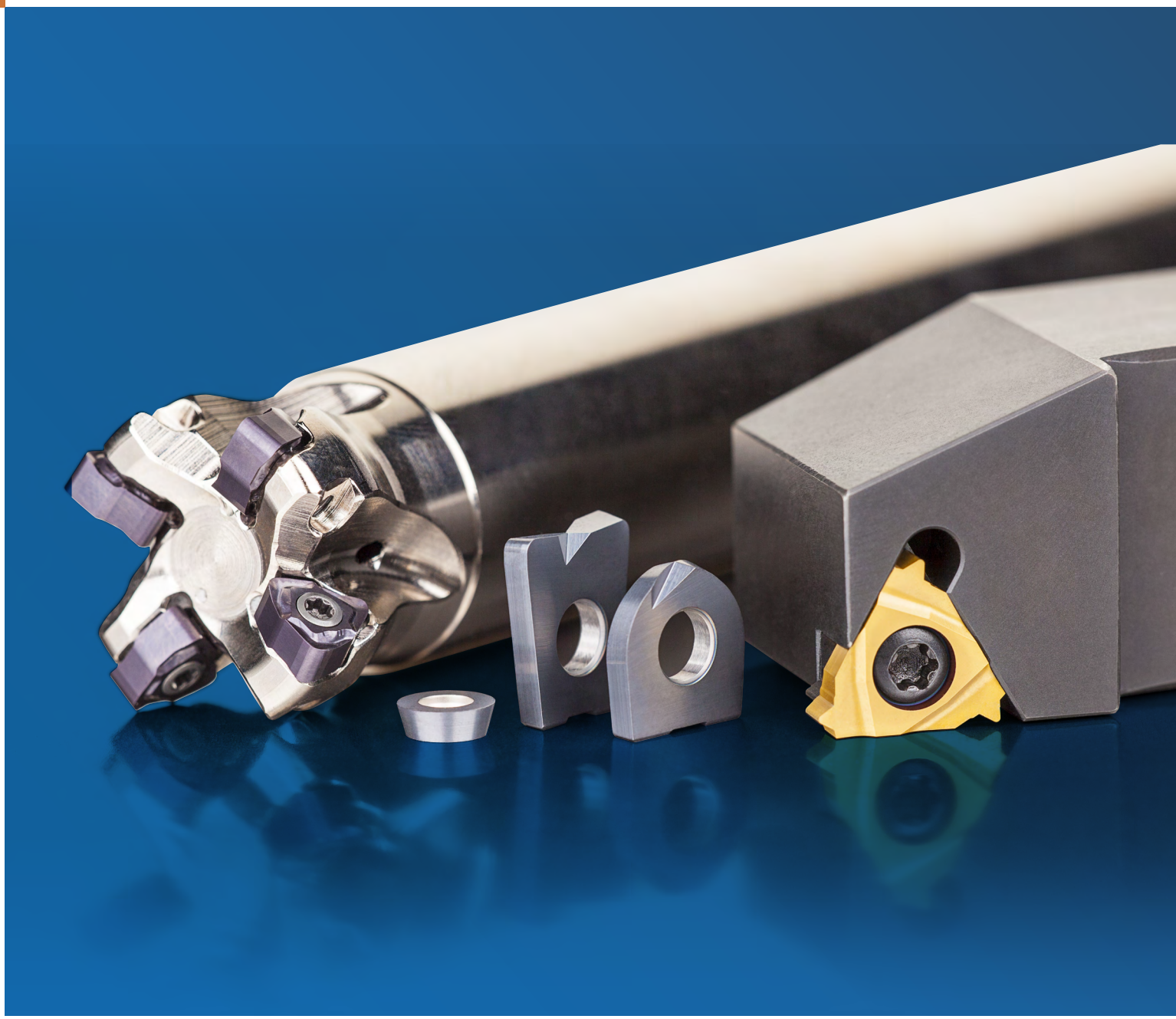
PRAMET

New products 2018



PRAMET

CONTENTS

New items only are listed in this brochure. This icon is used to identify where there is an existing assortment available and includes the relevant page number from the Pramet 2017 catalog and previous New products brochure.

MILLING CUTTERS AND INSERTS

PRODUCTIVE COPY MILLING TOOLS FOR SEMI-FINISHING AND FINISHING

Our family of economical milling tools has been enhanced by a new range of productive tools (ø12-20mm) for die and mold applications. Designed for smooth cutting in operations with long overhang.
Featuring **more teeth for maximum productivity** and wiper geometry providing an improved surface finish, resulting in reduced machining time for finishing.

FEATURES & BENEFITS

- **Productivity** - Close pitch increases the number of teeth and enables at least 20% higher productivity than standard pitch cutters
- **Increased surface quality** - Patented wiper edges generate superior finish on component walls and face
- **Decreased vibration** - Optimized for deep cavity milling with particularly smooth cutting in corners and pockets
- **Cost saving** per cutting edge - Double-sided inserts with up to 4 cutting edges.
- Optimal **chip evacuation** - Internal coolant

APPLICATIONS

Materials:

- Steels, hardened steel and cast irons.

Process:

- Contouring, profiling, plunging and face milling.

INSERT TYPES

CNHX 05

CNHX 05

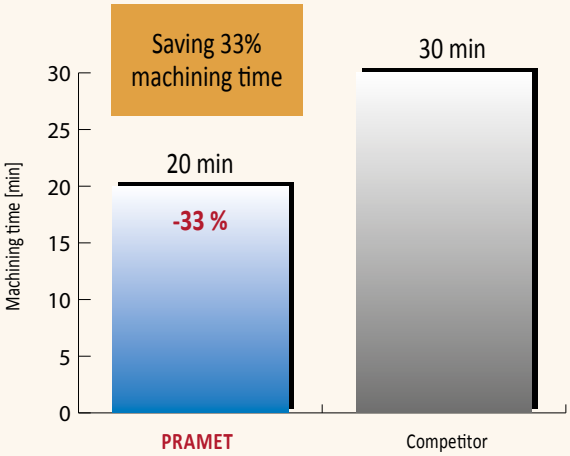
Wiper geometry for both shoulder and face milling

- 4 cutting edges
- Semi-finishing and finishing
- Double-sided insert
- Positive geometry
- Radius 0.5 and 1.0 mm

Also available with new grades developed for hardened materials (see page 22)

SCN05C / CNHX 05 MACHINING EXAMPLE

Material: AISI H13
Material group: H
Workpiece: Mold
Insert: CNHX 050210ER-WM: M4310
Coolant: YES - air

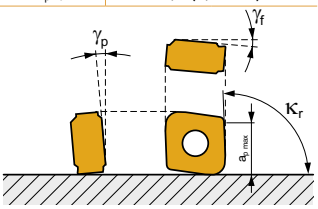


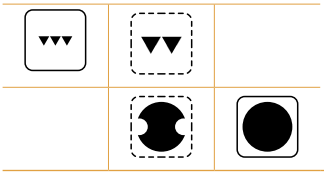
			PRAMET	Competitor
Operation			**Contouring - finishing**	
Tool			16A3R025M08--SCN05C-C	D16 mm, 2 teeth
Cutting speed	v_c	m/min	180	180
Feed per tooth	f_z	mm/tooth	0,1	0,1
Feed per minute	f	mm/min	1074	716
Axial depth of cut	a_p	mm	0,25	0,25
Radial depth of cut	a_e	mm	0,25	0,25
Machining time	t	min	20	30
Durability	T	min	45	30

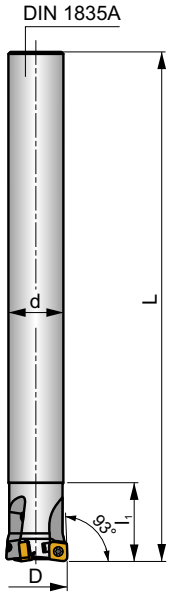
SCN05C

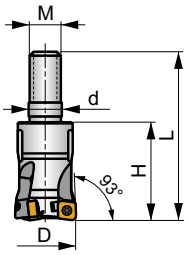
P K H S

κ_r	93
a_{pmax}	0,5 (1,0 mm)









h_m 0,02 - 0,07

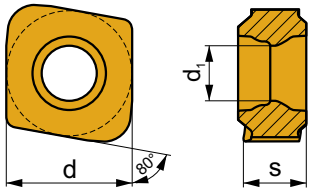
	ISO	D	L	d	l_1	H	M	γ_f°	γ_p°			max.		kg		
DIN 1835A	**12A2R020A10-SCN05C-C**	12	100	10	20	–	–	-15	-8	2	–	48700	✓	0,05	GI330	CO601
	16A3R020A14-SCN05C-C	16	130	14	20	–	–	-13,5	-7,8	3	–	42200	✓	0,13	GI330	CO601
	20A5R020A18-SCN05C-C	20	160	18	20	–	–	-12,7	-7,5	5	✓	37700	✓	0,28	GI330	CO601
MODULAR	**12A2R020M06-SCN05C-C**	12	35	–	–	20	M6	-15	-8	2	–	–	✓	0,01	GI330	CO601
	16A3R025M08-SCN05C-C	16	43	–	–	25	M8	-13,5	-7,8	3	–	–	✓	0,03	GI330	CO601
	20A5R030M10-SCN05C-C	20	49	–	–	30	M10	-12,7	-7,5	5	✓	–	✓	0,05	GI330	CO601

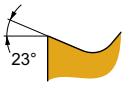
GI330	CNHX 0502..

