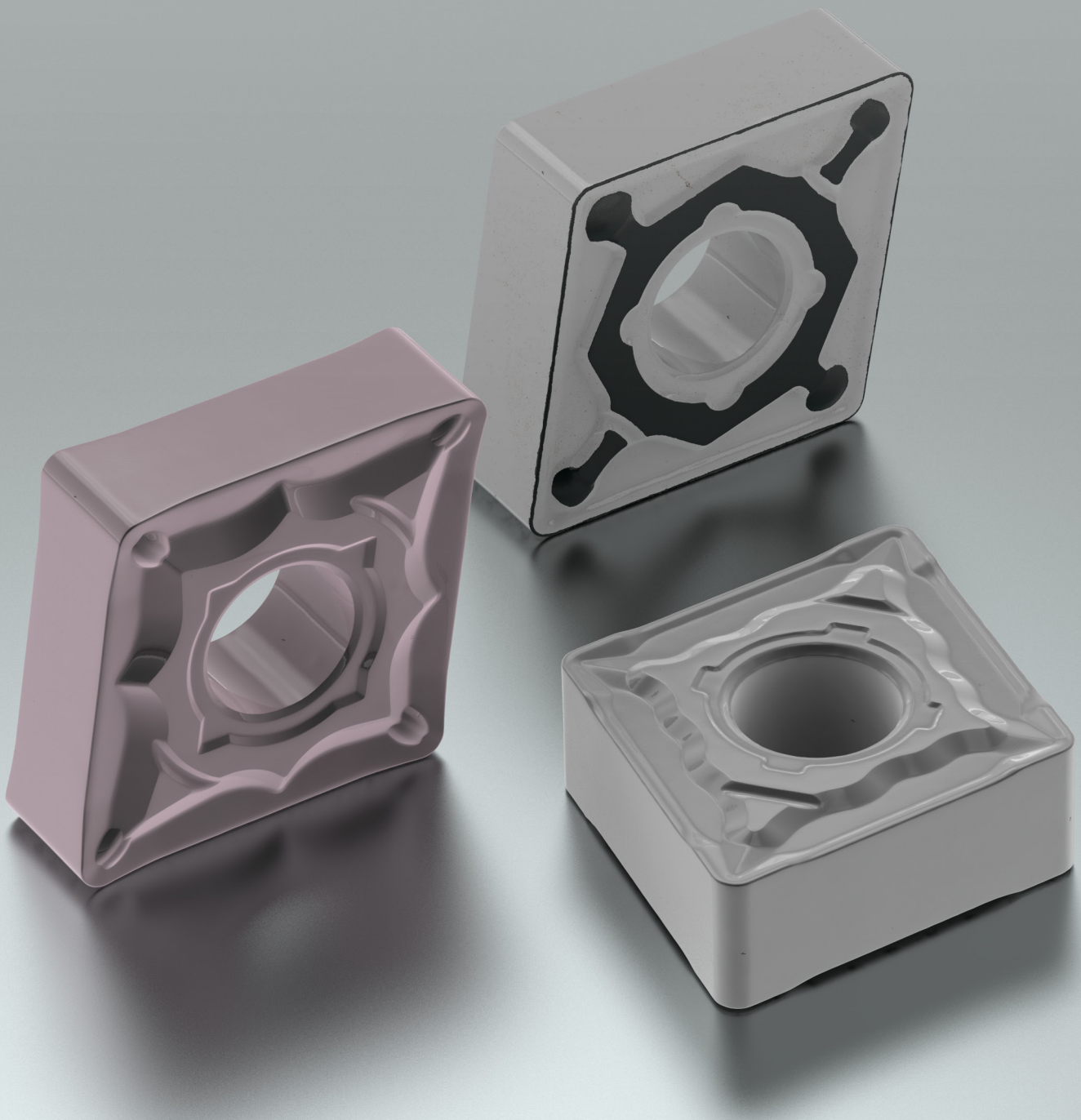
multidec®
ISO turn

ENGLISH

Negative ISO indexable inserts



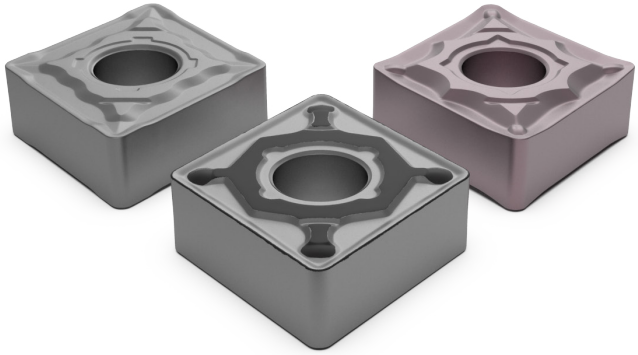
111 future since 1915

UTILIS®
Tooling for High Technology

Negative ISO indexable inserts from multidec®

multidec® ISO turn

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

HM	**Tool material** Carbide
80°	**Form of insert** Example: 80°
M	**Tolerance class** Class M (sintered)

FE	**Geometry** FE = Finishing
MN	MN = Medium Normal machining
RV	RV = Roughing

P	**Application** For steels
M	For Stainless steels

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
DNMG 110404 MN1 … 1	Art. no. 560870 2

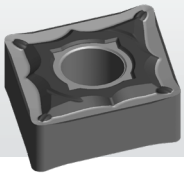
1 Order using order designation:
DNMG 110404 MN1 UMP30A1

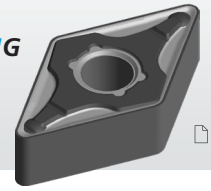
2 Order using art. no.: **560870**

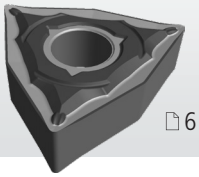
General information

Symbol legend 2

Information about the indexable inserts

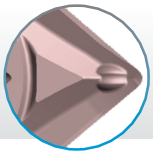
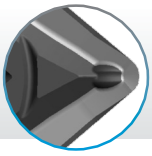
