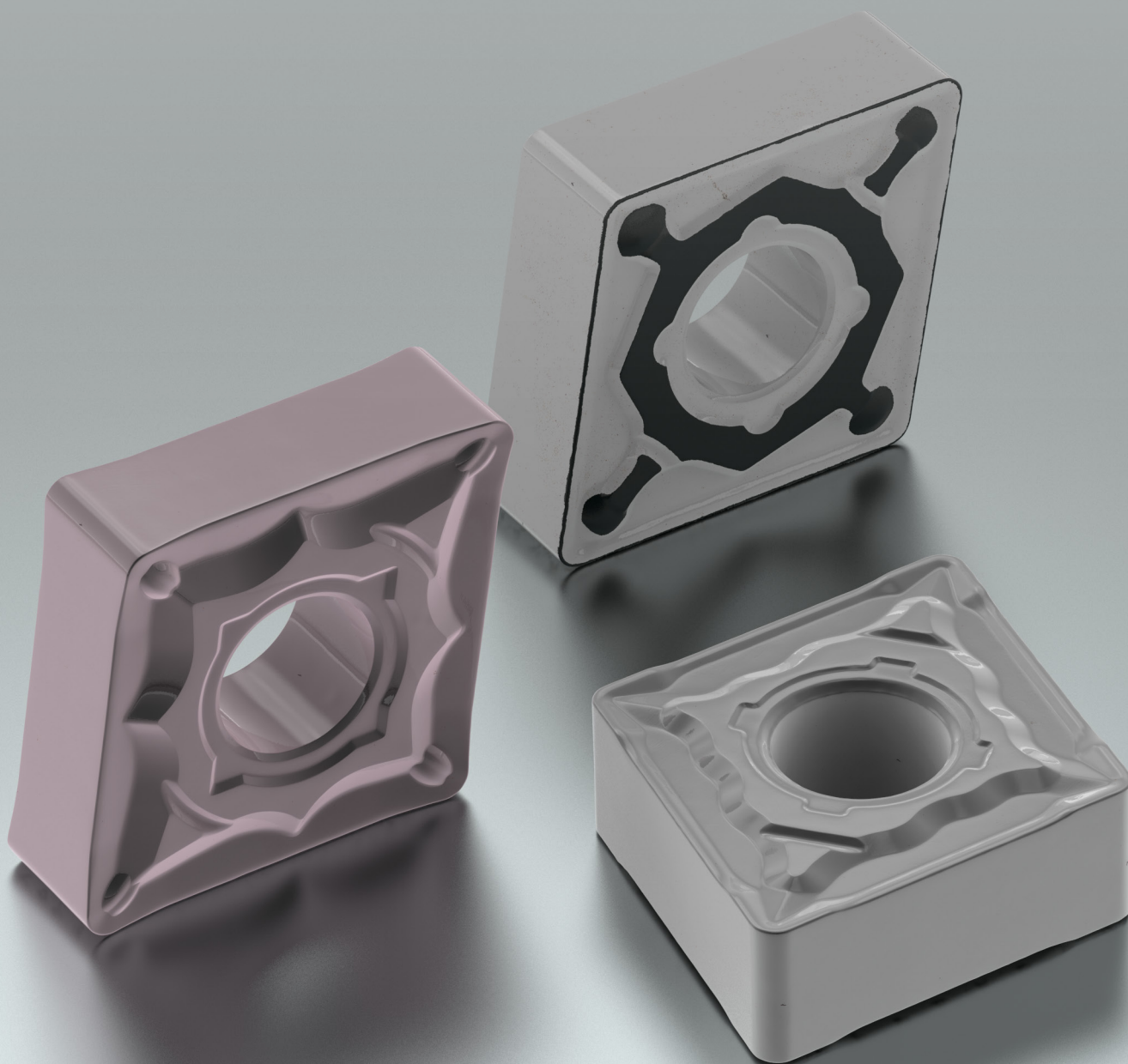
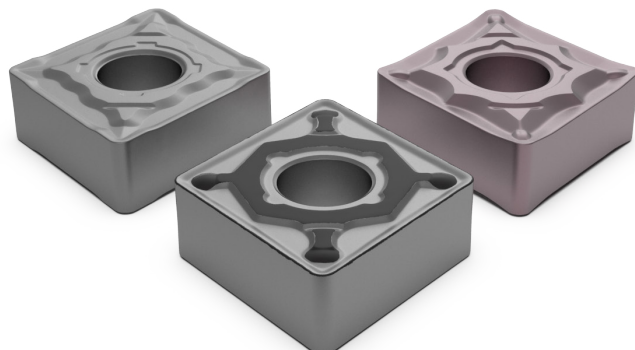


**Negative ISO
indexable inserts**



The negative indexable inserts according to ISO standard are universal and usable for precision cutting work. Available in CNMG, DNMG and WNMG versions, they provide optimum cutting conditions thanks to having three different geometries. Our indexable inserts are characterised by having outstanding wear resistance and stability, which makes efficient machining of different materials possible. This is ideal for users who place value on reliable and flexible cutting.