		Nm			
CO601	US 62005-T06P	0,9	M 2	4,9	Flag T06P

CNHX 05

	d	d_1	s
0502	4,800	2,10	2,40





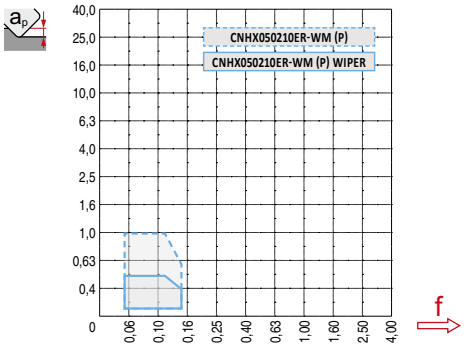
ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CNHX 050205ER-WM	**M4310**	◪		■			■	●	-	0,5	0,05	0,15	0,1	1,0
	M8330	■		■			◪	⬣	-	0,5	0,05	0,15	0,1	1,0
CNHX 050210ER-WM	**M4310**	◪		■			■	⬣	-	1,0	0,05	0,15	0,1	1,0
	M8330	■		■			◪	⬣	-	1,0	0,05	0,15	0,1	1,0

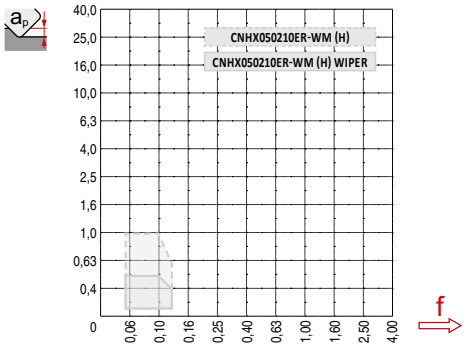
ISO		f_{min}	f_{max}	M4310	M8330
P	●	0,05	0,15	350	365
	⬣	0,05	0,12	315	329
	✖	0,05	0,10	280	292
K	●	0,05	0,15	330	345
	⬣	0,20	0,12	297	311
	✖	0,20	0,10	264	276
H	●	0,05	0,15	71	68
	⬣	0,05	0,12	64	61
	✖	0,05	0,10	57	54

PRAMET

a_e / D	0,05	0,10	0,15	0,20	0,25	0,30	0,40	0,50	0,60	0,70	0,75	0,80	0,90	1,00
X.V	1,48	1,35	1,27	1,22	1,19	1,16	1,11	1,08	1,05	1,03	1,00	1,00	1,00	1,00
X.f	2,87	2,05	1,69	1,48	1,33	1,23	1,09	0,75	0,94	0,90	0,89	0,88	0,88	1,00
X.f	0,64	0,64	0,64	0,64	0,64	0,65	0,65	0,67	0,68	0,71	0,72	0,74	0,79	1,00

	CNHX 05-WM	
r_ε	0,5	1,0
a	0,50	0,50





D	max
12	0,4
16	0,4
20	0,5

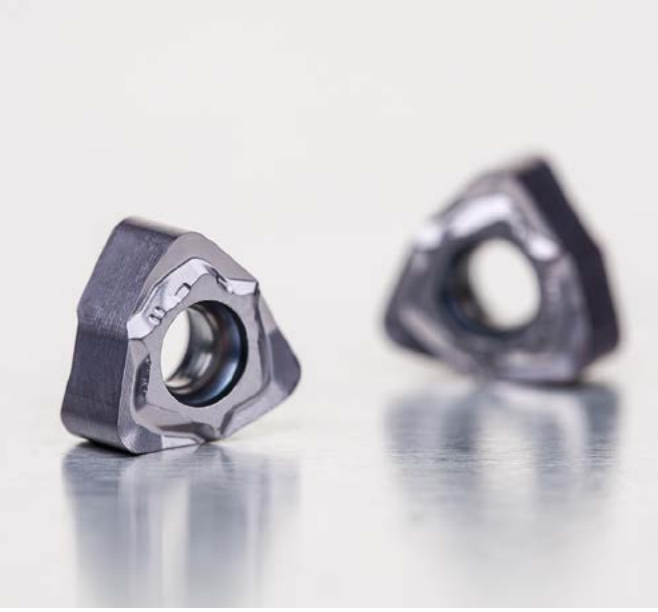
D	α_{max} °	a_p/l
12	2,4	1/25
14	1,5	1/40
16	1,1	1/54

ECONOMICAL AND PRODUCTIVE COPY MILLING TOOLS FOR SEMI-FINISHING AND FINISHING

Our family of economical milling tools has been further enhanced by a new range of productive tools (ø 20-35mm) for die and mold applications. Designed for smooth cutting in operations with long overhang.
Featuring **more cutting edges for extreme economical** use and wiper geometry providing an improved surface finish, resulting in reduced machining time for finishing.

FEATURES & BENEFITS

- **Economical** – 6-cutting edges providing a more cost-effective option
- **Increased surface quality** - patented wiper edges generate superior finish on component walls and face
- **Decreased vibration** - Optimized for deep cavity milling with particularly smooth cutting in corners and pockets
- **Productive** – higher feeds
- Optimal **chip evacuation** - Internal coolant



APPLICATIONS

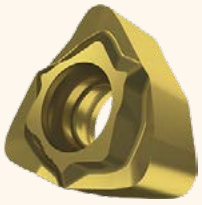
Materials:

- Steels, hardened steel and cast irons.

Process:

- Contouring, profiling, plunging and face milling.

INSERT TYPES



WNHX 04

WNHX 04

Wiper geometry for both shoulder and face milling

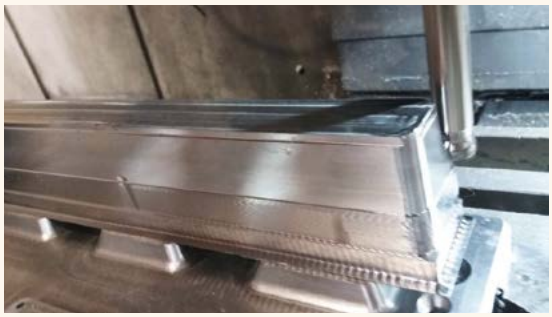
- 6 cutting edges
- Semi-finishing and finishing
- Double-sided insert
- Positive geometry
- Radius 0.5, 1.0 and 1.5 mm

Also available with new grades developed for hardened materials (see page 22)

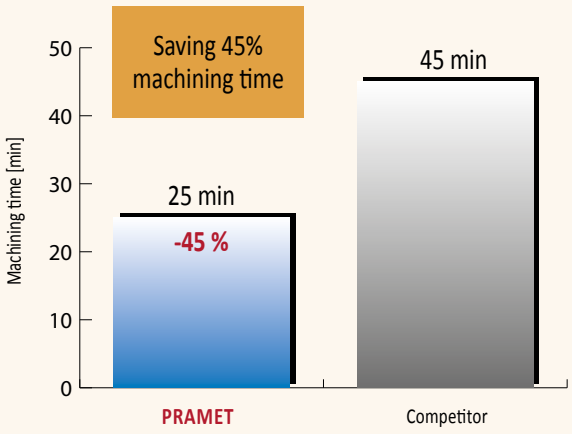
SWN04C / WNHX 04

SWN04C / WNHX 04 MACHINING EXAMPLE

Material: DIN 1.2738 (AISI P20)
Material group: P
Workpiece: Mold for plastic injection
Insert: WNHX 040310ER-WM: M4310
Coolant: YES - air



			PRAMET	Competitor
Operation			Contouring - finishing	
Tool			25A4R020A22--SWN04C-C	D25mm, 4 teeth
Cutting speed	v_c	m/min	196	196
Feed per tooth	f_z	mm/tooth	0,36	0,20
Feed per minute	f	mm/min	3600	2000
Axial depth of cut	a_p	mm	0,50	0,50
Radial depth of cut	a_e	mm	0,70	0,70
Machining time	t	min	25	45
Durability	T	min	45	45

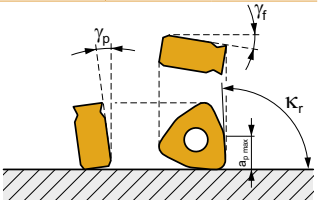


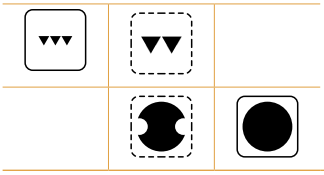
PRAMET

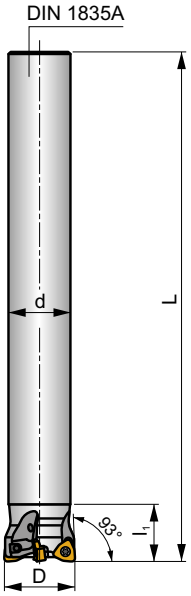
SWN04C

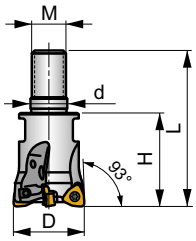
P K H S

κ_r	93
a_{pmax}	0,5 (2,0 mm)









h_m 0,02 - 0,07

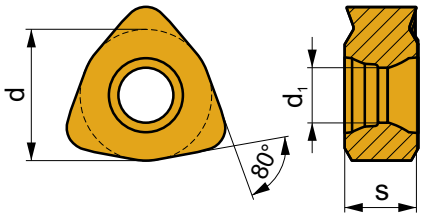
	ISO	D	L	d	l_1	H	M	γ_f°	γ_p°			max.		kg		
DIN 1835A	**20A3R020A18-SWN04C-C**	20	160	18	20	–	–	-12	-8	3	–	19700	✓	0,27	GI331	CO602
	25A4R020A22-SWN04C-C	25	180	22	20	–	–	-11,5	-8	4	✓	26600	✓	0,45	GI331	CO602
	32A6R020A25-SWN04C-C	32	200	25	20	–	–	-11,2	-8	6	✓	23500	✓	0,69	GI331	CO602
MODULAR	**20A3R030M10-SWN04C-C**	20	49	–	–	30	M10	-12	-8	3	–	–	✓	0,05	GI331	CO602
	25A4R033M12-SWN04C-C	25	55	–	–	33	M12	-11,5	-8	4	✓	–	✓	0,08	GI331	CO602
	32A6R040M16-SWN04C-C	32	63	–	–	40	M16	-11,2	-8	6	✓	–	✓	0,19	GI331	CO602
	35A6R043M16-SWN04C-C	35	66	–	–	43	M16	-11,1	-8	6	✓	–	✓	0,22	GI331	CO602

GI331	WNHX 0403..