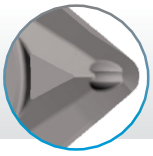
CNMG  4

DNMG  5

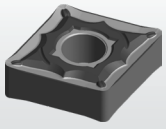
WNMG  6

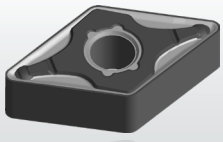
Success Stories 7

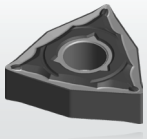
Designation key 8

Application diagram and grades    9

Indexable inserts

CNMG... 80°  10–11

DNMG... 55°  12–13

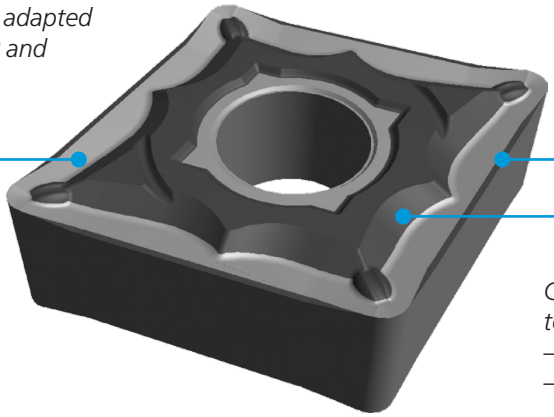
WNMG... 80°  14–15

Information about the CNMG indexable insert

– 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



FE
Finishing geometry



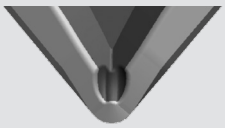
MN
For medium machining



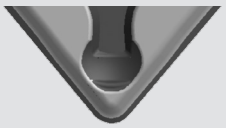
RV
For roughing

Geometries for stainless steels

M



FE
Finishing geometry



MN
For medium machining



RV
For roughing

Applications

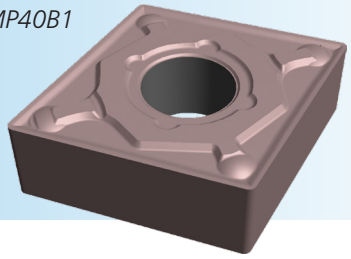
– Turning
– Roughing with RV geometry of up to a_p = 6 mm
– Medium machining with the MN geometry
– Finishing with the FE geometry
– Versatile use in mechanical engineering in general, in the aerospace industry, in the defence area, in medical engineering, and much more.