Legend

Page information

□ 12... See page 12 and the following (example)

Recommended usage

- Preferred application
- Possible application
- Application not recommended

Availability

- 12345** Standard articles
- 12345** Standard articles, new in this catalog
- 12345** Discontinued articles

Symbols for tool characteristics and tool applications

	Tool material Carbide		Geometry FE = Finishing		Application For steels
	Form of insert Example: 80°		MN = Medium Normal machining		For Stainless steels
	Tolerance class Class M (sintered)		RV = Roughing		

Categorization of materials

The application data for multidec® tools is defined for specific material groups. All machinable materials are classified using a standardized color-coding system that is applied consistently throughout the entire catalog.

P	Steel
M	Stainless steel
K	Cast iron
N	Non-ferrous metals
S	High-alloy materials
H	Hard materials

Dimensions

All dimensions are in millimeter (mm).

Order designation

Order designation	Coated
To the designation of the selected type of product, the desired grade code must be added.	
	1 UMP30A1
	Art. no.
DNMG 110404 MN1 ... 1	560870 2

- 1** Order using order designation:
DNMG 110404 MN1 UMP30A1
- 2** Order using art. no.: **560870**

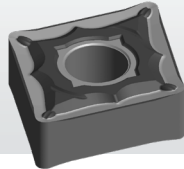
General information

Symbol legend

2

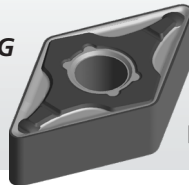
Information about the indexable inserts

CNMG



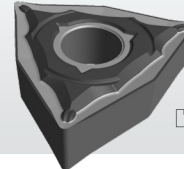
4

DNMG



5

WNMG



6

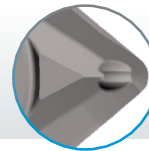
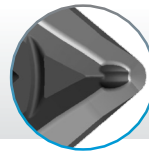
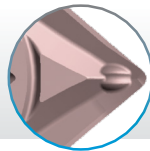
Success Stories

7

Designation key

8

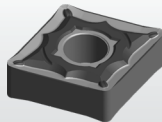
Application diagram
and grades



9

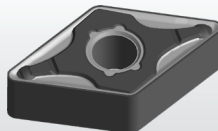
Indexable inserts

CNMG... 80°



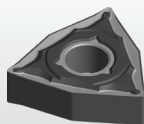
10–11

DNMG... 55°



12–13

WNMG... 80°

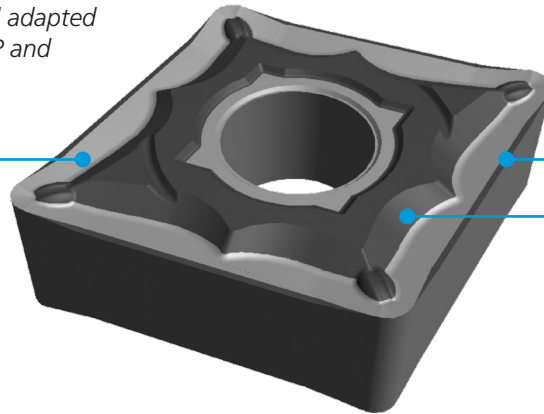


14–15

- CNMG 1204 and CNMG 1606
- Corner radius: 0.4, 0.8 and 1.2 mm
- 6 carbide grades with different toughness and different coatings

Overview of CNMG

Special CVD and PVD layers and adapted chip former for machining ISO-P and ISO-M materials.



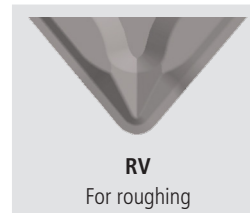
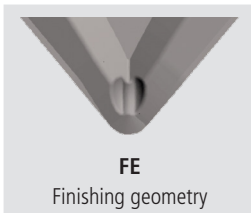
Cutting edge in accordance with EN = rounded

Coordinated substrate & coating, toughness of:
– 15, 25 and 35 with steel grades
– 20, 30 and 40 with grades for stainless materials

Geometries

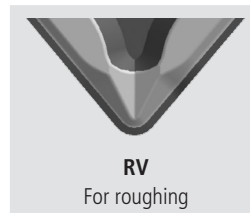
Geometries for steels

P



Geometries for stainless steels

M



Applications

- Turning
- Roughing with RV geometry of up to $a_p = 6$ mm
- Medium machining with the MN geometry
- Finishing with the FE geometry
- Versatile use in mechanical engineering in general, in the aerospace industry, in the defence area, in medical engineering, and much more.

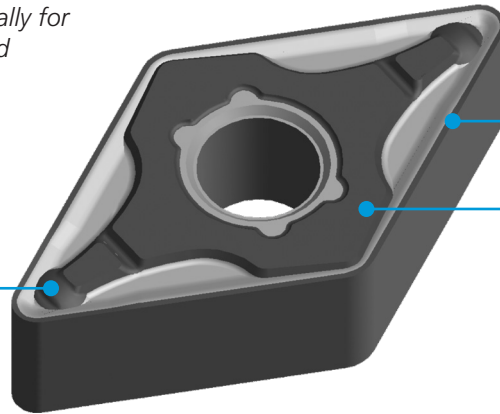
Advantages

- Outstanding process reliability due to optimum chip breaking, therefore no machine downtimes caused by so-called "birds nesting"
- Wide range of substrates and coatings for covering all application areas
- High surface quality by finishing

- DNMG 1104, DNMG 1504 and DNMG 1506
- Corner radius: 0.4, 0.8 and 1.2 mm
- 4 carbide grades with different toughness and different coatings

Overview of DNMG

Optimised chip former, specially for machining steel materials and stainless materials.

