WÜRNHER®

Precision with Perfection

Cutting Tools

Inserts Series

2023

WÜRNHER®

QUALITY IS NOT A COINCIDENCE !

WÜRNHER has a professional team of industry leaders. university professors from all around the world. and talented native engineers to ensure the quality of its products.

WÜRNHER has effective communication channels to constantly interact and communicate with its customers and understand their needs.

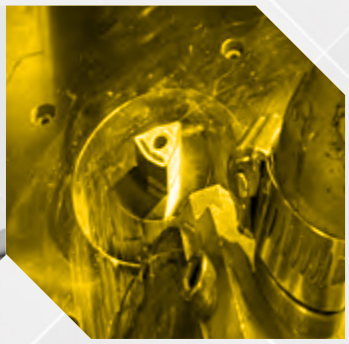
Providing technical advice is a very important strategy in our organization that can guarantee the quality of our products and after-sales services. We take pride in providing our customers with the best products and welcome them to share their experiences.

According to their feedback. we solve the technical and quality challenges of our products in the best possible way. We believe. to achieve the best quality and success. our relationships with vendors. colleagues. and clients have to be based on trust and respect.

Thank you for choosing

Würnher

PRESS



Herein, you may learn about the overall manufacturing process of carbide inserts. The raw materials for inserts, which are mostly composed of cobalt and tungsten carbide in different combinations, are initially as a powder. This mixture is poured into a specific die and pressed until it reaches a moderate strength. After that, it is heated in a sintering furnace to a temperature that is above the cobalt melting temperature and below the melting temperature of the harder phase, tungsten carbide, to create a dense, hard insert. The insert shrinks during the sintering process, and depending on the density distribution following the pressing procedure, distortion may also result. Understanding the relation between pressing process parameters and the final shape is crucial because it affects the tolerances of the final product.

SINTER

Milling solid tools with ballnose heads are cutting tools used in milling machines to produce complex shapes and features on a workpiece. The ballnose head refers to the rounded end of the cutting tool, which is designed to create curved surfaces or contours in the material being machined. These tools are typically made from solid carbide or high-speed steel and come in a variety of sizes and geometries to suit different machining applications. They are commonly used in the aerospace, automotive, and medical industries for producing parts with complex 3D shapes and contours.

QUALITY CONTROL

The quality controls in the manufacturing process of carbide inserts make it possible to guarantee that they fulfill their function appropriately. Our QC team thoroughly inspects all products for high quality before delivery. They utilize height gages, micrometers, and 2D projectors to ensure that insert dimensions conform to the design specifications. They also assess coating thicknesses to ensure they meet requirements and evaluate the thickness variations. Similarly, all inspections are performed with regard to the standards, as appropriate, to verify the product's high quality.

TECH CENTER

Our mission is to provide high-quality products and exceptional customer service. This can only be accomplished by empowering the company's technical center. Our technical experts' primary tasks are to gather and analyze qualitative and quantitative technical data to evaluate the performance of the product and determine the optimum machining parameters from the viewpoints of the machine and the workpiece material. This allows them to define standard benchmarking points that enable them to compare products considering the intended purpose of each. Other responsibilities of the technical center staff include looking for the simplest and most cost-effective solution to the customer's technical challenge. Our technical center ensures that the best ideas drive the product in the production chain.

WÜRNHER®

TABLE OF CONTENT

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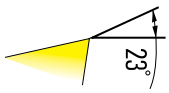
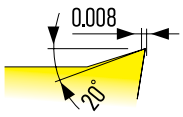
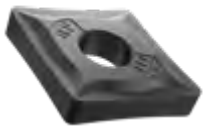
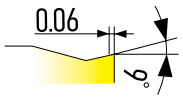
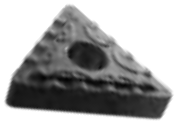
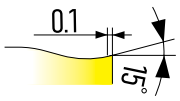
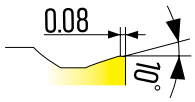
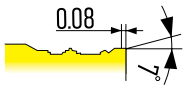
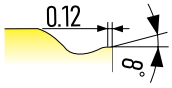
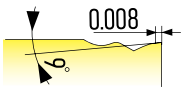
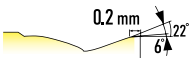
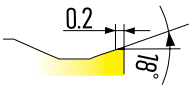
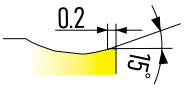
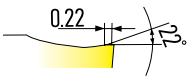
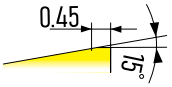
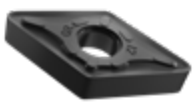
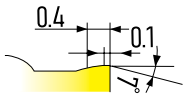
Grade Application for ISO Material Group

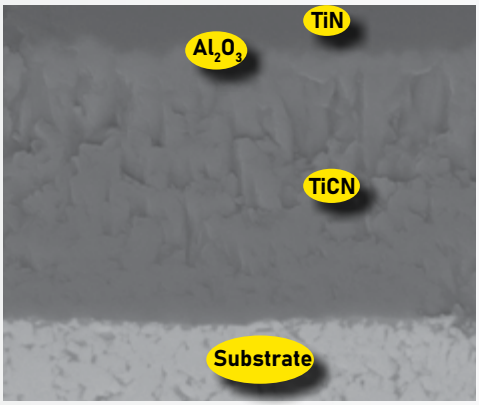
Material Group	MATERIAL CLASSIFICATION	ISO	CVD Coated								PVD Coated		Cemented Carbide
			WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WCK15-53	WCK15-54	WPM25-52	WPM25-54	WUN15-53
P	Unalloyed Steel / Alloyed Steel	P10	WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54			WPM25-52		
		P20											
		P30										WPM25-54	
		P40											
		P50											
M	Stainless Steel	M10									WPM25-52		
		M20											
		M30										WPM25-54	
		M40											
		M50											
K	Cast Iron	K10							WCK15-53	WCK15-54			
		K20											
		K30											
		K40											
		K50											
N	Aluminum / Aluminum Alloy	N10											
		N20											WUN15-53
		N30											
		N40											
		N50											
S	Heat Resistant Alloy	S10									WPM25-52		
		S20											
		S30											
		S40											
		S50											
H	Hardened Steel / Chilled Cast Iron	H10											
		H20											
		H30											
		H40											
		H50											

CHIPBREAKERS DESCRIPTION

AC			Applicable for aluminum at G-class tolerance with a large rake angle and inclination angle; that sharpens the tool and facilitates chip breaking and cutting.
AH			Applicable for aluminum with a large rake angle and inclination angle; that sharpens the tool and facilitates chip breaking and cutting.
HF			M-class general finishing chipbreaker; which is particularly appropriate for internal and external finishing turning of steel and cast iron.
BF			Recommended for finishing processing of M type materials. The sharp edge line well addresses difficulties with stainless steel processing, such as chip breaking and surface hardening within the processing method. You can get high-quality machined surfaces thanks to all of these.
GF			Recommended for finishing processing of P type materials. This double side chipbreaker with M-class tolerance has a strong edge line and high edge security, making it versatile.
BM			Recommended for semi-finishing processing of M type materials. BM chipbreaker is more efficient than BF one; since it more effectively breaks chips and lessens issues with material adhesion.
GS			Recommended for semi-finishing processing of P type materials. With GS chipbreaker. machining employs a light cutting force and creates wide chips. It performs well when it comes to process ductile alloy steel.
HM			M-class general semi-finishing chipbreaker; which is particularly appropriate for internal and external semi-finishing turning of steel and cast iron.

TM			General-purpose chipbreaker with vast chip control area. Protrusion close to the corner in the unique shape of this chip breaker. along with the large rake angle, offers a sharp edge with low cutting force.
MA			Highly recommended for medium cutting processing of alloy steel and carbon steel, although it is an ideal option for general cutting applications. It's positive land also gives a sharp cutting action.
GM			Recommended for semi-finishing processing of P type materials. This M class doubleside chipbreaker. which has a stronger edge line than the -GS type chipbreaker. is appropriate for cast iron processing with a low cutting force as well as semi-finishing in unstable processing conditions.
Plant			Recommended for roughing processing of K type materials. This M class doubleside chipbreaker features a strong edge line which makes it ideal for discontinious cutting and other unstable processes.
STR			Recommended for semi-fishing and roughing processing of P, M and K type materials. This double side chipbreaker with M-class tolerance has a strong edge line and good edge security, making it versatile.
HR			M-class general finishing chipbreaker, which is particularly appropriate for internal and external rough turning of steel and cast iron.
KR			Recommended for heavy-load roughing processing of K type materials. This M class doubleside chipbreaker works effectively, since it features a strong edge line. great resistance to plastic deformation, and consequently low chipping probability.
GR			Recommended for roughing processing of P type materials. This M class single-side chipbreaker has a low chipping probability and, depending on the cutting depth and feed, may also have a high removal rate and cutting force.

Grade : WCK15-53

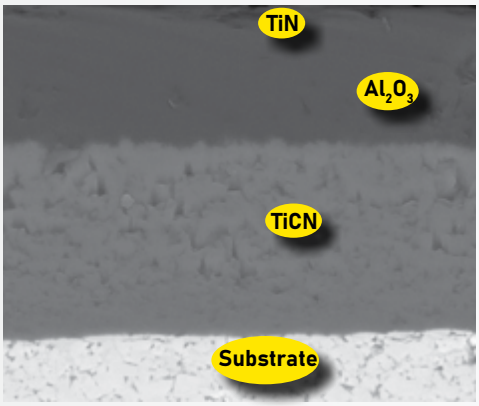


This grade of inserts has a coating of MT-Ti(CN), thick Al2O3, and TiN on a carbide substrate that possesses a high wear resistance. WCK15-53 appears in gray black color. It is recommended as the initial grade for finishing and semi-finishing of ductile cast Iron and forged cast iron, highly cutting speed allowance.

Application range

ISO Certification	1	5	10	15	20	25	30	35	40	45	50
P											
M											
K		WCK15-53									
N											
S											
H											

Grade : WCK15-54

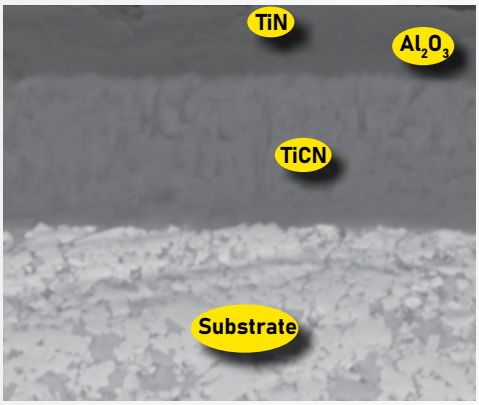


This grade of inserts has a coating of MT-Ti(CN), ultra Al2O3. and TiN on a carbide substrate that possesses a high wear resistance. It is recommended as the initial grade for ductile cast Iron and forged cast iron, highly cutting speed allowance.

Application range

ISO Certification	1	5	10	15	20	25	30	35	40	45	50
P											
M											
K		WCK15-54									
N											
S											
H											

Grade : WCP15-53

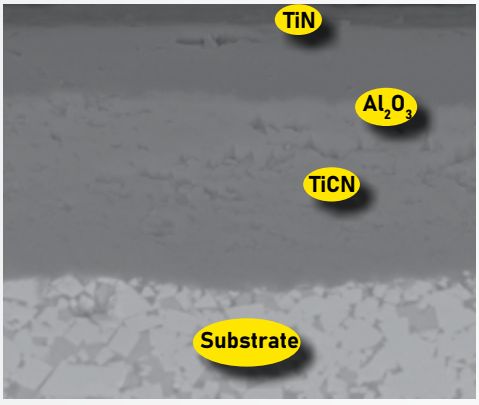


This grade of inserts has a coating of MT-Ti(CN), thick Al2O3, and TiN on a carbide substrate that has high wear resistance. Al2O3 layer on the top of the insert causes WCP15-53 coating to appear black. This is a suitable grade for finishing processing of steel, stainless steel and cast steel materials under high-speed cutting conditions.

Application range

ISO Certification	1	5	10	15	20	25	30	35	40	45	50
P		WCP15-53									
M											
K											
N											
S											
H											

Grade : WCP25-53

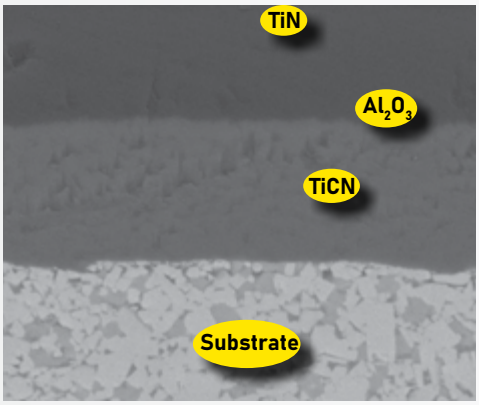


This grade of inserts features a coating of MT-Ti(CN), ultra-fine Al2O3, and TiN on a carbide substrate with special strength and toughness. WCP25-53 coating appears black, due to Al2O3 layer on top of the insert. This is the best grade for steel processing. appropriate for finishing and semi-finishing of steel. stainless steel, and cast steel.

Application range

ISO Certification	1	5	10	15	20	25	30	35	40	45	50
P			WCP25-53								
M											
K											
N											
S											
H											

Grade : WCP25-54

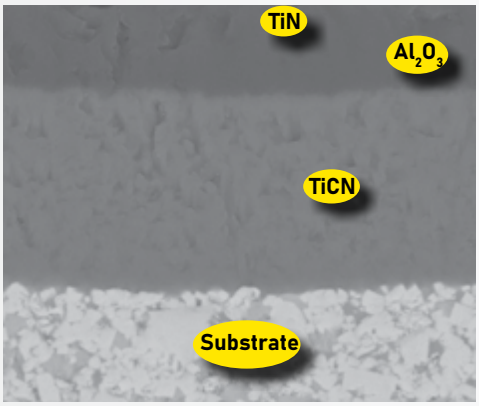


This grade of inserts features a coating of MT-Ti(CN), fine grained Al2O3, and TiN on a carbide substrate with an optimized toughness and hardness. This is a general grade in the ISO P25 application area, and it is suitable for steel, stainless steel, and cast iron finishing and semi-finishing.

Application range

ISO Certification	1	5	10	15	20	25	30	35	40	45	50
P			WCP25-54								
M											
K											
N											
S											
H											

Grade : WCP35-53

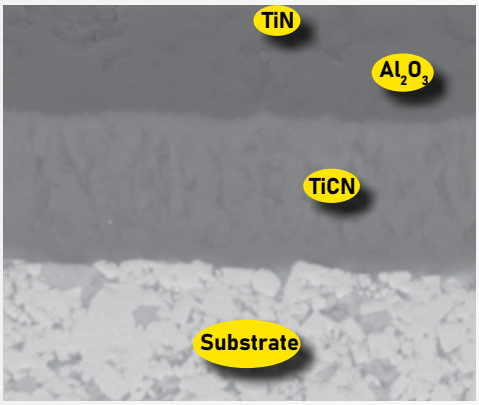


This grade of inserts comprises a coating of MT-Ti(CN), ultra fine Al2O3, and TiN on a carbide substrate, and a high-strength matrix with anti-plastic deformation ability. WCP35-53 grade offers good toughness and anti-plastic deformation characteristics, as well. It appears black because of the Al2O3 coating layer on top of the insert. This is on ideal grade for light-roughing and roughing on steel. stainless steel, and cast steel.

Application range

ISO Certification	1	5	10	15	20	25	30	35	40	45	50
P				WCP35-53							
M											
K											
N											
S											
H											

Grade : WCP35-54

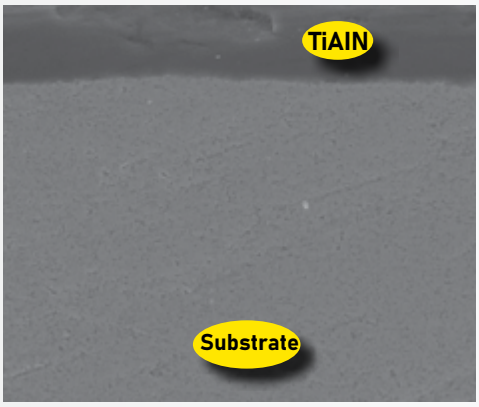


This grade of inserts comprises a coating of MT-Ti(CN), fine grained Al2O3, and TiN on a carbide substrate, and a high-strength matrix with strong resistance to plastic deformation. WCP35-54 grade offers great toughness. as well. It is suitable for light load roughing of steel. stainless steel, and cast iron materials.

Application range

ISO Certification	1	5	10	15	20	25	30	35	40	45	50
P				WCP35-54							
M											
K											
N											
S											
H											

Grade : WPM25-52

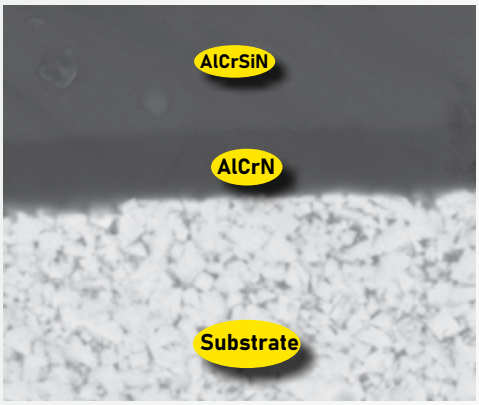


This grade of inserts has a 2-4 mm TiAlN PVD coating layer applied on a high toughness ultra-fine particle substrate. WPM25-52 grade seems gray black. This is widely applicable for steel, stainless steel and high-temperature alloy in finishing and semi-finishing.

Application range

ISO Certification	1	5	10	15	20	25	30	35	40	45	50
P			WPM25-52								
M			WPM25-52								
K											
N											
S		WPM25-52									
H											

Grade : WPM25-54

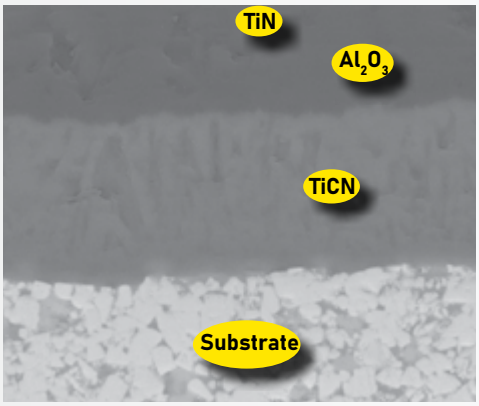


This grade of inserts has a 2-4 mm AlCrN+AlCrSiN PVD coating layer applied on a high toughness ultra-fine particle substrate. WPM25-54 grade appears in bronze color. This is appropriate for all materials in light and medium load milling, as well as stainless steel and high-temperature, high-hardness alloy in finishing and semi-finishing.

