADMX 11....**	1.500 - 3.000	.065
	IS90AD16E	**ADMX 16....**	1.500 - 3.000	.100
	**IS90LN12**	**LN.. 12....**	1.500 - 4.500	.015
	**IS19PD09**	**PD.. 09....**	2.000 - 4.000	.080
	**ISCM0RD**	**RD.. 12....**	2.000 - 3.000	.110
		RD.. 16....	2.000 - 4.000	.165
	**IS45HN06C**	**HNGX 06....**	1.500 - 5.000	.035
	IS45HN09C	**HNGX 09....**	2.000 - 4.000	.075
END MILLING CUTTERS				
	**ISAD11E**	**ADMX 11....**	.625 - 1.500	.065
	ISAD16E	**ADMX 16....**	1.000 - 1.500	.100
	**ISLN12**	**LN.. 12...**	1.000 - 1.500	.015
	**ISPD09**	**PD.. 09....**	1.250 - 1.500	.070
	**IS(C)RD**	**RD.. 07....**	.625 - 1.000	.045
		RD.. 10....	.750 - 1.500	.100
		**RD.. 12....**	1.000 - 1.500	.120
	**ISHN06**	**HNGX 06....**	1.000 - 1.500	.035

RAMPING







SHELL CUTTER BODIES

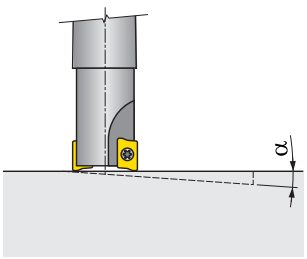
Tool	Inserts	Diameter of cutter [in]	α_{max} [°]	a_p/l [in]
 IS90AD11E	ADMX 11....	1.500	3.800	.255/4.000
		2.000	2.800	.190/4.000
		2.500	1.800	.120/4.000
		3.000	1.600	.105/4.000
		4.000	1.200	.080/4.000
IS90AD16E	ADMX 16....	1.500	5.000	.335/4.000
		2.000	3.500	.235/4.000
		2.500	2.500	.170/4.000
		3.000	2.000	.135/4.000
 IC90AD15	AD.. 15T3..	1.500	.830	.050/4.000
		2.000	.660	.045/4.000
		2.500	.500	.030/4.000
		3.000	.330	.020/4.000
 IS90LN12	LNGX 12....	1.500	.850	.055/4.000
		2.000	.650	.040/4.000
		2.500	.450	.025/4.000
		3.000	.350	.020/4.000
		4.000	.250	.010/4.000
		4.400	.200	.010/4.000
 ISCMORD	RD.. 12....	2.000	4.000	.235/3.50
		2.500	3.000	.200/4.000
		3.000	2.200	.145/4.000
	RD.. 16....	2.000	8.000	.3150/2.35
		2.500	6.000	.315/3.000
		3.000	4.000	.270/4.000
		4.000	3.000	.200/4.000
 IS19PD09	PD.. 0905..	2.000	8.000	.080/.650
		2.500	7.000	.080/.750
		2.500	6.000	.080/.850
		3.000	5.000	.080/1.000
		4.000	3.000	.080/1.500
 ISM0ZD09	ZDCW 09....	1.500	.350** (2.700)*	.020/4.000
ISM0ZD12	ZDEW 12....	2.000	.500** (2.600)*	.030/4.000
		2.500	.350** (1.800)*	.020/4.000
		3.000	.290** (1.300)*	.015/4.000
 IS45HN06C	HNGX 06....	1.500	1.500	.100/4.000
		2.000	1.150	.075/4.000
		2.500	.890	.060/4.000
		3.000	.680	.045/4.000
		4.000	.540	.030/4.000
		5.000	.420	.025/4.000
 IS45HN09C	HNGX 09....	2.000	2.100	.140/4.000
		2.500	1.500	.100/4.000
		3.000	1.100	.070/4.000
		4.000	.900	.060/4.000
		5.000	.700	.045/4.000
		6.000	.500	.030/4.000

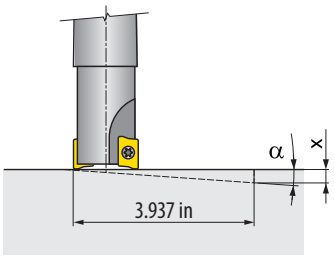
*) Valid for conventional milling.
**) Can be used for HFC cutters.

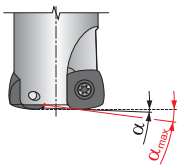
PRAMET

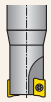
RAMPING

SHANK TOOLS





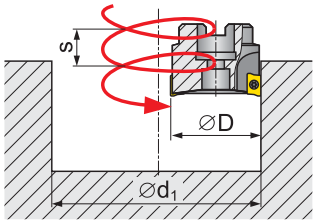


Tool		Inserts		Diameter of cutter [in]	α_{max} [°]	a_p/l [in]
	ISAD11E	ADMX 11....		.625	10.500	.355 / 1.550
				.750	9.000	.355 / 2.240
				1.000	6.000	.355 / 3.450
				1.250	5.300	.355 / 4.000
				1.500	3.800	.255 / 4.000
	ISAD16E	ADMX 16....		1.000	12.500	.510 / 2.240
				1.250	7.500	.510 / 4.000
				1.500	5.000	.335 / 4.000
	ICAD15	AD.. 15T3..		1.000	1.750	.120 / 4.000
				1.250	1.250	.080 / 4.000
				1.500	.830	.050 / 4.000
	ISLN12	LNGX 12....		1.000	2.200	.145 / 4.000
				1.250	1.200	.080 / 4.000
				1.500	.850	.055 / 4.000
		RD.. 07....		.6250	11.000	.080 / .500
				.750	7.000	.080 / .710
				1.000	6.000	.080 / .830
		RD.. 10....		.750	2.000	.100 / .750
				1.000	12.000	.100 / .870
				1.250	8.000	.100 / .750
				1.500	7.000	.100 / .870
		RD.. 12....		1.000	25.000	.120 / .320
				1.500	9.000	.120 / .830
				1.500	8.000	.120 / .900
		RD.. 16....		1.250	25.000	.155 / .430
	ISPD09	PD.. 0905..		1.250		
				1.500	8.000	
	ISZD07	ZDCW 07....		.625	.500** (7.800)*	.030 / 4.000
				.750	.300** (1.200)*	.015 / 4.000
				1.000	.200** (5.400)*	.010 / 4.000
				1.250	.100** (3.300)*	.005 / 4.000
	ISZD09	ZDCW 09....		1.000	.900** (6.500)*	.060 / 4.000
				1.250	.500** (4.000)*	.030 / 4.000
	ISZD12	ZDEW 12....		1.250	1.200** (4.000)*	.065 / 3.000
				1.500	.700** (3.700)*	.065 / 4.000
	ISHN06	HNGX 06....		1.000	2.690	.120 / 2.550
				1.250	1.960	.120 / 3.500
				1.500	1.500	.120 / 4.000

*) Valid for conventional milling.
**) Can be used for HFC cutters.

MILLING BY HELICAL INTERPOLATION

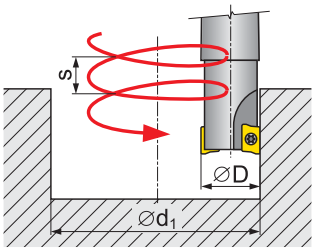
SHELL CUTTER BODIES



Tool		Inserts	Diameter of cutter	d_{min}	d_{max}	s_{max}
			[in]			
	IS90AD11E	ADMX 11....	1.500	2.950	–	.060
				–	3.050	.080
	IS90AD16E	ADMX 16....	1.500	2.800	–	.195
				–	3.050	.315
			2.000	3.600	–	.175
				–	3.850	.235
			2.500	4.650	–	.155
				–	4.850	.195
			3.000	5.350	–	.060
				–	6.200	.080
	IS90LN12	LNGX 12....	1.500	2.850	3.050	.070
			2.000	3.650	3.850	.065
			2.500	4.650	4.850	.060
	ISCM0RD	RD.. 12....	2.000	3.200	4.000	.110
			2.500	4.300	5.200	.110
			3.000	5.350	6.250	.110
		RD.. 16....	2.000	2.900	4.100	.155
			2.500	4.000	5.200	.155
			3.000	5.100	6.250	.155
			4.000	6.650	7.850	.155
	IS19PD09	PD.. 0905..	2.000	3.250	3.600	.080
			2.500	4.300	4.850	.080
			3.000	5.600	6.200	.080
			4.000	7.200	7.750	.080
	ISM0ZD09	ZDCW 09....	1.500	2.500	3.000	.015
	ISM0ZD12	ZDEW 12....	2.000	3.100	3.750	.025
			2.500	4.100	4.800	.030
			3.000	5.450	6.100	.030