		Nm			
CO602	US 42507-T07P	1,2	M 2,5	7	Flag T07P

WNHX 04

	d	d_1	s
0403	6,200	2,60	3,38



ISO		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
WNHX 040305ER-WM	**M4310**	◪		■			■	●	-	0,5	0,05	0,25	0,1	2,0
	M8330	■		■			◪	⬣	-	0,5	0,05	0,25	0,1	2,0
WNHX 040310ER-WM	**M4310**	◪		■			■	⬣	-	1,0	0,05	0,25	0,1	2,0
	M8330	■		■			◪	⬣	-	1,0	0,05	0,25	0,1	2,0
WNHX 040315ER-WM	**M4310**	◪		■			■	⬣	-	1,5	0,05	0,25	0,1	2,0
	M8330	■		■			◪	⬣	-	1,5	0,05	0,25	0,1	2,0

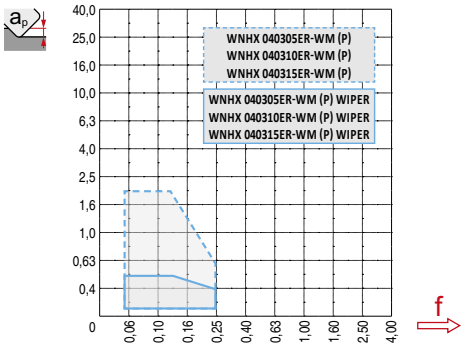
15°

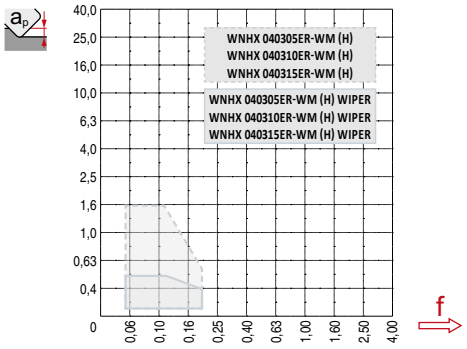
ISO		f_{min}	f_{max}	M4310	M8330
P	●	0,05	0,15	327	345
	⬣	0,05	0,12	294	311
	✖	0,05	0,10	261	276
K	●	0,05	0,15	308	326
	⬣	0,20	0,12	278	293
	✖	0,20	0,10	247	261
H	●	0,05	0,15	68	64
	⬣	0,05	0,12	61	58
	✖	0,05	0,10	54	51

PRAMET

a_e / D	0,05	0,10	0,15	0,20	0,25	0,30	0,40	0,50	0,60	0,70	0,75	0,80	0,90	1,00
X.V	1,48	1,35	1,27	1,22	1,19	1,16	1,11	1,08	1,05	1,03	1,00	1,00	1,00	1,00
X.f	2,87	2,05	1,69	1,48	1,33	1,23	1,09	0,75	0,94	0,90	0,89	0,88	0,88	1,00
X.f	0,64	0,64	0,64	0,64	0,64	0,65	0,65	0,67	0,68	0,71	0,72	0,74	0,79	1,00

	WNHX 04-WM		
r_ε	0,5	1,0	1,5
a	0,50	0,50	0,50





D	max
20	0,4
25	0,5
32	0,5
35	0,5

D	α_{max} °	a_p/l
20	0,7	1,1/100
25	0,5	0,75/100
32	03	0,4/100
35	0,3	0,4/100

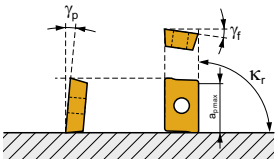
PRAMET

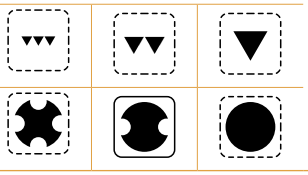
SAD07D

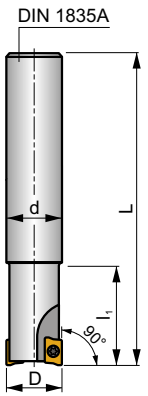
P M K N S

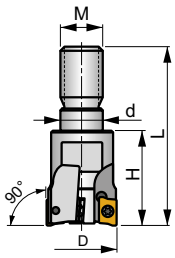
S

κ_r	90°
a_{pmax}	5,0 mm









h_m 0,03 - 0,08

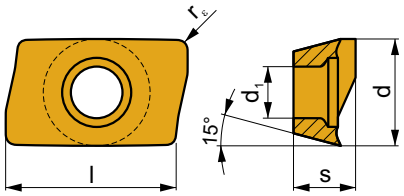
	ISO	D	L	d	l_1	H	M	γ_f°	γ_p°			max.		kg		
DIN 1835A	**10A2R018A08-SAD07D-CF**	10	100	8	18	–	–	-12	+8	2	–	61600	✓	0,03	GI276	SQ010
	10A2R018A10-SAD07D-CF	10	80	10	18	–	–	-12	+8	2	–	61600	✓	0,04	GI276	SQ010
	12A3R020A12-SAD07D-CF	12	90	12	20	–	–	-10	+8	3	–	56200	✓	0,07	GI276	SQ010
	14A3R020A12-SAD07D-CF	14	140	12	20	–	–	-9	+8	3	–	52100	✓	0,10	GI276	SQ010
	14A3R020A14-SAD07D-CF	14	90	14	20	–	–	-9	+8	3	–	52100	✓	0,09	GI276	SQ010
MODULAR	**14A3R023M08-SAD07D-CF**	14	41	8,5	–	23	M8	-9	+8	3	–	–	✓	0,02	GI276	SQ010

GI276	ADMX 0702..	ADEX 0702..

SQ010	US 62003A-T06P	0,6 Nm	M 2	3	Flag T06P

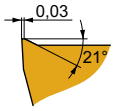
ADMX 07

	d	d_1	l	s
0702	4,482	2,20	6,95	2,48



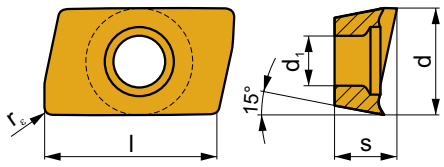
2017 M92

ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
ADMX 070208SR-M	**M6330**	■	■			■		●	-	0,8	0,03	0,12	0,1	5,0

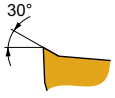


ADEX 07-FA

	d	d_1	l	s
0702	4,497	2,20	6,95	2,48



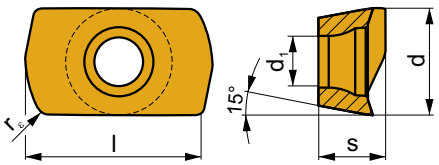
ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
ADEX 070204FR-FA	**M0315**				■			●	++	0,4	0,03	0,20	0,1	5,0
	HF7				■			●	+ / -	0,4	0,03	0,20	0,1	5,0
ADEX 070208FR-FA	**HF7**				■			●	+ / -	0,8	0,03	0,20	0,1	5,0



PRAMET

ADEX 07-HF

	d	d_1	l	s
0702	4,439	2,20	6,45	2,48



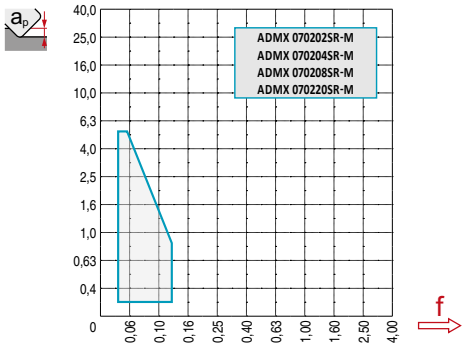
		ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
HFC	0,08 / 15°	ADEX 070206SR-HF	M6330	◪	■			◪		⬢	-	0,6	0,20	0,90	0,1	0,3
			M8330	■	◪	□		□	□	⬢	-	0,6	0,20	0,90	0,1	0,3
S			M8340	■	■	□		◪		⬢	+ / -	0,6	0,20	0,90	0,1	0,3

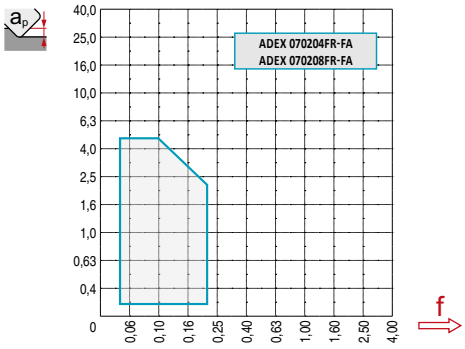
ISO		f_{min}	f_{max}	M9340	M6330	M8310	M8330	M8340	8215	8230	HF7	M0315
P	●	0,03	0,12	280	255	290	278	260	280	255	-	-
	⬢	0,03	0,08	250	225	260	244	225	240	220	-	-
	✖	0,03	0,05	220	200	235	216	195	205	190	-	-
M	●	0,03	0,12	165	165	175	162	155	165	150	-	-
	⬢	0,03	0,08	150	145	155	144	135	140	135	-	-
	✖	0,03	0,05	130	125	140	126	115	120	115	-	-
K	●	0,03	0,12	-	-	275	264	240	260	240	-	-
	⬢	0,03	0,08	-	-	250	238	215	230	210	-	-
	✖	0,03	0,05	-	-	220	210	185	195	180	-	-
N	●	0,03	0,20	-	-	-	-	-	-	-	306	684
	⬢	0,03	0,16	-	-	-	-	-	-	-	275	612
	✖	0,03	0,12	-	-	-	-	-	-	-	239	536
S	●	0,03	0,12	80	80	85	78	75	80	75	-	-
	⬢	0,03	0,08	75	70	75	70	65	70	65	-	-
	✖	0,03	0,05	60	60	65	62	55	60	55	-	-