Application range

ISO Certification	1	5	10	15	20	25	30	35	40	45	50
P						WPM25-54					
M						WPM25-54					
K											
N											
S											
H											

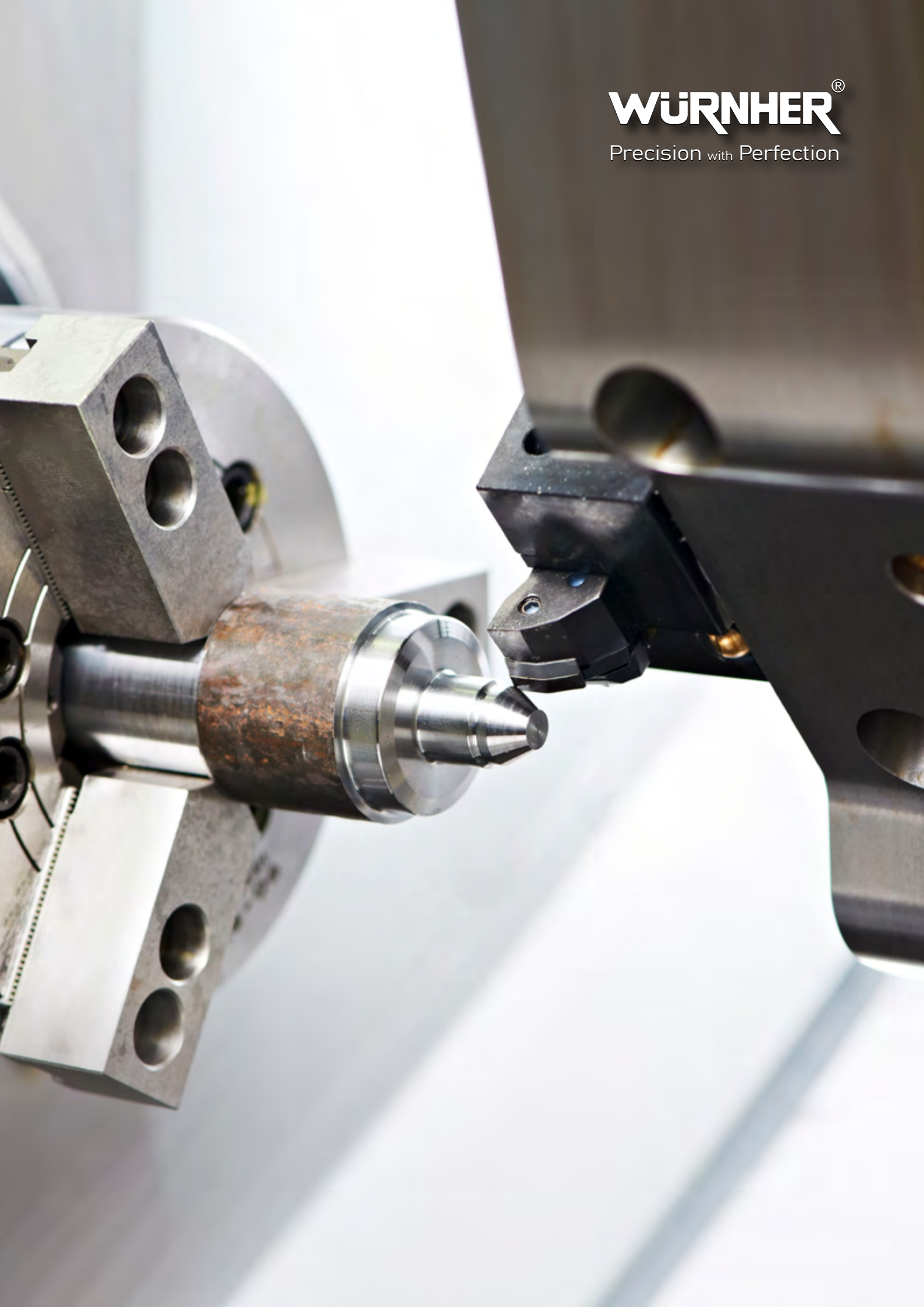
Grade : WCP15-54



This grade of inserts has a coating of MT-Ti(CN), fine grained Al2O3, and TiN on a carbide substrate that has high wear resistance. This grade is appropriate for high-speed cutting applications for finishing steel, stainless steel, and cast steel materials.

Application range

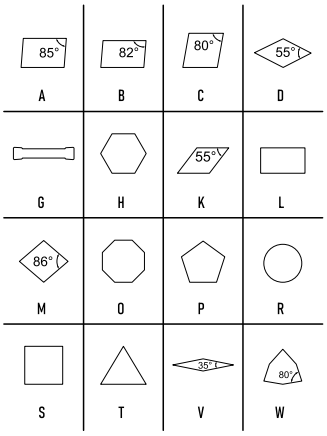
ISO Certification	1	5	10	15	20	25	30	35	40	45	50
P		WCP15-54									
M											
K											
N											
S											
H											


WÜRNHER®
Precision with Perfection

INSERT DESIGNATION (BASED ON ISO NORMS)

W	N	M	G	08	04	08		
1	2	3	4	5	6	7	8	9

1. Insert Shape

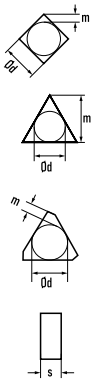


2. Clearance Angle

Letter Symbol	α
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
O	Special

3. Tolerance Class

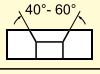
d (mm)
m (mm)
s (mm)



Symbol	D	M	S
A	± 0.025	± 0.005	± 0.025
C	± 0.025	± 0.013	± 0.025
E	± 0.025	± 0.025	± 0.025
F	± 0.013	± 0.005	± 0.025
G	± 0.025	± 0.025	± 0.130
H	± 0.013	± 0.013	± 0.025
J *	± 0.15-0.05	± 0.005	± 0.025
K *	± 0.15-0.05	± 0.013	± 0.025
L *	± 0.15-0.05	± 0.025	± 0.025
M *	± 0.15-0.05	± 0.20-0.08	± 0.130
N *	± 0.15-0.05	± 0.20-0.08	± 0.025
U *	± 0.25-0.08	± 0.38-0.13	± 0.130

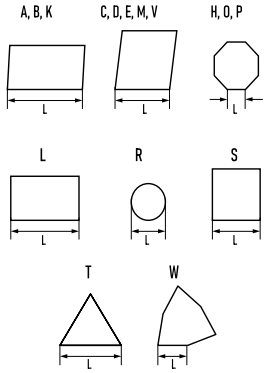
* Depending on the insert size.

4. Fixing and Chip Breaker Types

Type	Symbol	Type	Symbol
A		N	
B		P	
F		R	
G		T	
H		W	
M		X	Special Design

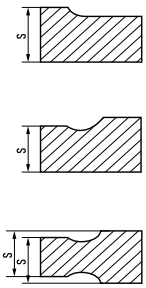
INSERT DESIGNATION (BASED ON ISO NORMS)

5. Cutting Edge Length



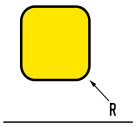
Disregarding any decimals e.g. 12,7 = 12

6. Insert Thickness



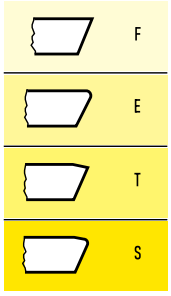
Symbol	mm
01	= 1.59
T1	= 1.98
02	= 2.38
03	= 3.18
T3	= 3.97
04	= 4.76
05	= 5.56
06	= 6.35
07	= 7.94
09	= 9.52

7. Insert Corner Radius



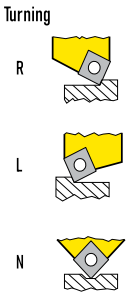
00	= Sharp corner or round insert (inch version)
M0	= Round insert (metric version)
01	= 0.1 mm
02	= 0.2 mm
04	= 0.4 mm
08	= 0.8 mm
12	= 1.2 mm
16	= 1.6 mm
etc	

8. Edge Preparation



Optional information

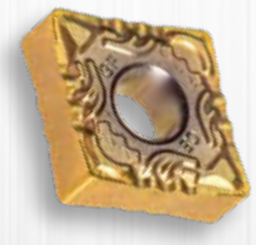
9. Cutting Direction

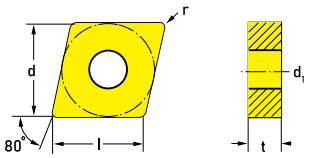


Optional information

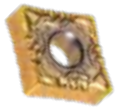
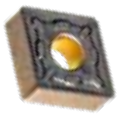
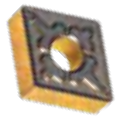
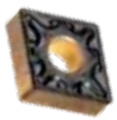
WÜRNHER®

TURNING INSERTS

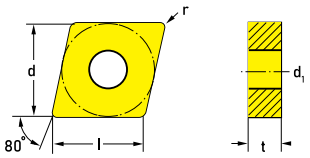




Indexable inserts

CN..	Designation	Dimensions (mm)					P						M		K		N
		Size	d	t	d_1	R	WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	CNMG120404-BF	12.0	12.7	4.76	5.16	0.4							○	●			
	CNMG120408-BF	12.0	12.7	4.76	5.16	0.8							○	●			
	CNMG120404-GF	12.0	12.7	4.76	5.16	0.4	○	●					○	●			
	CNMG120408-GF	12.0	12.7	4.76	5.16	0.8	○	●					○	●			
	CNMG120404-GS	12.0	12.7	4.76	5.16	0.4	○	●	○	●			○	●			
	CNMG120408-GS	12.0	12.7	4.76	5.16	0.8	○	●	○	●			○	●			
	CNMG120404-TM	12.0	12.7	4.76	5.16	0.4	○	●	○	●			○	●			
	CNMG120408-TM	12.0	12.7	4.76	5.16	0.8	○	●	○	●			○	●			
	CNMG120412-TM	12.0	12.7	4.76	5.16	1.2	○	●	○	●			○	●			
	CNMG120404-MA	12.0	12.7	4.76	5.16	0.4			○	●					○	●	
	CNMG120408-MA	12.0	12.7	4.76	5.16	0.8			○	●					○	●	
	CNMG120404-GM	12.0	12.7	4.76	5.16	0.4	○	●	○	●					○	●	
	CNMG120408-GM	12.0	12.7	4.76	5.16	0.8	○	●	○	●					○	●	
	CNMG120412-GM	12.0	12.7	4.76	5.16	1.2	○	●	○	●					○	●	
	CNMG120416-GM	12.0	12.7	4.76	5.16	1.6	○	●	○	●					○	●	

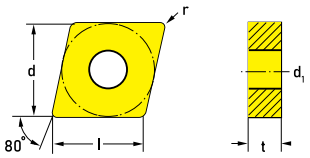
● First choice
○ Make to order



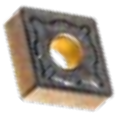
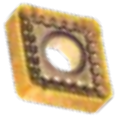
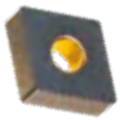
Indexable inserts

CN..	Designation	Dimensions (mm)					P						M		K		N
		Size	d	t	d_1	R	WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	CNMG160608-GM	16.0	15.875	6.35	6.35	0.8	○	●	○	●					○	●	
	CNMG160612-GM	16.0	15.875	6.35	6.35	1.2	○	●	○	●					○	●	
	CNMG160616-GM	16.0	15.875	6.35	6.35	1.6	○	●	○	●					○	●	
	CNMG190608-GM	19.0	19.05	6.35	7.93	0.8	○	●	○	●					○	●	
	CNMG190612-GM	19.0	19.05	6.35	7.93	1.2	○	●	○	●					○	●	
	CNMG190616-GM	19.0	19.05	6.35	7.93	1.6	○	●	○	●					○	●	
	CNMG120404	12.0	12.7	4.76	5.16	0.4			○	●	○	●			○	●	
	CNMG120408	12.0	12.7	4.76	5.16	0.8			○	●	○	●			○	●	
	CNMG120412	12.0	12.7	4.76	5.16	1.2			○	●	○	●			○	●	
	CNMG120416	12.0	12.7	4.76	5.16	1.6			○	●	○	●			○	●	
	CNMG160608	16.0	15.875	6.35	6.35	0.8			○	●	○	●			○	●	
	CNMG160612	16.0	15.875	6.35	6.35	1.2			○	●	○	●			○	●	
	CNMG160616	16.0	15.875	6.35	6.35	1.6			○	●	○	●			○	●	
	CNMG190608	19.0	19.05	6.35	7.93	0.8			○	●	○	●			○	●	
	CNMG190612	19.0	19.05	6.35	7.93	1.2			○	●	○	●			○	●	
	CNMG190616	19.0	19.05	6.35	7.93	1.6			○	●	○	●			○	●	
	CNMG120408-KR	12.0	12.7	4.76	5.16	0.8									○	●	
	CNMG120412-KR	12.0	12.7	4.76	5.16	1.2									○	●	
	CNMG120416-KR	12.0	12.7	4.76	5.16	1.6									○	●	
	CNMG160612-KR	16.0	15.875	6.35	6.35	1.2									○	●	
	CNMG160616-KR	16.0	15.875	6.35	6.35	1.6									○	●	

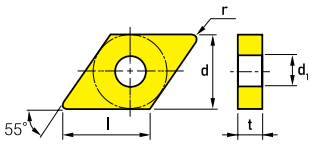
● First choice
○ Make to order



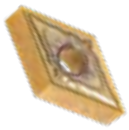
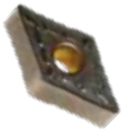
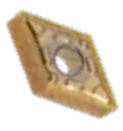
Indexable inserts

CN..	Designation	Dimensions (mm)					P						M		K		N
		Size	d	t	d_1	R	WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	CNMG120408-KR	12.0	12.7	4.76	5.16	0.8									○	●	
	CNMG120412-KR	12.0	12.7	4.76	5.16	1.2									○	●	
	CNMG120416-KR	12.0	12.7	4.76	5.16	1.6									○	●	
	CNMG160612-KR	16.0	15.875	6.35	6.35	1.2									○	●	
	CNMG160616-KR	16.0	15.875	6.35	6.35	1.6									○	●	
	CNMG120408-GR	12.0	12.7	4.76	5.16	0.8					○	●			○	●	
	CNMG120412-GR	12.0	12.7	4.76	5.16	1.2					○	●			○	●	
	CNMG160612-GR	16.0	15.875	6.35	6.35	1.2					○	●			○	●	
	CNMG160616-GR	16.0	15.875	6.35	6.35	1.6					○	●			○	●	
	CNMM190612-GR	19.0	19.05	6.35	7.93	1.2					○	●			○	●	
	CNMM190616-GR	19.0	19.05	6.35	7.93	1.6					○	●			○	●	
	CNMM190624-GR	19.0	19.05	6.35	7.93	2.4					○	●			○	●	
	CNMM250924-GR	25	25.4	9.52	9.12	2.4					○	●			○	●	
	CNMA120404	12.0	12.7	4.76	5.16	0.4									○	●	
	CNMA120408	12.0	12.7	4.76	5.16	0.8									○	●	
	CNMA120412	12.0	12.7	4.76	5.16	1.2									○	●	
	CNMA120416	12.0	12.7	4.76	5.16	1.6									○	●	
	CNMA160608	16.0	15.875	6.35	6.35	0.8									○	●	
	CNMA160612	16.0	15.875	6.35	6.35	1.2									○	●	
	CNMA160616	16.0	15.875	6.35	6.35	1.6									○	●	
	CNMA190612	19.0	19.05	6.35	7.93	1.2									○	●	
	CNMA190616	19.0	19.05	6.35	7.93	1.6									○	●	

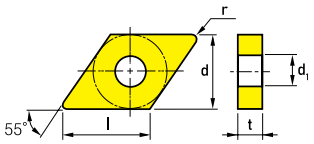
● First choice
○ Make to order



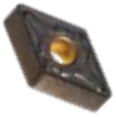
Indexable inserts

DN..	Designation	Dimensions (mm)					P						M		K		N
		Size	d	t	d_1	R	WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	DNMG150404-GF	15.0	12.7	4.76	5.16	0.4	○	●					○	●			
	DNMG150408-GF	15.0	12.7	4.76	5.16	0.8	○	●					○	●			
	DNMG150604-GF	15.0	12.7	6.35	5.16	0.4	○	●					○	●			
	DNMG150608-GF	15.0	12.7	6.35	5.16	0.8	○	●					○	●			
	DNMG110408-BM	15.0	12.7	4.76	5.16	0.8							○	●			
	DNMG150604-BM	15.0	12.7	6.35	5.16	0.4							○	●			
	DNMG150608-BM	15.0	12.7	6.35	5.16	0.8							○	●			
	DNMG150404-GS	15.0	12.7	4.76	5.16	0.4	○	●	○	●							
	DNMG150408-GS	15.0	12.7	4.76	5.16	0.8	○	●	○	●							
	DNMG150604-GS	15.0	12.7	6.35	5.16	0.4	○	●	○	●							
	DNMG150608-GS	15.0	12.7	6.35	5.16	0.8	○	●	○	●							
	DNMG110404-MA	11.0	9.525	4.76	3.81	0.4					○	●			○	●	
	DNMG110408-MA	11.0	9.525	4.76	3.81	0.8					○	●			○	●	
	DNMG150404-MA	15.0	12.7	4.76	5.16	0.4					○	●			○	●	
	DNMG150408-MA	15.0	12.7	4.76	5.16	0.8					○	●			○	●	
	DNMG150412-MA	15.0	12.7	4.76	5.16	1.2					○	●			○	●	
	DNMG150604-MA	15.0	12.7	6.35	5.16	0.4					○	●			○	●	
	DNMG150608-MA	15.0	12.7	6.35	5.16	0.8					○	●			○	●	
	DNMG150612-MA	15.0	12.7	6.35	5.16	1.2					○	●			○	●	
	DNMG110404-GM	11.0	9.525	3.18	3.81	0.4	○	●	○	●							
	DNMG110408-GM	11.0	9.525	3.18	3.81	0.8	○	●	○	●							
	DNMG150404-GM	15.0	12.7	4.76	5.16	0.4	○	●	○	●							
	DNMG150408-GM	15.0	12.7	4.76	5.16	0.8	○	●	○	●							