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

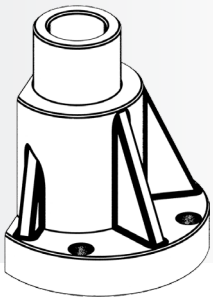
Customer test: Machining of a housing

Indexable insert:
CNMG 120408 MN1 UMP40B1

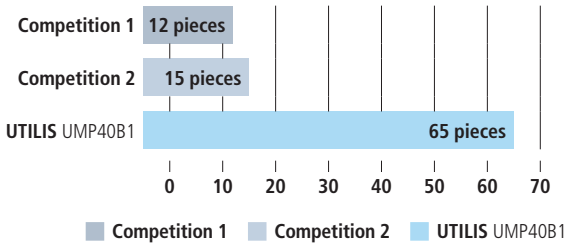


Material:
ISO-M / X2CrNi18-9 (1.4307)

Strength:
280 HB



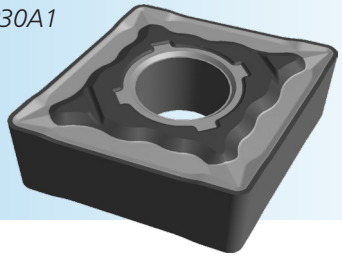
Cutting specification		Competition 1	Competition 2	UTILIS UMP40B1
v_c	[m/min]	130	130	130
f	[mm/U]	0.13	0.13	0.13
n	[U/min-1]	1380	1380	1380
a_p	[mm]	1.5	1.5	1.5
T	[mm]	from Ø 30 to Ø 25 mm		
Tool life	[Stck.]	**12**	**15**	**65**



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

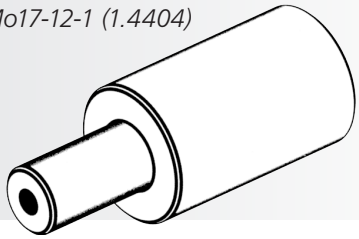
Customer test: Machining of a shaft

Indexable insert:
CNMG 120408 RV1 UMP30A1

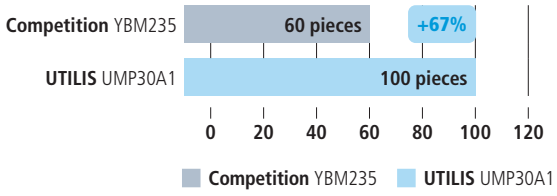


Material:
ISO-M / X2CrNiMo17-12-1 (1.4404)

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**

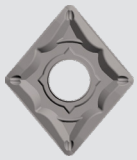
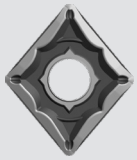
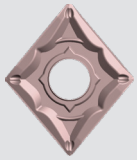


With the CNMG 120408 RV1 UMP30A1, the user achieves significantly higher process reliability and cost-effectiveness in this test. The tool life test revealed a tool life increase of around 67% compared to the competition.

Indexable inserts

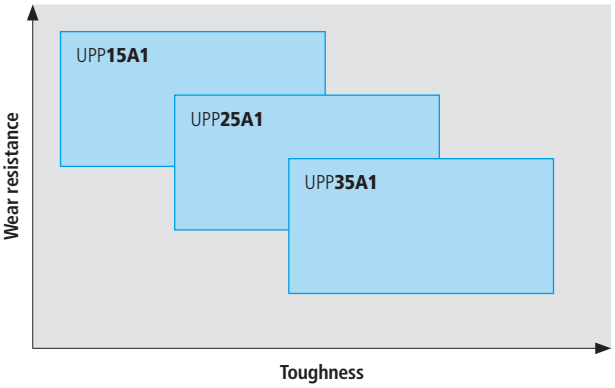
ISO designation	ISO dimension code	Machining recommendation
16	16	4–6