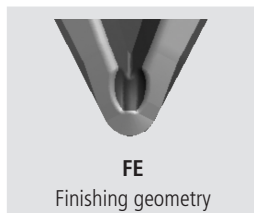


Cutting edge in accordance with EN = rounded

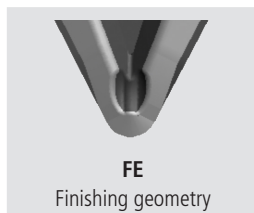
Coordinated substrate & coating, toughness of:
 – 15 and 25 with steel grades
 – 20 and 30 with grades for stainless materials

Geometries

Geometries for steels



Geometries for stainless steels



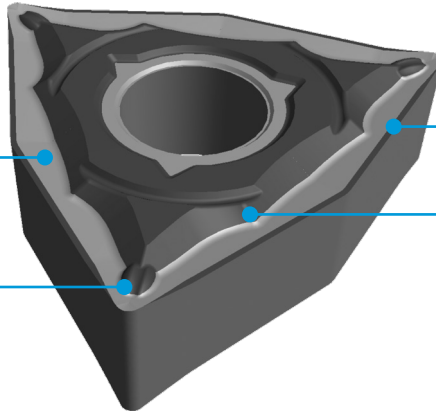
Applications and advantages

- Turning
- Optimised chip former breaks the chips, even during finishing
- Medium machining with the MN geometry
- Finishing with the FE geometry
- Versatile use in mechanical engineering in general, in the aerospace industry, in the defence area, in medical engineering, and much more

- WNMG 0604 and WNMG 0804
- Corner radius: 0.4, 0.8 and 1.2 mm
- 4 carbide grades with different toughness and different coatings

Overview of WNMG

Special CVD and PVD layers and adapted chip former for machining ISO-P and ISO-M materials.



Cutting edge in accordance with EN = rounded

Optimised chip former, specially for machining steel materials and stainless materials.

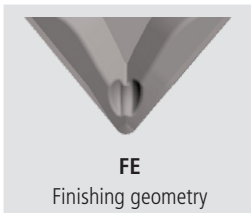
Coordinated substrate & coating, toughness of:

- 15 and 25 with steel grades
- 30 and 40 with grades for stainless materials

Geometries

Geometries for steels

P



Geometries for stainless steels

M



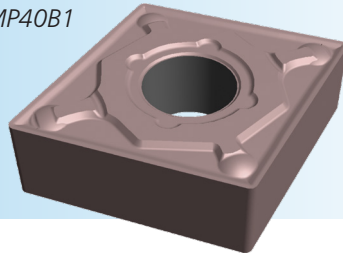
Applications and advantages

- Turning
- Specially developed chip breaker provides clean and controlled chip formation, even during finishing operations
- Efficient machining with medium cutting thanks to MN geometry
- High surface quality due to FE geometry during precision machining
- Versatile use in mechanical engineering in general, in the aerospace industry, in the defence area, in medical engineering, and much more

Customer test: Machining of a housing

Indexable insert:

CNMG 120408 MN1 UMP40B1

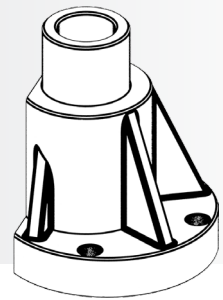


Material:

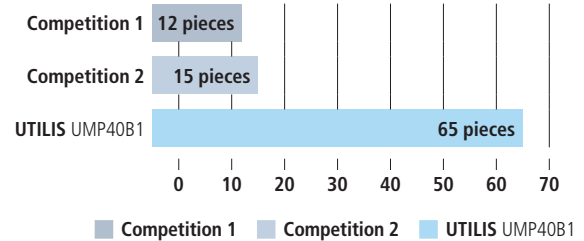
ISO-M / X2CrNi18-9 (1.4307)

Strength:

280 HB



Cutting specification		Competition 1	Competition 2	UTILIS UMP40B1
v_c	[m/min]	130	130	130
f	[mm/U]	0.13	0.13	0.13
n	[U/min-1]	1380	1380	1380
a_p	[mm]	1.5	1.5	1.5
T	[mm]	from Ø 30 to Ø 25 mm		
Tool life	[Stck.]	12	15	65

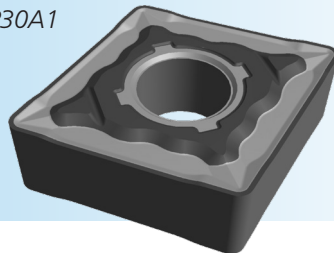


65 components were manufactured, and the CNMG 120408 MN1 UMP40B1 insert showed almost no signs of wear.