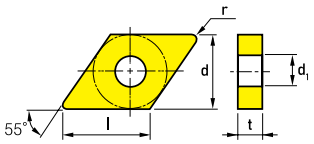
● First choice
○ Make to order



Indexable inserts

DN..	Designation	Dimensions (mm)					P						M		K		N
		Size	d	t	d_1	R	WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	DNMG150412-GM	15.0	12.7	4.76	5.16	1.2	○	●	○	●							
	DNMG150604-GM	15.0	12.7	6.35	5.16	0.4	○	●	○	●							
	DNMG150608-GM	15.0	12.7	6.35	5.16	0.8	○	●	○	●							
	DNMG150612-GM	15.0	12.7	6.35	5.16	1.2	○	●	○	●							
	DNMG110408	11.0	9.525	4.76	3.81	0.8			○	●	○	●			○	●	
	DNMG150404	15.0	12.7	4.76	5.16	0.4			○	●	○	●			○	●	
	DNMG150408	15.0	12.7	4.76	5.16	0.8			○	●	○	●			○	●	
	DNMG150412	15.0	12.7	4.76	5.16	1.2			○	●	○	●			○	●	
	DNMG150604	15.0	12.7	6.35	5.16	0.4			○	●	○	●			○	●	
	DNMG150608	15.0	12.7	6.35	5.16	0.8			○	●	○	●			○	●	
	DNMG150612	15.0	12.7	6.35	5.16	1.2			○	●	○	●			○	●	
	DNMG150616	15.0	12.7	6.35	5.16	1.6			○	●	○	●			○	●	
	DNMG150408-KR	15.0	12.7	4.76	5.16	0.8					○	●			○	●	
	DNMG150412-KR	15.0	12.7	4.76	5.16	1.2					○	●			○	●	
	DNMG150608-KR	15.0	12.7	6.35	5.16	0.8					○	●			○	●	
	DNMG150612-KR	15.0	12.7	6.35	5.16	1.2					○	●			○	●	
	DNMG150616-KR	15.0	12.7	6.35	5.16	1.6					○	●			○	●	
	DNMG150608-GR	15.0	12.7	6.35	5.16	0.8					○	●			○	●	
	DNMG150612-GR	15.0	12.7	6.35	5.16	1.2					○	●			○	●	
	DNMG150616-GR	15.0	12.7	6.35	5.16	1.6					○	●			○	●	

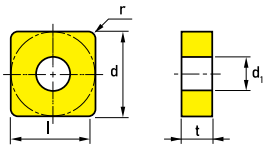
● First choice
○ Make to order



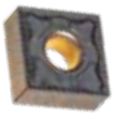
Indexable inserts

DN..	Designation	Dimensions (mm)					P						M		K		N
		Size	d	t	d_1	R	WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	DNMA150408	15.0	12.7	4.76	5.16	0.8									○	●	
	DNMA150412	15.0	12.7	4.76	5.16	1.2									○	●	
	DNMA150608	15.0	12.7	6.35	5.16	0.8									○	●	
	DNMA150612	15.0	12.7	6.35	5.16	1.2									○	●	
	DNMA150616	15.0	12.7	6.35	5.16	1.6									○	●	

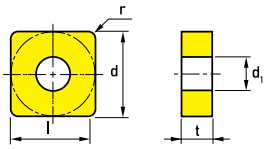
● First choice
○ Make to order



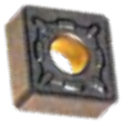
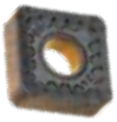
Indexable inserts

SN..	Designation	Dimensions (mm)					P						M		K		N
		Size	d	t	d_1	R	WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	SNMG120404-BM	12.0	12.7	4.76	5.16	0.4							○	●			
	SNMG120408-BM	12.0	12.7	4.76	5.16	0.8							○	●			
	SNMG120404-GS	12.0	12.7	4.76	5.16	0.4	○	●	○	●	○	●					
	SNMG120408-GS	12.0	12.7	4.76	5.16	0.8	○	●	○	●	○	●					
	SNMG120404-MA	12.0	12.7	4.76	5.16	0.4									○	●	
	SNMG120408-MA	12.0	12.7	4.76	5.16	0.8									○	●	
	SNMG120412-MA	12.0	12.7	4.76	5.16	1.2									○	●	
	SNMG120404-GM	12.0	12.7	4.76	5.16	0.4	○	●	○	●	○	●					
	SNMG120408-GM	12.0	12.7	4.76	5.16	0.8	○	●	○	●	○	●					
	SNMG120412-GM	12.0	12.7	4.76	5.16	1.2	○	●	○	●	○	●			○	●	
	SNMG120416-GM	12.0	12.7	4.76	5.16	1.6	○	●	○	●	○	●			○	●	
	SNMG150608-GM	15.0	15.875	6.35	6.35	0.8	○	●	○	●	○	●			○	●	
	SNMG150612-GM	15.0	15.875	6.35	6.35	1.2	○	●	○	●	○	●			○	●	
	SNMG190608-GM	19.0	19.05	6.35	7.93	0.8	○	●	○	●	○	●			○	●	
	SNMG190612-GM	19.0	19.05	6.35	7.93	1.2	○	●	○	●	○	●			○	●	

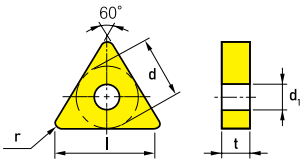
● First choice
○ Make to order



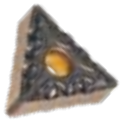
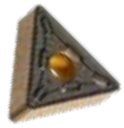
Indexable inserts

SN..	Designation	Dimensions (mm)					P						M		K		N
		Size	d	t	d_1	R	WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	SNMG120404	12.0	12.7	4.76	5.16	0.4			○	●	○	●			○	●	
	SNMG120408	12.0	12.7	4.76	5.16	0.8			○	●	○	●			○	●	
	SNMG120412	12.0	12.7	4.76	5.16	1.2			○	●	○	●			○	●	
	SNMG190612	19.0	19.05	6.35	7.93	1.2			○	●	○	●			○	●	
	SNMG190616	19.0	19.05	6.35	7.93	1.6			○	●	○	●			○	●	
	SNMG120408-GR	12.0	12.7	4.76	5.16	0.8			○	●	○	●			○	●	
	SNMG120412-GR	12.0	12.7	4.76	5.16	1.2			○	●	○	●			○	●	
	SNMG150612-GR	15.0	15.875	6.35	6.35	1.2			○	●	○	●			○	●	
	SNMG150616-GR	15.0	15.875	6.35	6.35	1.6			○	●	○	●			○	●	
	SNMG190612-GR	19.0	19.05	6.35	7.93	1.2			○	●	○	●			○	●	
	SNMG190616-GR	19.0	19.05	6.35	7.93	1.6			○	●	○	●			○	●	
	SNMM150612-GR	15.0	15.875	6.35	6.35	1.2					○	●			○	●	
	SNMM150616-GR	15.0	15.875	6.35	6.35	1.6					○	●			○	●	
	SNMM190612-GR	19.0	19.05	6.35	7.93	1.2					○	●			○	●	
	SNMM190616-GR	19.0	19.05	6.35	7.93	1.6					○	●			○	●	
	SNMM190624-GR	19.0	19.05	6.35	7.93	2.4					○	●			○	●	
	SNMM250724-GR	25	25.4	7.94	9.12	2.4					○	●			○	●	
	SNMM250924-GR	25	25.4	9.52	9.12	2.4					○	●			○	●	
	SNMA120408	12.0	12.7	4.76	5.16	0.8					○	●			○	●	
	SNMA120412	12.0	12.7	4.76	5.16	1.2					○	●			○	●	
	SNMA120416	12.0	12.7	4.76	5.16	1.6					○	●			○	●	
	SNMA150612	15.0	15.875	6.35	6.35	1.2					○	●			○	●	
	SNMA190612	19.0	19.05	6.35	7.93	1.2					○	●			○	●	
	SNMA190616	19.0	19.05	6.35	7.93	1.6					○	●			○	●	

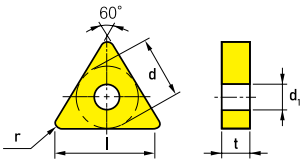
● First choice
○ Make to order



Indexable inserts

TN..	Designation	Dimensions (mm)					P						M		K		N
		Size	d	t	d_1	R	WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	TNMG160404-BF	16.0	9.525	4.76	3.81	0.4	○	○					○	●			
	TNMG160408-BF	16.0	9.525	4.76	3.81	0.8	○	○					○	●			
	TNMG160404-GF	16.0	9.525	4.76	3.81	0.4	○	●	○	●							
	TNMG160408-GF	16.0	9.525	4.76	3.81	0.8	○	●	○	●							
	TNMG160404-BM	16.0	9.525	4.76	3.81	0.4	○	○					○	●			
	TNMG160408-BM	16.0	9.525	4.76	3.81	0.8	○	○					○	●			
	TNMG220408-BM	22.0	12.7	4.76	5.16	0.8	○	○					○	●			
	TNMG160404-GS	16.0	9.525	4.76	3.81	0.4	○	●	○	●							
	TNMG160408-GS	16.0	9.525	4.76	3.81	0.8	○	●	○	●							
	TNMG160404-TM	16.0	9.525	4.76	3.81	0.4	○	●	○	●			○	●			
	TNMG160408-TM	16.0	9.525	4.76	3.81	0.8	○	●	○	●			○	●		○	
	TNMG160404-MA	16.0	9.525	4.76	3.81	0.4	○	●	○	●			○	●		○	
	TNMG160408-MA	16.0	9.525	4.76	3.81	0.8	○	●	○	●			○	●		○	
	TNMG160412-MA	16.0	9.525	4.76	3.81	1.2	○	●	○	●			○	●		○	

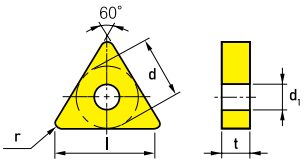
● First choice
○ Make to order



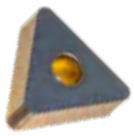
Indexable inserts

TN..	Designation	Dimensions (mm)					P						M		K		N
		Size	d	t	d_1	R	WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	TNMG160404-GM	16.0	9.525	4.76	3.81	0.4	○	●	○	●		○				○	
	TNMG160408-GM	16.0	9.525	4.76	3.81	0.8	○	●	○	●		○				○	
	TNMG160412-GM	16.0	9.525	4.76	3.81	1.2	○	●	○	●		○				○	
	TNMG220404-GM	22.0	12.7	4.76	5.16	0.4	○	●	○	●		○				○	
	TNMG220408-GM	22.0	12.7	4.76	5.16	0.8	○	●	○	●		○				○	
	TNMG220412-GM	22.0	12.7	4.76	5.16	1.2	○	●	○	●		○				○	
	TNMG160404	16.0	9.525	4.76	3.81	0.4			○	●	○	●			○	●	
	TNMG160408	16.0	9.525	4.76	3.81	0.8			○	●	○	●			○	●	
	TNMG160412	16.0	9.525	4.76	3.81	1.2			○	●	○	●			○	●	
	TNMG220408	22.0	12.7	4.76	5.16	0.8			○	●	○	●			○	●	
	TNMG220412	22.0	12.7	4.76	5.16	1.2			○	●	○	●			○	●	
	TNMG160408-KR	16.0	9.525	4.76	3.81	0.8									○	●	
	TNMG160412-KR	16.0	9.525	4.76	3.81	1.2									○	●	
	TNMG220408-KR	22.0	12.7	4.76	5.16	0.8									○	●	
	TNMG220412-KR	22.0	12.7	4.76	5.16	1.2									○	●	
	TNMG220416-KR	22.0	12.7	4.76	5.16	1.6									○	●	
	TNMG160408-GR	16.0	9.525	4.76	3.81	0.8			○	●	○	●					
	TNMG160412-GR	16.0	9.525	4.76	3.81	1.2			○	●	○	●					
	TNMG160416-GR	16.0	9.525	4.76	3.81	1.6			○	●	○	●					
	TNMG220412-GR	22.0	12.7	4.76	5.16	1.2			○	●	○	●					
	TNMG220416-GR	22.0	12.7	4.76	5.16	1.6			○	●	○	●					
	TNMG270612-GR	27.0	15.875	6.35	6.35	1.2			○	●	○	●					
	TNMG270616-GR	27.0	15.875	6.35	6.35	1.6			○	●	○	●					
	TNMG330916-GR	33	19.05	9.52	7.93	1.6			○	●	○	●					
	TNMG330924-GR	33	19.05	9.52	7.93	2.4			○	●	○	●					

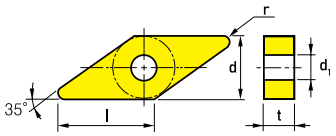
● First choice
○ Make to order



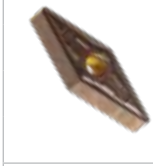
Indexable inserts

TN..	Designation	Dimensions (mm)					P						M		K		N
		Size	d	t	d_1	R	WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	TNMA160404	16.0	9.525	4.76	3.81	0.4									○	●	
	TNMA160408	16.0	9.525	4.76	3.81	0.8									○	●	
	TNMA160412	16.0	9.525	4.76	3.81	1.2									○	●	
	TNMA160416	16.0	9.525	4.76	3.81	1.6									○	●	
	TNMA220404	22.0	12.7	4.76	5.16	0.4									○	●	
	TNMA220408	22.0	12.7	4.76	5.16	0.8									○	●	
	TNMA220412	22.0	12.7	4.76	5.16	1.2									○	●	
	TNMA220416	22.0	12.7	4.76	5.16	1.6									○	●	

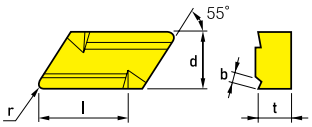
● First choice
○ Make to order



Indexable inserts

VN..	Designation	Dimensions (mm)					P						M		K		N
		Size	d	t	d_1	R	WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	VNMG160404-GF	16.0	9.525	4.76	3.81	0.4	○	●	○	●							
	VNMG160408-GF	16.0	9.525	4.76	3.81	0.8	○	●	○	●							
	VNMG160404-BM	16.0	9.525	4.76	3.81	0.4							○	●			
	VNMG160408-BM	16.0	9.525	4.76	3.81	0.8							○	●			
	VNMG160408-TM	16.0	9.525	4.76	3.81	0.8			●	●			○	●			
	VNMG160412-TM	16.0	9.525	4.76	3.81	1.2			●	●			○	●			
	VNMG160404-MA	16.0	9.525	4.76	3.81	0.4			○	●			○	●		○	
	VNMG160408-MA	16.0	9.525	4.76	3.81	0.8			○	●			○	●		○	
	VNMG160404-GM	16.0	9.525	4.76	3.81	0.4	○	●	○	●							
	VNMG160408-GM	16.0	9.525	4.76	3.81	0.8	○	●	○	●							
	VNMG160412-GM	16.0	9.525	4.76	3.81	1.2	○	●	○	●							
	VNMG160404	16.0	9.525	4.76	3.81	0.4		●	○	●					○	●	
	VNMG160408	16.0	9.525	4.76	3.81	0.8		●	○	●					○	●	
	VNMG160412	16.0	9.525	4.76	3.81	1.2		●	○	●					○	●	

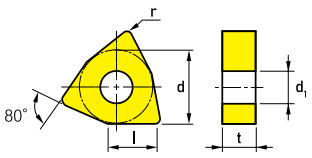
● First choice
○ Make to order



Indexable inserts

KN..	Designation	Dimensions (mm)					P						M		K		N
		Size	d	t	d_1	R	WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	KNUX160405R11	16.0	9.525	4.76	-	0.5			○	●	○	●					
	KNUX160405L11	16.0	9.525	4.76	-	0.5			○	●	○	●					

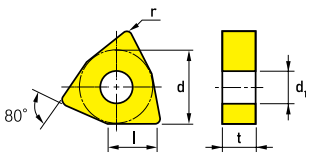
● First choice
○ Make to order



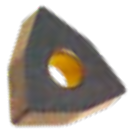
Indexable inserts

WN..	Designation	Dimensions (mm)					P						M		K		N
		Size	d	t	d_1	R	WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	WNMG060404-GF	6.0	9.525	4.76	3.81	0.4	○	●	○	●							
	WNMG060408-GF	6.0	9.525	4.76	3.81	0.8	○	●	○	●							
	WNMG080404-GF	8.0	12.7	4.76	5.16	0.4	○	●	○	●							
	WNMG080408-GF	8.0	12.7	4.76	5.16	0.8	○	●	○	●							
	WNMG080412-GF	8.0	12.7	4.76	5.16	1.2	○	●	○	●							
	WNMG080404-BM	8.0	12.7	4.76	5.16	0.4							○	●			
	WNMG080408-BM	8.0	12.7	4.76	5.16	0.8							○	●			
	WNMG080412-BM	8.0	12.7	4.76	5.16	1.2							○	●			
	WNMG080404-GS	8.0	12.7	4.76	5.16	0.4	○	●	○	●				○		○	
	WNMG080408-GS	8.0	12.7	4.76	5.16	0.8	○	●	○	●				○		○	
	WNMG080404-MA	8.0	12.7	4.76	5.16	0.4				●				○	●	●	
	WNMG080408-MA	8.0	12.7	4.76	5.16	0.8				●				○	●	●	
	WNMG080412-MA	8.0	12.7	4.76	5.16	1.2				●				○	●	●	
	WNMG060408-GM	6.0	9.525	4.76	3.81	0.8		○	○	●							
	WNMG080404-GM	8.0	12.7	4.76	5.16	0.4		○	○	●							
	WNMG080408-GM	8.0	12.7	4.76	5.16	0.8		○	○	●							
	WNMG080412-GM	8.0	12.7	4.76	5.16	1.2		○	○	●							
	WNMG080416-GM	8.0	12.7	4.76	5.16	1.6		○	○	●							

● First choice
○ Make to order



Indexable inserts

WN..	Designation	Dimensions (mm)					P						M		K		N
		Size	d	t	d_1	R	WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	WNMG080404	8.0	12.7	4.76	5.16	0.4			○	●		○		○	○	●	
	WNMG080408	8.0	12.7	4.76	5.16	0.8			○	●		○		○	○	●	
	WNMG080412	8.0	12.7	4.76	5.16	1.2			○	●		○		○	○	●	
	WNMG060412-KR	6.0	9.525	4.76	3.81	1.2									○	●	
	WNMG080404-KR	8.0	12.7	4.76	5.16	0.4									○	●	
	WNMG080408-KR	8.0	12.7	4.76	5.16	0.8									○	●	
	WNMG080412-KR	8.0	12.7	4.76	5.16	1.2									○	●	
	WNMG080416-KR	8.0	12.7	4.76	5.16	1.6									○	●	
	WNMG080408-GR	8.0	12.7	4.76	5.16	0.8				○	○	●			○		
	WNMG080412-GR	8.0	12.7	4.76	5.16	1.2				○	○	●			○		
	WNMG080416-GR	8.0	12.7	4.76	5.16	1.6				○	○	●			○		
	WNMA080404	8.0	12.7	4.76	5.16	0.4						○			●	○	
	WNMA080408	8.0	12.7	4.76	5.16	0.8						○			●	○	
	WNMA080412	8.0	12.7	4.76	5.16	1.2						○			●	○	
	WNMA080416	8.0	12.7	4.76	5.16	1.6						○			●	○	