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

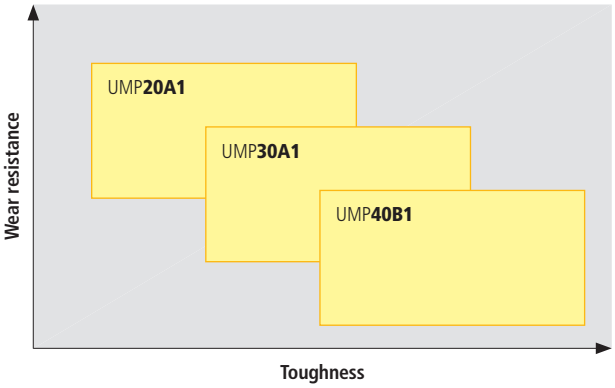
UTILIS	Main application	Secondary application	Hardness/toughness	Coating				Coating index
U	P Steels M Stainless steels	P Steels	Wear resistance ↑ 15 20 25 30 35 40 ↓ Toughness	A	CVD	Al_2O_3 TiCN		1
						Al_2O_3 TiCN with treatment		
				B	PVD	TiAlSiN		

Wear resistance and toughness

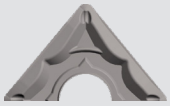
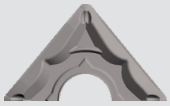
UPP – Wear resistance and toughness

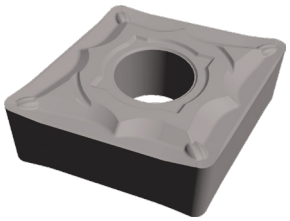


UMP – Wear resistance and toughness



The grades

Material	Hardness/toughness	Coating		Colour	
		Type	Layers		
P Steels	15A1	CVD	Al_2O_3 TiCN	Silver	
	25A1	CVD	Al_2O_3 TiCN	Silver/ Black	
	35A1	CVD	Al_2O_3 TiCN	Silver	
M Stainless steels	20A1	CVD	Al_2O_3 TiCN	Silver/ Black	
	30A1	CVD	Al_2O_3 TiCN	Silver/ Black	
	40B1	PVD	TiAlSiN	Copper	



Coated		
●	●	●
–	–	–
–	–	–
–	–	–
–	–	–
–	–	–

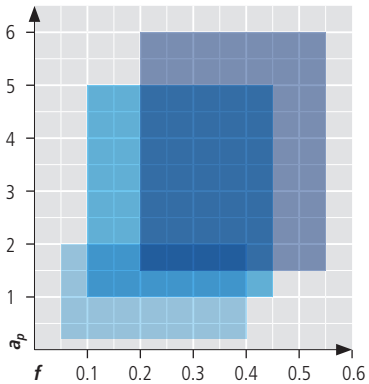
← More wear-resistant

Tougher →

Geometry	Size	R	Order designation	UPP15A1	UPP25A1	UPP35A1
				Art. no.		
FE	CN 12 ~12	0.4	CNMG 120404 FE1 …	560548	560549	560550
		0.8	CNMG 120408 FE1 …	558163	558171	560557
MN	CN 12 ~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 ~16	0.8	CNMG 160608 MN1 …	560664	560665	560666
RV	CN 12 ~12	0.8	CNMG 120408 RV1 …	558176	558177	558178
		1.2	CNMG 120412 RV1 …	560571	560572	560573

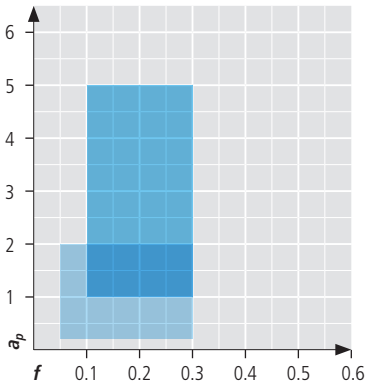
Application range

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)



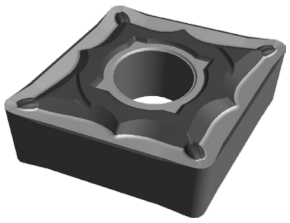
FE: 25A1 (R 0.4)
MN: 25A1 (R 0.4)

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	–

Legend 2

HM | 80° | M | M | FE | MN | RV



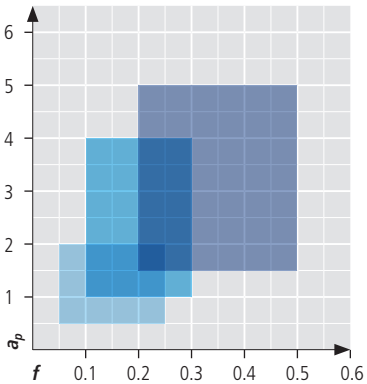
Coated		
○	○	○
●	●	●
–	–	–
–	–	–
–	–	–
–	–	–