Customer test: Machining of a shaft

Indexable insert:

CNMG 120408 RV1 UMP30A1

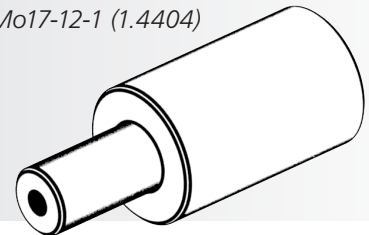


Material:

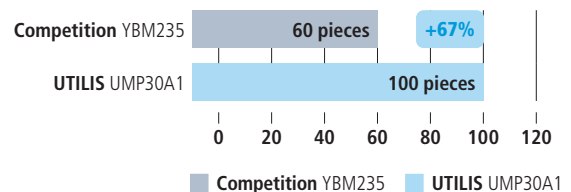
ISO-M / X2CrNiMo17-12-1 (1.4404)

Strength:

220 HB



Cutting specification		Competition YBM235	UTILIS UMP30A1
v_c	[m/min]	216	216
f	[mm/U]	0.25	0.25
n	[U/min-1]	1250	1250
a_p	[mm]	2.5	2.5
T	[mm]	from Ø 55 to Ø 35 mm	
Tool life	[Stck.]	60	100

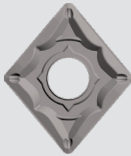
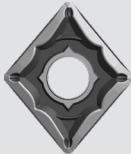
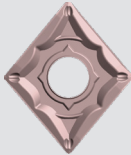
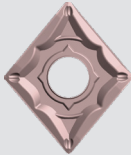


With the CNMG 120408 RV1 UMP30A1, the user achieves significantly higher process reliability and cost-effectiveness in this test. The tool life test revealed a tool life increase of around 67% compared to the competition.

Indexable inserts

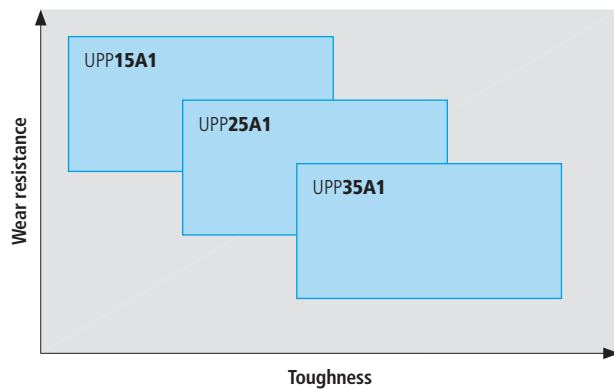
ISO designation	ISO dimension code	Machining recommendation
□ 16	□ 16	□ 4-6

C N M G 1 2 0 4 0 8 M N 1 U M P 2 0 A 1

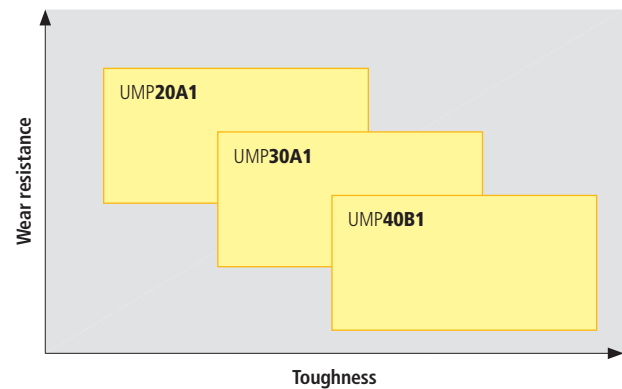
UTILIS	Main application	Secondary application	Hardness/toughness		Coating			Coating index
U	P Steels	P Steels	↑ Wear resistance 15 20 25 30 35 40 ↓ Toughness	A	CVD	Al ₂ O ₃ TiCN		1
						Al ₂ O ₃ TiCN with treatment		
						TiAlSiN		
	M Stainless steels			B	PVD	TiAlSiN		

Wear resistance and toughness

UPP – Wear resistance and toughness

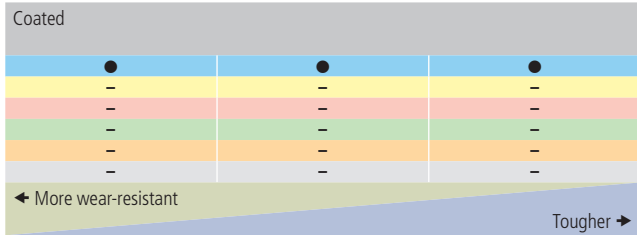
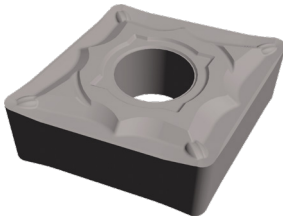


UMP – Wear resistance and toughness



The grades

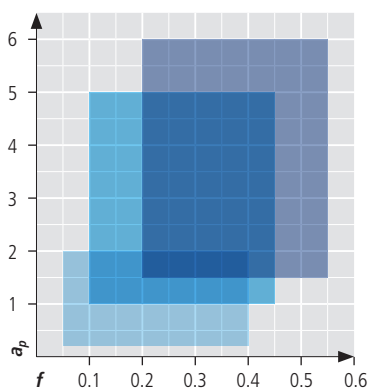
Material	Hardness/toughness	Coating		Colour	
		Type	Layers		
P Steels	15A1	CVD	Al ₂ O ₃ TiCN	Silver	
	25A1	CVD	Al ₂ O ₃ TiCN	Silver/ Black	
	35A1	CVD	Al ₂ O ₃ TiCN	Silver	
M Stainless steels	20A1	CVD	Al ₂ O ₃ TiCN	Silver/ Black	
	30A1	CVD	Al ₂ O ₃ TiCN	Silver/ Black	
	40B1	PVD	TiAlSiN	Copper	