● First choice
○ Make to order

Velocity of cut

VC (m/min)

		CVD							PVD		Uncoated
		WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WCK15-53	WCK15-54	WPM25-52	WPM25-54	WUN15-53
Steel	Low Carbon	140 - 280	180 - 320	120 - 260	160 - 300	110 - 240	150-280			180 - 330	200 - 300	
	Medium Alloy	110 - 240	140 - 280	100-220	120-260	80-220	100-240			150 - 280	170 - 270	
	High Alloy	100 - 210	110-220	80-190	100-230	60-170	80-200			120 - 250	120 - 220	
Stainless Steel	Series 300	140-220	160 - 280							160 - 280	160 - 270	
	Series 400	110-180	140 - 250							140 - 250	140 - 250	
	Duplex	70 - 150	70 - 150							70 - 150	70 - 150	
Castiron	Grey							140 - 320	140 - 280	120 - 240	130 -250	
	Nodular							120 - 280	120 - 260	100 - 240	100 - 240	
	Hardened							40 - 80	60 - 100	40 - 80	40 - 80	
ALU	<8% Silicon									200 - 350	200 - 350	150 - 350
	>8% Silicon									170 - 300	170 - 300	120 - 300
	Copper Alloys									180 - 320	180 - 320	120 - 320
	Aerospace									200 - 400	200 - 400	120 - 400
Exotic Alloys	Titanium									35 - 65	35 - 65	
	Nickel Alloys									25 - 45	25 - 45	
Hardened	38 - 45 HRC							50 - 100	50 - 100			
	45 - 55 HRC							40 - 80	40 - 80			
	55 - 65 HRC											

WÜRNHER®

Feed Rate & Depth of cut

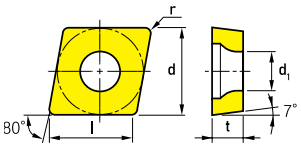
ap (mm) & fn (mm/n)

		Chip breaker Nose radius (mm)	BF				GF				BM				GS				TM			
			DOC		f		DOC		f		DOC		f		DOC		f		DOC		f	
			min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
Steel	Low Carbon	0.4	0.15	1.5	0.08	0.2	0.2	2	0.11	0.23	0.1	2	0.1	0.2					0.3	2.5	0.15	0.3
		0.8	0.3	3	0.18	0.3	0.3	4	0.2	0.35	0.3	3.5	0.18	0.35	0.5	4	0.22	0.35	0.5	4	0.23	0.4
		1.2																	1	5	0.23	0.54
	Medium Alloy	0.4	0.15	1.5	0.08	0.2	0.2	2	0.11	0.23	0.1	2	0.1	0.2					0.3	2	0.15	0.3
		0.8	0.3	2.5	0.18	0.3	0.3	3	0.2	0.35	0.3	3	0.18	0.35	0.5	3	0.22	0.35	0.5	3.5	0.23	0.4
		1.2																	1	4.5	0.23	0.48
	High Alloy	0.4	0.15	1	0.08	0.2	0.2	2	0.11	0.23	0.1	2	0.1	0.2					0.3	2	0.15	0.3
		0.8	0.3	2	0.18	0.3	0.3	2.5	0.2	0.35	0.3	2.5	0.18	0.35	0.5	3	0.22	0.35	0.5	3.5	0.23	0.4
		1.2																	1	4.5	0.23	0.4
Stainless Steel	Series 300	0.4	0.15	1.5	0.08	0.2	0.2	2	0.11	0.23	0.1	2	0.1	0.2					0.3	2.5	0.15	0.3
		0.8	0.3	3	0.18	0.25	0.3	3	0.2	0.35	0.3	3	0.18	0.35	0.5	3	0.22	0.35	0.5	4	0.23	0.35
		1.2																	1	5	0.23	0.45
	Series 400	0.4	0.15	1.5	0.08	0.2	0.2	2	0.11	0.23	0.1	2	0.1	0.2					0.3	2	0.15	0.3
		0.8	0.3	2.5	0.18	0.25	0.3	3	0.2	0.35	0.3	3	0.18	0.35	0.5	3	0.22	0.35	0.5	3.5	0.23	0.35
		1.2																	1	4.5	0.23	0.45
	Duplex	0.4	0.15	1	0.08	0.18	0.2	2	0.11	0.23	0.1	2	0.1	0.2					0.3	2	0.15	0.25
		0.8	0.3	2	0.18	0.25	0.3	2.5	0.2	0.35	0.3	2.5	0.18	0.35	0.5	2.5	0.22	0.35	0.5	3	0.23	0.3
		1.2																	1	3	0.23	0.3
Cast Iron	Grey	0.4	0.15	1.5	0.06	0.2	0.2	2	0.11	0.23	0.1	2	0.1	0.2					0.3	2.5	0.15	0.3
		0.8	0.3	3	0.18	0.3	0.3	4	0.2	0.35	0.3	3.5	0.18	0.35	0.5	4	0.22	0.35	0.5	4	0.23	0.4
		1.2																	1	5	0.23	0.54
	Nodular	0.4	0.15	1.5	0.06	0.2	0.2	2	0.11	0.23	0.1	2	0.1	0.2					0.3	2	0.15	0.3
		0.8	0.3	2.5	0.18	0.3	0.3	3	0.2	0.35	0.3	3	0.18	0.35	0.5	3	0.22	0.35	0.5	3.5	0.23	0.4
		1.2																	1	4.5	0.23	0.48
	Hardened	0.4	0.15	0.5	0.05	0.15	0.15	0.5	0.05	0.15	0.15	0.5	0.05	0.15					0.15	1.5	0.1	0.2
		0.8	0.3	1	0.12	0.25	0.3	1	0.12	0.25	0.3	1	0.12	0.25	0.5	2	0.12	0.25	0.3	1.5	0.12	0.22
		1.2																	0.3	2	0.15	0.25
ALU	<8% Silicon	0.2																				
		0.4	0.15	2.5	0.08	0.2	0.2	2.5	0.11	0.23	0.1	2.5	0.1	0.2					0.5	4	0.23	0.4
		0.8	0.3	4	0.18	0.3	0.3	4	0.2	0.35	0.3	4	0.18	0.35	0.5	4	0.22	0.35	1	5	0.23	0.54
	>8% Silicon	0.2																				
		0.4	0.15	2.5	0.08	0.2	0.2	2.5	0.11	0.23	0.1	2.5	0.1	0.2					0.3	2.5	0.15	0.3
		0.8	0.3	4	0.18	0.3	0.3	4	0.2	0.35	0.3	4	0.18	0.35	0.5	4	0.22	0.35	0.5	4	0.23	0.4
	Copper Alloys	0.2																				
		0.4	0.15	2.5	0.08	0.2	0.2	2.5	0.11	0.23	0.1	2.5	0.1	0.2					0.3	2.5	0.15	0.3
		0.8	0.3	4	0.18	0.3	0.3	4	0.2	0.35	0.3	4	0.18	0.35	0.5	4	0.22	0.35	0.5	4	0.23	0.4
	Aerospace	0.2																				
		0.4	0.15	2.5	0.08	0.2	0.2	2.5	0.11	0.23	0.1	2.5	0.1	0.2					0.3	2.5	0.15	0.3
		0.8	0.3	4	0.18	0.3	0.3	4	0.2	0.35	0.3	4	0.18	0.35	0.5	4	0.22	0.35	0.5	4	0.23	0.4
Exotic Alloys	Titanium	0.4	0.15	1.5	0.08	0.15	0.2	2	0.1	0.18	0.1	1.8	0.1	0.18					0.2	2	0.1	0.18
		0.8	0.3	2	0.15	0.25	0.3	2.5	0.18	0.25	0.3	2	0.18	0.25	0.5	2	0.12	0.27	0.3	2.5	0.18	0.25
		1.2																	0.8	3	0.2	0.3
	Nickel Alloys	0.4	0.15	1.5	0.08	0.15	0.2	2	0.1	0.18	0.1	1.8	0.1	0.18					0.2	2	0.1	0.18
		0.8	0.3	2	0.15	0.25	0.3	2.5	0.18	0.25	0.3	2	0.18	0.25	0.5	2	0.12	0.27	0.3	2.5	0.18	0.25
		1.2																	0.8	3	0.2	0.3
Hardened	38 - 45 HRC	0.4																	0.2	1.5	0.05	0.12
		0.8																	0.3	1.8	0.05	0.14
		1.2																	0.3	2	0.05	0.18
	45 - 55 HRC	0.4																	0.2	1	0.05	0.12
		0.8																	0.3	1	0.05	0.14
		1.2																	0.3	1.2	0.05	0.18
	55 - 65 HRC	0.4																	0.2	0.8	0.05	0.12
		0.8																	0.3	1	0.05	0.14
		1.2																	0.3	1	0.05	0.18

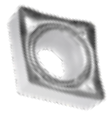
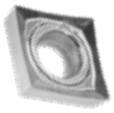
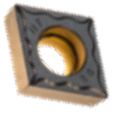
Feed Rate & Depth of cut

ap (mm) & fn (mm/n)

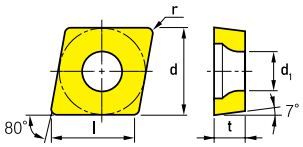
		Chipbreaker	MA				KR				GR				Standard				FLAT (A TYPE)			
		Nose radius (mm)	DOC		f		DOC		f		DOC		f		DOC		f		DOC		f	
			min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
Steel	Low Carbon	0.4																				
		0.8	0.5	4	0.15	0.4					0.5	4	0.18	0.4	0.5	4	0.15	0.4				
		1.2	1	5	0.23	0.54					1	5	0.23	0.54	1	5	0.23	0.54				
	Medium Alloy	0.4																				
		0.8	0.5	3.5	0.15	0.4					0.5	3.5	0.18	0.4	0.5	3.5	0.15	0.4				
		1.2	1	4.5	0.23	0.48					1	4.5	0.23	0.48	1	4.5	0.23	0.48				
	High Alloy	0.4																				
		0.8	0.5	3.5	0.15	0.4					0.5	3.5	0.18	0.4	0.5	3.5	0.15	0.4				
		1.2	1	4	0.23	0.4					1	4	0.23	0.4	1	4	0.23	0.4				
Stainless Steel	Series 300	0.4																				
		0.8	0.5	4	0.15	0.35					0.5	4	0.18	0.35	0.5	4	0.15	0.35				
		1.2	1	5	0.23	0.45					1	5	0.23	0.45	1	5	0.23	0.45				
	Series 400	0.4																				
		0.8	0.5	3.5	0.15	0.35					0.5	3.5	0.18	0.35	0.5	3.5	0.15	0.35				
		1.2	1	4.5	0.23	0.45					1	4.5	0.23	0.45	1	4.5	0.23	0.45				
	Duplex	0.4																				
		0.8	0.5	2.5	0.15	0.3					0.5	2.5	0.18	0.3	0.5	2.5	0.15	0.3				
		1.2	1	3	0.23	0.3					1	3	0.23	0.3	1	3	0.23	0.3				
Cast Iron	Grey	0.4																				
		0.8	0.5	4	0.15	0.4	0.5	4	0.18	0.4	0.5	4	0.18	0.4	0.5	4	0.15	0.4	0.5	4	0.18	0.4
		1.2	1	5	0.18	0.54	1	5	0.23	0.54	1	5	0.23	0.54	1	5	0.18	0.54	1	5	0.23	0.54
	Nodular	0.4																				
		0.8	0.5	3.5	0.15	0.4	0.5	3.5	0.18	0.4	0.5	3.5	0.18	0.4	0.5	3.5	0.15	0.4	0.5	3.5	0.18	0.4
		1.2	1	4.5	0.18	0.48	1	4.5	0.2	0.48	1	4.5	0.2	0.48	1	4.5	0.18	0.48	1	4.5	0.2	0.48
	Hardened	0.4																				
		0.8	0.3	1.5	0.12	0.22	0.3	1.5	0.12	0.22	0.3	1.5	0.12	0.22	0.3	1.5	0.12	0.22	0.3	1.5	0.12	0.22
		1.2	0.3	2	0.15	0.25	0.3	2	0.15	0.25	0.3	2	0.15	0.25	0.3	2	0.15	0.25	0.3	2	0.15	0.25
ALU	< 8% Silicon	0.2																				
		0.4	0.5	4	0.23	0.4					0.5	4	0.23	0.4	0.5	4	0.23	0.4				
		0.8	1	5	0.23	0.54					1	5	0.23	0.54	1	5	0.23	0.54				
	> 8% Silicon	0.2																				
		0.4	0.3	2.5	0.15	0.3					0.3	2.5	0.15	0.3	0.3	2.5	0.15	0.3				
		0.8	0.5	4	0.23	0.4					0.5	4	0.23	0.4	0.5	4	0.23	0.4				
	Copper Alloys	0.2																				
		0.4	0.3	2.5	0.15	0.3					0.3	2.5	0.15	0.3	0.3	2.5	0.15	0.3				
		0.8	0.5	4	0.23	0.4					0.5	4	0.23	0.4	0.5	4	0.23	0.4				
	Aerospace	0.2																				
		0.4	0.3	2.5	0.15	0.3					0.3	2.5	0.15	0.3	0.3	2.5	0.15	0.3				
		0.8	0.5	4	0.23	0.4					0.5	4	0.23	0.4	0.5	4	0.23	0.4				
Exotic Alloys	Titanium	0.4																				
		0.8	0.3	2.5	0.18	0.25					0.3	2.5	0.18	0.25	0.3	2.5	0.18	0.25				
		1.2	0.8	3	0.2	0.3					0.8	3	0.2	0.3	0.8	3	0.2	0.3				
	Nickel Alloys	0.4																				
		0.8	0.3	2.5	0.18	0.25					0.3	2.5	0.18	0.25	0.3	2.5	0.18	0.25				
		1.2	0.8	3	0.2	0.3					0.8	3	0.2	0.3	0.8	3	0.2	0.3				
Hardened	38 - 45 HRC	0.4																				
		0.8	0.3	1.8	0.05	0.14	0.3	1.8	0.05	0.14	0.3	1.8	0.05	0.14	0.3	1.8	0.05	0.14	0.3	1.8	0.05	0.14
		1.2	0.3	2	0.05	0.18	0.3	2	0.05	0.18	0.3	2	0.05	0.18	0.3	2	0.05	0.18	0.3	2	0.05	0.18
	45 - 55 HRC	0.4																				
		0.8	0.3	1	0.05	0.14	0.3	1	0.05	0.14	0.3	1	0.05	0.14	0.3	1	0.05	0.14	0.3	1	0.05	0.14
		1.2	0.3	1.2	0.05	0.18	0.3	1.2	0.05	0.18	0.3	1.2	0.05	0.18	0.3	1.2	0.05	0.18	0.3	1.2	0.05	0.18
	55 - 65 HRC	0.4																				
		0.8	0.3	1	0.05	0.14	0.3	1	0.05	0.14	0.3	1	0.05	0.14	0.3	1	0.05	0.14	0.3	1	0.05	0.14
		1.2	0.3	1	0.05	0.18	0.3	1	0.05	0.18	0.3	1	0.05	0.18	0.3	1	0.05	0.18	0.3	1	0.05	0.18



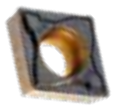
Indexable inserts

CC..	Designation	Dimensions (mm)					P						M		K		N
		Size	d	t	d_1	R	WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	CCGX060202-AC	6.0	6.35	2.38	2.8	0.2											●
	CCGX060204-AC	6.0	6.35	2.38	2.8	0.4											●
	CCGX060208-AC	6.0	6.35	2.38	2.8	0.8											●
	CCGX09T302-AC	9.0	9.525	3.97	4.4	0.2											●
	CCGX09T304-AC	9.0	9.525	3.97	4.4	0.4											●
	CCGX09T308-AC	9.0	9.525	3.97	4.4	0.8											●
	CCGX120408-AC	12.0	12.7	4.76	5.5	0.8											●
	CCGX060202-AH	6.0	6.35	2.38	2.8	0.2											●
	CCGX060204-AH	6.0	6.35	2.38	2.8	0.4											●
	CCGX060208-AH	6.0	6.35	2.38	2.8	0.8											●
	CCGX09T304-AH	9.0	9.525	3.97	4.4	0.4											●
	CCGX09T308-AH	9.0	9.525	3.97	4.4	0.8											●
	CCGX120404-AH	12.0	12.7	4.76	5.5	0.4											●
	CCGX120408-AH	12.0	12.7	4.76	5.5	0.8											●
	CCMT060202-HF	6.0	6.35	2.38	2.8	0.2	○	●		●				○			
	CCMT060204-HF	6.0	6.35	2.38	2.8	0.4	○	●		●				○			
	CCMT09T302-HF	9.0	9.525	3.97	4.4	0.2	○	●		●				○			
	CCMT09T304-HF	9.0	9.525	3.97	4.4	0.4	○	●		●				○			
	CCMT09T308-HF	9.0	9.525	3.97	4.4	0.8	○	●		●				○			
	CCMT120404-HF	12.0	12.7	4.76	5.5	0.4	○	●		●				○			

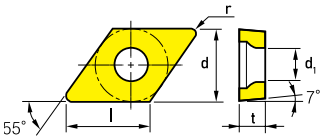
● First choice
○ Make to order



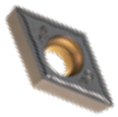
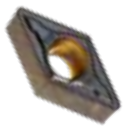
Indexable inserts

CC..	Designation	Dimensions (mm)					P						M		K		N
		Size	d	t	d_1	R	WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	CCMT060204-HM	6.0	6.35	2.38	2.8	0.4	○	●	○	●			○	●			
	CCMT060208-HM	6.0	6.35	2.38	2.8	0.8	○	●	○	●			○	●			
	CCMT09T302-HM	9.0	9.525	3.97	4.4	0.2	○	●	○	●			○	●			
	CCMT09T304-HM	9.0	9.525	3.97	4.4	0.4	○	●	○	●			○	●			
	CCMT09T308-HM	9.0	9.525	3.97	4.4	0.8	○	●	○	●			○	●			
	CCMT09T312-HM	9.0	9.525	3.97	4.4	1.2	○	●	○	●			○	●			
	CCMT120404-HM	12.0	12.7	4.76	5.5	0.4	○	●	○	●			○	●			
	CCMT120408-HM	12.0	12.7	4.76	5.5	0.8	○	●	○	●			○	●			
	CCMT120412-HM	12.0	12.7	4.76	5.5	1.2	○	●	○	●			○	●			
	CCMT060204-HR	6.0	6.35	2.38	2.8	0.4			○	●	○	●				○	
	CCMT060208-HR	6.0	6.35	2.38	2.8	0.8			○	●	○	●				○	
	CCMT09T304-HR	9.0	9.525	3.97	4.4	0.4			○	●	○	●				○	
	CCMT09T308-HR	9.0	9.525	3.97	4.4	0.8			○	●	○	●				○	
	CCMT120408-HR	12.0	12.7	4.76	5.5	0.8			○	●	○	●				○	
	CCMT060204-HR	6.0	6.35	2.38	2.8	0.4			○	●	○	●				○	
	CCMT060208-HR	6.0	6.35	2.38	2.8	0.8			○	●	○	●				○	
	CCMT09T304-HR	9.0	9.525	3.97	4.4	0.4			○	●	○	●				○	
	CCMT09T308-HR	9.0	9.525	3.97	4.4	0.8			○	●	○	●				○	
	CCMT120408-HR	12.0	12.7	4.76	5.5	0.8			○	●	○	●				○	