MILLING BY HELICAL INTERPOLATION

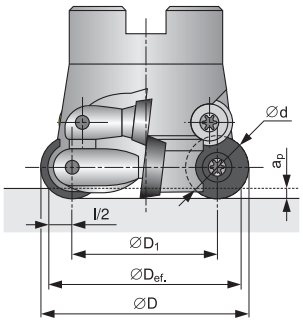
SHANK TOOLS



Tool	Inserts	Diameter of cutter	d_{min}	d_{max}	s_{max}
		[in]			
 ISAD11E	ADMX 11....	.625	1.050	–	.325
			–	1.200	.355
		.750	1.350	–	.295
			–	1.500	.355
		1.000	1.750	–	.255
			–	1.900	.295
		1.250	2.300	–	.155
			–	2.450	.175
		1.500	2.950	–	.060
			–	3.050	.080
ISAD16E	ADMX 16....	1.000	1.650	–	.390
			–	1.900	.490
		1.250	2.150	–	.255
			–	2.450	.355
		1.500	2.800	–	.195
			–	3.050	.315
 ISLN12	LNGX 12....	1.000	1.700	1.900	.110
		1.250	2.250	2.450	.080
		1.500	2.850	3.050	.070
 IS(C)RD	RD.. 07....	.625	.650	1.200	.055
		.750	1.100	1.550	.055
		1.000	1.500	1.950	.060
	RD.. 10....	.750	.850	1.550	.100
		1.000	1.250	1.950	.100
		1.250	1.650	2.350	.090
		1.500	2.050	2.750	.100
	RD.. 12....	1.000	1.000	1.900	.120
		1.500	1.800	2.750	.120
		1.500	2.450	3.200	.135
 ISPD09	PD.. 0905..	1.500	2.500	3.050	.080
 ISZD07	ZDCW 07....	.625	.800	1.200	.015
		.750	1.100	1.500	.015
		1.000	1.500	1.900	.015
		1.250	2.050	2.450	.015
ISZD09	ZDCW 09....	1.000	1.350	1.900	.015
		1.250	1.900	2.350	.015
ISZD12	ZDEW 12....	1.250	1.700	2.450	.025
		1.500	2.300	3.050	.025

TOROIDAL MILLING CUTTER

It is necessary to take the effective diameter into account when calculating the cutting speed.



$$v_c = \frac{\pi \cdot D_{ef} \cdot n}{12} \quad \text{[ft/min]}$$

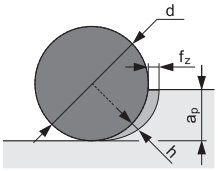
$$D_{ef.} = D_1 + l \quad \text{[in]}$$

Values of l [in] for different values of a_p [in]:

d [in]	a_p [in]									
	.020	.040	.060	.080	.100	.120	.135	.155	.175	.195
.276	.140	.190	.225	.245	-	-	-	-	-	-
.315	.155	.210	.245	.270	-	-	-	-	-	-
.394	.175	.235	.280	.315	.340	-	-	-	-	-
.472	.190	.260	.310	.350	.380	.410	-	-	-	-
.630	.220	.300	.365	.415	.455	.490	.520	.545	-	-
.787	.245	.340	.410	.470	.520	.560	.595	.625	.655	.680

The optimum feed from the recommended chip thickness depends on the machined material and the depth of cut.*

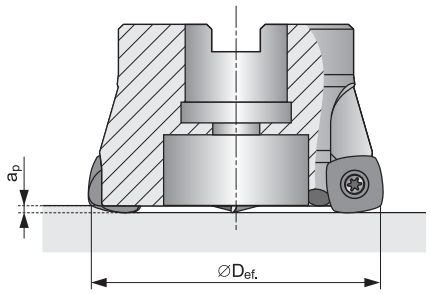
*) The recommended depth of cut can be found in the relevant product page in the catalogue.



$$f_z = h_m \sqrt{\frac{d}{a_p}} \quad \text{[in/tooth]}$$

Marking of inserts	a_{pmax}	Recommended chip thicknesses for the machined material groups					
	[in]	P	M	K	N	S	H
RD ..0702	.080	.00120 - .00430	.00195 - .00315	.00120 - .00430	.00195 - .00510	.00195 - .00315	.00080 - .00315
RD.. 0802	.080	.00120 - .00590	.00195 - .00390	.00120 - .00590	.00195 - .00705	.00195 - .00390	.00120 - .00390
RD.. 1003	.100	.00120 - .00590	.00195 - .00390	.00120 - .00590	.00195 - .00705	.00195 - .00390	.00120 - .00390
RD.. 12T3	.120	.00155 - .00705	.00275 - .00510	.00155 - .00705	.00275 - .00785	.00275 - .00510	.00120 - .00510
RD(P).. 1204	.120	.00155 - .00785	.00275 - .00590	.00155 - .00785	.00275 - .00980	.00275 - .00590	.00120 - .00590
RD.. 1604	.155	.00195 - .00785	.00390 - .00590	.00195 - .00785	.00390 - .00980	.00390 - .00590	.00155 - .00590
RD.. 2006	.195	.00195 - .01175	.00390 - .00785	.00195 - .01175	.00390 - .01570	.00390 - .00785	.00155 - .00785

HIGH FEED CUTTERS (HF CUTTERS)



Formula for calculating cutting speed:

$$v_c = \frac{\pi \cdot D_{ef} \cdot n}{12} \quad \text{[ft/min]}$$

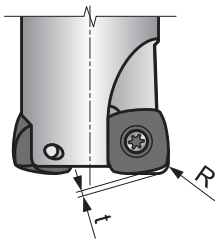
Effective diameter of cutter for face milling:

Cutter Ø [in]	Insert	Effective diameter D_{ef} in relation to a_p [in]		
		$a_p = 0$	$a_p = 0,5$	$a_p = 1,0$
.625	ZDCW 070304	.235	.480	.600
.750		.390	.635	.755
1.000		.590	.830	.955
1.250		.865	1.105	1.225
1.000	ZDCW 09T304	.455	.825	.930
1.250		.735	1.095	1.205
1.500		1.085	1.410	1.520

Cutter Ø [in]	Insert	Effective diameter D_{ef} in relation to a_p [in]			
		$a_p = 0$	$a_p = 0,5$	$a_p = 1,0$	$a_p = 1,5$
1.250	ZDEW 120408	.570	.970	1.100	1.180
1.500	ZDEW 120408	.880	1.285	1.415	1.500
2.00	ZDEW 120408	1.275	1.680	1.810	1.895
2.500	ZDEW 120408	1.785	2.195	2.320	2.405
3.000	ZDEW 120408	2.450	2.865	2.990	3.070

Cutter Ø [in]	Insert	Effective diameter D_{ef} in relation to a_p [in]				
		$a_p = 0$	$a_p = 0,5$	$a_p = 1,0$	$a_p = 1,5$	$a_p = 2,0$
1.250	PD .. 0905	.730	.835	.940	1.045	1.155
1.500		1.010	1.125	1.240	1.355	1.465
2.00		1.395	1.510	1.625	1.735	1.850
2.500		1.905	2.020	2.135	2.250	2.365
3.000		2.575	2.685	2.800	2.920	3.030
4.000		3.355	3.470	3.585	3.700	3.810

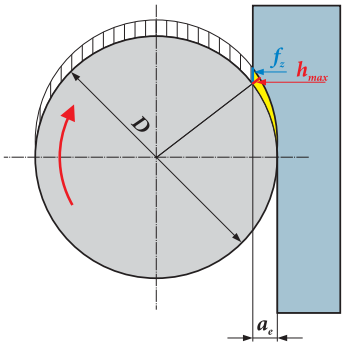
Information for CNC programming:



Insert	*R*	*t*
	[in]	[in]
ZDCW 070304	.065	.025
ZDCW 09T304	.090	.020
ZDEW 120408	.140	.025
PD.. 0905..	.175	.045
ADEX 11T308SR-HF	.056	.014

MILLING DEEP SHOULDERS

Recommended feed/chip thickness range:



Disc cutters:

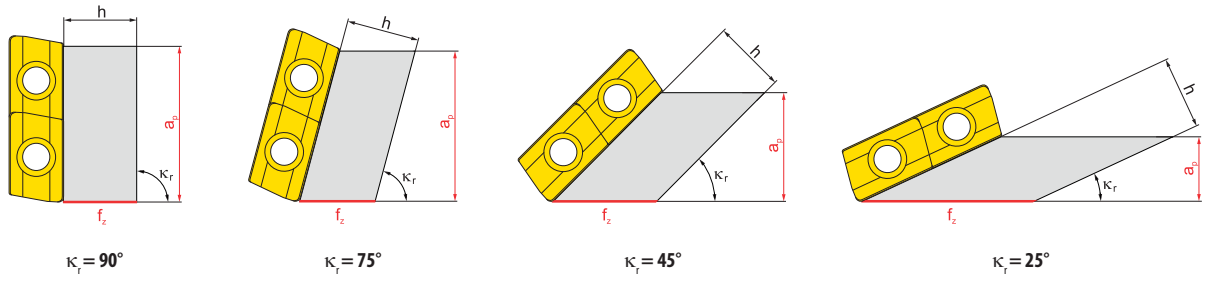
Ø cutter	Rec. medium chip thickness	a_e = .100		a_e = .200		a_e = .400		a_e = .800		a_e = 1.550		a_e = 3.150	
		$f_{z\,min}$	$f_{z\,max}$	$f_{z\,min}$	$f_{z\,max}$	$f_{z\,min}$	$f_{z\,max}$	$f_{z\,min}$	$f_{z\,max}$	$f_{z\,min}$	$f_{z\,max}$	$f_{z\,min}$	$f_{z\,max}$
[in]	h_m [in]	[in/tooth]											
2.500	.0025 - .0035	.0155	.0200	.0100	.0125	–	–	–	–	–	–	–	–
3.000	.0025 - .0035	.0175	.0225	.0110	.0145	.0080	.0100	–	–	–	–	–	–
4.000	.0025 - .0035	.0195	.0250	.0125	.0160	.0090	.0115	.0065	.0080	–	–	–	–
5.000	.0025 - .0035	.0220	.0280	.0140	.0180	.0100	.0125	.0070	.0090	–	–	–	–
6.000	.0025 - .0035	.0245	.0315	.0155	.0200	.0110	.0145	.0080	.0100	.0055	.0075	–	–
8.000	.0025 - .0035	.0275	.0355	.0175	.0225	.0125	.0160	.0090	.0115	.0065	.0080	–	–
10.000	.0025 - .0035	.0305	.0395	.0195	.0250	.0140	.0180	.0100	.0125	.0070	.0090	.0050	.0065
12.000	.0025 - .0035	.0345	.0445	.0220	.0280	.0155	.0200	.0110	.0140	.0080	.0100	.0055	.0075