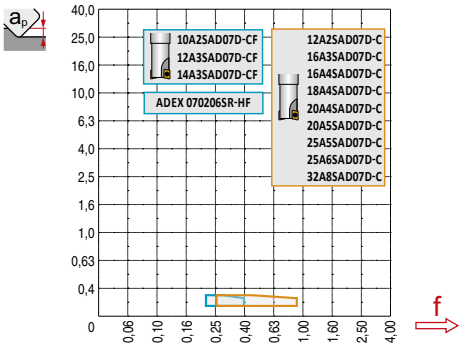
HFC		f_{min}	f_{max}	M8330	M8340	M6330
P	●	0,20	0,90	265	250	235
	⬢	0,20	0,70	235	220	210
	✖	0,20	0,50	205	190	180
M	●	0,20	0,90	160	150	165
	⬢	0,20	0,70	140	130	145
	✖	0,20	0,50	125	115	127
K	●	0,20	0,90	250	235	–
	⬢	0,20	0,70	220	205	–
	✖	0,20	0,50	190	180	–
N	●	0,20	0,70	70	65	73
	⬢	0,20	0,60	60	55	65
	✖	0,20	0,50	55	50	56
S	●	0,10	0,20	52	–	–
	⬢	0,10	0,20	42	–	–
	✖	0,10	0,20	40	–	–

a_e/D	0,05	0,10	0,15	0,20	0,25	0,30	0,40	0,50	0,60	0,70	0,75	0,80	0,90	1,00
X.V	1,48	1,35	1,27	1,22	1,19	1,16	1,11	1,08	1,05	1,03	1,00	1,00	1,00	1,00
⇨X.f	2,87	2,05	1,69	1,48	1,33	1,23	1,09	0,75	0,94	0,90	0,89	0,88	0,88	1,00
⇨X.f	0,64	0,64	0,64	0,64	0,64	0,65	0,65	0,67	0,68	0,71	0,72	0,74	0,79	1,00

	ADMX 07-M				ADEX 07-HF	ADEX 07-FA	
r_ε	0,2	0,4	0,8	2,0	0,6	0,4	0,8
a	1,38	0,89	0,54	0,33	–	0,94	0,55







max.
3,9

a_p	1,0	3,0	5,0
1 ⇨f	0,13	0,08	0,05

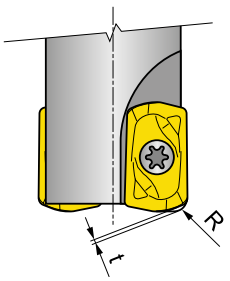
D	α_{max} °	a_p/l	HFC α_{max} °	HFC α_{max} °	HFC a_p/l
10	5,2	5,0/56	3,5	3,5	0,3/6
12	3,4	5,0/86	2,2	2,2	0,3/9
14	2,5	4,2/100	1,6	1,6	0,3/12
16	1,9	3,2/100	1,3	1,3	0,3/15
18	1,7	2,8/100	1,1	1,1	0,3/17
20	1,5	2,5/100	0,9	0,9	0,3/21
25	1,1	1,8/100	0,7	0,7	0,3/26
32	0,8	1,2/100	0,5	0,5	0,3/36

D	d_{min}	d_{max}	s_{max} d_{min}	s_{max} d_{max}
10	12,0	20,0	0,5	2,8
12	16,0	24,0	0,7	2,2
14	20,0	28,0	0,8	1,9
16	24,0	32,0	0,8	1,6
18	28,0	36,0	0,9	1,6
20	32,0	40,0	0,9	1,6
25	42,0	50,0	1,0	1,5
32	56,0	64,0	1,0	1,4

HFC				
D	d_{min}	d_{max}	s_{max} d_{min}	s_{max} d_{max}
10	12	20	0,30	0,30
12	16	24	0,30	0,30
14	20	28	0,30	0,30
16	24	32	0,30	0,30
18	28	36	0,30	0,30
20	32	40	0,30	0,30
25	42	50	0,30	0,30
32	56	64	0,30	0,30

a_p	HFC
0,9	0,3

D	µm	3	5	10	15	20	30	40	50	60	80	100
10		0,346	0,447	0,632	0,775	0,894	1,095	1,265	1,414	1,549	1,789	2,000
12		0,379	0,490	0,693	0,849	0,980	1,200	1,386	1,549	1,697	1,960	2,191
14		0,410	0,529	0,748	0,917	1,058	1,296	1,497	1,673	1,833	2,117	2,366
16	f_e	0,438	0,566	0,800	0,980	1,131	1,386	1,600	1,789	1,960	2,263	2,530
18		0,465	0,600	0,849	1,039	1,200	1,470	1,697	1,897	2,078	2,400	2,683
20		0,490	0,632	0,894	1,095	1,265	1,549	1,789	2,000	2,191	2,530	2,828
25		0,548	0,707	1,000	1,225	1,414	1,732	2,000	2,236	2,449	2,828	3,162
32		0,620	0,800	1,131	1,386	1,600	1,960	2,263	2,530	2,771	3,200	3,578



ADEX 07	R	t
	[mm]	[mm]
ADEX 070206SR-HF	0,8	0,18

MILLING INSERTS

HIGH PERFORMANCE GRADES FOR HARD MILLING

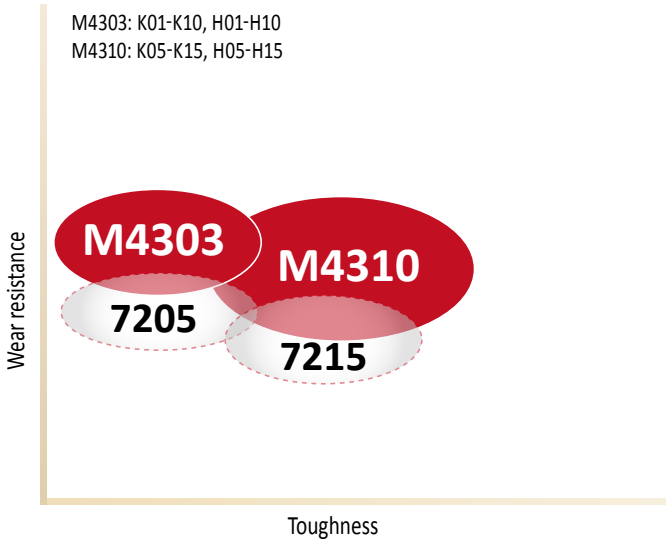
New PVD grades developed for increased performance and durability when semi-finishing and finishing in hardened steels and cast iron.

FEATURES & BENEFITS

- **High performance** - Delivering high speed hard milling solutions for die and mold applications
- **Reliability** - Predictable behaviour (consistent wear progression)
- **Longer tool life** - Increased wear resistance
- **Smooth cutting properties** - Ultra thin PVD coating increases cutting edge toughness
- **Prevents fracture by chipping** - Substrate with high hardness (M4303) and with balanced toughness and wear resistance (M4310)

M4303, M4310

AREA OF APPLICATION



M4303 GRADE

M4303

Superior wear resistance

First choice for hardened steel (above 55HRC) and cast iron

- Second choice for steels and non-ferrous metals
- Replacement of existing grade 7205

M4310 GRADE

M4310

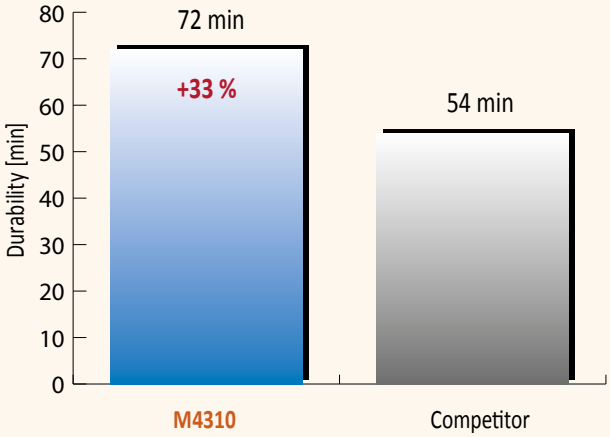
Balance of toughness and wear resistance

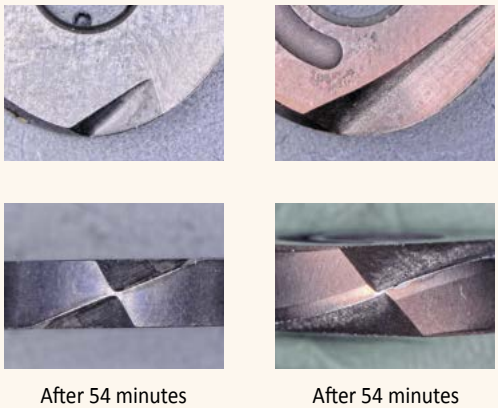
- First choice for hardened steel and cast iron
- Second choice for stainless steel, steels and non-ferrous metals
- Replacement of existing grade 7215

M4310 MACHINING EXAMPLE

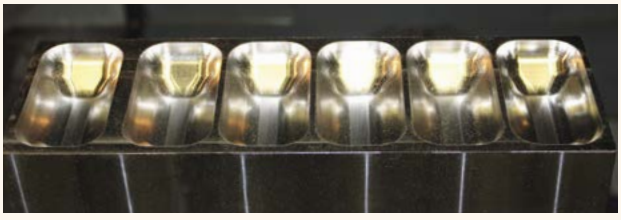
Material: X15CrVMo121 (62 HRC)
Material group: H
Insert: RC 16
Coolant: No

			PRAMET	Competitor
Grade			M4310	
Cutting speed	v_c	m/min	220	220
Feed tooth	f_z	mm/tooth	0,2	0,2
Axial depth of cut	a_p	mm	0,5	0,5
Durability	T	min	72	54





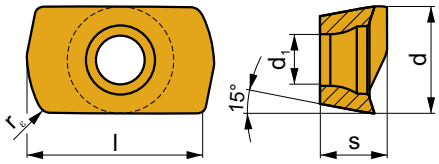
After 54 minutes | After 54 minutes



PRAMET

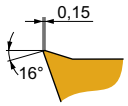
ADEX 11-HF

	d	d_1	l	s
11T3	6,450	2,90	10,67	3,82



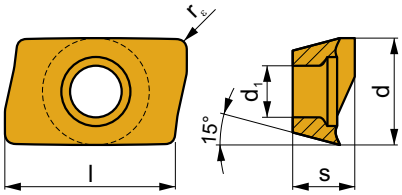
2017 M98

	ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
HFC, S	**ADEX 11T308SR-HF**	**M6330**	◪	■			◪		✱	-	0,8	0,40	1,30	0,1	0,6



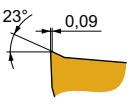
ADMX 11

	d	d_1	l	s
11T3	6,530	2,90	11,00	3,97



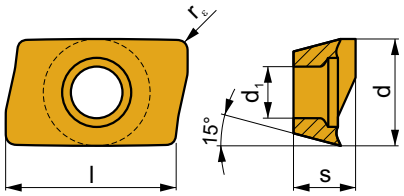
2017 M97

	ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
1, U, S	**ADMX 11T316SR-M**	**M6330**	◪	■			◪		✖	-	1,6	0,10	0,22	0,2	9,0
	ADMX 11T320SR-M	**M6330**	◪	■			◪		✖	-	2,0	0,10	0,22	0,2	9,0
	ADMX 11T325SR-M	**M6330**	◪	■			◪		✖	-	2,5	0,10	0,22	0,2	9,0
	ADMX 11T330SR-M	**M6330**	◪	■			◪		✖	-	3,0	0,10	0,22	0,2	9,0