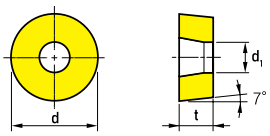
● First choice
○ Make to order



Indexable inserts

DC..	Designation	Dimensions (mm)					P						M		K		N
		Size	d	t	d_1	R	WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	DCGX070202-AC	7.0	6.35	2.38	2.8	0.2											●
	DCGX070204-AC	7.0	6.35	2.38	2.8	0.4											●
	DCGX11T302-AC	11.0	9.525	3.97	4.4	0.2											●
	DCGX11T304-AC	11.0	9.525	3.97	4.4	0.4											●
	DCGX11T308-AC	11.0	9.525	3.97	4.4	0.8											●
	DCMT070202-HF	7.0	6.35	2.38	2.8	0.2	○	●	○	●			○	●			
	DCMT070204-HF	7.0	6.35	2.38	2.8	0.4	○	●	○	●			○	●			
	DCMT11T304-HF	11.0	9.525	3.97	4.4	0.4	○	●	○	●			○	●			
	DCMT11T308-HF	11.0	9.525	3.97	4.4	0.8	○	●	○	●			○	●			
	DCMT070204-HM	7.0	6.35	2.38	2.8	0.4	○	●	○	●			○	●			
	DCMT070208-HM	7.0	6.35	2.38	2.8	0.8	○	●	○	●			○	●			
	DCMT11T302-HM	11.0	9.525	3.97	4.4	0.2	○	●	○	●			○	●			
	DCMT11T304-HM	11.0	9.525	3.97	4.4	0.4	○	●	○	●			○	●			
	DCMT11T308-HM	11.0	9.525	3.97	4.4	0.8	○	●	○	●			○	●			
	DCMT11T304-HR	11.0	9.525	3.97	4.4	0.4	○	●	○	●						○	
	DCMT11T308-HR	11.0	9.525	3.97	4.4	0.8	○	●	○	●						○	
	DCMT11T312-HR	11.0	9.525	3.97	4.4	1.2	○	●	○	●						○	

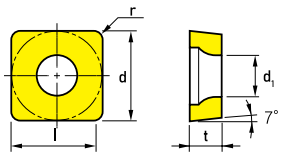
● First choice
○ Make to order



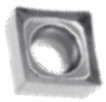
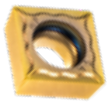
Indexable inserts

RC..	Designation	Dimensions (mm)					P						M		K		N
		Size	d	t	d_1	R	WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	RCGX0803M0-AC	8.0	8.0	3.18	3.4	-											●
	RCGX1003M0-AC	10.0	10.0	3.18	3.6	-											●
	RCGX1204M0-AC	12.0	12.0	4.76	4.2	-											●

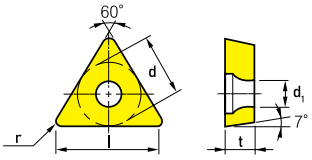
● First choice
○ Make to order



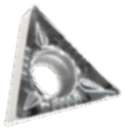
Indexable inserts

SC..	Designation	Dimensions (mm)					P						M		K		N
		Size	d	t	d_1	R	WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	SCGX09T302-AH	9.0	9.525	3.97	4.4	0.2											●
	SCGX09T304-AH	9.0	9.525	3.97	4.4	0.4											●
	SCGX09T308-AH	9.0	9.525	3.97	4.4	0.8											●
	SCGX120404-AH	12.0	12.7	4.76	5.5	0.4											●
	SCGX120408-AH	12.0	12.7	4.76	5.5	0.8											●
	SCMT09T302-HF	9.0	9.525	3.97	4.4	0.2	●	●		○		○	●	●		○	
	SCMT09T304-HF	9.0	9.525	3.97	4.4	0.4	●	●		○		○	●	●		○	
	SCMT09T308-HF	9.0	9.525	3.97	4.4	0.8	●	●		○		○	●	●		○	
	SCMT09T304-HM	9.0	9.525	3.97	4.4	0.4	○	●		○	○			●		○	
	SCMT09T308-HM	9.0	9.525	3.97	4.4	0.8	○	●		○	○			●		○	
	SCMT120404-HM	12.0	12.7	4.76	5.5	0.4	○	●		○	○			●		○	
	SCMT120408-HM	12.0	12.7	4.76	5.5	0.8	○	●		○	○			●		○	
	SCMT120412-HM	12.0	12.7	4.76	5.5	1.2	○	●						●		○	

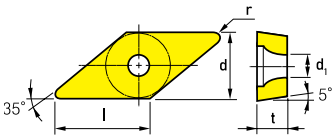
● First choice
○ Make to order



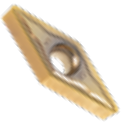
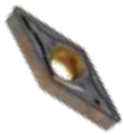
Indexable inserts

TC..	Designation	Dimensions (mm)					P						M		K		N
		Size	d	t	d_1	R	WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	TCGX110202-AC	11.0	6.35	2.38	2.8	0.2											●
	TCGX110204-AC	11.0	6.35	2.38	2.8	0.4											●
	TCGX110208-AC	11.0	6.35	2.38	2.8	0.8											●
	TCGX16T302-AC	16.0	9.523	3.97	4.4	0.2											●
	TCGX16T304-AC	16.0	9.523	3.97	4.4	0.4											●
	TCGX16T308-AC	16.0	9.523	3.97	4.4	0.8											●
	TCMT090204-HF	9.0	5.56	2.38	2.5	0.4	○	●		●			○	●			
	TCMT110202-HF	11.0	6.35	2.38	2.8	0.2	○	●		●			○	●			
	TCMT110204-HF	11.0	6.35	2.38	2.8	0.4	○	●		●			○	●			
	TCMT16T304-HF	16.0	9.523	3.97	4.4	0.4	○	●		●			○	●			
	TCMT16T308-HF	16.0	9.523	3.97	4.4	0.8	○	●		●			○	●			
	TCMT090204-HM	9.0	5.56	2.38	2.5	0.4		○	○	●	○	●				●	
	TCMT090208-HM	9.0	5.56	2.38	2.5	0.8		○	○	●	○	●				●	
	TCMT110204-HM	11.0	6.35	2.38	2.8	0.4		○	○	●	○	●				●	
	TCMT110208-HM	11.0	6.35	2.38	2.8	0.8		○	○	●	○	●				●	
	TCMT16T304-HM	16.0	9.523	3.97	4.4	0.4		○	○	●	○	●				●	
	TCMT16T308-HM	16.0	9.523	3.97	4.4	0.8		○	○	●	○	●				●	
	TCMT16T312-HM	16.0	9.523	3.97	4.4	1.2		○	○	●	○	●				●	

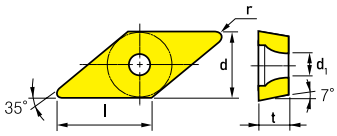
● First choice
○ Make to order



Indexable inserts

VB..	Designation	Dimensions (mm)					P						M		K		N
		Size	d	t	d_1	R	WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	VBMT110204-HF	11.0	6.35	3.18	2.8	0.4		○		○				●			
	VBMT110208-HF	11.0	6.35	3.18	2.8	0.8		○		○				●			
	VBMT160404-HM	16.0	9.525	4.76	4.4	0.4		●		●			○	●			
	VBMT160408-HM	16.0	9.525	4.76	4.4	0.8		●		●			○	●			
	VBMT160402	16.0	9.525	4.76	4.4	0.2		●		●			○	●			
	VBMT160404	16.0	9.525	4.76	4.4	0.4		●		●			○	●			
	VBMT160408	16.0	9.525	4.76	4.4	0.8		●		●			○	●			
	VBMT160412	16.0	9.525	4.76	4.4	1.2		●		●			○	●			
	VBMT160408-HR	16.0	9.525	4.76	4.4	0.8	○	●		●						○	
	VBMT160412-HR	16.0	9.525	4.76	4.4	1.2	○	●	○	●						○	

● First choice
○ Make to order



Indexable inserts

VC..	Designation	Dimensions (mm)					P						M		K		N
		Size	d	t	d_1	R	WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	VCGX110304-AC	11.0	6.35	3.18	2.8	0.4											●
	VCGX110308-AC	11.0	6.35	3.18	2.8	0.8											●
	VCGX160402-AC	16.0	9.525	4.76	4.4	0.2											●
	VCGX160404-AC	16.0	9.525	4.76	4.4	0.4											●
	VCGX160408-AC	16.0	9.525	4.76	4.4	0.8											●
	VCGX160412-AC	16.0	9.525	4.76	4.4	1.2											●
	VCMT160404-HH	16.0	9.525	4.76	4.4	0.4	●			○			○	●	●		
	VCMT160408-HH	16.0	9.525	4.76	4.4	0.8	●			○			○	●	●		

● First choice
○ Make to order

Velocity of cut

VC (m/min)

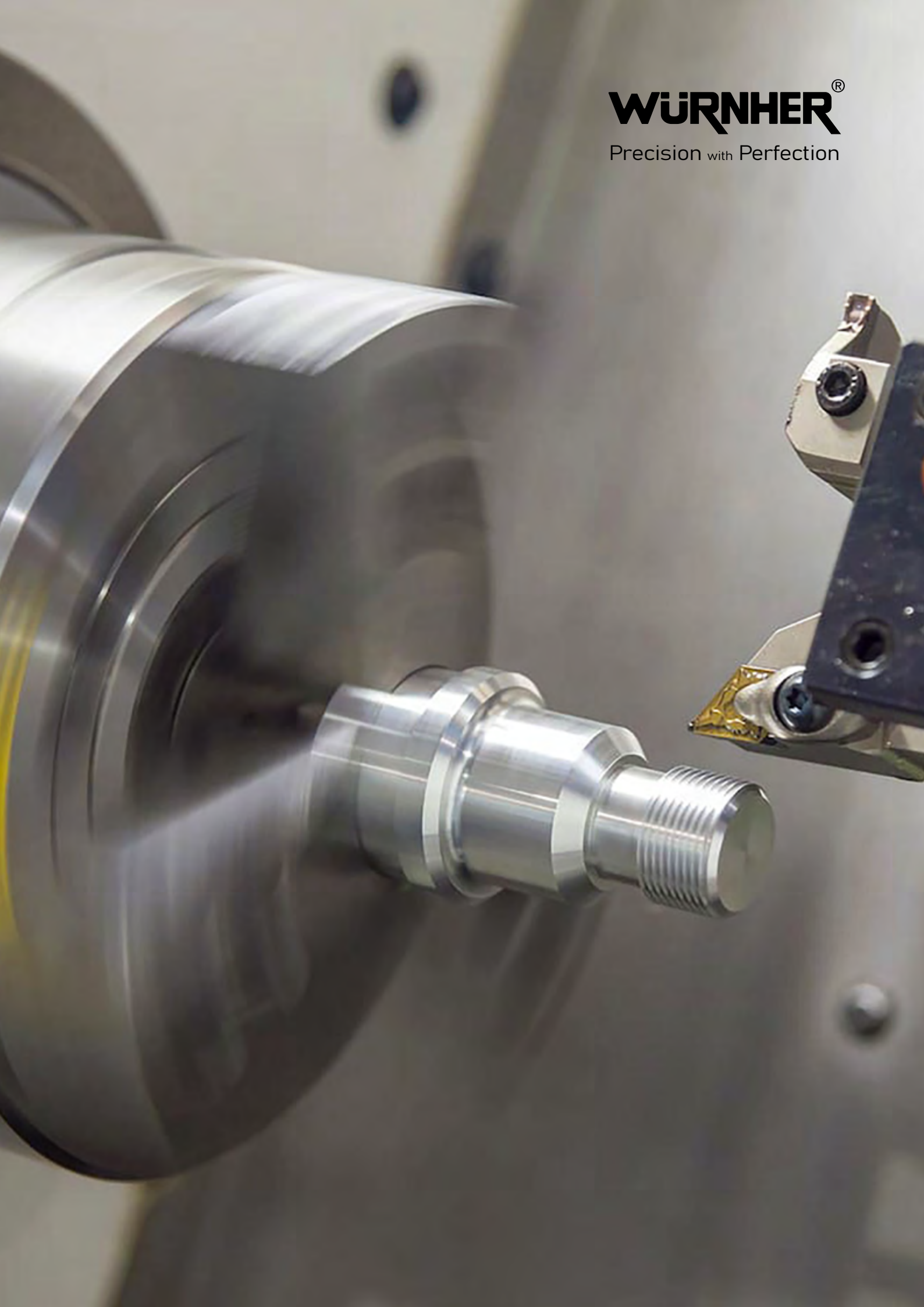
		CVD								PVD		Uncoated
		WCP15-53	WCP15-54	WCP25-53	WCP25-54	WCP35-53	WCP35-54	WCK15-53	WCK15-54	WPM25-52	WPM25-54	WUN15-53
Steel	Low Carbon	140 - 280	180 - 320	120 - 260	160 - 300	110 - 240	150-280			180 - 330	200 - 300	
	Medium Alloy	110 - 240	140 - 280	100-220	120-260	80-220	100-240			150 - 280	170 - 270	
	High Alloy	100 - 210	110-220	80-190	100-230	60-170	80-200			120 - 250	120 - 220	
Stainless Steel	Series 300	140-220	160 - 280							160 - 280	160 - 270	
	Series 400	110-180	140 - 250							140 - 250	140 - 250	
	Duplex	70 - 150	70 - 150							70 - 150	70 - 150	
Castiron	Grey							140 - 320	140 - 280	120 - 240	130 -250	
	Nodular							120 - 280	120 - 260	100 - 240	100 - 240	
	Hardened							40 - 80	60 - 100	40 - 80	40 - 80	
ALU	<8% Silicon									200 - 350	200 - 350	150 - 350
	>8% Silicon									170 - 300	170 - 300	120 - 300
	Copper Alloys									180 - 320	180 - 320	120 - 320
	Aerospace									200 - 400	200 - 400	120 - 400
Exotic Alloys	Titanium									35 - 65	35 - 65	
	Nickel Alloys									25 - 45	25 - 45	
Hardened	38 - 45 HRC							50 - 100	50 - 100			
	45 - 55 HRC							40 - 80	40 - 80			
	55 - 65 HRC											

WÜRNHER

Feed Rate & Depth of cut

ap (mm) & fn (mm/n)

		Chip-breaker	AC				AH				HF				HM				HR				HH			
			DOC		f		DOC		f		DOC		f		DOC		f		DOC		f		DOC		f	
		Nose radius (mm)	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
Steel	Low Carbon	0.4	0.15	1.5	0.08	0.2	0.2	2	0.11	0.23	0.1	2	0.1	0.2					0.3	2.5	0.15	0.3				
		0.8	0.3	3	0.18	0.3	0.3	4	0.2	0.35	0.3	3.5	0.18	0.35	0.5	4	0.22	0.35	0.5	4	0.23	0.4	0.5	4	0.15	0.4
		1.2																	1	5	0.23	0.54	1	5	0.23	0.54
	Medium Alloy	0.4	0.15	1.5	0.08	0.2	0.2	2	0.11	0.23	0.1	2	0.1	0.2					0.3	2	0.15	0.3				
		0.8	0.3	2.5	0.18	0.3	0.3	3	0.2	0.35	0.3	3	0.18	0.35	0.5	3	0.22	0.35	0.5	3.5	0.23	0.4	0.5	3.5	0.15	0.4
		1.2																	1	4.5	0.23	0.48	1	4.5	0.23	0.48
	High Alloy	0.4	0.15	1	0.08	0.2	0.2	2	0.11	0.23	0.1	2	0.1	0.2					0.3	2	0.15	0.3				
		0.8	0.3	2	0.18	0.3	0.3	2.5	0.2	0.35	0.3	2.5	0.18	0.35	0.5	3	0.22	0.35	0.5	3.5	0.23	0.4	0.5	3.5	0.15	0.4
		1.2																	1	4.5	0.23	0.4	1	4	0.23	0.4
Stainless Steel	Series 300	0.4	0.15	1.5	0.08	0.2	0.2	2	0.11	0.23	0.1	2	0.1	0.2					0.3	2.5	0.15	0.3				
		0.8	0.3	3	0.18	0.25	0.3	3	0.2	0.35	0.3	3	0.18	0.35	0.5	3	0.22	0.35	0.5	4	0.23	0.35	0.5	4	0.15	0.35
		1.2																	1	5	0.23	0.45	1	5	0.23	0.45
	Series 400	0.4	0.15	1.5	0.08	0.2	0.2	2	0.11	0.23	0.1	2	0.1	0.2					0.3	2	0.15	0.3				
		0.8	0.3	2.5	0.18	0.25	0.3	3	0.2	0.35	0.3	3	0.18	0.35	0.5	3	0.22	0.35	0.5	3.5	0.23	0.35	0.5	3.5	0.15	0.35
		1.2																	1	4.5	0.23	0.45	1	4.5	0.23	0.45
	Duplex	0.4	0.15	1	0.08	0.18	0.2	2	0.11	0.23	0.1	2	0.1	0.2					0.3	2	0.15	0.25				
		0.8	0.3	2	0.18	0.25	0.3	2.5	0.2	0.35	0.3	2.5	0.18	0.35	0.5	2.5	0.22	0.35	0.5	3	0.23	0.3	0.5	2.5	0.15	0.3
		1.2																	1	3	0.23	0.3	1	3	0.23	0.3
Cast Iron	Grey	0.4	0.15	1.5	0.06	0.2	0.2	2	0.11	0.23	0.1	2	0.1	0.2					0.3	2.5	0.15	0.3				
		0.8	0.3	3	0.18	0.3	0.3	4	0.2	0.35	0.3	3.5	0.18	0.35	0.5	4	0.22	0.35	0.5	4	0.23	0.4	0.5	4	0.15	0.4
		1.2																	1	5	0.23	0.54	1	5	0.18	0.54
	Nodular	0.4	0.15	1.5	0.06	0.2	0.2	2	0.11	0.23	0.1	2	0.1	0.2					0.3	2	0.15	0.3				
		0.8	0.3	2.5	0.18	0.3	0.3	3	0.2	0.35	0.3	3	0.18	0.35	0.5	3	0.22	0.35	0.5	3.5	0.23	0.4	0.5	3.5	0.15	0.4
		1.2																	1	4.5	0.23	0.48	1	4.5	0.18	0.48
	Hardened	0.4	0.15	0.5	0.05	0.15	0.15	0.5	0.05	0.15	0.15	0.5	0.05	0.15					0.15	1.5	0.1	0.2				
		0.8	0.3	1	0.12	0.25	0.3	1	0.12	0.25	0.3	1	0.12	0.25	0.5	2	0.12	0.25	0.3	1.5	0.12	0.22	0.3	1.5	0.12	0.22
		1.2																	0.3	2	0.15	0.25	0.3	2	0.15	0.25
ALU		0.2																								
	< 8% Silicon	0.4	0.15	2.5	0.08	0.2	0.2	2.5	0.11	0.23	0.1	2.5	0.1	0.2					0.5	4	0.23	0.4	0.5	4	0.23	0.4
		0.8	0.3	4	0.18	0.3	0.3	4	0.2	0.35	0.3	4	0.18	0.35	0.5	4	0.22	0.35	1	5	0.23	0.54	1	5	0.23	0.54
		0.2																								
	> 8% Silicon	0.4	0.15	2.5	0.08	0.2	0.2	2.5	0.11	0.23	0.1	2.5	0.1	0.2					0.3	2.5	0.15	0.3	0.3	2.5	0.15	0.3
		0.8	0.3	4	0.18	0.3	0.3	4	0.2	0.35	0.3	4	0.18	0.35	0.5	4	0.22	0.35	0.5	4	0.23	0.4	0.5	4	0.23	0.4
		0.2																								
	Copper Alloys	0.4	0.15	2.5	0.08	0.2	0.2	2.5	0.11	0.23	0.1	2.5	0.1	0.2					0.3	2.5	0.15	0.3	0.3	2.5	0.15	0.3
		0.8	0.3	4	0.18	0.3	0.3	4	0.2	0.35	0.3	4	0.18	0.35	0.5	4	0.22	0.35	0.5	4	0.23	0.4	0.5	4	0.23	0.4
		0.2																								
	Aero-space	0.4	0.15	2.5	0.08	0.2	0.2	2.5	0.11	0.23	0.1	2.5	0.1	0.2					0.3	2.5	0.15	0.3	0.3	2.5	0.15	0.3
		0.8	0.3	4	0.18	0.3	0.3	4	0.2	0.35	0.3	4	0.18	0.35	0.5	4	0.22	0.35	0.5	4	0.23	0.4	0.5	4	0.23	0.4
Exotic Alloys	Titanium	0.4																								
		0.8																								
		1.2																								
	Nickel Alloys	0.4																								
		0.8																								
		1.2																								
Hardened	38 - 45 HRC	0.4																								
		0.8																								
		1.2																								
	45 - 55 HRC	0.4																								
		0.8																								
		1.2																								
	55 - 65 HRC	0.4																								
		0.8																								
		1.2																								