Type J-SAD11E / T-S90AD11E cylindrical cutters:

Ø cutter	Rec. medium chip thickness	a_e = .100		a_e = .150		a_e = .300		a_e = .500		a_e = .650	
		$f_{z\,min}$	$f_{z\,max}$	$f_{z\,min}$	$f_{z\,max}$	$f_{z\,min}$	$f_{z\,max}$	$f_{z\,min}$	$f_{z\,max}$	$f_{z\,min}$	$f_{z\,max}$
[in]	h_m [in]	[in/tooth]									
1.000	.0020 - .0030	.0070	.0110	.0050	.0080	.0035	.0060				
1.250	.0020 - .0030	.0080	.0125	.0055	.0090	.0040	.0065				
1.500	.0020 - .0030	.0090	.0140	.0065	.0100	.0045	.0075	.0040	.0060		
2.000	.0020 - .0030	.0100	.0160	.0070	.0110	.0050	.0080	.0040	.0065	.0035	.0060

MILLING CUTTER FOR CHAMFERING SxxXP16

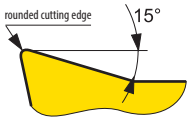
Influence of feed on chip thickness and setting angle:



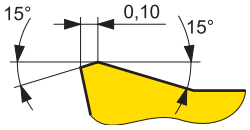
$\kappa_r = 90°$ $\kappa_r = 75°$ $\kappa_r = 45°$ $\kappa_r = 25°$

Cutting edge design:

Type **E**



Type **S**

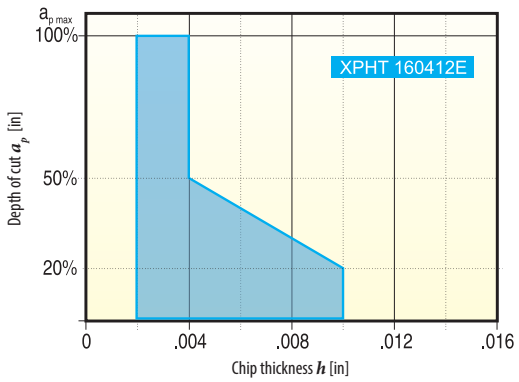


Influence of max. depth on setting angle:

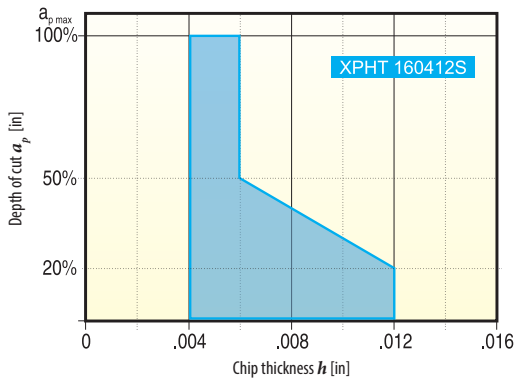
κ_r	$sin\ \kappa_r$	$tg\ \kappa_r$	$a_{p\ max}$ [in]	Chip thickness h [in]	
				Type **E**	Type **S**
15°	.259	.268	.275	.002 - .0025 - .004	.004 - .0045 - .006
25°	.423	.466	.470		
30°	.500	.577	.550		
35°	.574	.700	.625		
40°	.643	.839	.705		
45°	.707	1.000	.785		
50°	.766	1.192	.865		
55°	.819	1.428	.900		
60°	.866	1.732	1.000		
75°	.966	3.732	1.100		

Application diagram for SxxXP16:

For inserts with cutting edge design **E**



For inserts with cutting edge design **S**



PRAMET

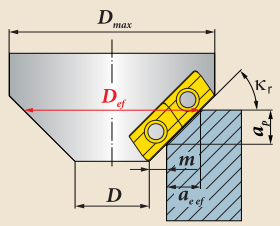
Initial cutting conditions:

κ_r	$a_{e\,ef}/D_{ef}$							
	0,10	0,15	0,20	0,25	0,30	0,35	0,40	1,00
15°	.0240 - **.0335** - .0480	.0195 - **.0275** - .0390	.0170 - **.0235** - .0335	.0155 - **.0210** - .0300	.0135 - **.0190** - .0280	.0130 - **.0180** - .0255	.0120 - **.0170** - .0240	.0075 - **.0105** - .0155
25°	.0145 - **.0205** - .0295	.0120 - **.0170** - .0240	.0100 - **.0145** - .0210	.0095 - **.0130** - .0185	.0085 - **.0120** - .0170	.0080 - **.0110** - .0155	.0075 - **.0100** - .0145	.0095 - **.0110** - .0135
30°	.0125 - **.0175** - .0245	.0100 - **.0140** - .0205	.0085 - **.0120** - .0175	.0080 - **.0110** - .0155	.0070 - **.0100** - .0145	.0065 - **.0095** - .0135	.0065 - **.0085** - .0125	.0080 - **.0095** - .0120
35°	.0110 - **.0155** - .0215	.0090 - **.0125** - .0175	.0075 - **.0105** - .0155	.0065 - **.0095** - .0135	.0065 - **.0085** - .0125	.0060 - **.0080** - .0115	.0110 - **.0130** - .0160	.0065 - **.0080** - .0100
40°	.0100 - **.0135** - .0190	.0080 - **.0110** - .0155	.0065 - **.0095** - .0135	.0065 - **.0085** - .0120	.0110 - **.0135** - .0170	.0100 - **.0125** - .0155	.0100 - **.0120** - .0145	.0065 - **.0075** - .0090
45°	.0085 - **.0120** - .0175	.0070 - **.0100** - .0145	.0065 - **.0085** - .0125	.0110 - **.0135** - .0165	.0100 - **.0120** - .0155	.0095 - **.0115** - .0140	.0085 - **.0105** - .0135	.0055 - **.0065** - .0080
50°	.0080 - **.0115** - .0160	.0065 - **.0095** - .0135	.0115 - **.0135** - .0175	.0100 - **.0120** - .0155	.0095 - **.0115** - .0140	.0085 - **.0100** - .0130	.0080 - **.0100** - .0120	.0050 - **.0065** - .0080
55°	.0075 - **.0105** - .0155	.0065 - **.0085** - .0125	.0105 - **.0130** - .0160	.0095 - **.0115** - .0145	.0085 - **.0105** - .0130	.0080 - **.0100** - .0120	.0075 - **.0090** - .0115	.0045 - **.0060** - .0070
60°	.0070 - **.0100** - .0145	.0120 - **.0140** - .0175	.0100 - **.0120** - .0155	.0090 - **.0110** - .0135	.0080 - **.0100** - .0125	.0080 - **.0090** - .0115	.0070 - **.0085** - .0105	.0045 - **.0055** - .0065
75°	.0065 - **.0090** - .0130	.0105 - **.0125** - .0155	.0090 - **.0110** - .0135	.0080 - **.0100** - .0120	.0075 - **.0090** - .0110	.0065 - **.0080** - .0100	.0065 - **.0080** - .0100	.0040 - **.0045** - .0065
v_c [ft/min]	920	835	770	740	705	675	655	525

Type E: XPHT 160412E | **Type S:** XPHT 160412S

Relations for calculating cutting conditions with chamfering cutters:

CHAMFER



Relation a_p and $a_{e\,ef}$

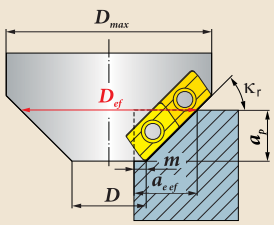
$$a_p = a_{e\,ef} \,.\, tg\,\kappa_r \quad \text{[in]}$$

$$a_{e\,ef} = \frac{a_p}{tg\,\kappa_r} \quad \text{[in]}$$

Effective diameter D_{ef}

$$D_{ef} = D + 2\,.\,(a_{e\,ef} + m) \quad \text{[in]}$$

CHAMFER WITH SHOULDER



Relation a_p and $a_{e\,ef}$

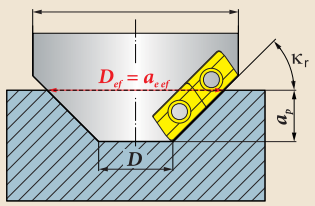
$$a_p = (a_{e\,ef} - m)\,.\,tg\,\kappa_r \quad \text{[in]}$$

$$a_{e\,ef} = m + \frac{a_p}{tg\,\kappa_r} \quad \text{[in]}$$

Effective diameter D_{ef}

$$D_{ef} = D + 2\,.\,(a_{e\,ef} - m) \quad \text{[in]}$$

SLOT



Relation a_p and $a_{e\,ef}$

$$a_p = \frac{a_{e\,ef} - D}{2} \,.\, tg\,\kappa_r \quad \text{[in]}$$

$$a_{e\,ef} = D + \frac{2\,.\,a_p}{tg\,\kappa_r} \quad \text{[in]}$$

Effective diameter D_{ef}

$$D_{ef} = a_{e\,ef} \quad \text{[in]}$$

Feed per tooth f_z

$$f_z = \frac{h}{sin\,\kappa_r} \,.\, \sqrt{\frac{D_{ef}}{a_{e\,ef}}} \quad \text{[in/tooth]}$$