Geometry	Size	R	Order designation	UPP15A1	UPP25A1	UPP35A1
	CN 12 	0.4	CNMG 120404 FE1 ...	560548	560549	560550
		0.8	CNMG 120408 FE1 ...	558163	558171	560557
	CN 12 	0.4	CNMG 120404 MN1 ...	560554	560555	560556
		0.8	CNMG 120408 MN1 ...	558172	558173	558174
		1.2	CNMG 120412 MN1 ...	560562	560563	560564
	CN 16 	0.8	CNMG 160608 MN1 ...	560664	560665	560666
	CN 12 	0.8	CNMG 120408 RV1 ...	558176	558177	558178
		1.2	CNMG 120412 RV1 ...	560571	560572	560573

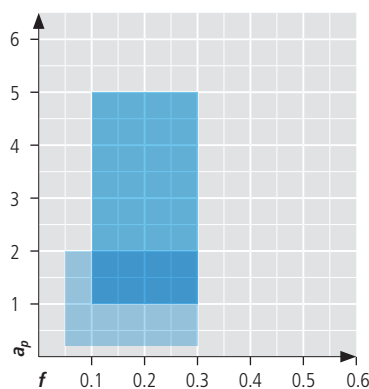
Application range

ISO P – Steels
 a_p (mm) / f (mm/U)



FE: 15A1/35A1 (R 0.8)
 MN: 15A1/35A1 (R 0.8)
 RV: 15A1/25A1/35A1 (R 0.8)

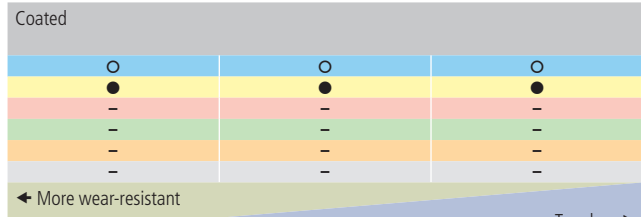
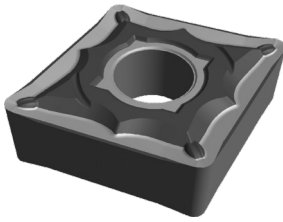
ISO P – Steels
 a_p (mm) / f (mm/U)



FE: 25A1 (R 0.4)
 MN: 25A1 (R 0.4)

v_c (m/min)

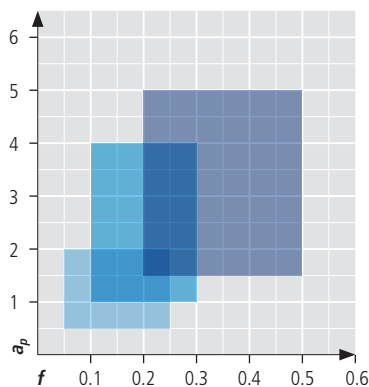
	UPP15A1		UPP25A1		UPP35A1	
	P	M	P	M	P	M
FE	250-450	–	130-300	–	100-220	–
MN	250-450	–	130-300	–	100-220	–
RV	250-450	–	130-300	–	100-220	–



Geometry	Size	R	Order designation	UMP20A1	UMP30A1	UMP40B1
		0.4	CNMG 120404 FE1 ...	559948	559949	559950
		0.8	CNMG 120408 FE1 ...	559946	558179	559947
		0.4	CNMG 120404 MN1 ...	559952	559953	559954
		0.8	CNMG 120408 MN1 ...	558180	558181	558182
		1.2	CNMG 120412 MN1 ...	559960	559961	559962
		0.8	CNMG 120408 RV1 ...	558183	558184	558185
		1.2	CNMG 120412 RV1 ...	559963	559964	559965
		1.2	CNMG 160612 RV1 ...		559976	

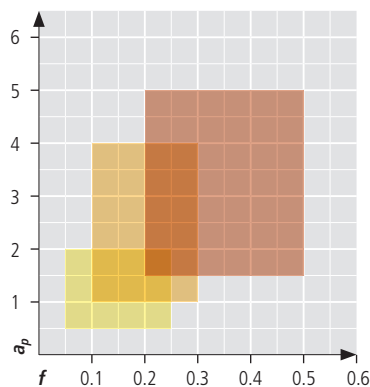
Application range

ISO P – Steels

 a_p (mm) / f (mm/U)


FE: 20A1/30A1/40B1 (R 0.8)
 MN: 20A1/30A1/40B1 (R 0.4)
 RV: 20A1/30A1/40B1 (R 0.8)

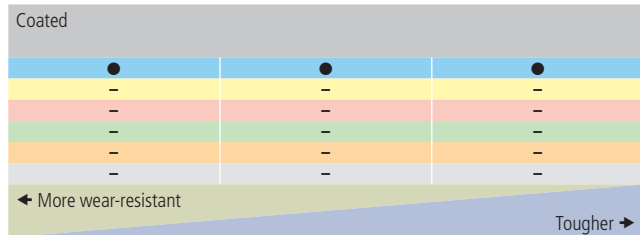
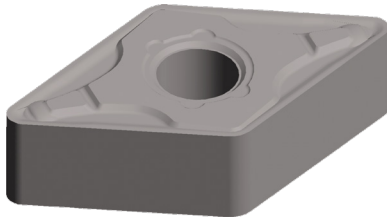
ISO M – Stainless steels

 a_p (mm) / f (mm/U)