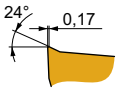
ADMX 16

	d	d_1	l	s
1606	9,950	4,50	16,00	6,25



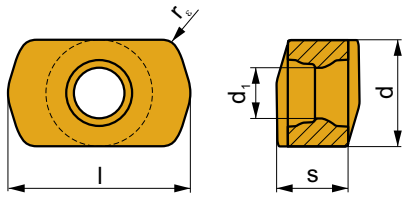
2017
M105

	ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	ADMX 160620SR-M	**M6330**	◪	■			◪		✖	-	2,0	0,10	0,30	0,3	13,0
	ADMX 160632SR-M	**M6330**	◪	■			◪		✖	-	3,2	0,10	0,30	0,3	13,0
	ADMX 160640SR-M	**M6330**	◪	■			◪		✖	-	4,0	0,10	0,30	0,3	13,0



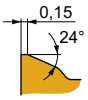
BNGX 10

	d	d_1	l	s
10T3	5,800	2,76	9,92	3,90



2017.2
7

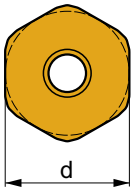
	ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	BNGX 10T308SR-M	**M6330**	◪	□					✖	-	0,8	0,20	1,40	0,3	1,0

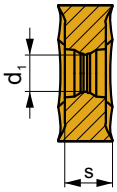


PRAMET

HNGX 06

	d	d_1	s
0604	10,500	3,70	4,76



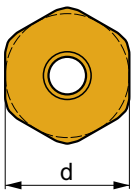


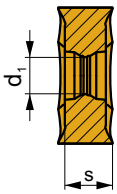
2017 M31

	ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	HNGX 0604ANSN-F	**M6330**	◪	■					?	-	–	0,08	0,17	0,3	3,0
	25° 0,05														
1	**HNGX 0604ANSN-M**	**M6330**	◪	◪					✖	-	–	0,13	0,25	0,6	3,0
	23° 0,09														

HNGX 09

	d	d_1	s
0906	16,500	4,90	6,35



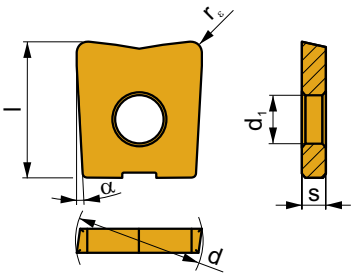


2017 M36

	ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	HNGX 0906ANSN-F	**M6330**	◪	■					?	-	–	0,10	0,20	0,5	5,0
	22° 0,07														

LC

	α°	d	d_1	l	s
08	3°	8,000	3,00	9,50	2,00
10	3°	10,000	4,00	11,50	2,50
12	7°	12,000	5,00	14,00	2,50
16	7°	16,000	5,00	16,00	3,00
20	7°	20,000	5,00	18,00	3,00

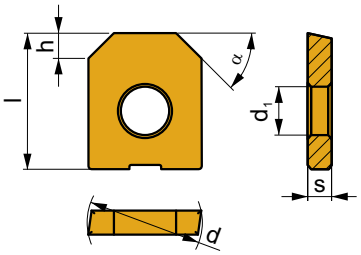


2017
M271, M279

ISO		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
LC 0806-KP	M4310	◪		■			■	●	-	0,6	0,08	0,20	0,1	0,6
	M8330	■		■			◪	⬢	-	0,6	0,08	0,20	0,1	0,6
LC 0810-KP	M4310	◪		■			■	⬢	-	1,0	0,08	0,20	0,1	1,0
LC 1008-KP	M4310	◪		■			■	⬢	-	0,8	0,08	0,25	0,1	0,8
	M8330	■		■			◪	⬢	-	0,8	0,08	0,25	0,1	0,8
LC 1010-KP	M4310	◪		■			■	⬢	-	1,0	0,08	0,25	0,1	1,0
	M8330	■		■			◪	⬢	-	1,0	0,08	0,25	0,1	1,0
LC 1210-KP	M4310	◪		■			■	⬢	-	1,0	0,08	0,25	0,1	1,0
	M8330	■		■			◪	⬢	-	1,0	0,08	0,25	0,1	1,0
LC 1220-KP	M4310	◪		■			■	⬢	-	2,0	0,08	0,25	0,1	2,0
LC 1610-KP	M4310	◪		■			■	⬢	-	1,0	0,08	0,30	0,1	1,0
	M8330	■		■			◪	⬢	-	1,0	0,08	0,30	0,1	1,0
LC 1613-KP	M4310	◪		■			■	⬢	-	1,3	0,08	0,30	0,1	1,3
LC 1630-KP	M4310	◪		■			■	⬢	-	3,0	0,08	0,30	0,1	3,0
LC 2010-KP	M4310	◪		■			■	⬢	-	1,0	0,08	0,35	0,1	1,0
	M8330	■		■			◪	⬢	-	1,0	0,08	0,35	0,1	1,0
LC 2016-KP	M4310	◪		■			■	⬢	-	1,6	0,08	0,35	0,1	1,6
LC 2040-KP	M8330	■		■			◪	⬢	-	4,0	0,08	0,35	0,1	4,0
LC 0806-KPF	M4310	◪		■			■	●	-	0,6	0,05	0,15	0,1	0,6
LC 1008-KPF	M4310	◪		■			■	⬢	-	0,8	0,05	0,20	0,1	0,8
LC 1210-KPF	M4310	◪		■			■	⬢	-	1,0	0,05	0,15	0,1	1,0
	M8330	■		■			◪	⬢	-	1,0	0,05	0,15	0,1	1,0
LC 1613-KPF	M4310	◪		■			■	⬢	-	1,3	0,05	0,15	0,1	1,3
LC 2016-KPF	M4310	◪		■			■	⬢	-	1,6	0,05	0,15	0,1	1,6

LC 12-CH

	α°	d	d_1	h	l	s
1245	45°	12,000	5,00	3,0	14,00	2,50



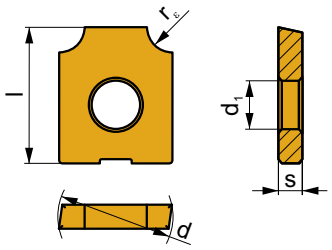
2017
M271

ISO		P	M	K	N	S	H		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
LC 1245-CH	M4310	◪		■			■	⬢	-	–	0,08	0,25	0,1	2,0

PRAMET

LC 12-RE

	d	d_1	l	s
12	12,000	5,00	14,00	2,50

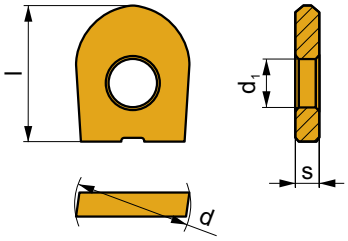


2017 M272

	ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
U, E	LC 1220-RE	M4310	◪		■			■	●	-	2,0	0,08	0,25	0,1	2,0
	LC 1230-RE	M4310	◪		■			■	●	-	3,0	0,08	0,25	0,1	3,0

RC

	d	d_1	l	s
08	8,000	3,00	9,50	2,00
10	10,000	4,00	11,50	2,50
12	12,000	5,00	12,00	2,50
16	16,000	5,00	14,00	3,00
20	20,000	5,00	16,00	3,00
25	25,000	6,00	21,50	4,00
32	32,000	8,00	25,80	5,00

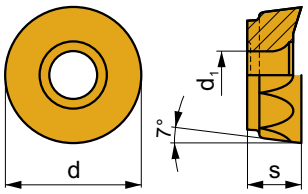


2017 M270

	ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
U, E	RC 08	M4310	◪		■			■	●	-	–	0,10	0,30	0,3	0,8
		M8330	■		■			◪	●	-	–	0,10	0,30	0,3	0,8
	RC 10	M4310	◪		■			■	●	-	–	0,10	0,33	0,3	1,0
		M8330	■		■			◪	●	-	–	0,10	0,33	0,3	1,0
	RC 12	M4310	◪		■			■	●	-	–	0,10	0,35	0,4	1,2
		M8330	■		■			◪	●	-	–	0,10	0,35	0,4	1,2
	RC 16	M4310	◪		■			■	●	-	–	0,10	0,40	0,5	1,6
		M8330	■		■			◪	●	-	–	0,10	0,40	0,5	1,6
	RC 20	M4310	◪		■			■	●	-	–	0,10	0,50	0,6	2,0
		M8330	■		■			◪	●	-	–	0,10	0,50	0,6	2,0
	RC 25	M4310	◪		■			■	●	-	–	0,10	0,55	0,6	2,5
		M8330	■		■			◪	●	-	–	0,10	0,55	0,6	2,5
	RC 32	M4310	◪		■			■	●	-	–	0,10	0,60	0,6	3,2
		M8330	■		■			◪	●	-	–	0,10	0,60	0,6	3,2
F	RC 08-F	M4310	◪		■			■	●	-	–	0,05	0,30	0,3	0,8
	RC 10-F	M4310	◪		■			■	●	-	–	0,05	0,33	0,3	1,0
	RC 12-F	M4310	◪		■			■	●	-	–	0,05	0,35	0,4	1,2
	RC 16-F	M4310	◪		■			■	●	-	–	0,05	0,40	0,5	1,6
		M8330	■		■			◪	●	-	–	0,05	0,40	0,5	1,6
	RC 20-F	M4310	◪		■			■	●	-	–	0,05	0,50	0,5	2,0
		M8330	■		■			◪	●	-	–	0,05	0,50	0,5	2,0

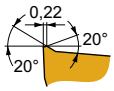
RCMT 20

	d	d_1	s
2006	20,000	6,50	6,35



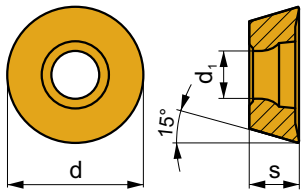
2017 M205

ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RCMT 2006MOSN-M	**M6330**	◪	■			■		✖	-	–	0,15	0,45	0,3	10,0