Feed per tooth f_z

$$f_z = \frac{h}{sin\,\kappa_r} \quad \text{[in/tooth]}$$

Revolutions n

$$n = \frac{v_c\,.\,12}{D_{ef}\,.\,\pi} \quad \text{[rev./min]}$$

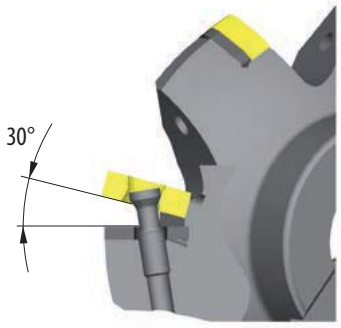
Table feed f_{min}

$$f_{min} = f_z\,.\,z\,.\,n \quad \text{[in/min]}$$

TYPE IS57PN 13 FACE CUTTERS

Replacing the cutting inserts without the need to remove the fixing screw:

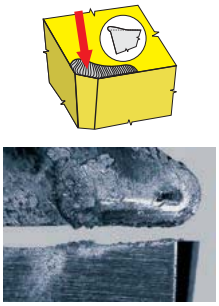
1 Place the insert into the seat at a 30° angle.

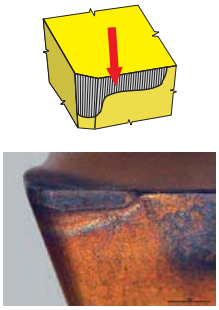


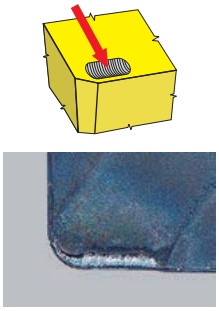
2 Position the insert on a shim in the required position in the milling cutter seat.

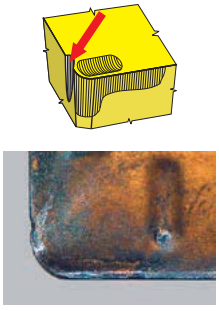
3 Tighten the screw.

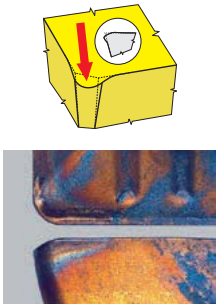
4 Torque 15 Nm.

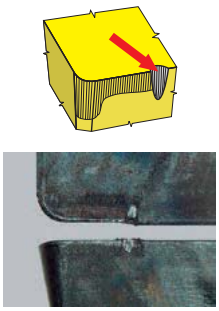
Picture	BUILT-UP EDGE	
	**Description and cause:** The machined material gets stuck to the cutting edge of the insert. The build--up has the properties of weld deposits on the cutting edge. Removing it can damage the cutting edge, which has a negative effect on the quality of the machined surface.	**Corrective measures:** - increase the cutting speed - increase the feed rate - use a coated grade - use a different milling geometry - use a coolant with more effective anti-sticking properties (or no coolant at all)

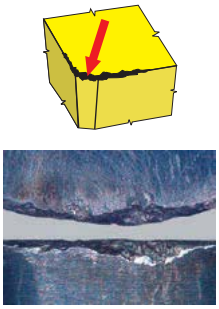
Picture	FLANK WEAR	
	**Description and cause:** Flank wear is one of the main factors that affects the service life of the insert. It is caused by friction between the insert and the machined material. It cannot be fully eliminated, but it can be reduced.	**Corrective measures:** - use a more wear-resistant grade - reduce the cutting speed - increase the feed rate (if it is under 0.1 mm per tooth) - use coolant or increase cooling

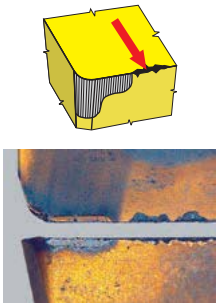
Picture	CRATERING	
	**Description and cause:** Cratering usually appears on inserts with a plain face.	**Corrective measures:** - use more wear resistant grade - use coated grade, primarily (MT) CVD - reduce the cutting speed - use different milling geometry - more positive - use coolant or increase the intensity of cooling

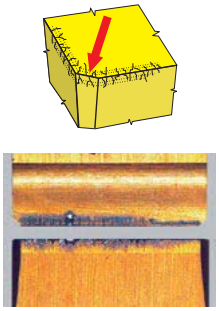
Picture	OXIDATION GROOVE ON THE MINOR EDGE	
	**Description and cause:** The main criterion which limits the tool life. It usually appears in turning. A combination of oxidation groove and cratering causes increased roughness on the machined surface.	**Corrective measures:** - use a coated or more wear-resistant grade - if possible use Al_2O_3 coated inserts - use coolant or increase the intensity of cooling - reduce the cutting speed

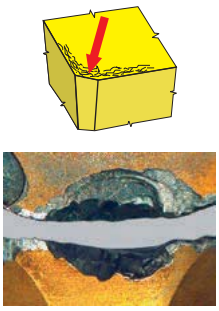
Picture	PLASTIC DEFORMATION	
	**Description and cause:** This is caused by high thermal stress on the cutting edge (high feed rate and cutting speed).	**Corrective measures:** - use a more wear-resistant grade - reduce the cutting speed - reduce the feed rate - use a coolant or increase cooling - use a cutting insert with a larger corner radius - use a cutting insert with a larger corner angle

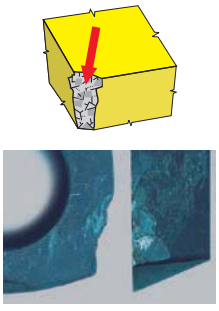
Picture	NOTCH WEAR	
	**Description and cause:** It is created when the insert edge contacts the surface of the work piece. It is mainly caused by hardening of the surface layer of work piece and burrs. Usually appears in austenitic stainless steels.	**Corrective measures:** - use a coated or more abrabion-resistant type of cemented carbide (if conditions allow) - use an insert with a coating containing Al_2O_3 - choose a tool with a smaller setting angle

Picture	CHIPPING OF CUTTING EDGE	
	**Description and cause:** Brittle chipping (micro-chipping) usually occurs in combination with other types of wear and is difficult to identify separately. It is caused by low rigidity of the machine-tool-workpiece assembly or by "hard forming".	**Corrective measures:** - use a more rigid type of cemented carbide - choose less intensive machining conditions - use a different cutting geometry - reduce the feed at entering the cut

Picture	CHIPPING OF CUTTING EDGE (OUT OF CUT)	
	**Description and cause:** This is caused by inadequate chip forming, which causes mechanical damage to the cutting edge.	**Corrective measures:** - change the feed rate - choose a tool with a different setting angle - use an insert with a different geometry - use a tougher grade

Picture	COMB CRACKS	
	**Description and cause:** This is caused by high thermal stress on the cutting edge during interrupted cut.	**Corrective measures:** - use plenty of coolant or stop using coolant (air can be used to eliminate burrs on the cutting area) - reduce the cutting speed - reduce the feed rate - use a tougher grade

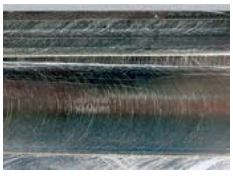
Picture	CRACKS ALONG THE FLANK	
	**Description and cause:** This is caused by high dynamic stress on the area behind the cutting edge.	**Corrective measures:** - use a tougher grade - change the cutting conditions - use a milling insert with a different geometry or an insert with a different cutting edge condition (...T, ...S, ...K, ...P) - change the feed rate - change the position of the cutter

Picture	INSERT FRACTURE	
	**Description and cause:** The cutting edge or tip of the tool is destroyed, this has numerous causes and depends on the tool material, workpiece material and condition and rigidity of the machine-tool-workpiece assembly in particular. The amount of wear, type and the machining conditions also have a certain influence.	**Corrective measures:** - use a tougher grade - reduce the feed rate and depth of cut - use an insert with a larger corner radius - use a cutting insert with a larger corner angle - use a milling insert with a different geometry - improve stability - change the position of the cutter (reduce the feed rate)

Picture	POOR SURFACE QUALITY	
	**Description and cause:** Numerous causes depending on the workpiece material, cutting conditions (feed rate and cutting speed), the condition of the cutting edge, the extent and type of wear, and the condition and rigidity of the machine-tool--workpiece assembly. - incorrect tool chosen - incorrect chip thickness - incorrect cutting speed - coolant is needed - high feed rate	**Corrective measures:** - use a finishing insert, or an insert with finishing segment - use an insert with suitable cutting geometry - reduce the feed rate - adjust (usually increase) the cutting speed - use coolant or lubrication (MQL) - eliminate vibrations - use a tool with which the position of the individual inserts can be adjusted more accurately - change the chip thickness (modify the machining conditions)