FE: 20A1/30A1/40B1 (R 0.8)
 MN: 20A1/30A1/40B1 (R 0.4)
 RV: 20A1/30A1/40B1 (R 0.8)

 v_c (m/min)

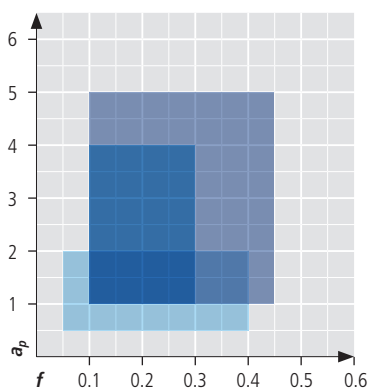
	UMP20A1		UMP30A1		UMP40B1	
	P	M	P	M	P	M
FE	90-210	120-240	80-180	100-200	60-160	80-180
MN	90-210	120-240	80-180	100-200	60-160	80-180
RV	90-210	120-240	80-180	100-200	60-160	80-180



Geometry	Size	R	Order designation	UPP15A1	UPP25A1	UPP35A1
	DN 11 	0.4	DNMG 110404 FE1 ...		Art. no. 560986	
	DN 15 	0.4	DNMG 150404 FE1 ...		560694	
		0.8	DNMG 150408 FE1 ...		560697	
		0.8	DNMG 150608 FE1 ...		560702	
	DN 11 	0.4	DNMG 110404 MN1 ...	560689	560690	
		0.8	DNMG 110408 MN1 ...	560691	560693	565217
	DN 15 	0.4	DNMG 150404 MN1 ...	560695	560696	
		0.8	DNMG 150408 MN1 ...	560698	560699	
		1.2	DNMG 150412 MN1 ...	560700	560701	
		0.8	DNMG 150608 MN1 ...	560708	560710	565218
		1.2	DNMG 150612 MN1 ...	560712	560713	

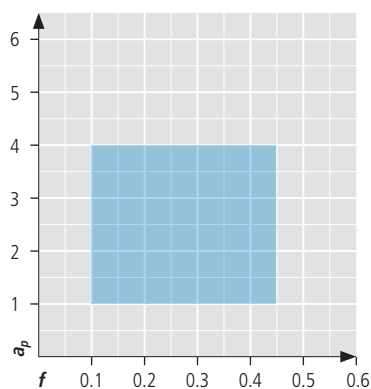
Application range

ISO P – Steels
 a_p (mm) / f (mm/U)



FE: 25A1
 MN: 15A1 (110404)
 15A1/25A1 (150608/150612)

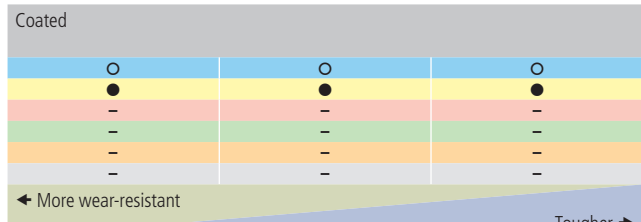
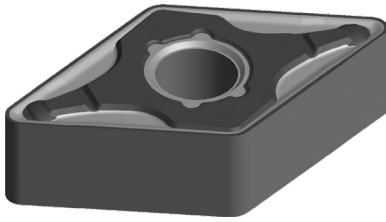
ISO P – Steels
 a_p (mm) / f (mm/U)



MN: 15A1/25A1 (110408)

v_c (m/min)

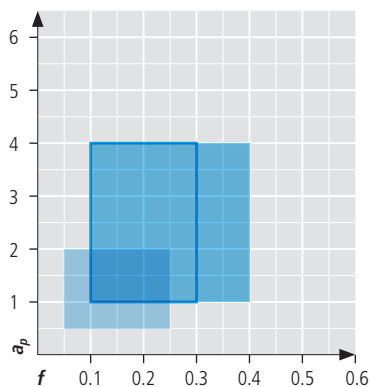
	UPP15A1		UPP25A1		UPP35A1	
	P	M	P	M	P	M
FE	–	–	130-300	–	–	–
MN	250-450	–	130-300	–	–	–



Geometry	Size	R	Order designation	UMP20A1	UMP30A1	UMP40B1
	DN 11 	0.4	DNMG 110404 FE1 ...	560500	560501	
	DN 15 	0.8	DNMG 150408 FE1 ...	560872	560873	
		0.8	DNMG 150608 FE1 ...	560876	560877	
	DN 11 	0.4	DNMG 110404 MN1 ...		560870	
		0.8	DNMG 110408 MN1 ...	564614	560871	564615
	DN 15 	0.8	DNMG 150408 MN1 ...		560874	
		1.2	DNMG 150412 MN1 ...		560875	
		0.8	DNMG 150608 MN1 ...	564616	560878	564617
		1.2	DNMG 150612 MN1 ...		560879	