WÜRNHER®
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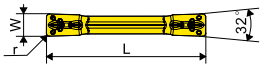
PARTING & GROOVING



Indexable inserts

WS..	Designation	Dimensions (mm)					P		M		K	
		L	w	h	H	R	WCP15-53	WCP15-54	WPM25-52	WPM25-54	WCK15-53	WCK15-54
	WSG200-MM	16.0	2.00	3.50	3.98	0.20	○	●	○	●	○	●
	WSG300-MM	21.0	3.00	4.80	5.63	0.40	○	●	○	●	○	●
	WSG400-MM	21.0	4.00	4.80	5.72	0.40	○	●	○	●	○	●
	WSG500-MM	21.0	5.00	4.80	5.88	0.40	○	●	○	●	○	●
	WSG250-SN	20.5	2.0	4.50	5.59	0.3	○	●	○	●	○	●
	WSG300-SN	20.6	3.0	4.60	5.68	0.3	○	●	○	●	○	●
	WSG400-SN	25.5	4.0	4.70	6.00	0.4	○	●	○	●	○	●
	WSG500-SN	25.5	5.0	4.90	6.36	0.4	○	●	○	●	○	●
	WSG600-SN	25.0	6.0	5.05	6.69	0.8	○	●	○	●	○	●

● First choice
○ Make to order

WÜRNHER®

Velocity of cut
VC (m/min)

		WCP40-55	WCP25-53	WPM25-52	WPM25-54	WCK15-54	WCK15-53
Steel	Low Carbon						
	Medium Alloy	60 - 150	70 - 160	80 - 180	90 - 200	50 - 140	60 - 150
	High Alloy	50 - 130	60 - 150	60 - 150	70 - 160	40 - 120	50 - 140
Stainless Steel	Series 300			60 - 180	50 - 160		
	Series 400			60 - 160	60 - 140		
	Duplex			35 - 100	35 - 90		
Castiron	Grey	80 - 160	90 - 180	100 - 180	100 - 180	90 - 170	90 - 200
	Nodular	90 - 170	100 - 180	100 - 180	100 - 180	80 - 160	80 - 160
	Hardened	40 - 80	40 - 80	25 - 45	25 - 45	40 - 80	40 - 80
ALU	<8% Silicon			120 - 250	120 - 230		
	>8% Silicon			100 - 230	100 - 200		
	Copper Alloys			100 - 250	100 - 180		
	Aerospace			110 - 250	110 - 200		
Exotic Alloys	Titanium			30 - 55	30 - 45		
	Nickel Alloys			20 - 38	20 - 35		
Hardened	38 - 45 HRC			40 - 80	30 - 60		
	45 - 55 HRC			25 - 65	20 - 50		
	55 - 65 HRC						

WÜRNHER

Feed Rate
fn (mm/n)

		Size (mm)	f min	f max
Steel	Low Carbon	2	0.06	0.2
		3	0.07	0.24
		4	0.13	0.33
		5	0.2	0.4
	Medium Alloy	2	0.05	0.17
		3	0.06	0.2
		4	0.12	0.27
		5	0.18	0.32
	High Alloy	2	0.05	0.14
		3	0.05	0.15
		4	0.11	0.21
		5	0.16	0.25

		Size (mm)	f min	f max
Stainless Steel	Series 300	2	0.06	0.16
		3	0.07	0.2
		4	0.13	0.27
		5	0.2	0.32
	Series 400	2	0.05	0.16
		3	0.06	0.2
		4	0.12	0.27
		5	0.18	0.32
	Duplex	2	0.05	0.14
		3	0.05	0.16
		4	0.11	0.21
		5	0.16	0.25

		Size (mm)	f min	f max
Cast Iron	Grey	2	0.04	0.18
		3	0.05	0.22
		4	0.1	0.3
		5	0.14	0.36
	Nodular	2	0.04	0.16
		3	0.05	0.2
		4	0.1	0.27
		5	0.14	0.32
	Hardened	2	0.04	0.14
		3	0.05	0.16
		4	0.1	0.21
		5	0.14	0.25

		Size (mm)	f min	f max
ALU	< 8% Silicon	2	0.05	0.27
		3	0.06	0.33
		4	0.12	0.45
		5	0.18	0.54
	> 8% Silicon	2	0.05	0.27
		3	0.06	0.33
		4	0.12	0.45
		5	0.18	0.54
	Copper Alloys	2	0.05	0.27
		3	0.06	0.33
		4	0.12	0.45
		5	0.18	0.54
	Aerospace	2	0.05	0.27
		3	0.06	0.33
		4	0.12	0.45
		5	0.18	0.54

		Size (mm)	f min	f max
Exotic Alloys	Titanium	2	0.05	0.14
		3	0.06	0.17
		4	0.12	0.23
		5	0.18	0.27
	Nickel Alloys	2	0.05	0.14
		3	0.05	0.17
		4	0.11	0.23
		5	0.16	0.27

		Size (mm)	f min	f max
Hardened	38 - 45 HRC	2	0.03	0.11
		3	0.03	0.13
		4	0.06	0.18
		5	0.09	0.22
	45 - 55 HRC	2	0.03	0.09
		3	0.03	0.11
		4	0.06	0.15
		5	0.09	0.18
	55 - 65 HRC	2	0.03	0.08
		3	0.03	0.1
		4	0.06	0.14
		5	0.09	0.16


WÜRNHER®
Precision with Perfection
WÜRNHER®

INSERT DESIGNATION (BASED ON ISO NORMS)

16	E	R	ISO
1	2	3	4

1. Size

L	I.C
11	1/4"
16	3/8"
22	1/2"
27	5/8"

2. Type of Insert

E: EXTERNAL
N: INTERNAL

3. Hand of Insert

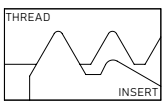
R: RIGHT
L: LEFT

4. Profile

PARTIAL	FULL
60°	ISO
55°	BSPT
A	NPTUN
G	TRAPEZ
AG	WITHWORTH
N	
Q	

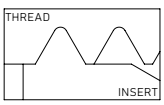
PARTIAL

(A,G,AG,N,Q)



- ✔ Most economical solution
- ✔ Used for wide range of pitches
- ✔ It is partial because of the exterior major or internal minor diameter is not machined

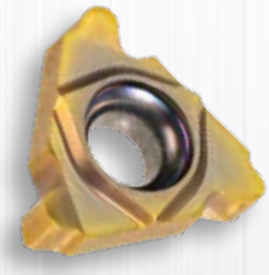
FULL

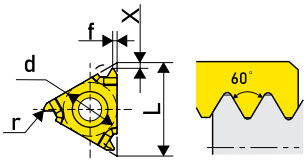


- ✔ Cuts all thread shapes according to the requirements
- ✔ Wide range of inserts needed in order to fit each standard and range of pitches

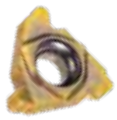
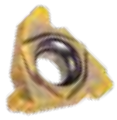
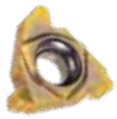
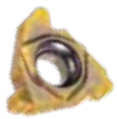
WÜRNHER®

THREADING

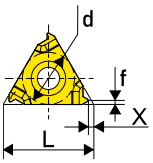


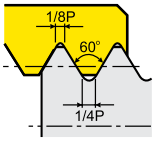


Indexable inserts

Partial Profile 60°	Designation Right	Designation Left	Pitch(mm)	TPI	Dimensions (mm)				M			
									WPM20-52		WPM20-54	
					d	L	X	f	R	L	R	L
	11ER-A60	11EL-A60	0.5-1.5	48-16	6.35	11	0.8	0.9	●	●	●	●
	11ER-AG60	11EL-AG60	0.5-3.0	48-8	9.525	11	1.2	1.7	●	●	●	●
	22ER-N60	22EL-N60	3.5-5.0	7-5	12.7	22	1.7	2.5	●	●	●	●
	11NR-A60	11NL-A60	0.5-1.5	48-16	6.35	11	0.8	0.9	●	●	●	●
	11NR-AG60	11NL-AG60	0.5-3.0	48-8	9.525	11	1.2	1.7	●	●	●	●
	22NR-N60	22NL-N60	3.5-5.0	7-5	12.7	22	1.7	2.5	●	●	●	●
	11ER-A55	11EL-A55	0.5-1.5	48-16	6.35	11	0.8	0.9	●	●	●	●
	11ER-AG55	11EL-AG55	0.5-3.0	48-8	9.525	11	1.2	1.7	●	●	●	●
	22ER-N55	22EL-N55	3.5-5.0	7-5	12.7	22	1.7	2.5	●	●	●	●
	11NR-A55	11NL-A55	0.5-1.5	48-16	6.35	11	0.8	0.9	●	●	●	●
	11NR-AG55	11NL-AG55	0.5-3.0	48-8	9.525	11	1.2	1.7	●	●	●	●
	22NR-N55	22NL-N55	3.5-5.0	7-5	12.7	22	1.7	2.5	●	●	●	●

● First choice
○ Make to order

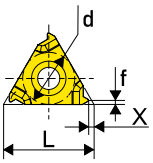


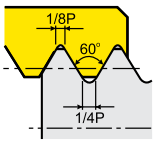


Indexable inserts

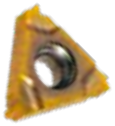
ISO Metric	Designation Right	Designation Left	Pitch(mm)	TPI	Dimensions (mm)				M			
									WPM20-52		WPM20-54	
					d	L	X	f	R	L	R	L
	11ER-1.0ISO	11EL-1.0ISO	-	1.0	6.35	11	0.7	0.7	●	●	●	●
	11ER-1.25ISO	11EL-1.25ISO	-	1.25	6.35	11	0.8	0.9	●	●	●	●
	11ER-1.5ISO	11EL-1.5ISO	-	1.5	6.35	11	0.8	1	●	●	●	●
	16ER-0.5ISO	16EL-0.5ISO	-	0.5	9.525	16	0.6	0.4	●	●	●	●
	16ER-0.75ISO	16EL-0.75ISO	-	0.75	9.525	16	0.6	0.6	●	●	●	●
	16ER-1.0ISO	16EL-1.0ISO	-	1.0	9.525	16	0.7	0.7	●	●	●	●
	16ER-1.25ISO	16EL-1.25ISO	-	1.25	9.525	16	0.8	0.9	●	●	●	●
	16ER-1.5ISO	16EL-1.5ISO	-	1.5	9.525	16	0.8	1	●	●	●	●
	16ER-1.75ISO	16EL-1.75ISO	-	1.75	9.525	16	0.9	1.2	●	●	●	●
	16ER-2.0ISO	16EL-2.0ISO	-	2.0	9.525	16	1	1.3	●	●	●	●
	16ER-2.5ISO	16EL-2.5ISO	-	2.5	9.525	16	1.1	1.5	●	●	●	●
	16ER-3.0ISO	16EL-3.0ISO	-	3.0	9.525	16	1.2	1.6	●	●	●	●
	11NR-0.5ISO	11NL-0.5ISO	-	0.5	6.35	11	0.6	0.4	●	●	●	●
	11NR-0.75ISO	11NL-0.75ISO	-	0.75	6.35	11	0.6	0.6	●	●	●	●
	11NR-1.0ISO	11NL-1.0ISO	-	1.0	6.35	11	0.6	0.7	●	●	●	●
	11NR-1.25ISO	11NL-1.25ISO	-	1.25	6.35	11	0.8	0.9	●	●	●	●
	11NR-1.5ISO	11NL-1.5ISO	-	1.5	6.35	11	0.8	1	●	●	●	●
	11NR-1.75ISO	11NL-1.75ISO	-	1.75	6.35	11	0.9	1.1	●	●	●	●
	11NR-2.0ISO	11NL-2.0ISO	-	2.0	6.35	11	0.9	1.1	●	●	●	●
	11NR-2.5ISO	11NL-2.5ISO	-	2.5	6.35	11	0.8	1.1	●	●	●	●
	16NR-0.35ISO	16NL-0.35ISO	-	0.35	9.525	16	0.8	0.3	●	●	●	●
	16NR-0.4ISO	16NL-0.4ISO	-	0.4	9.525	16	0.8	0.4	●	●	●	●

● First choice
○ Make to order

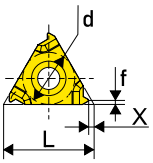


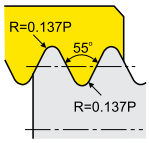


Indexable inserts

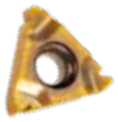
UN Unified	Designation Right	Designation Left	Pitch(mm)	TPI	Dimensions (mm)				M			
									WPM20-52		WPM20-54	
					d	L	X	f	R	L	R	L
	11ER-20UN	11EL-14UN	-	14	6.35	11	0.9	1.1	●	●	●	●
	16ER-36UN	16EL-36UN	-	36	9.525	16	0.6	0.6	●	●	●	●
	16ER-32UN	16EL-32UN	-	32	9.525	16	0.6	0.6	●	●	●	●
	16ER-28UN	16EL-28UN	-	28	9.525	16	0.6	0.7	●	●	●	●
	16ER-27UN	16EL-27UN	-	27	9.525	16	0.6	0.8	●	●	●	●
	16ER-24UN	16EL-24UN	-	24	9.525	16	0.7	0.8	●	●	●	●
	16ER-20UN	16EL-20UN	-	20	9.525	16	0.8	0.9	●	●	●	●
	16ER-18UN	16EL-18UN	-	18	9.525	16	0.8	1	●	●	●	●
	16ER-16UN	16EL-16UN	-	16	9.525	16	0.9	1.1	●	●	●	●
	16ER-14UN	16EL-14UN	-	14	9.525	16	1	1.2	●	●	●	●
	16ER-12UN	16EL-12UN	-	12	9.525	16	1.1	1.4	●	●	●	●
	11NR-20UN	11NL-20UN	-	20	6.35	11	0.8	0.9	●	●	●	●
	11NR-18UN	11NL-18UN	-	18	6.35	11	0.8	1	●	●	●	●
	16NR-24UN	16NL-24UN	-	24	9.525	16	0.7	0.8	●	●	●	●
	16NR-20UN	16NL-20UN	-	20	9.525	16	0.8	0.9	●	●	●	●
	16NR-18UN	16NL-18UN	-	18	9.525	16	0.8	1	●	●	●	●
	16NR-16UN	16NL-16UN	-	16	9.525	16	0.9	1.1	●	●	●	●
	16NR-14UN	16NL-14UN	-	14	9.525	16	1	1.2	●	●	●	●
	16NR-12UN	16NL-12UN	-	12	9.525	16	1.1	1.4	●	●	●	●

● First choice
○ Make to order

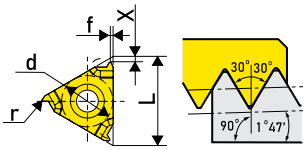




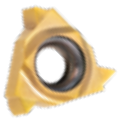
Indexable inserts

Whitworth 55°	Designation Right	Designation Left	Pitch(mm)	TPI	Dimensions (mm)				M			
									WPM20-52		WPM20-54	
					d	L	X	f	R	L	R	L
	16ER-16W	16EL-16W	-	16	9.525	16	0.9	1.1	●	●	●	●
	16ER-14W	16EL-14W	-	14	9.525	16	1	1.2	●	●	●	●
	16ER-11W	16EL-11W	-	11	9.526	16	1.1	1.5	●	●	●	●
	11NR-19W	11NL-19W	-	19	6.35	11	0.8	1	●	●	●	●
	11NR-16W	11NL-16W	-	16	6.35	11	0.9	1.1	●	●	●	●
	11NR-14W	11NL-14W	-	14	6.35	11	0.9	1.1	●	●	●	●
	16NR-19W	16NL-19W	-	19	9.525	16	0.8	1	●	●	●	●
	16NR-16W	16NL-16W	-	16	9.525	16	0.9	1.1	●	●	●	●
	16NR-14W	16NL-14W	-	14	9.525	16	1	1.2	●	●	●	●
	16NR-11W	16NL-11W	-	11	9.525	16	1.1	1.5				