Picture	VIBRATIONS	
	**Description and cause:** This is a very common problem, which is mainly caused by an unbalanced workpiece or tool, unstable fixing of the machined part and high cutting forces. - low rigidity of machine-tool-workpiece assembly - excessive chip depth (both axial and radial) - run-out - poor workpiece or tool balance - large tool overhang	**Corrective measures:** - check the stability of the workpiece fixing - check the stability of the tool fixing - reduce the cutting depth - use a tool with smaller overhang - modify the cutting speed - reduce the chip thickness (change the cutting or machining conditions) - choose a suitable cutting geometry and tool material to minimize the cutting process force balance (as sharp and as positive as possible), i.e. use a tool with a lower cutting resistance - when milling, use a tool with a smaller setting angle

Picture	BURRS	
	**Description and cause:** This usually occurs on soft steels and plastic materials.	**Corrective measures:** - use a cutting insert with a sharp cutting edge - use a cutting insert with positive geometry - use a tool with a smaller setting angle

Picture	ERRORS IN DIMENSIONS AND SHAPE OF WORKPIECE	
	**Description and cause:** Depends on a number of factors.	**Corrective measures:** - use a wear-resistant cutting insert - improve the stability of the cutter and workpiece - minimize tool overhang - use a workpiece with a suitable machining allowance

Picture	INADEQUATE CHIP FORMATION	
	**Description and cause:** Using a chip with a suitable shape is as important as its durability (service life of the tool). The workpiece material, the feed rate, the depth of cut and the cutting geometry all have an effect on chip forming. A chip that is too long is unacceptable for various reasons, while a chip that is too short is undesirable as it overloads the cutting edge and causes vibrations.	**Corrective measures:** - change the fee rate and depth of cut - use a more suitable cutting geometry - change the cutting conditions

GENERAL PRINCIPLES

Check the seat condition of the cutting insert:

Before clamping a new cutting insert or changing the edge, it is necessary to clean the seat and check its condition or the condition of the anvil and wedge (especially the damage under the corner of the cutting insert).

Check and service the clamping parts:

It is also important to check the clamping parts, including clamping levers, screws, wedges and clamps. Only use original, undamaged parts (found in the catalogue). Regularly lubricate the threads and the binding surface of screws, for example using heat-resistant lubricant (Molyko G.). For assembly and disassembly, only use screwdrivers and wrenches specified in our catalogue or recommended by the tool manufacturer. Pay attention to the correct torque settings (proportional) - it is advisable to use a torque wrench.

Check the tightening:

Before tightening, check the fit of the cutting insert on the whole of the binding surface and in the radial and axial directions. Cutting inserts and tools must always be clean and undamaged.

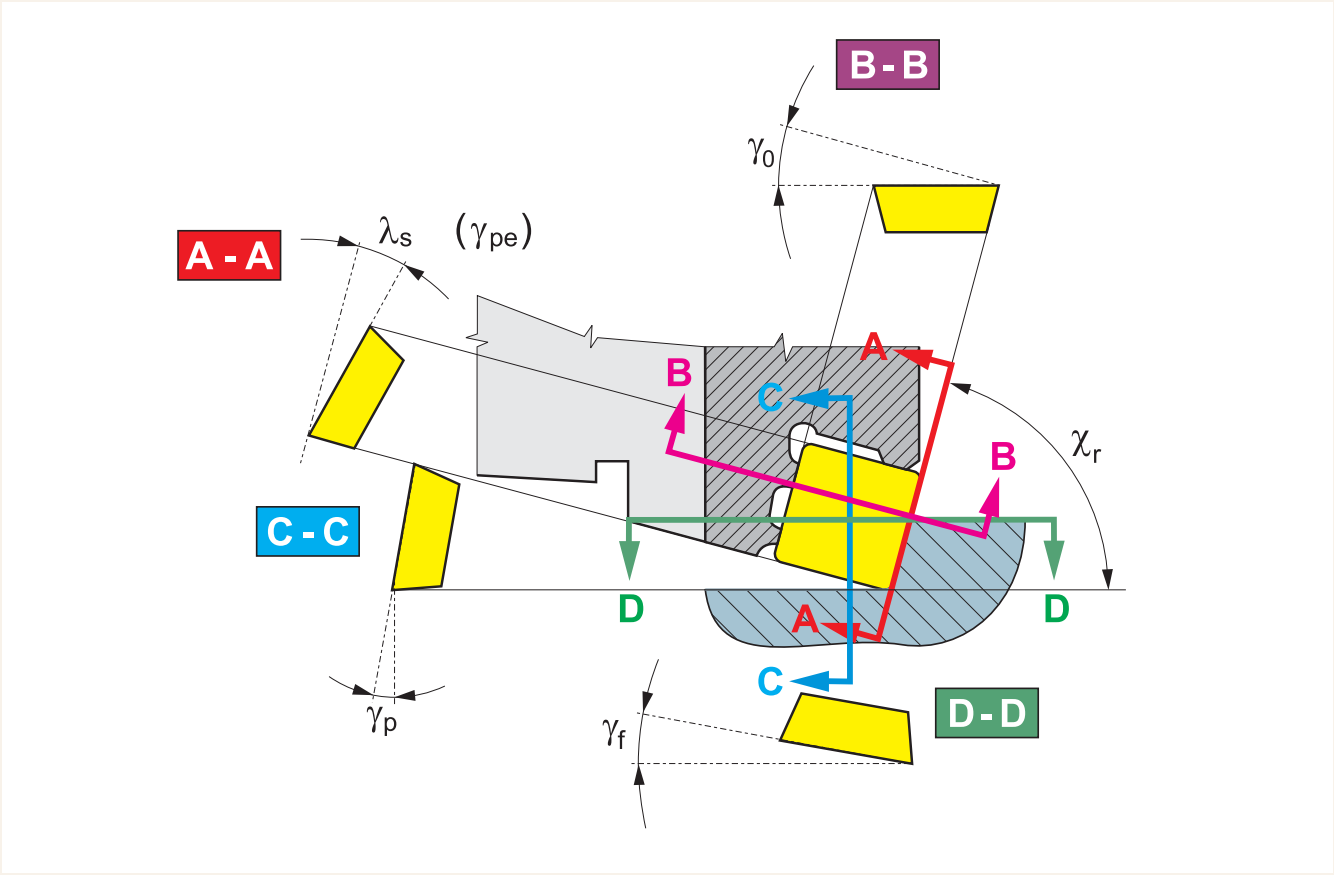
FORMULA FOR CALCULATING CUTTING PARAMETERS

Quantity	Formula	Unit	Note
Number of revolutions	$n = \frac{v_c \cdot 12}{D \cdot \pi}$	[rev/min]	
Cutting speed	$v_c = \frac{\pi \cdot D \cdot n}{12}$	[ft/min]	
Feed per revolution	$f_{rev} = \frac{f_{min}}{n} = f_z \cdot z$	[in/rev.]	
Feed per minute (speed of feed)	$f_{min} = v_f = f_{rev} \cdot n = f_z \cdot z \cdot n$	[in/min]	
Feed per tooth	$f_z = \frac{f_{rev.}}{z} = \frac{f_{min}}{n \cdot z}$	[in/tooth]	
Chip cross section	$A = f_z \cdot a_p$	[in^2]	
Chip thickness (For insert with straight edge)	$h = f_z \cdot \sin \kappa_r$	[in]	
Chip thickness (For round cutting insert)	$h = f_z \cdot \sqrt{\frac{a_p}{D}}$	[in]	
Metal removal rate	$Q = a_p \cdot a_e \cdot f_{min}$	[in^3/min]	

n Number of revolutions [rev/min]
D Diameter (of tool or work piece) [in]
v_c Cutting speed [ft/min]
f_{ot} Feed per revolution [in/rev]
f_{min} Feed per minute (sometimes called speed of feed) [in/min]
f_z Feed per tooth [in/tooth]
z Number of teeth [1]

A Chip cross section [in^2]
f_{ot} Feed per revolution [in/rev]
a_p Axial depth of cut (depth of cut) [in]
a_e Radial depth of cut (width of cut) [in]
κ_r Major edge setting angle [°]
h Chip thickness [in]
v_c Cutting speed [in/min]
f_{min} Feed per minute (sometimes called speed of feed) [in/min]
f_z Feed per tooth [in/tooth]
Q Material removal rate per minute [in^3/min]

Picture 4



The position of the cutting insert clamped in the tool is determined by several angles - see picture 4.