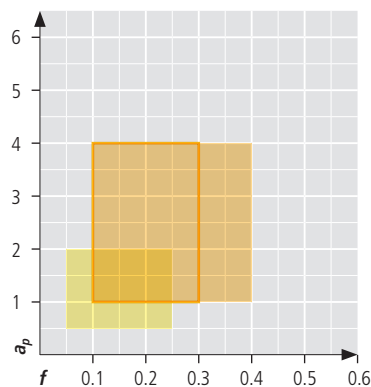
Application range

ISO P – Steels

 a_p (mm) / f (mm/U)


FE: 20A1 / 30A1
 MN: 30A1
 30A1 (110404)

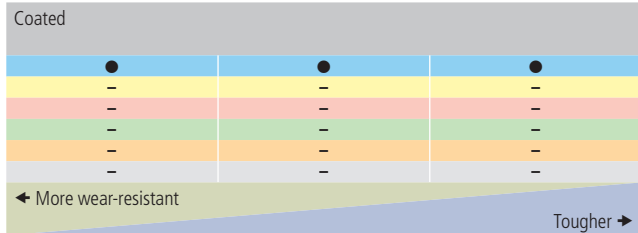
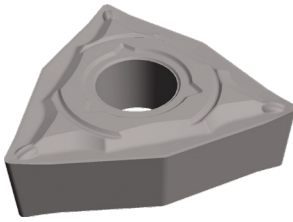
ISO M – Stainless steels

 a_p (mm) / f (mm/U)


FE: 20A1 / 30A1
 MN: 30A1
 30A1 (110404)

 v_c (m/min)

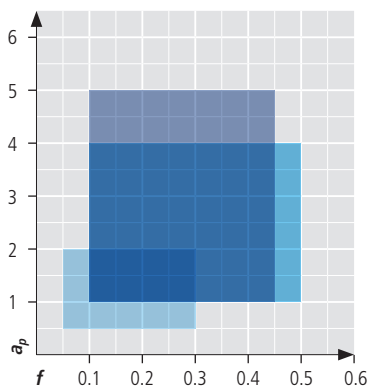
	UMP20A1		UMP30A1		UMP40B1	
	P	M	P	M	P	M
FE	90-210	120-240	80-180	100-200	–	–
MN	–	–	80-180	100-200	–	–



Geometry	Size	R	Order designation	UPP15A1	UPP25A1	UPP35A1
	WN 6 ~6	0.4	WNMG 060404 FE1 ...		Art. no. 560667	
	WN 8 ~8	0.4	WNMG 080404 FE1 ...	560675		
		0.8	WNMG 080408 FE1 ...	560678		
	WN 6 ~6	0.4	WNMG 060404 MN1 ...	560668	560669	
		0.8	WNMG 060408 MN1 ...	560673	560674	
	WN 8 ~8	0.4	WNMG 080404 MN1 ...	560676	560677	
		0.8	WNMG 080408 MN1 ...	560679	560680	565219
		1.2	WNMG 080412 MN1 ...	560681	560682	

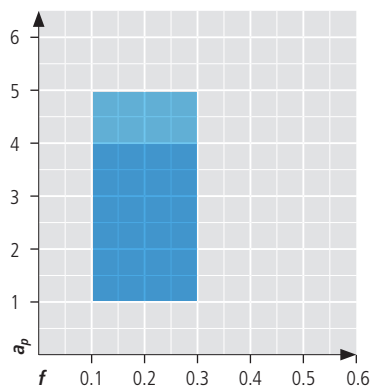
Application range

ISO P – Steels
 a_p (mm) / f (mm/U)



FE: 25A1
 MN: 15A1/25A1 (060408)
 15A1/25A1 (080408/12)

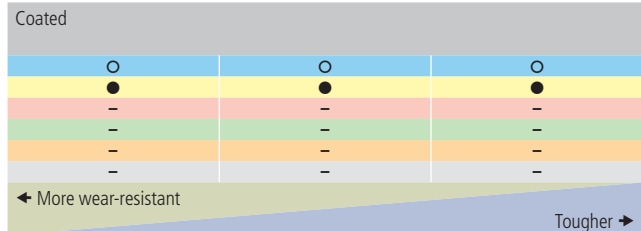
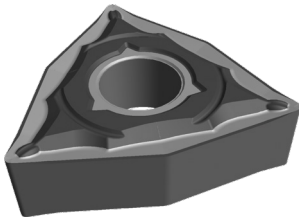
ISO P – Steels
 a_p (mm) / f (mm/U)



MN: 25A1 (060404)
 15A1/25A1 (080408/12)

v_c (m/min)

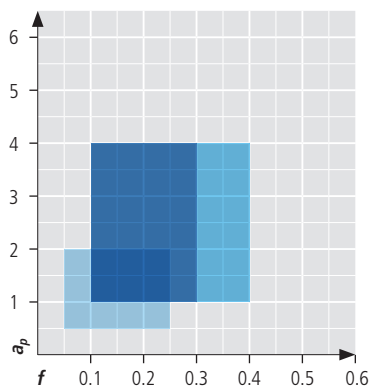
	UPP15A1		UPP25A1		UPP35A1	
	P	M	P	M	P	M
FE	250-450	—	130-300	—	—	—
MN	250-450	—	130-300	—	—	—