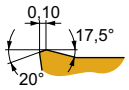
RDGT 10

	d	d_1	s
1003	10,000	3,90	3,18



2017 M219

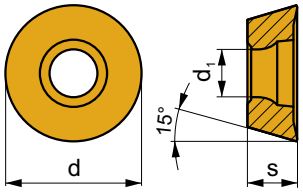
ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RDGT 1003MOT	**M6330**	◪	■			◪		✖	-	–	0,10	0,30	0,5	2,5



PRAMET

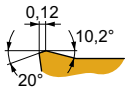
RDGT 12

	d	d_1	s
12T3	12,000	3,90	3,97



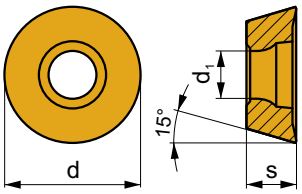
2017 M225

ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RDGT 12T3MOT	**M6330**	◪	■			◪		✖	-	–	0,10	0,35	1,0	3,0



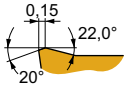
RDGT 16

	d	d_1	s
1604	16,000	5,20	4,76



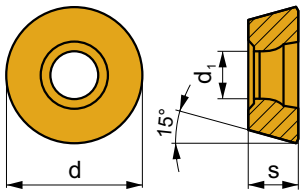
2017 M231

ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RDGT 1604MOT	**M6330**	◪	■			◪		✖	-	–	0,10	0,40	1,0	4,0



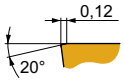
RDHX 07

	d	d_1	s
0702	7,000	2,80	2,38



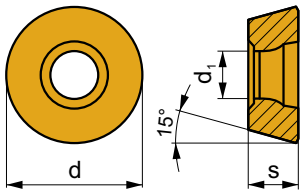
2017 M213

	ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	RDHX 0702MOT	**M4303**	◪	□	■			■	✖	-	–	0,10	0,20	0,5	2,0



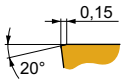
RDHX 10

	d	d_1	s
1003	10,000	3,90	3,18



2017 M218

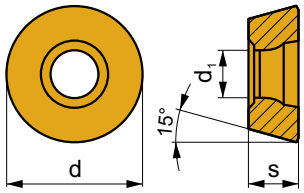
	ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	RDHX 1003MOT	**M4303**	◪	□	■			■	✖	-	–	0,10	0,30	0,5	2,5



PRAMET

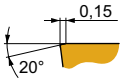
RDHX 12

	d	d_1	s
12T3	12,000	3,90	3,97



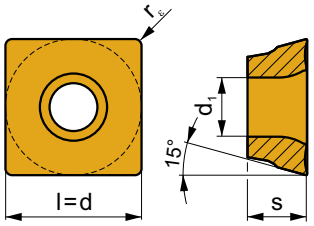
2017 M224

ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
RDHX 12T3MOT	**M4303**	◪	□	■			■	✖	-	–	0,10	0,35	1,0	3,0



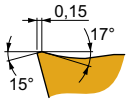
SDKT 12IM

	d	d_1	l	s
1205	12,700	5,5	12,700	5,56



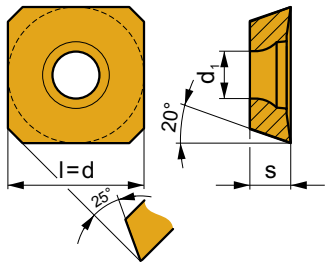
2017.2 53

ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
SDKT 1205AESN-FM	**M6330**	◪	◪			□		✖	-	–	0,15	0,35	0,2	10,0



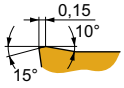
SEET 12-PM

	d	d_1	l	s
12T3	13,400	4,20	13,400	3,97



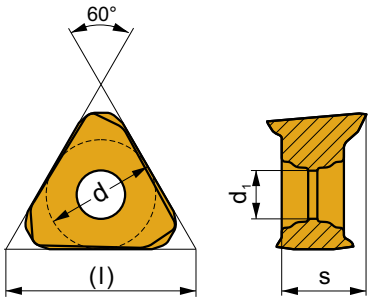
2017 M332

	ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	SEET 12T3M-PM	M6330	◪	■			◪		⬢	-	–	0,20	0,35	1,0	6,5



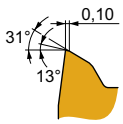
TNGX 10

	d	d_1	l	s
1004	6,000	2,8	10,39	4,69



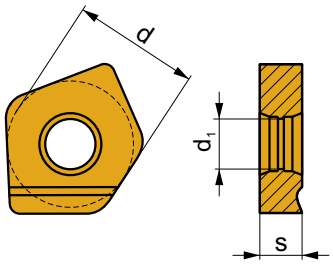
2017 M127

	ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
	TNGX 100404SR-M	M6330	◪	■			◪		●	-	0,4	0,05	0,15	0,3	5,0

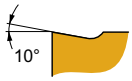


XNGX 13

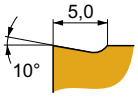
	d	d_1	s
1308	24,180	10,00	7,94

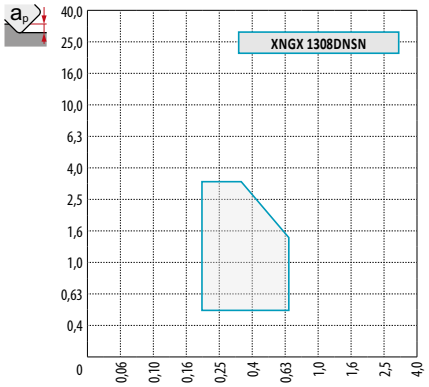


ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
XNGX 1308DNSN	**M8330**	■	□	■				✖	-	-	0,25	0,70	0,5	3,5



XNGX 13

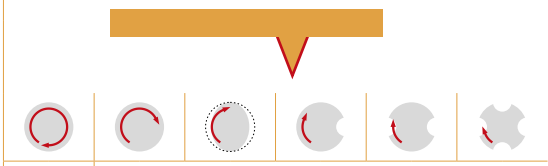




P	M	K	N	S	H
■	□	■			

f 0,25 – 0,7

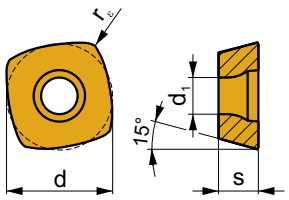
a_p 0,5 – 3,5



f ? XNGX 1308DNSN

ZDEW 12

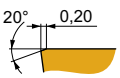
	d	d_1	l	s
1204	12,700	4,40	12,70	4,76



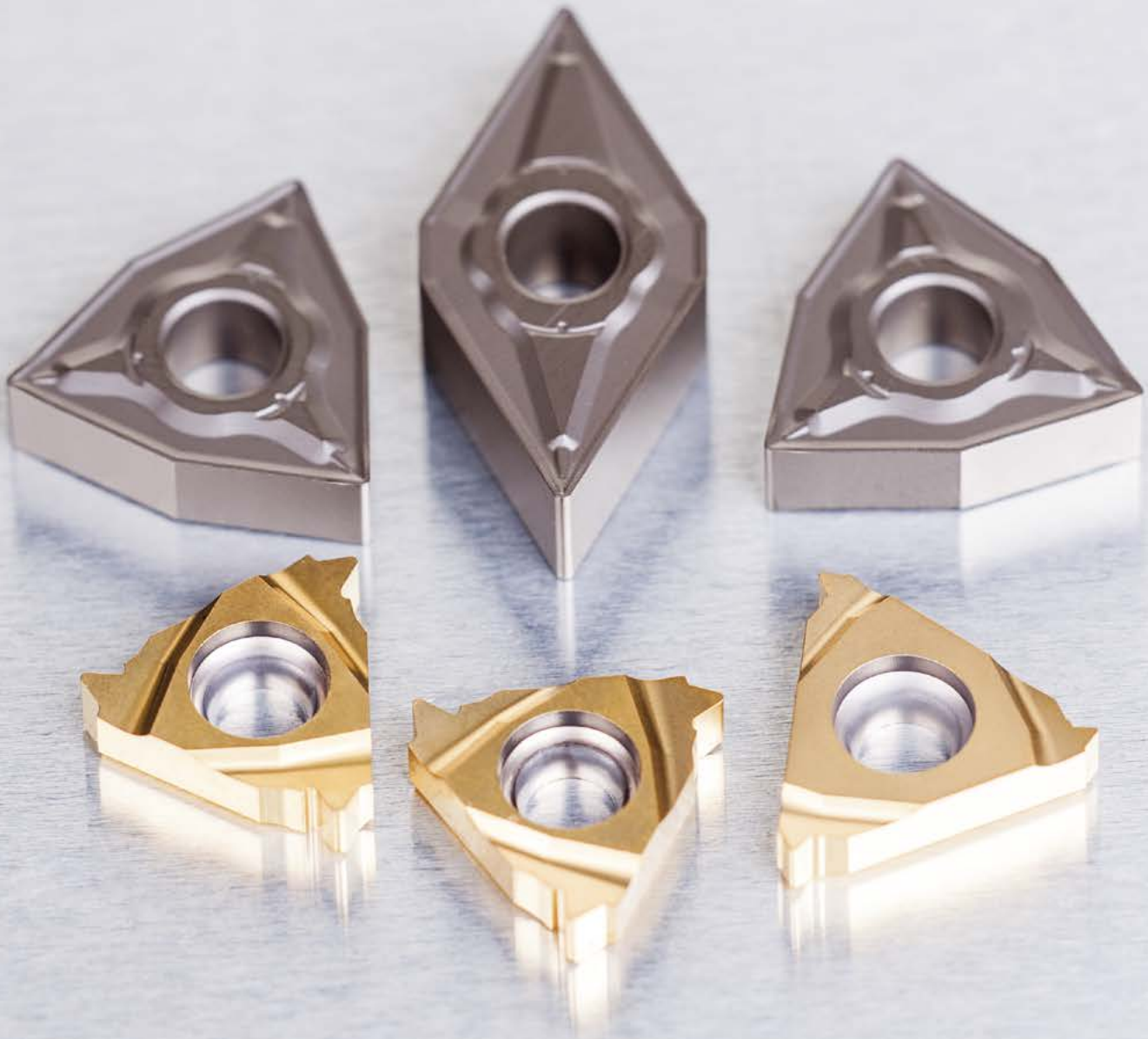
2017 M253

ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
ZDEW 120408	**M4303**	◪		■			■	✱	-	0,8	0,50	3,00	0,3	1,6