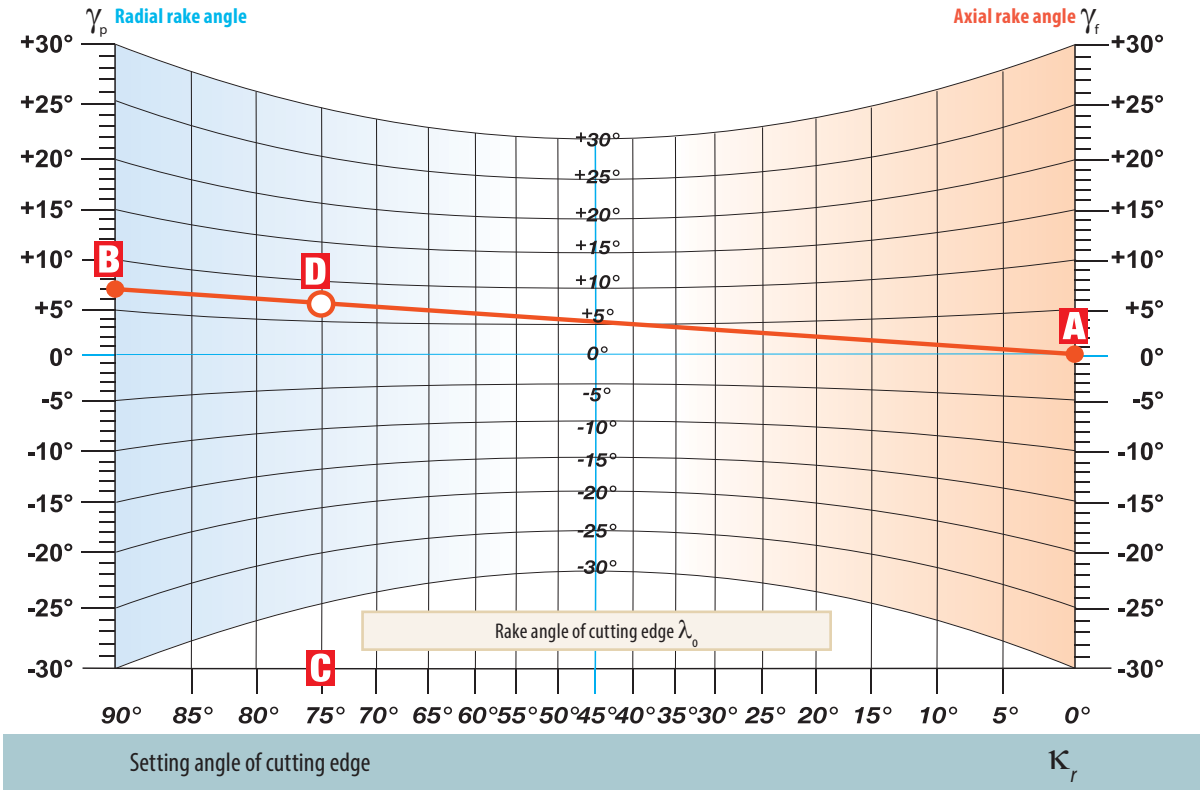
Constructional angles determine the basic orientation of the seat position that the cutting insert is clamped in and are therefore important for the design of the milling cutter body. There are two angles: axial face angle γ_p (tool back rake) and radial face angle γ_f (tool side rake) - see picture 5.

Working angles are the setting angle χ_r, the orthogonal face angle γ_o and the rake angle of the cutting edge λ_s.

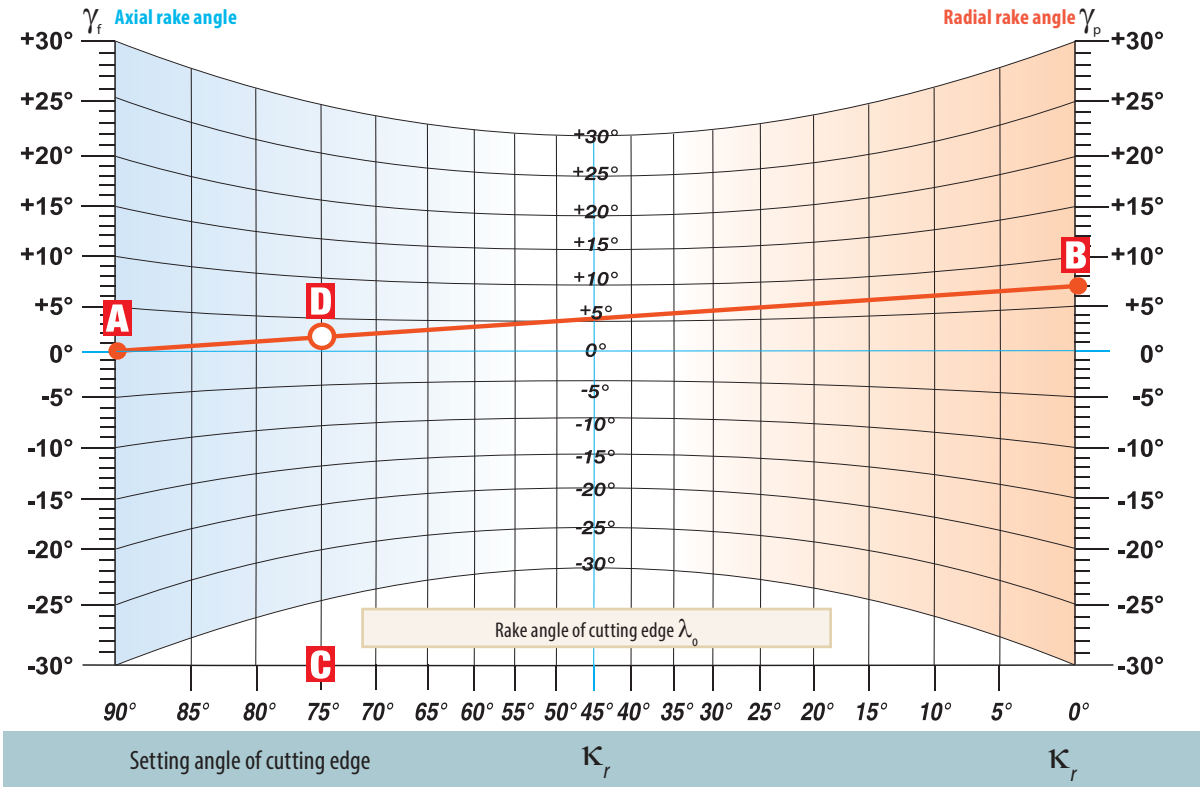
- **Orthogonal face angle** γ_o - affects not only the extent of plastic deformation of the cut chip but also the cutting force and temperature. The bigger the rake angle γ_o, the lower the cutting force and power demand of the milling machine engine (and vice versa).
- **Setting angle** χ_r - determines the thickness of the chip at a specific feed per tooth f_z and axial depth of cut a_p. It therefore affects cutting forces, specifically load, wear and tool service life. Reducing the setting angle χ_r at a constant feed f_z causes a decrease in the chip thickness h.
- **Rake angle of cutting edge** λ_s - together with setting angle χ_r and face angle γ_o, this determines the point of first contact between the edge and work piece. That is why it affects the resistance of the edge to chipping during interrupted cut. At the same time, it affects the direction of chip evacuation.

Picture 5

$$\tan \gamma_o = \tan \gamma_p \cdot \sin \kappa_o + \tan \gamma_f \cdot \cos \kappa_r$$



$$\tan \lambda_s = \tan \gamma_f \cdot \sin \kappa_r - \tan \gamma_p \cdot \cos \kappa_r$$

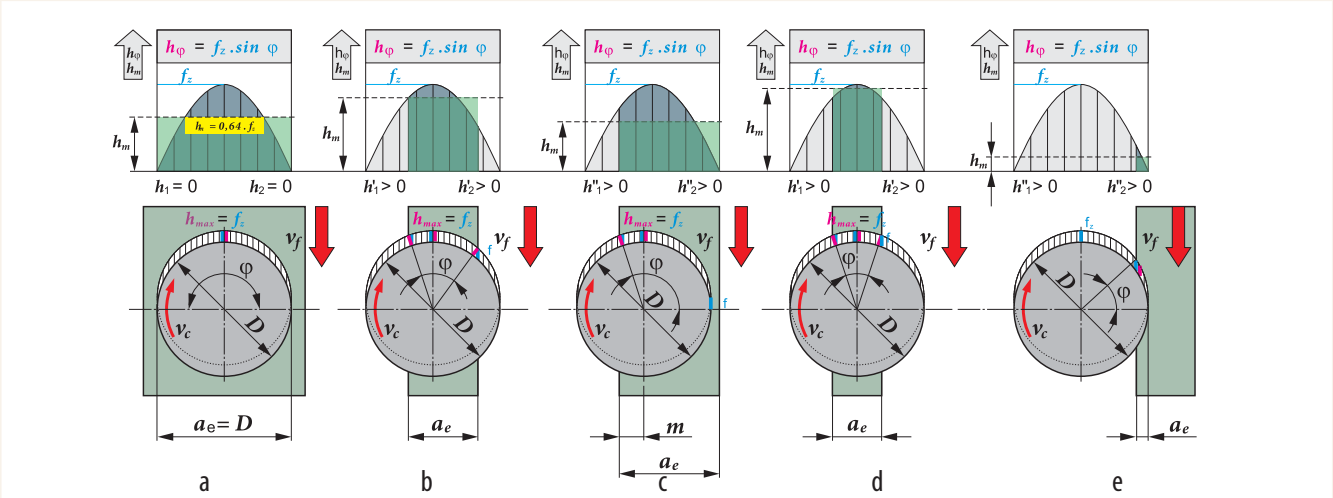


The entering and exiting conditions are decisive for tool service life. Choosing these conditions correctly has an influence on milling - the quality of the surface and the cutting output.

When entering the workpiece, the cutting edge is exposed to intense mechanical shock, which causes mechanical stress on the cutting edge. This shock can cause chipping on the cutting edge (fracture or abrasion) under incorrect cutting conditions.

In spite of this, we recommend using tools with indexable cutting inserts at down cut (the maximum chip thickness to be cut). Furthermore, the point of first contact between the cutting edge and the workpiece should not be on the corner of the cutting edge. This depends partly on the basic geometry of the cutting edge - angles γ_o, λ_s, χ_r - and partly on the relative position of the axis of the milling cutter and the entering edge of the workpiece.

Picture 6



The exiting of the cutting edge from the cut is also accompanied by thermal stress, caused by a rapid reduction in temperature of the surface layer of the cutting edge and mechanical stress caused by elastic deformation relief of the surface layer of workpiece at a rapid drop in cutting force.