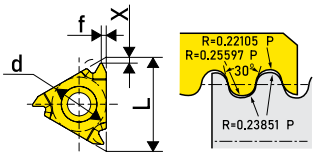
● First choice
○ Make to order



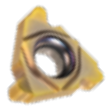
Indexable inserts

NPT	Designation Right	Designation Left	Pitch(mm)	TPI	Dimensions (mm)				M			
									WPM20-52		WPM20-54	
					d	L	X	f	R	L	R	L
	11ER-14NPT	11EL-14NPT	-	14	6.35	11	0.8	1	●	●	●	●
	16ER-18NPT	16EL-18NPT	-	18	9.525	16	0.8	1	●	●	●	●
	16ER-14NPT	16EL-14NPT	-	14	9.525	16	0.9	1.2	●	●	●	●
	16ER-11.5NPT	16EL-11.5NPT	-	11.5	9.525	16	1.1	1.5	●	●	●	●
	11NR-14NPT	11NL-14NPT	-	14	6.35	11	0.8	1	●	●	●	●
	16NR-18NPT	16NL-18NPT	-	18	9.525	16	0.8	1	●	●	●	●
	16NR-14NPT	16NL-14NPT	-	14	9.525	16	0.9	1.2	●	●	●	●
	16NR-11.5NPT	16NL-11.5NPT	-	11.5	9.525	16	1.1	1.5	●	●	●	●

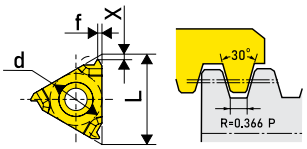
● First choice
○ Make to order



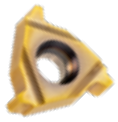
Indexable inserts

Round DIN 405	Designation Right	Designation Left	Pitch(mm)	TPI	Dimensions (mm)				M			
									WPM20-52		WPM20-54	
					d	L	X	f	R	L	R	L
	16ER-8RD	16EL-8RD	-	8	9.525	16	1.4	1.3	●	●	●	●
	16ER-6RD	16EL-6RD	-	6	9.525	16	1.5	1.7	●	●	●	●
	16NR-8RD	16NL-8RD	-	8	9.525	16	1.4	1.3	●	●	●	●
	16NR-6RD	16NL-6RD	-	6	9.525	16	1.5	1.7	●	●	●	●

● First choice
○ Make to order



Indexable inserts

Trapez DIN 103	Designation Right	Designation Left	Pitch(mm)	TPI	Dimensions (mm)				M			
									WPM20-52		WPM20-54	
					d	L	X	f	R	L	R	L
	16ER-2.0TR	16EL-2.0TR	-	2	9.525	16	1.1	1.3	●	●	●	●
	22ER-4.0TR	22EL-4.0TR	-	4	12.7	22	1.7	1.9	●	●	●	●
	22ER-5.0TR	22EL-5.0TR	-	5	12.7	22	2.1	2.5	●	●	●	●
	22NR-4.0TR	22NL-4.0TR	-	4	12.7	22	1.7	1.9	●	●	●	●
	22NR-5.0TR	22NL-5.0TR	-	5	12.7	22	2.1	2.5	●	●	●	●

● First choice
○ Make to order

WÜRNHER®

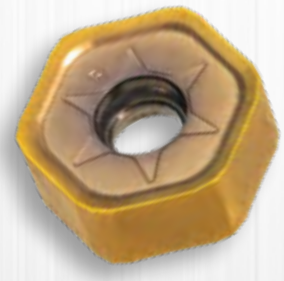
Velocity of cut
VC (m/min)

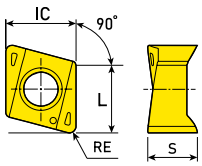
		WPP25-53	WPP25-54
Steel	Low Carbon	80 - 180	80 - 220
	Medium Alloy	80 - 140	80 - 180
	High Alloy	60 - 130	60 - 150
Stainless Steel	Series 300	60 - 170	60 - 180
	Series 400	60 - 150	60 - 160
	Duplex	35 - 100	35 - 110
Castiron	Grey	100 - 160	100 - 180
	Nodular	100 - 150	100 - 180
	Hardened	25 - 45	25 - 55
ALU	<8% Silicon	120 - 230	120 - 250
	>8% Silicon	100 - 210	100 - 230
	Copper Alloys	100 - 200	100 - 250
	Aerospace	110 - 180	110 - 250
Exotic Alloys	Titanium	30 - 50	30 - 55
	Nickel Alloys	20 - 38	20 - 40
Hardened	38 - 45 HRC	40 - 70	40 - 80
	45 - 55 HRC	25 - 60	25 - 65
	55 - 65 HRC		


WÜRNHER®
Precision with Perfection

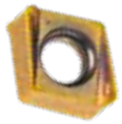
WÜRNHER®

MILLING

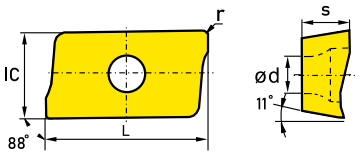




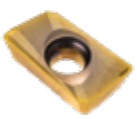
Indexable inserts

4NKT..	Designation	Dimensions (mm)					P			M		K		N
		Size	I.C	L	S	R	WCP30-55	WCP40-55	WCP50-55	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	4NKT060308R	06	6.6	6.0	4.67	0.8	○	●		○	●	○	●	

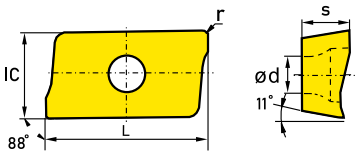
● First choice
○ Make to order



Indexable inserts

AP..	Designation	Dimensions (mm)					P			M		K		N
		Size	I.C	L	S	R	WCP30-55	WCP40-55	WCP50-55	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	APGT160416PDER	16	9.45	17	4.76	1.6				○	●			
	APKT1003PDR-F2	10	6.76	10.52	3.53	-		●	○	○	●	○	●	
	APKT160408-AC	16	9.45	17.877	5.76	0.8	○	●		○	●			
	APKT11T304-GM	11	6.76	12.24	3.6	0.4		●	○	○	●			
	APKT11T308-GM	11	6.76	12.24	3.6	0.8		●	○	○	●			
	APKT160408-GM	16	9.45	17.877	5.76	0.8	○	●		○	●			
	APMT1135PDER-AM	11	6.2	11.4	3.5	-	○	●		○	●			
	APMT1135PDER-H2	11	6.2	11.4	3.6	-	○	●		○	●			
	APMT1604PDER-H2	16	9.25	17.25	4.76	-	○	●		○	●			

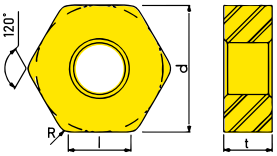
● First choice
○ Make to order



Indexable inserts

AP..	Designation	Dimensions (mm)					P			M		K		N
		Size	I.C	L	S	R	WCP30-55	WCP40-55	WCP50-55	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	APMT1135PDER-M2	11	6.2	11.4	3.5	-	○	●		○	●			
	APMT1604PDER-M2	16	9.25	17.25	4.76	-	○	●		○	●			

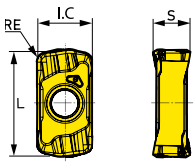
● First choice
○ Make to order



Indexable inserts

HN..	Designation	Dimensions (mm)					P			M		K		N
		Size	I.C	L	S	R	WCP30-55	WCP40-55	WCP50-55	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	HNMG0907ANSN-M	09	16.5	9.53	7.1	-		○	●		●	○	●	
	HNMG0907ANSN-R	09	16.5	9.53	7.1	-		○	●		●	○	●	

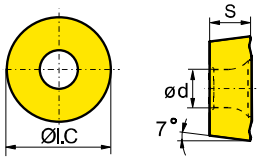
● First choice
○ Make to order



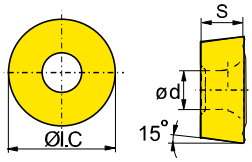
Indexable inserts

LN..	Designation	Dimensions (mm)					P			M		K		N
		Size	I.C	L	S	R	WCP30-55	WCP40-55	WCP50-55	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	LNMU0303ZER-ML	3.0	6	3.2	4.29	-				○	●			
	LOGU030310ER-GM	3.0	6.2	11.9	3.96	-				●	●			

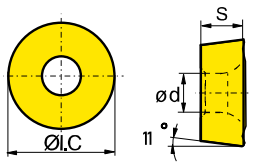
● First choice
○ Make to order



Indexable inserts

RC..	Designation	Dimensions (mm)					P			M		K		N
		Size	I.C	L	S	R	WCP30-55	WCP40-55	WCP50-55	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	RCKT10T3MO	10	10	-	3.97	-		○	●	○	●	○	●	
	RCKT1204MO	12	12	-	4.76	-		○	●	○	●	○	●	
														
	RDKT10T3MOW	10	10	-	3.97	-		○	●	○	●			
	RDKT1204MOW	12	12	-	4.76	-		○	●	○	●			
	RDKT1604MOW	16	16	-	4.76	-		○	●	○	●			
	RDKT1605MOW	16	16	-	5.56	-		○	●	○	●			
	RDMT0802MOTN	08	8.0	-	2.38	-		○	●	○	●			
	RDMT10T3MOTN	10	10	-	3.97	-		○	●	○	●			
	RDMT1204MOTN	12	12	-	4.76	-		○	●	○	●			
	RDMT1604MOTN	16	16	-	4.76	-		○	●	○	●			

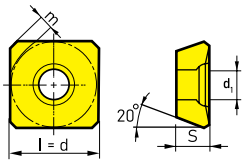
● First choice
○ Make to order



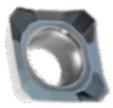
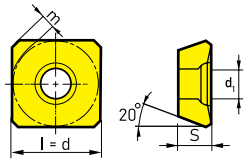
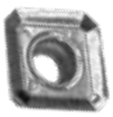
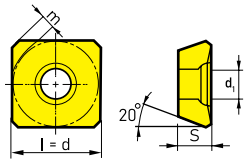
Indexable inserts

RP..	Designation	Dimensions (mm)					P			M		K		N
		Size	I.C	L	S	R	WCP30-55	WCP40-55	WCP50-55	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	RPMT08T2MOE-JS	8.0	8.0	-	2.78	-		○	●	○	●			
	RPMT10T3MOE-JS	10	10	-	3.97	-		○	●	○	●			
	RPMT1204MOE-JS	12	12	-	4.76	-		○	●	○	●			
	RPMT1606MOE-JS	16	16	-	6.35	-		○	●	○	●			
	RPMW0802MO	8.0	8.0	-	2.38	-				○	●			
	RPMW08T2MO	8.0	8.0	-	2.78	-				○	●			
	RPMW10T3MO	10	10	-	3.97	-				○	●			
	RPMW1204MO	12	12	-	4.76	-				○	●			
	RPMW1606MO	16	16	-	6.35	-				○	●			

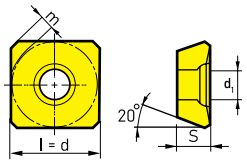
● First choice
○ Make to order



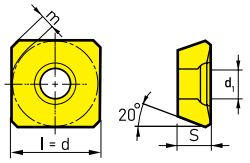
Indexable inserts

SE..	Designation	Dimensions (mm)					P			M		K		N
		Size	I.C	L	S	R	WCP30-55	WCP40-55	WCP50-55	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	SEHT1204AFFN	12	12.7	12.7	4.76	-				○	●			
														
	SEHT12T3-HL	12	13.4	13.4	4	-				○	●			
														
	SEHT12T3-FM	12	13.4	13.4	4	-				○	●			

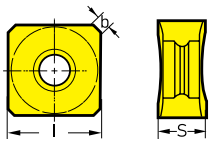
● First choice
○ Make to order



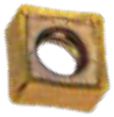
Indexable inserts

SE..	Designation	Dimensions (mm)					P			M		K		N
		Size	l.C	L	S	R	WCP30-55	WCP40-55	WCP50-55	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	SEHT12T3-SM	12	13.4	13.4	4	-				○	●			
														
	SEHT12T3-SR	12	13.4	13.4	4	-				○	●			

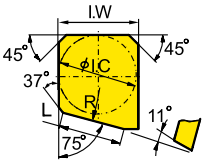
● First choice
○ Make to order

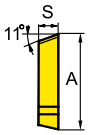


Indexable inserts

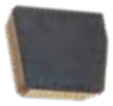
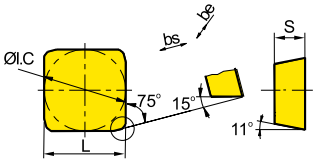
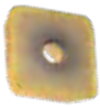
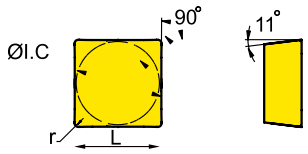
SN..	Designation	Dimensions (mm)					P			M		K		N
		Size	I.C	L	S	R	WCP30-55	WCP40-55	WCP50-55	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	SNMX1205ANN	12	12.7	12.7	6.4	-		○	●	○	●	○	●	
	SNMX120512-F57	12	12.7	12.7	6.4	1.2		○	●	○	●	○	●	

● First choice
○ Make to order

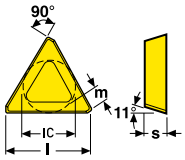




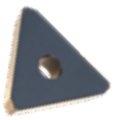
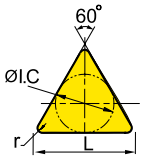
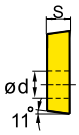
Indexable inserts

SP..	Designation	Dimensions (mm)					P			M		K		N
		Size	I.C	L	S	R	WCP30-55	WCP40-55	WCP50-55	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	SPEX1203EDL-1	12	12.7	10	3.18	-	●				○			
	SPEX1203EDR-1	12	12.7	10	3.18	-	●				○			
	SPEX1504EDL-1	15	15.875	10	4.76	-	●				○			
	SPEX1504EDR-1	15	15.875	10	4.76	-	●				○			
														
	SPKN1203EDR-D3	12	12.7	12.7	3.18	0.0	●				○			
	SPKN1504EDR-D3	15	15.875	15.875	4.76	0.0	●				○			
														
	SPMR120304	12	12.7	12.7	3.18	0.4	●				○			
	SPMR120308	12	12.7	12.7	3.18	0.8	●				○			
	SPMR120312	12	12.7	12.7	3.18	1.2	●				○			

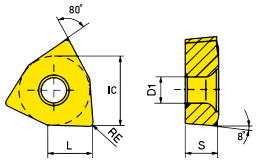
● First choice
○ Make to order



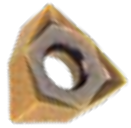
Indexable inserts

TP..	Designation	Dimensions (mm)					P			M		K		N
		Size	I.C	L	S	R	WCP30-55	WCP40-55	WCP50-55	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	TPKN1603PDTR	16	9.525	16.5	3.18	-		●		●	○			
	TPKN2204PDTR	22	12.7	22	4.76	-		●		●	○			
	TPKN1603PDTR-D3	16	9.525	16.5	3.18	-		●		●	○			
	TPKN2204PDTR-D3	22	12.7	22	4.76	-		●		●	○			
 														
	TPMR160304-D3	16	9.53	16.5	4.76	0.4		●		●	○			
	TPMR160308-D3	16	9.53	16.5	4.76	0.8		●		●	○			
	TPMR160312-D3	16	9.53	16.5	4.76	1.2		●		●	○			

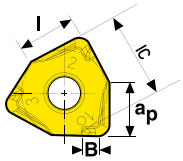
● First choice
○ Make to order



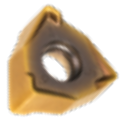
Indexable inserts

WN..	Designation	Dimensions (mm)					P			M		K		N
		Size	I.C	L	S	R	WCP30-55	WCP40-55	WCP50-55	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	WNMU080608EN-GM	8.0	12.7	8.6	6.35	0.8	○			○	●	●		

● First choice
○ Make to order



Indexable inserts

XN..	Designation	Dimensions (mm)					P			M		K		N
		Size	l.C	L	S	R	WCP30-55	WCP40-55	WCP50-55	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	XNEX080608TR-M13	8.0	12.5	7.5	6.35	0.8	○			○	●	●		
	XNEX080612TR-M13	8.0	12.5	7.5	6.35	1.2	○			○	●	●		
	XNEX080616TR-M13	8.0	12.5	7.5	6.35	1.6	○			○	●	●		

● First choice
○ Make to order

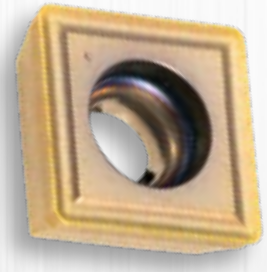
WÜRNHER®

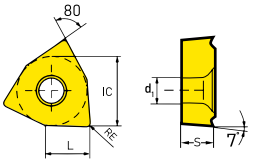
Velocity of cut
VC (m/min)

		CVD					PVD		uncoated
		WCP30-55	WCP40-55	WCP50-55	WCK15-53	WCK15-54	WPM25-52	WPM25-54	WUN15-53
Steel	Low Carbon	160-200	140-180	120-160			200 - 300	180 - 330	
	Medium Alloy	140-180	120-160	100-140			170 - 270	150 - 280	
	High Alloy	120-160	100-140	80-120			120 - 220	120 - 250	
Stainless Steel	Series 300	100-140	90-130	80-120			160 - 270	160 - 280	
	Series 400	90-130	80-120	70-110			140 - 250	140 - 250	
	Duplex	80-120	70-110	60-100			70 - 150	70 - 150	
Castiron	Grey	180-220	160-200	100-140	90-160	100 -180	130 -250	120 - 240	
	Nodular	160-200	100-140	80-120	80-120	90-180	100 - 240	100 - 240	
	Hardened	100-140	80-120	70-120	60-100	80-160	40 - 80	40 - 80	
ALU	<8% Silicon						200 - 350	200 - 350	150 - 350
	>8% Silicon						170 - 300	170 - 300	120 - 300
	Copper Alloys						180 - 320	180 - 320	120 - 320
	Aerospace						200 - 400	200 - 400	120 - 400
Exotic Alloys	Titanium						35 - 65	35 - 65	
	Nickel Alloys						25 - 45	25 - 45	
Hardened	38 - 45 HRC						50 - 100	50 - 100	
	45 - 55 HRC						40 - 80	40 - 80	
	55 - 65 HRC						30 - 50	30 - 50	