HFC

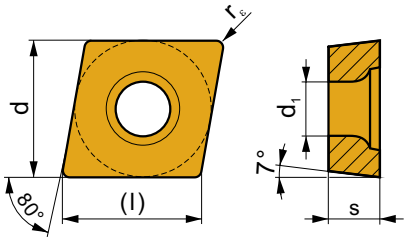


TURNING INSERTS



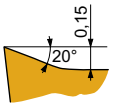
CCGT

	d	d_1	l	s
0602-SF3	6,350	2,80	6,4	2,58
09T3-SF3	9,525	4,40	9,7	4,22
1204-SF3	12,700	5,50	12,9	5,01



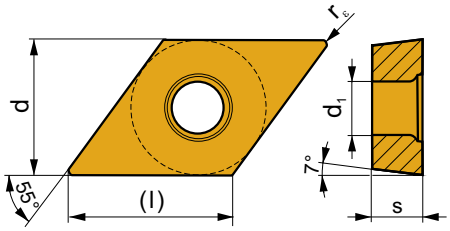
2017 T40

ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
CCGT 060201E-SF3	**T6310**		■		◪	■		●	+	0,1	0,02	0,08	0,1	1,6
CCGT 09T301E-SF3	**T6310**		■		◪	■		●	+	0,1	0,02	0,08	0,1	1,6
CCGT 120404E-SF3	**T6310**		■		◪	■		●	+	0,4	0,05	0,20	0,4	2,5



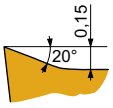
DCGT

	d	d_1	l	s
0702-SF3	6,350	2,80	7,8	2,58
11T3-SF3	9,525	4,40	11,6	4,22



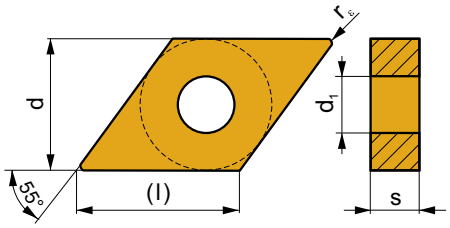
2017 T61

ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
DCGT 070201E-SF3	**T6310**		■		◪	■		●	+	0,1	0,02	0,06	0,1	1,6
DCGT 11T301E-SF3	**T6310**		■		◪	■		●	+	0,1	0,02	0,06	0,1	1,8



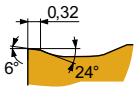
DNMG

	d	d_1	l	s
1504	12,700	5,16	15,5	4,76
1506	12,700	5,16	15,5	6,35



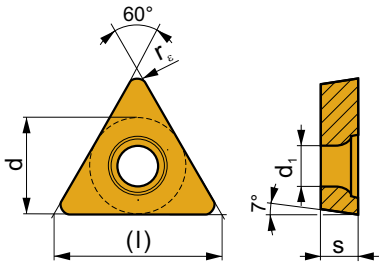
2017 T66

ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
DNMG 150408-NRM	**T7325**	◪	■			□		●	++	0,8	0,23	0,45	0,8	4,0
	T7335	◪	■			□		●	+++	0,8	0,23	0,45	0,8	4,0
	T9315	■						●	++	0,8	0,23	0,45	0,8	4,0
DNMG 150604-NRM	**T7325**	◪	■			□		●	++	0,4	0,15	0,24	0,4	4,0
	T7335	◪	■			□		●	++	0,4	0,15	0,24	0,4	4,0
	T9315	■						●	++	0,4	0,15	0,24	0,4	4,0
DNMG 150608-NRM	**T7325**	◪	■			□		●	++	0,8	0,23	0,45	0,8	4,0
	T7335	◪	■			□		⬢	+++	0,8	0,23	0,45	0,8	4,0
	T9315	■						●	++	0,8	0,23	0,45	0,8	4,0
DNMG 150612-NRM	**T7325**	◪	■			□		⬢	+++	1,2	0,25	0,70	1,2	4,0
	T7335	◪	■			□		⬢	+++	1,2	0,25	0,70	1,2	4,0
	T9315	■						⬢	+++	1,2	0,25	0,70	1,2	4,0



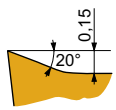
TCGT

	d	d_1	l	s
16T3-SF3	9,525	4,40	16,5	4,22



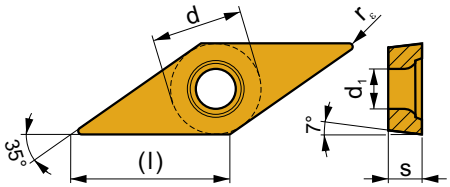
2017 T101

ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
TCGT 16T312E-SF3	**T6310**		■		◪	■		●	++	1,2	0,10	0,60	0,8	3,5



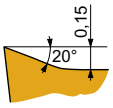
VCGT

	d	d_1	l	s
1102-SF3	6,350	2,80	11,1	2,58
1103-SF3	6,350	2,80	11,1	3,43
1604-SF3	9,525	4,40	16,6	5,01



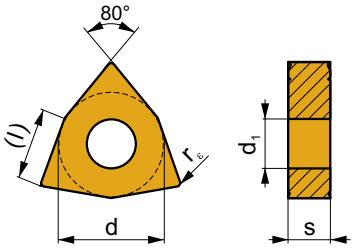
2017 T116

ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
VCGT 110201E-SF3	**T6310**		■		◪	■		●	+	0,1	0,02	0,05	0,1	1,6
VCGT 110301E-SF3	**T6310**		■		◪	■		●	+	0,1	0,02	0,05	0,1	1,6
VCGT 110302E-SF3	**T6310**		■		◪	■		●	+	0,2	0,02	0,10	0,2	1,6
VCGT 110304E-SF3	**T6310**		■		◪	■		●	+	0,4	0,04	0,20	0,4	2,0
VCGT 160402E-SF3	**T6310**		■		◪	■		●	+	0,2	0,02	0,10	0,2	2,0



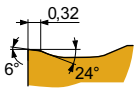
WNMG

	d	d_1	l	s
0804	12,700	5,16	8,7	4,76



2017 T125

ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$
WNMG 080404-NRM	**T7325**	◪	■			□		●	+ +	0,4	0,15	0,30	0,4	4,0
	T7335	◪	■			□		●	+ +	0,4	0,15	0,30	0,4	4,0
	T9315	■						●	+ +	0,4	0,15	0,30	0,4	4,0
WNMG 080408-NRM	**T7325**	◪	■			□		⬢	+ +	0,8	0,23	0,55	0,8	5,0
	T7335	◪	■			□		⬢	+ +	0,8	0,23	0,55	0,8	5,0
	T9315	■						⬢	+ +	0,8	0,23	0,55	0,8	5,0
WNMG 080412-NRM	**T7325**	◪	■			□		⬢	+ +	1,2	0,25	0,70	1,2	5,0
	T7335	◪	■			□		⬢	+++	1,2	0,25	0,70	1,2	5,0
	T9315	■						⬢	+ +	1,2	0,25	0,70	1,2	5,0



T8010

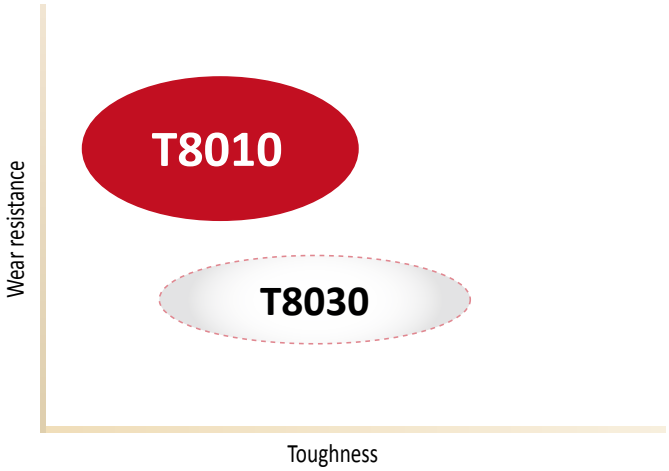
HIGH WEAR RESISTANT GRADE FOR RELIABLE AND PRECISE THREAD TURNING

The new grade is suitable for continuous high precision thread turning of steels, stainless steel, cast iron and super alloys. Offering excellent wear resistance while ensuring operational reliability, the T8010 extends the application area of the universal grade T8030.

FEATURES & BENEFITS

- **Accurate and reliable** - Stable cutting edge due to enhanced plastic deformation resistance
- **Longer tool life** – hard substrate and PVD coating with optimized interior residual stress
- **Easy wear indication** – gold finish of the inserts
- **Performance** – High wear resistance grade for increased cutting speeds

AREA OF APPLICATION



COMPONENT MATERIALS

- Steels, stainless steel and cast iron. Also suitable for super alloys

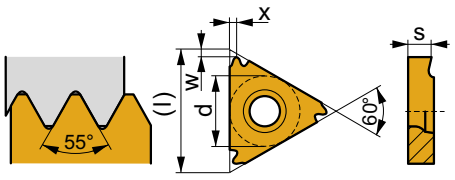
Where to use which grade?