That is why we use the average value of chip thickness h_m for any calculations.

The chip thickness h fluctuates during one revolution depending on angle φ in accordance with formulae $h\varphi = f_z \times sin\varphi$.

The maximum chip thickness equal to f_z is reached at the axis of the milling cutter. The average chip thickness h_m cut by one tooth during one revolution is equal to the height of the rectangle of the same area as the area under the sine curve relates to the radial depth of cut a_e. The average chip thickness h_m depends on the type of milling cutter and the cutting conditions, especially on the relation a_e/D, feed per tooth f_z and the setting angle χ_r. See picture 6. on the next page for an illustrative example.

The following formula can be used to calculate h_m (picture 6a, b, c, d):

$$h_m = f_z . sin\,\kappa_r \ .114,6 . \left(\frac{a_e}{D . arccos . \left[1 - \frac{2a_e}{D} \right]} \right)$$

The following formula can be used to calculate the feed f_z for the given value of h_m:

$$f_z = \frac{h_m}{sin\,\kappa_r} \cdot \left(\frac{D . arccos . \left[1 - \frac{2a_e}{D} \right]}{114,6 . a_e} \right)$$

where
h_m - average chip thickness [in]
f_z - feed per tooth [in/tooth]
a_e - radial depth of cut [in]
D - diameter [in]
χ_r - setting angle of major edge [°]

The following formula can be used to calculate h_m (picture 6e) if $a_e/D < 0,2$:

$$h_m = f_z\, sin\,\kappa_r \sqrt{\frac{a_e}{D}}$$

The following formula can be used to calculate the feed f_z for the given value of h_m:

$$f_z = \frac{h_m}{sin\,\kappa_r} \sqrt{\frac{D}{a_e}}$$

CALCULATING THE AVERAGE CHIP THICKNESS RANGES

There is an optimum average chip thickness range for each type of tool included in this catalogue. When using values lower than the stated range, there is a risk that the tool "will not cut", that there will be excessive wear, or even that the the insert will be severely damaged in the process. Exceeding the recommended value also risks damaging the insert due to tool overloading. The following table provides the cutter types together with the recommended average chip thickness ranges.

FACE MILLING CUTTERS				
$\kappa_r = 60°$	$\kappa_r = 75°$	$\kappa_r = 75°$	$\kappa_r = 45°$	With round inserts
–	Negative	Positive	–	Negative
ø 5.000 – 12.000 in	ø 3.000 – 12.000 in	ø 2.500 – 10.000 in	ø 2.000 – 12.000 in	ø 1.500 – 4.000 in
h_m .0030 – .0195 in	h_m .0030 – .0155 in	h_m .0025 – .0135 in	h_m .0060 – .0155 in	h_m .0025 – .0155 in

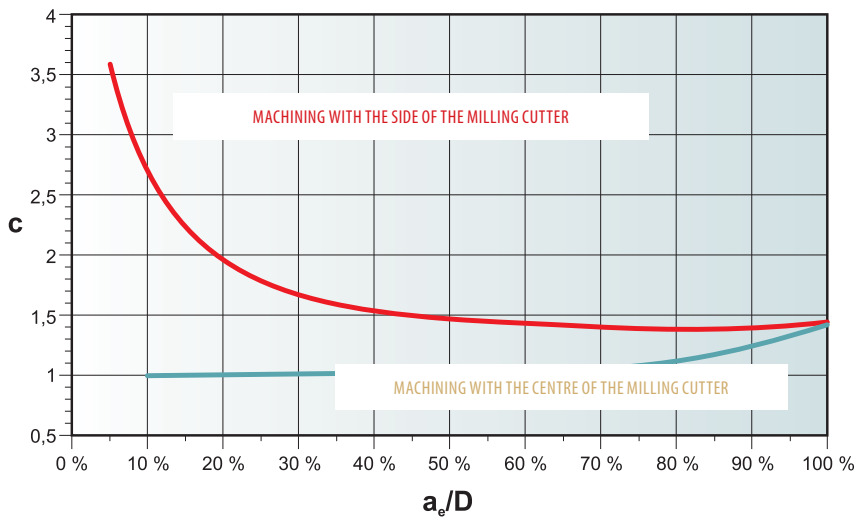
SHOULDER MILLING CUTTERS	HELICAL CUTTERS		DISC CUTTERS
$\kappa_r = 90°$	–	–	–
–	–	–	–
ø 1.500 – 6.000 in	ø 2.000 – 3.000 in	ø 1.000 – 1.500 in	Width .156 – .551 in
h_m .0030 – .0100 in	h_m .0040 – .0060 in	h_m .0025 – .0030 in	h_m .0025 – .0035 in

END MILLING CUTTERS		
$\kappa_r = 90°$	$\kappa_r = 45°$	With round inserts
–	–	–
ø .625 – 1.500 in	ø .375 – 1.250 in	ø .315 – 1.000 in
h_m .0025 – .0050 in	h_m .0025 – .0100 in	h_m .0025 – .0070 in

To achieve optimum application of any milling tool, it is therefore recommended to check the chip thickness or choose (calculate) a suitable feed based on the recommended range of h_m. It is also necessary to take the geometry of the insert into account. The formula above can be used to calculate f_z, or the following formula can be used instead.

The value of coefficent c can be read from the following chart:

$$f_z = \frac{h_m}{sin \cdot \kappa_r} \cdot c$$



FACE MILLING CUTTERS

Marking of cutter	Clamping screw	Torque [Nm]	Driver	Driver handle	Screwdriver	Screwdriver	Key	Clamping screw Thread	Clamping screw Length [in]
									
ISHN06	US 3007-T09P	**2.0**	–	–	–	FLAG T09P	–	**M 3**	**.280**
IS45HN06C	US3007-T09P	**2.0**	D-T07P/T09P	FG-15	–	–	–	**M 3**	**.280**
IS45HN09C	US 3512-T15P	**3.0**	D-T08P/T15P	FG-15	–	–	–	**M 3,5**	**.470**
ISSE09	US 3007-T09P	**2.0**	–	–	SDR T09P	–	–	**M 3**	**.280**
IS45SE09F	US 3007-T09P	**2.0**	–	–	SDR T09P	–	–	**M 3**	**.280**
IS57PN13	US 68026-T30P	**15.0**	–	–	SDR T30P-T	–	–	**M 8**	**1.020**
IC60HN09	US 74016-T15P	**3.5**	D-T08P/T15P	FG-15	–	–	–	**M 4**	**.630**
IF60SB22X	DS 01Z	**6.0**	–	–	–	–	KL 04	**M 8**	**.790**

SHOULDER MILLING CUTTERS

Marking of cutter	Clamping screw	Torque [Nm]	Driver	Driver handle	Screwdriver	Screwdriver	Key	Clamping screw Thread	Clamping screw Length [in]
									
ISAD11E	US 2505-T08P	**1.2**	–	–	–	FLAG T08P	–	**M 2,5**	**.200**
IS90AD11E	US 2505-T08P	**1.2**	D-T08P/T15P	FG-15	–		–	**M 2,5**	**.200**
ISAD16E	US 4008-T15P	**3.5**	–	–	–	FLAG T15P	–	**M 4**	**.310**
IS90AD16E	US 4011-T15P	**3.5**	D-T08P/T15P	FG-15	–	–	–	**M 4**	**.430**
IS90AD16E	US 4008-T15P	**3.5**	D-T08P/T15P	FG-15	–	–	–	**M 4**	**.310**
ICAD15	US 63511D-T15P	**3.0**	–	–	–	FLAG T15P	–	**M 3,5**	**.430**
IC90AD15	US 63511D-T15P	**3.0**	D-T08P/T15P	FG-15	–	–	–	**M 3,5**	**.430**
ISLN12	US 44012-T15P	**3.5**	–	–	–	FLAG T15P	–	**M 4**	**.470**
IS90LN12	US 44012-T15P	**3.5**	D-T08P/T15P	FG-15	–	–	–	**M 4**	**.470**
IS90LN16	US 45012-T20P	**5.0**	–	–	SDR T20P-T	–	–	**M 5**	**.470**
ISSO09	US 3006-T09P	**2.0**	–	–	SDR T09P	–	–	**M 3**	**.240**
IS90SO09	US 3006-T09P	**2.0**	–	–	SDR T09P	–	–	**M 3**	**.24**

HELICAL CUTTERS

Marking of cutter	Clamping screw	Torque [Nm]	Driver	Driver handle	Screwdriver	Screwdriver	Clamping screw Thread	Clamping screw Length [in]
								
J-ISAD11E	US 2506-T07P	**1.2**	–	–	–	FLAG T07P	**M 2,5**	**.240**
T-IS90AD11E	US 2506-T07P	**1.2**	D-T07P/T09P	FG-15	–	–	**M 2,5**	**.240**

DISC CUTTERS

Marking of cutter	Clamping screw	Torque	Screwdriver	Clamping screw Thread	Clamping screw Length [in]
		[Nm]			
IS90SN11N2.5	US 3504-T09P	**3.0**	SDR T09P	**M 3,5**	**.160**
IS90SN12N4	US 94006-T15	**5.0**	SDR T15	**M 4**	**.236**
IS90SN12N5	US 71	**5.0**	SDR T15	**M 4**	**.280**
IS90SN12N6	US 94008-T15	**5.0**	SDR T15	**M 4**	**.315**
IS90SN11N2.5-R	US 3504-T09P	**3.0**	SDR T09P	**M 3,5**	**.160**
IS90SN11N3-R	US 3505-T09P	**3.0**	SDR T09P	**M 3,5**	**.197**
IS90SN12N4-R	US 70	**5.0**	SDR T15	**M 4**	**.200**
IS90SN12N6-R	US 72	**5.0**	SDR T15	**M 4**	**.350**