← More wear-resistant — Tougher →

Geometry	Size	R	Order designation	UMP20A1	UMP30A1	UMP40B1
				Art. no.		
FE 	CN 12 ~12 	0.4	CNMG 120404 FE1 …	559948	559949	559950
		0.8	CNMG 120408 FE1 …	559946	558179	559947
MN 	CN 12 ~12 	0.4	CNMG 120404 MN1 …	559952	559953	559954
		0.8	CNMG 120408 MN1 …	558180	558181	558182
		1.2	CNMG 120412 MN1 …	559960	559961	559962
RV 	CN 12 ~12 	0.8	CNMG 120408 RV1 …	558183	558184	558185
		1.2	CNMG 120412 RV1 …	559963	559964	559965
	CN 16 ~16 	1.2	CNMG 160612 RV1 …		559976	

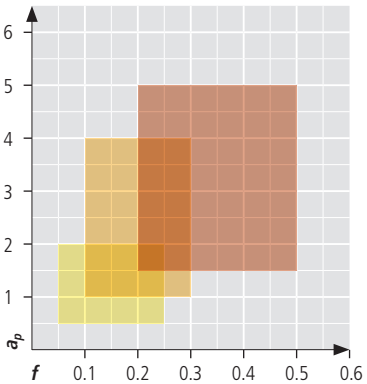
Application range

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)

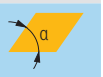
	UMP20A1		UMP30A1		UMP40B1	
	P	M	P	M	P	M
FE	90-210	120-240	80-180	100-200	60-160	80-180
MN	90-210	120-240	80-180	100-200	60-160	80-180
RV	90-210	120-240	80-180	100-200	60-160	80-180

Legend 2

Designation system

Indexable inserts

Form of insert

Index	α	
C	80°	
D	55°	
W	80°	

Clearance angle

Index	α	
N	0°	

Tolerance

Index	s ±	d ±	
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	≈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

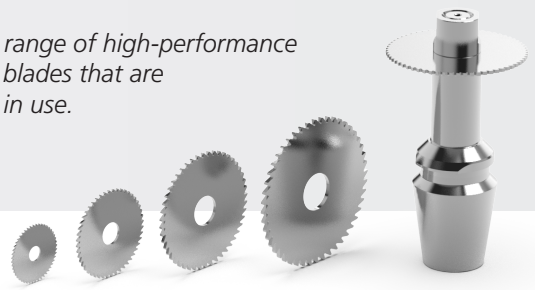
Grades

8–9

More multidec® products from the company UTILIS

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.

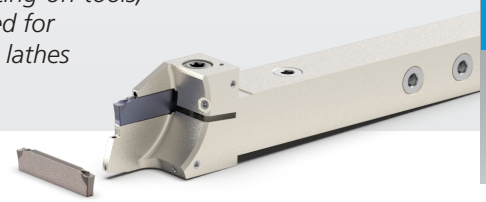




Article 400929

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.

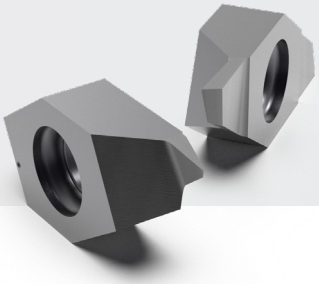




Article 400870

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

More multidec® products from the company UTILIS

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 star 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.

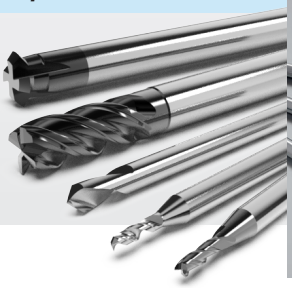




Article 300969

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!

UTILIS®

Tooling for High Technology

■ ***UTILIS AG, Precision Tools***

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*UTILIS, MULTIDEC-ISO, NEGATIVE ISO INDEXABLE INSERTS, CATALOG 2026.02 EN – **400943***