Geometry	Size	R	Order designation	UMP20A1	UMP30A1	UMP40B1
	WN 6 ~6 	0.4	WNMG 060404 FE1 ...		Art. no. 559979	
		0.8	WNMG 060408 FE1 ...		559980	
	WN 8 ~8 	0.4	WNMG 080404 FE1 ...		560493	
		0.8	WNMG 080408 FE1 ...		560496	
	WN 6 ~6 	0.8	WNMG 060408 MN1 ...		560484	
	WN 8 ~8 	0.4	WNMG 080404 MN1 ...		560494	560495
		0.8	WNMG 080408 MN1 ...		560497	560498

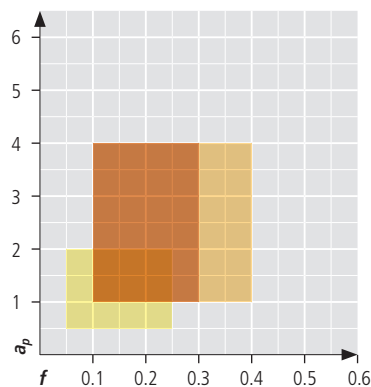
Application range

ISO P – Steels

 a_p (mm) / f (mm/U)

FE: 30A1

MN: 30A1 / 40B1 (060408/080408)
 30A1 / 40B1 (080404)

ISO M – Stainless steels

 a_p (mm) / f (mm/U)

FE: 30A1

MN: 30A1 / 40B1 (060408/080408)
 30A1 / 40B1 (080404)

 v_c (m/min)

	UMP20A1		UMP30A1		UMP40B1	
	P	M	P	M	P	M
FE	–	–	80-180	100-200	–	–
MN	–	–	80-180	100-200	60-160	80-180

Indexable inserts

Form of insert		
Index	α	
C	80°	
D	55°	
W	80°	

Clearance angle		
Index	α	
N	0°	

Tolerance			
Index	$s \pm$	$d \pm$	
M	0.13	0.05–0.15*	

* Dependent on dimension of insert

Distinctive mark	
Index	
G	

C N M G 1 2 0 4 0 8 M N 1 U M P 2 0 A 1

Edge length			
Index	$\approx l$	d	
12	12	12.7	C = 80°
16	16	15.88	
11	11	9.53	D = 55°
15	15	12.7	
06	6.5	9.53	W = 80°
08	8.7	12.7	

Insert thickness		
Index	s	
04	4.76	
06	6.35	

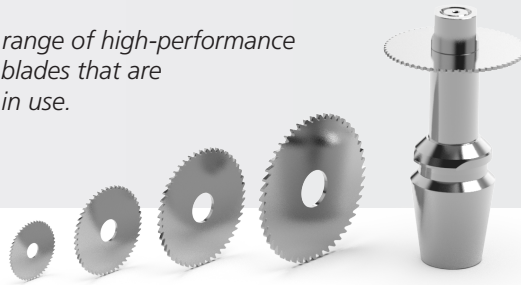
Corner radius		
Index	R	
04	0.4	
08	0.8	
12	1.2	

Machining recommendation	
Index	
FE1	Finishing
MN1	Medium Normal machining
RV1	Roughing

Grades	
	8–9

multidec®-SAW – Solid carbide circular saw blades

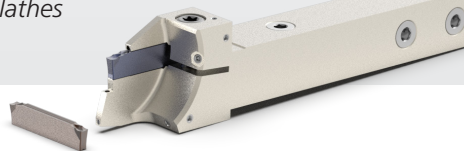
multidec®-SAW is a large range of high-performance solid carbide circular saw blades that are very versatile and flexible in use.



Article 400929

multidec®-5000 – High-performance parting-off tools

multidec®-5000 offers a comprehensive range of high-quality, high-performance parting-off tools, which have been specially developed for use on sliding headstock automatic lathes



Article 400933

multidec®-CUT – G-LINE inserts

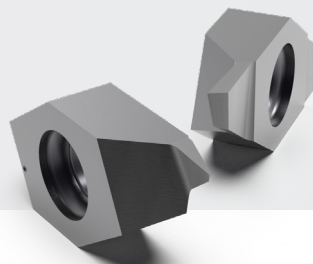
The performance boost in machining. New technology for creation of any three-dimensional chip-breaker shapes.



Article 400870

multidec®-CUT – WATCH-LINE inserts

The WATCH-LINE range of turning inserts is designed for the efficient machining of very small parts in the watchmaking industry.



Article 400918

multidec®-LUB – Tool plates, complete

multidec®-LUB tool plate with an integrated coolant system and a tool stop system, which can be quickly and easily replaced with the existing one.

Increase the performance of your machine!

CITIZEN  TORNOS



Article 400882

multidec®-WHIRLING – The efficient way to make threads

multidec®-WHIRLING is the thread whirling tool system with multiple cutting edges; unlike the thread turning method, this enables the thread to be finished without burr in a single pass.



Article 300969

multidec®-MICRO TOOLS & -MILL – Solid carbide precision tools

multidec®-MICRO TOOLS contain various solid carbide micro tools for drilling, milling and TORX® milling. You will find a wide range of universal milling tools in the multidec®-MILL product range.



Article 400925

multidec®-CARE – From the idea to the machine

You have an order or an idea, and you want to know how to implement it? Together, we can realise a cost-effective solution for you.



Article 400885

Product video



SCAN ME!

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Tooling for High Technology

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