T8010: Higher cutting speeds and accuracy are required. Also for super alloys

T8030: Universal choice for a wide range of materials

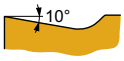
TN 55° PP EXT

	d	l	s
16	9,525	16,5	3,47
22	12,700	22,0	4,71



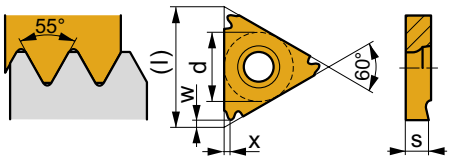
2017 T169

ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$		1 2 3 / 1"	x	w
TN 16ERAG55	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	0,50 - 3,00	48,0 - 8,0	1,50	1,10
TN 22ERN55	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	3,50 - 5,00	7,0 - 5,0	2,50	1,80



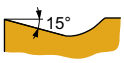
TN 55° PP INT

	d	l	s
16	9,525	16,5	3,47



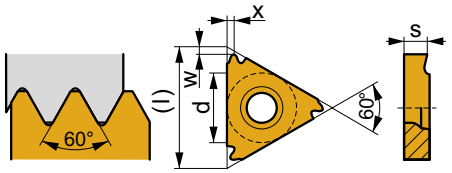
2017 T170

ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$		1 2 3 / 1"	x	w
TN 16NRAG55	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	0,50 - 3,00	48,0 - 8,0	1,50	1,10



TN 60° PP EXT

	d	l	s
16	9,525	16,5	3,47
22	12,700	22,0	4,71

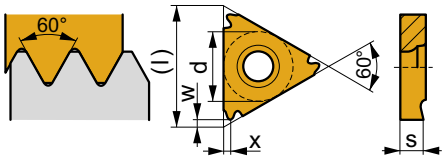


2017 T163

	ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$		1 2 3 /1"	x	w
	TN 16ERA60	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	0,50 - 1,50	48,0 - 16,0	0,80	0,60
	TN 16ERAG60	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	0,50 - 3,00	48,0 - 8,0	1,50	1,10
	TN 16ERG60	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	1,75 - 3,00	14,0 - 8,0	1,50	1,10
10°	**TN 22ERN60**	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	3,50 - 5,00	7,0 - 5,0	2,50	1,80
	TN 16ELAG60	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	0,50 - 3,00	48,0 - 8,0	1,50	1,10
10°																			

TN 60° PP INT

	d	l	s
11	6,350	11,0	3,00
16	9,525	16,5	3,47
22	12,700	22,0	4,71



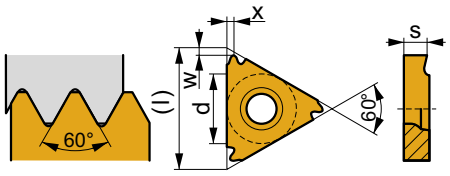
2017 T164

	ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$		1 2 3 /1"	x	w
	TN 11NRA60	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	0,50 - 1,50	48,0 - 16,0	0,80	0,70
	TN 16NRA60	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	0,50 - 1,50	48,0 - 16,0	0,80	0,70
	TN 16NRAG60	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	0,50 - 3,00	48,0 - 8,0	1,50	1,10
	TN 16NRG60	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	1,75 - 3,00	14,0 - 8,0	1,50	1,10
15°	**TN 22NRN60**	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	3,50 - 5,00	7,0 - 5,0	2,50	1,80
	TN 16NLAG60	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	0,50 - 3,00	48,0 - 8,0	1,50	1,10
15°																			

PRAMET

TN M EXT

	d	l	s
16	9,525	16,5	3,47
22	12,700	22,0	4,71

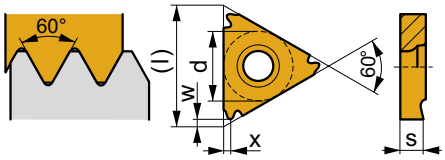


2017
T161

ISO		P	M	K	N	S	H	?		r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$		1 2 3 / 1"	x	w
TN 16ER050M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	0,50	–	0,80	0,80
TN 16ER075M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	0,75	–	0,80	0,80
TN 16ER080M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	0,80	–	0,60	0,80
TN 16ER100M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1,00	–	0,80	0,80
TN 16ER125M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1,25	–	0,80	0,80
TN 16ER150M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1,50	–	0,80	0,80
TN 16ER175M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1,75	–	1,50	1,20
TN 16ER200M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	2,00	–	1,50	1,20
TN 16ER250M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	2,50	–	1,50	1,20
TN 16ER300M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	3,00	–	1,50	1,20
TN 22ER350M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	3,50	–	2,50	1,80
TN 22ER400M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	4,00	–	2,50	1,80
TN 22ER450M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	4,50	–	2,50	1,80
TN 22ER500M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	5,00	–	2,50	1,80
TN 16EL100M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1,00	–	0,80	0,80
TN 16EL125M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1,25	–	0,80	0,80
TN 16EL150M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1,50	–	0,80	0,80
TN 16EL175M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1,75	–	1,50	1,20
TN 16EL200M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	2,00	–	1,50	1,20
TN 16EL250M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	2,50	–	1,50	1,20
TN 16EL300M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	3,00	–	1,50	1,20

TN M INT

	d	l	s
11	6,350	11,0	3,00
16	9,525	16,5	3,47
22	12,700	22,0	4,71



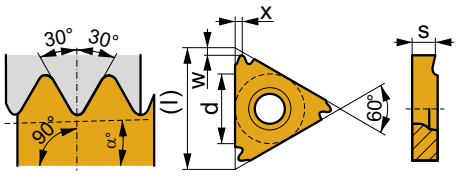
2017
T162

ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$		1 2 3 / 1"	x	w
TN 11NR050M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	0,50	–	0,80	0,80
TN 11NR075M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	0,75	–	0,80	0,80
TN 11NR100M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1,00	–	0,80	0,80
TN 11NR125M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1,25	–	0,80	0,80
TN 11NR150M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1,50	–	0,80	0,80
TN 11NR200M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	2,00	–	0,90	0,80
TN 16NR050M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	0,50	–	0,80	0,80
TN 16NR075M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	0,75	–	0,80	0,80
TN 16NR100M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1,00	–	0,80	0,80
TN 16NR125M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1,25	–	0,80	0,80
TN 16NR150M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1,50	–	0,80	0,80
TN 16NR175M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1,75	–	1,50	1,20
TN 16NR200M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	2,00	–	1,50	1,20
TN 16NR250M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	2,50	–	1,50	1,20
TN 16NR300M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	3,00	–	1,50	1,20
TN 22NR350M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	3,50	–	2,50	1,80
TN 22NR400M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	4,00	–	2,50	1,80
TN 22NR450M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	4,50	–	2,50	1,80
TN 22NR500M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	5,00	–	2,50	1,80
TN 11NL150M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1,50	–	0,80	0,80
TN 11NL200M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	2,00	–	0,90	0,80
TN 16NL100M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1,00	–	0,80	0,80
TN 16NL125M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1,25	–	0,80	0,80
TN 16NL150M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1,50	–	0,80	0,80
TN 16NL175M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	1,75	–	1,50	1,20
TN 16NL200M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	2,00	–	1,50	1,20
TN 16NL250M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	2,50	–	1,50	1,20
TN 16NL300M	T8010	■	■	■		◪		●	+++	–	–	–	–	–	3,00	–	1,50	1,20

PRAMET

TN NPT EXT

	α°	d	l	s
16	1°47´	9,525	16,5	3,47

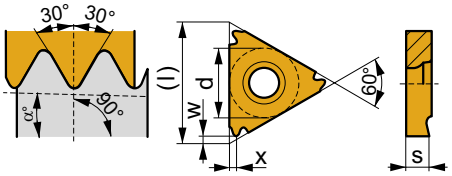


2017 T171

		ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$		1 2 3 / 1"	x	w
1 U E	10°	**TN 16ER140NPT**	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	14,0	1,50	1,10
		TN 16ER115NPT	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	11,5	1,50	1,10

TN NPT INT

	α°	d	l	s
16	1°47´	9,525	16,5	3,47

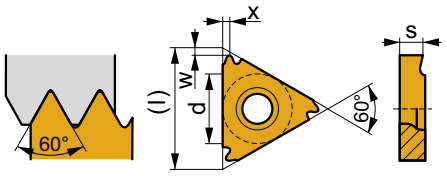


2017 T172

		ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$		1 2 3 / 1"	x	w
1 U E	15°	**TN 16NR140NPT**	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–		14,0	1,50	1,10
		TN 16NR115NPT	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–		11,5	1,50	1,10

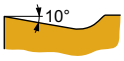
TN UN EXT

	d	l	s
16	9,525	16,5	3,47



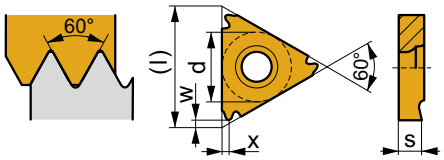
2017 T165

ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$		1 2 3 / 1"	x	w
TN 16ER200UN	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	20,0	0,80	0,80



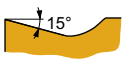
TN UN INT

	d	l	s
16	9,525	16,5	3,47



2017 T166

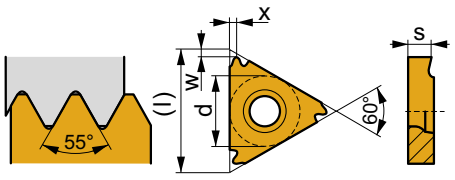
ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$		1 2 3 / 1"	x	w
TN 16NR200UN	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	20,0	0,80	0,80
TN 16NR120UN	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	12,0	1,50	1,20
TN 16NR080UN	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	8,0	1,50	1,20



PRAMET

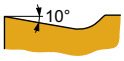
TN W EXT

	d	l	s
16	9,525	16,5	3,47



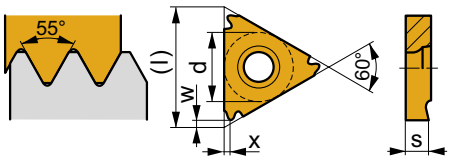
2017 T167

ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$		1 2 3 / 1"	x	w
TN 16ER190W	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	19,0	0,80	0,80
TN 16ER140W	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	14,0	1,50	1,20
TN 16ER110W	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	11,0	1,50	1,20



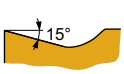
TN W INT

	d	l	s
11	6,350	11,0	3,00
16	9,525	16,5	3,47



2017 T168

ISO		P	M	K	N	S	H			r_ε	f_{min}	f_{max}	$a_{p\,min}$	$a_{p\,max}$		1 2 3 / 1"	x	w
TN 11NR190W	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	19,0	0,80	0,80
TN 11NR140W	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	14,0	0,90	0,70
TN 16NR190W	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	19,0	0,80	0,80
TN 16NR140W	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	14,0	1,50	1,20
TN 16NR110W	**T8010**	■	■	■		◪		●	+++	–	–	–	–	–	–	11,0	1,50	1,20



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