COPY MILLING CUTTERS

Marking of cutter	Clamping screw	Torque	Driver	Driver handle	Driver	Torque handle	Screwdriver	Screwdriver	Clamping screw Thread	Clamping screw Length [in]
		[Nm]								
W-ISRD07	US 25	**1.2**	–	–	–	–	SDR T07	–	**M 2,5**	**.200**
W-ISRD10	US 3507-T15	**3.0**	–	–	–	–	SDR T15	–	**M 3,5**	**.280**
ISRD07	US 25	**1.2**	–	–	–	–	SDR T07	–	**M 2,5**	**.200**
ISRD10	US 3507-T15	**3.0**	–	–	–	–	SDR T15	–	**M 3,5**	**.280**
ISCRD12	US 3507-T15	**3.0**	–	–	–	–	SDR T15	–	**M 3,5**	**.280**
ISRD12	US 3507-T15	**3.0**	–	–	–	–	SDR T15	–	**M 3,5**	**.280**
ISCRD16	US 4511-T20	**5.0**	–	–	–	–	SDR T20	–	**M 4,5**	**.430**
ISCMORD12	US 3507-T15	**3.0**	–	–	–	–	SDR T15	–	**M 3,5**	**.280**
ISCMORD16	US 4511-T20	**5.0**	–	–	–	–	SDR T20	–	**M 4,5**	**.430**
ISPD09	US 45011-T20P	**5.0**	–	–	–	–	–	FLAG T20P	**M 5**	**.430**
IS19PD09	US 45011-T20P	**5.0**	–	–	–	–	SDR T20P-T	–	**M 5**	**.430**
C-ISZD07	US 2205-T07P	**.9**	–	–	–	–	–	FLAG T07P	**M 2,2**	**.200**
W-ISZD09	US 3006-T09P	**2.0**	–	–	–	–	–	FLAG T09P	**M 3**	**.240**
W-ISZD12	US 4011-T15P	**3.5**	–	–	–	–	–	FLAG T15P	**M 4**	**.430**
ISZD07	US 2205-T07P	**.9**	–	–	–	–	–	FLAG T07P	**M 2,2**	**.200**
ISZD09	US 3006-T09P	**2.0**	–	–	–	–	–	FLAG T09P	**M 3**	**.240**
ISZD12	US 4011-T15P	**3.5**	–	–	–	–	–	FLAG T15P	**M 4**	**.430**
ISMOZD09	US 3006-T09P	**2.0**	D-T07P/T09P	FG-15	–	–	–	–	**M 3**	**.240**
ISMOZD12	US 4011-T15P	**3.5**	D-T08P/T15P	FG-15	–	–	–	–	**M 4**	**.430**

CUTTERS FOR SPECIAL APPLICATIONS

Marking of cutter	Clamping screw	Torque	Driver	Driver handle	Screwdriver	Clamping screw Thread	Clamping screw Length [in]
		[Nm]					
ISSD09	US 3509-T15	**3.0**	–	–	SDR T15	**M 3,5**	**.35**
ISSD09	US 3507-T15	**3.0**	–	–	SDR T15	**M 3,5**	**.28**
ISxxXP16	US 3509-T15	**3.0**	D-T07/T15	FG-15		**M 3,5**	**.35**

TORQUE HANDLE

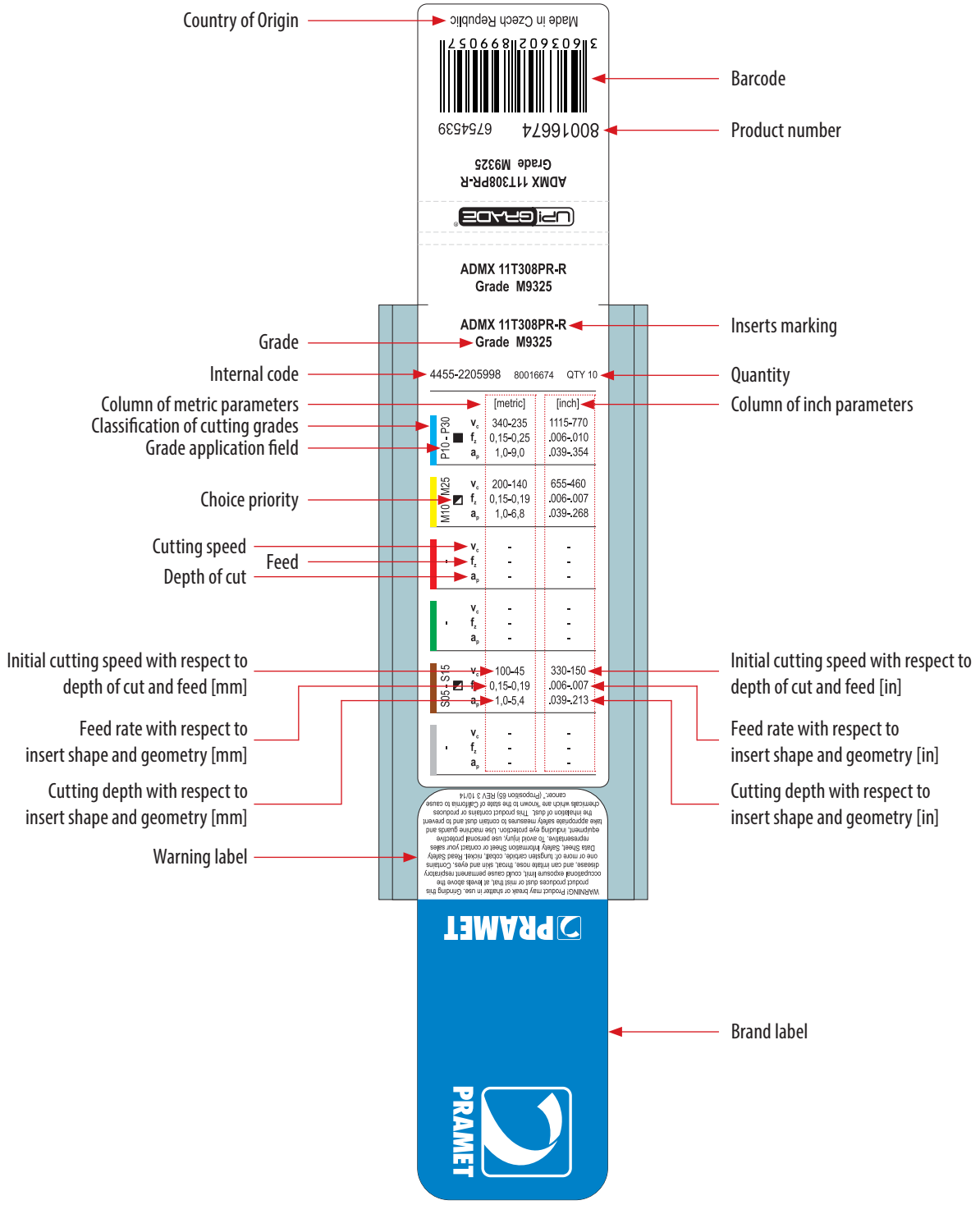
Torque handle 	Torque [Nm]	Thread of clamping screw
MR-0,8-2,0 vario	.8 - 2.0	M 2 - M 3
MR-1,0-5,0 vario	1.0 - 5.0	M 2,5 - M 5
MR-0,9 fix	.9	M 2
MR-2,0 fix	2.0	M 3
MR-3,0 fix	3.0	M 3,5
MR-3,5 fix	3.5	M 4
MR-5,0 fix	5.0	M 5

DRIVERS

Exchangeable driver 
D-T6
D-T6P
D-T7
D-T7P
D-T8
D-T8P
D-T9
D-T9P
D-T15
D-T15P
D-T20
D-T20P

SCREW LUBRICATION

Owing to the high thermal stress on the clamping screws, it is advisable to lubricate them with a high-quality paste such as MOLYKOTE 100. This paste can be ordered in the same way as spare parts.


Country of Origin
Made in Czech Republic
Barcode
Product number
8001667 4 6754539
Grade M9325
ADMX 11T308PR-R
UPGRADE
ADMX 11T308PR-R
Grade M9325
Grade
Internal code
Column of metric parameters
Classification of cutting grades
Grade application field
Choice priority
Cutting speed
Feed
Depth of cut
ADMX 11T308PR-R
Grade M9325
4455-2205998 80016674 QTY 10
[metric] [inch]
P10 - P30
M10 M25
SD5 + S15
340-235 1115-770
0,15-0,25 .006-.010
1,0-9,0 .039-.354
200-140 655-460
0,15-0,19 .006-.007
1,0-6,8 .039-.268
100-45 330-150
0,15-0,19 .006-.007
1,0-5,4 .039-.213
Inserts marking
Quantity
Column of inch parameters
Initial cutting speed with respect to depth of cut and feed [mm]
Feed rate with respect to insert shape and geometry [mm]
Cutting depth with respect to insert shape and geometry [mm]
Warning label
Initial cutting speed with respect to depth of cut and feed [in]
Feed rate with respect to insert shape and geometry [in]
Cutting depth with respect to insert shape and geometry [in]
PRAMET
Brand label