WÜRNHER®

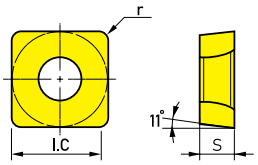
DRILLING





Indexable inserts

WC..	Designation	Dimensions (mm)					P			M		K		N
		Size	I.C	L	S	R	WCP30-55	WCP40-55	WCP50-55	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	WCMX030208-FN	3.0	5.56	3.8	2.38	0.8				●	●			
	WCMX040208-FN	4.0	6.35	4.3	2.38	0.8				●	●			
	WCMX050308-FN	5.0	7.94	5.4	3.18	0.8				●	●			
	WCMX06T308-FN	6.0	9.53	6.5	3.97	0.8				●	●			
	WCMX080412-FN	8.0	12.7	8.7	4.76	1.2				●	●			



Indexable inserts

SP..	Designation	Dimensions (mm)					P			M		K		N
		Size	I.C	L	S	R	WCP30-55	WCP40-55	WCP50-55	WPM25-52	WPM25-54	WCK15-53	WCK15-54	WUN15-53
	SPMT050204-EM	5.0	5.0	5	2.25	0.4				●	●			
	SPMT060204-EM	6.0	6.0	6	2.61	0.4				●	●			
	SPMT07T308-EM	7.0	7.94	7.94	2.85	0.8				●	●			
	SPMT090408-EM	9.0	9.8	9.8	4.05	0.8				●	●			
	SPMT110408-EM	11.0	11.5	11.5	4.45	0.8				●	●			
	SPMT140512-EM	14.0	14.3	14.3	5.75	1.2				●	●			

● First choice
○ Make to order

WÜRNHER

Velocity of cut
VC (m/min)

		WPM25-52	WPM25-54
Steel	Low Carbon	90 - 220	90 - 220
	Medium Alloy	90 - 200	90 - 200
	High Alloy	60 - 150	60 - 150
Stainless Steel	Series 300	90 - 200	90 - 200
	Series 400	70 - 180	70 - 180
	Duplex	40 - 100	40 - 100
Castiron	Grey	100 - 180	100 - 180
	Nodular	100 - 180	100 - 180
	Hardened	25 - 45	25 - 45
ALU	<8% Silicon	200 - 350	200 - 350
	>8% Silicon	170 - 300	170 - 300
	Copper Alloys	180 - 320	180 - 320
	Aerospace	200 - 400	200 - 400
Exotic Alloys	Titanium	35 - 65	35 - 65
	Nickel Alloys	25 - 45	25 - 45
Hardened	38 - 45 HRC	50 - 100	50 - 100
	45 - 55 HRC	40 - 80	40 - 80
	55 - 65 HRC		

Feed Rate

fz (mm/tooth)

DRILLING BODY 3 X D

		SPMT			WCMX		
		Size (mm)	fz		Size (mm)	fz	
			min	max		min	max
Steel	Low Carbon	5	0.04	0.12	3	0.04	0.12
		6	0.04	0.15	4	0.04	0.15
		7	0.06	0.18	5	0.06	0.18
		9	0.06	0.22	6	0.06	0.22
		11	0.06	0.24	8	0.06	0.24
	Medium Alloy	5	0.04	0.12	3	0.04	0.12
		6	0.04	0.14	4	0.04	0.14
		7	0.04	0.18	5	0.04	0.18
		9	0.06	0.22	6	0.06	0.22
		11	0.06	0.24	8	0.06	0.24
	High Alloy	5	0.04	0.08	3	0.04	0.08
		6	0.04	0.12	4	0.04	0.12
		7	0.04	0.14	5	0.04	0.14
		9	0.06	0.16	6	0.06	0.16
		11	0.06	0.18	8	0.06	0.18
Stainless Steel	Series 300	5	0.04	0.1	3	0.04	0.1
		6	0.04	0.12	4	0.04	0.12
		7	0.04	0.14	5	0.04	0.14
		9	0.06	0.16	6	0.06	0.16
		11	0.06	0.18	8	0.06	0.18
	Series 400	5	0.04	0.09	3	0.04	0.09
		6	0.04	0.1	4	0.04	0.1
		7	0.04	0.12	5	0.04	0.12
		9	0.06	0.14	6	0.06	0.14
		11	0.06	0.15	8	0.06	0.15
	Duplex	5	0.04	0.09	3	0.04	0.09
		6	0.04	0.1	4	0.04	0.1
		7	0.04	0.12	5	0.04	0.12
		9	0.06	0.14	6	0.06	0.14
		11	0.06	0.15	8	0.06	0.15
Cast Iron	Grey	5	0.06	0.12	3	0.06	0.12
		6	0.06	0.14	4	0.06	0.14
		7	0.08	0.16	5	0.08	0.16
		9	0.1	0.2	6	0.1	0.2
		11	0.12	0.24	8	0.12	0.24
	Nodular	5	0.06	0.12	3	0.06	0.12
		6	0.06	0.14	4	0.06	0.14
		7	0.08	0.16	5	0.08	0.16
		9	0.1	0.2	6	0.1	0.2
		11	0.12	0.24	8	0.12	0.24
	Hardened	5	0.04	0.07	3	0.04	0.07
		6	0.04	0.07	4	0.04	0.07
		7	0.04	0.08	5	0.04	0.08
		9	0.06	0.08	6	0.06	0.08
		11	0.06	0,09	8	0.06	0,09
ALU	NF & Aluminium alloys	5	0.05	0.12	3	0.05	0.12
		6	0.05	0.14	4	0.05	0.14
		7	0.06	0.16	5	0.06	0.16
		9	0.06	0.18	6	0.06	0.18
		11	0.08	0.2	8	0.08	0.2
Exotic Alloys	Titanium						
	Nickel Alloys						
Hardened	38 - 55 HRC						

DRILLING BODY 5 X D

	SPMT			WCMX		
	Size (mm)	fz		Size (mm)	fz	
		min	max		min	max
Steel	5	0.03	0.09	3	0.03	0.09
	6	0.03	0.12	4	0.03	0.12
	7	0.05	0.14	5	0.05	0.14
	9	0.05	0.18	6	0.05	0.18
	11	0.05	0.19	8	0.05	0.19
	5	0.03	0.09	3	0.03	0.09
	6	0.03	0.11	4	0.03	0.11
	7	0.03	0.14	5	0.03	0.14
	9	0.05	0.18	6	0.05	0.18
	11	0.05	0.19	8	0.05	0.19
	5	0.03	0.05	3	0.03	0.05
	6	0.03	0.09	4	0.03	0.09
	7	0.03	0.1	5	0.03	0.1
	9	0.05	0.12	6	0.05	0.12
	11	0.05	0.13	8	0.05	0.13
Stainless Steel	5	0.03	0.07	3	0.03	0.07
	6	0.03	0.09	4	0.03	0.09
	7	0.03	0.1	5	0.03	0.1
	9	0.05	0.12	6	0.05	0.12
	11	0.05	0.13	8	0.05	0.13
	5	0.03	0.06	3	0.03	0.06
	6	0.03	0.07	4	0.03	0.07
	7	0.03	0.08	5	0.03	0.08
	9	0.05	0.1	6	0.05	0.1
	11	0.05	0.1	8	0.05	0.1
	5	0.03	0.06	3	0.03	0.06
	6	0.03	0.07	4	0.03	0.07
	7	0.03	0.08	5	0.03	0.08
	9	0.05	0.1	6	0.05	0.1
	11	0.05	0.1	8	0.05	0.1
Cast Iron	5	0.05	0.09	3	0.05	0.09
	6	0.05	0.11	4	0.05	0.11
	7	0.07	0.12	5	0.07	0.12
	9	0.09	0.16	6	0.09	0.16
	11	0.11	0.19	8	0.11	0.19
	5	0.05	0.09	3	0.05	0.09
	6	0.05	0.11	4	0.05	0.11
	7	0.07	0.12	5	0.07	0.12
	9	0.09	0.16	6	0.09	0.16
	11	0.11	0.19	8	0.11	0.19
	5	0.03	0,06	3	0.03	0,06
	6	0.03	0,06	4	0.03	0,06
	7	0.03	0,07	5	0.03	0,07
	9	0.05	0,08	6	0.05	0,08
	11	0.05	0,09	8	0.05	0,09
ALU	5	0.04	0.09	3	0.04	0.09
	6	0.04	0.11	4	0.04	0.11
	7	0.05	0.12	5	0.05	0.12
	9	0.05	0.14	6	0.05	0.14
	11	0.07	0.15	8	0.07	0.15
Exotic Alloys						
Hardened						

Grade Conversion Table Turning

ISO CLASSIFICATION	MATERIAL CALSSIFICATION	WURNHER	CORORMANT	ISCAR	KENNAMETAL	KORLOY	KYOCERA	MITSUBISHI	SECO	SUMITOMO	TAEGUTEC	TUNGALOY	WALTER	ZCC	YG	OKE	PALBIT	PRAMET_NEGATIVE
P	P10	WCP15-53	GC4315	IC8150	KCP10	NC3010	CA515	MC6015	TP1500	AC810P	TT8115	T9115	WPP10S	YBC152	YG1001	OP1205	PH7910	T9310
		WCP15-54	GC4215		KC9110	NC3015	CA5515	UE6110	TP1501	AC700G		T9015	WPP10	YBC151			PHG105	T9315
																		T6310
	P20	WCP25-53	GC4325	IC8250	KCP25	NC3220	CA525	MC6025	TP2500	AC8025P	TT8125	T9125	WPP20S	YBC251	YG3010	OP1215	PH7920	T9325
		WCP25-54	GC4225		KC9215	NC3120	CA5525	UE6020	TP2501	AC820P		T9025	WPP20	YBC252	YG3015	OC2015	PHG115	
															YG801	OC2115	PH5115	
	P30	WCP35-53	GC4335	IC8350	KCP30	NC3030	CA5535	MC6035	TP3500	AC830P	TT8135	T9135	WPP30S	YBC351	YG3020	OC2025	PHG125	T9335
		WCP35-54	GC4235		KCP40	NC500H		UE6035			TT8020	T9035	WPP30	YBC352	YG3030	OC2125	PHG5125	
																	PG140	
																	PH5740	
					KC9040													T8430
M	M20	WPM25-52	GC2025	IC908	KCM25	NC9025	CA6525	MC7025	TM2000	AC620M	TT9225	T6120	WSM20	YBM251	YG3030'	OP1215"	PHS215	
		WPM2554	GC1115	IC887	KC5525	PC5300	PR930	VP15TF	CP500	AC6030M	TT9080	T6020	WSM20S	YBG202	YG213		PHS225	T8430'
			GC15		KCU25		PR1025	MP9015		AC520U		AH120	WMP20S	YBG212	YG214		PH3240	
							RP1225					AH630		YBG205			PHS228	
							PR1325					AH8015						
K	K10	WCK15-53	GC3205	IC5005	KCK05	NC6205	CA4505	MC5005	TK1001	AC405K	TT7005	T505	WKK10S	YBD052	YG1010	OC4225	PH5705	T5305
			GC3005				CA4010	UC5105	TK1000	AC410K			WAK10			OC3105	PBH920	
		WCK15-54	GC3210	IC5010	KCK15	NC6110	CA4515	MC5015	TK2001	AC415K	TT7310	T5115	WKK20S	YBD152C	YG1001'	OC3215	PH5320	T5315
															YG3010'	OC3115D	PBY930	
																	PBY940	
			GC3215		KC9315		CA415	UC5115	TK2000	AC700G	TT7015	T515	WAK20	YBD152			PH5740'	
N	N10	WUN15-53	H10	IC20	K68	H01	KW10	HT110	KX	H1	K10	TH10	WK1	YD101	YG1001"		PHD910	T0315
					K313										YG10		PDP410	
																	PDP403	

Comparison of Grade for Milling

ISO CLASSIFICATION	MATERIAL CLASSIFICATION	WURNHER	CORDMANT	ISCAR	KENNAMETAL	KORLOY	KYOCERA	MITSUBISHI	SECO	SUMITOMO	TAEGUTEC	TUNGALOY	WALTER	ZCC	YG	OKE	PALBIT	PRAMET_NEGATIVE
P	P10	WCP30-55	GC4220	IC950	KC522M	PC3600	PR630	VP15TF	MP1500		TT7080	T3130	WKP25	YBG252		OP2202	PHP910	M9315
			GC4230		KC635M	PC3500	PR660		MP2500		TT7030	AH330	WAM10				PH7910""	M8310
						PC3535	PR730		T250M				WAM20					M8315
						PC3525												
	P20	WCP40-55	GC1030	IC808	KC522M	PC5300	PR9925	VP15TF	F30M	ACP2000	TT9080	AH120	WAM30	YBC301	YG715	OP1315	PHP920	M9325
			GC4240	IC908	KC635M	NC5330	PR830	VP20RT	MP3000		TT9030	AH725		YBM251'	YG713	OP1215""	PH7920""	
					KC725M	PC9530						AH730		YBG205"				
												GH330		YBG202"				
	P30	WCP50-55	GC1040	IC830	KC735M	PC3545		VP30RT	F40M	ACP300	TT8020	AH140	WKP235	YBM351	YG602	OC4225'	PH7930	M8330
				IC330	KC935M			FH7020X	MP2500	ACZ350	TT7800	T3130	WXP45	YBG302	YG622		PHP930	M8340'
				IC928				F7030			TT8080	AH130	WSP45	YBC302	YG603		PHP808	M8345
																	PHP530	
																	PHS740	
M	M10	WPM25-52	GC1030	HC808	KC635M	PC5300	PR730	VP15TF	MP2500	ACP2000	TT9300	T3130	WAM30	YBM251"	YG602'	OP1315'		
			GC2030	IC908		NC5330	PR830		F30M		TT9080	AH725	WXM35	YBM253	YG603'	OP1215""		
						PC9530	PR925					AH120		YBG252""				
														YBG205""				
														YBG202""				
														YBG9320'				
							PR1025							YBG252"				
M	M20	WPM25-54	GC2040	IC830	KC7725M	PC3545	PR1225	VP30RT	F40M	ACP300	TT8020	AH130	WXM35	YBC302'			PHH930	M6330
			S40T	IC330		PC5300	PR905	MP9030	MM4500	EH20Z	TT8080	AH140	WSM35	YBM351'			PH7930'	M9340
				IC928				F7030	MS2500	EH520Z		SH730	WSP45	YBG302'			PHH530	M8340"
				IC928				F7030	MS2500	EH520Z		SH730	WSP45				PHP530'	M8345'
				IC928				F7030	MS2500	EH520Z		SH730	WSP45				PHH808	
																	PH7740'	
K	K10	WCK15-53	GC3220	IC810	KCK15	PC6510	PR905	MC5020	MK2050	ACK2000	TT6080	T1115	WKP25	YBD152'	YG5020	OP2202'	PHP910'	M5315
		WCK15-54	GC4220	IC910	KC520M	PC215K	PR510	VP15TF	MK2000	ACK3000		AH120	WKP35	YBG102"	YG501		PHP920'	
	K20													YBD252	YG602"		PH7910""	
														YBG152	YG622'		PH7920""	
	K30													YBD252'			PH5705'	M8330'
																	PH5320'	

WÜRNHER®

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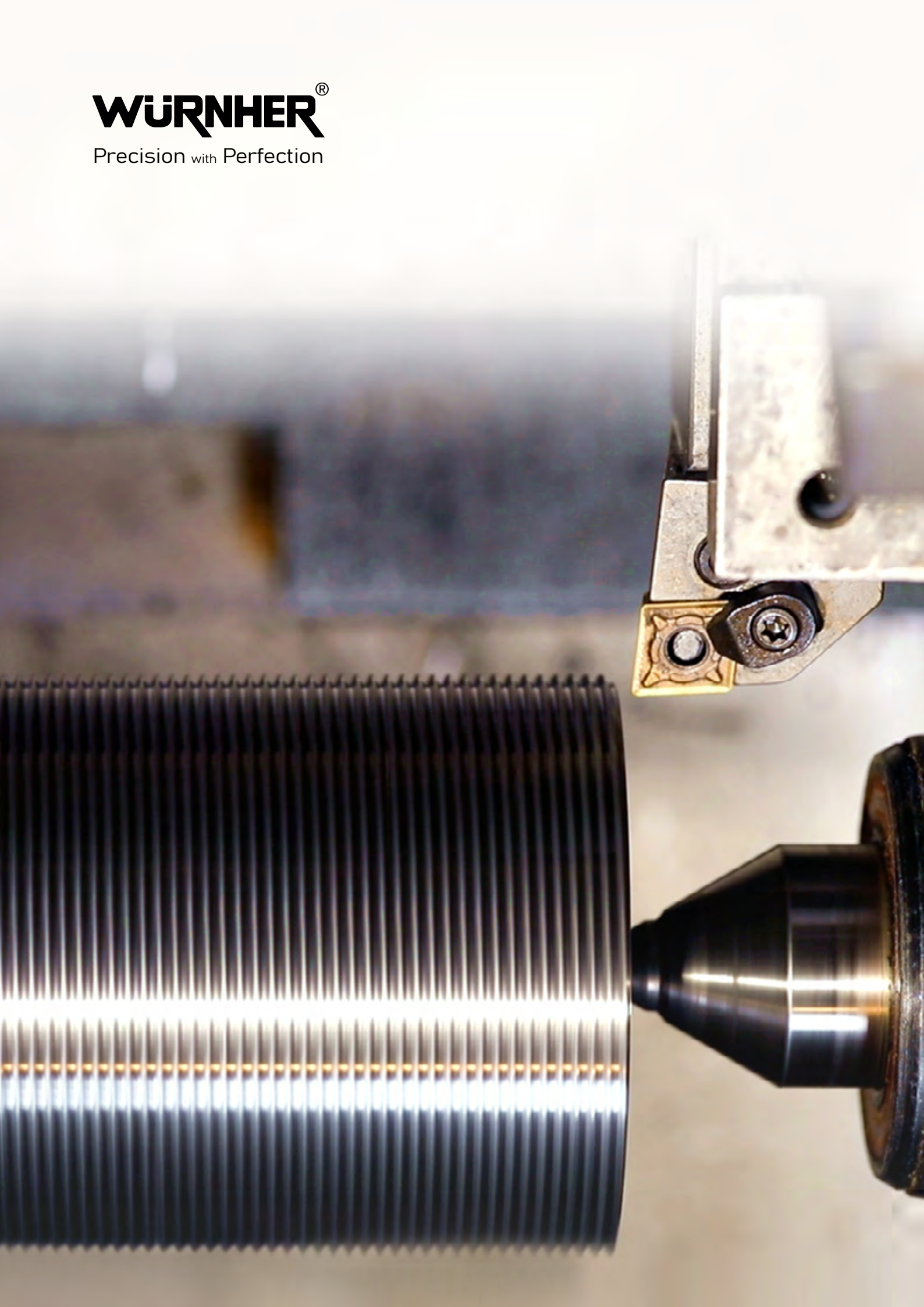

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