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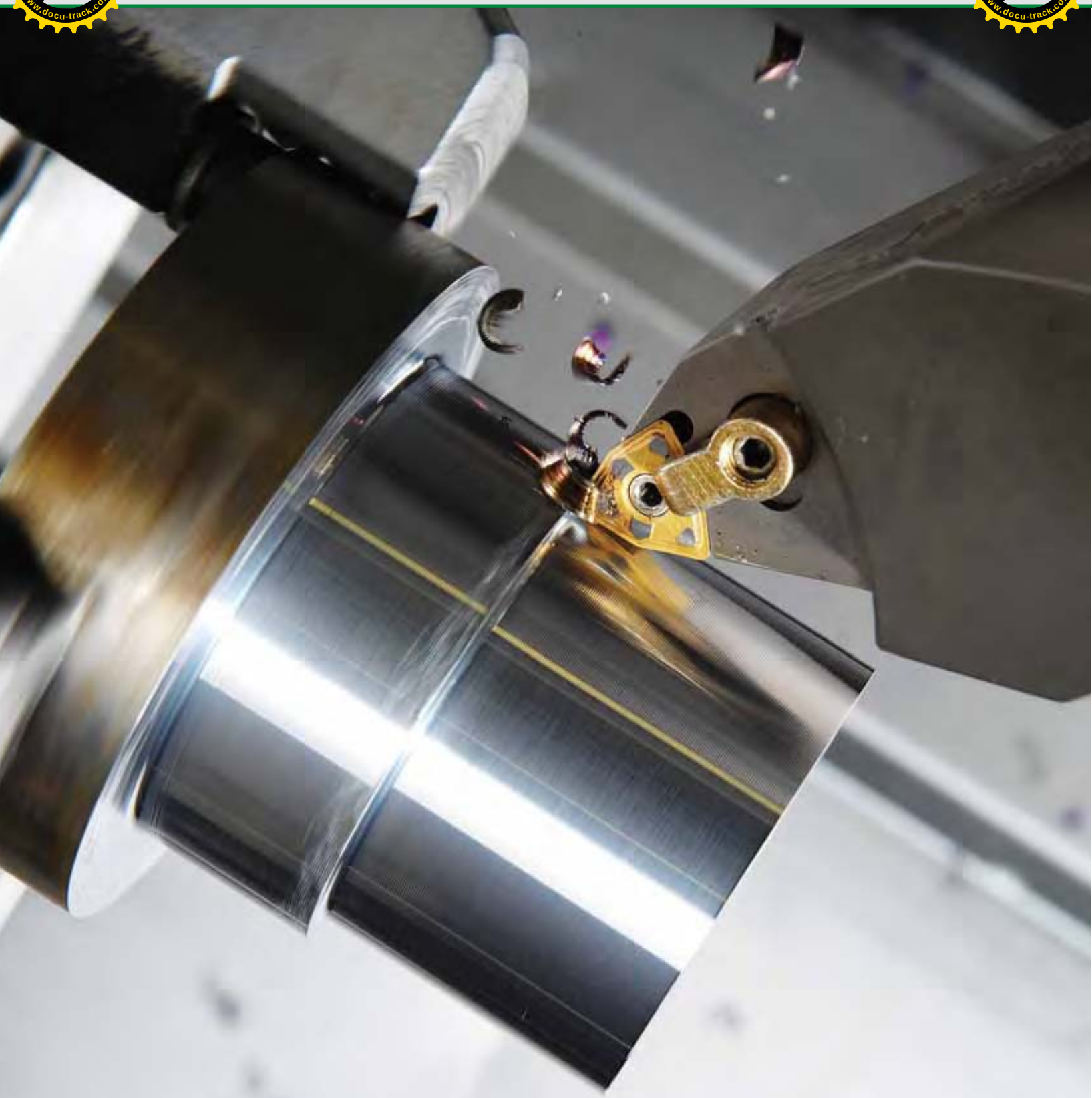
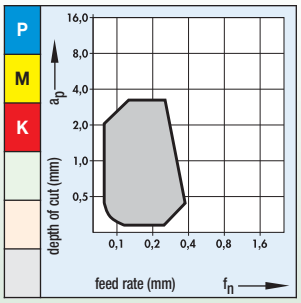


Double-Sided, Negative Inserts

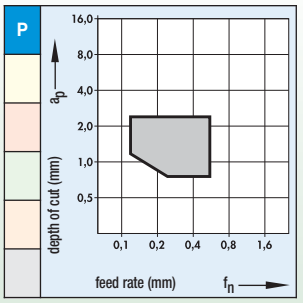
22

For finish turning, producing smooth, accurate surfaces. Very good chip control, especially at low depths of cut.



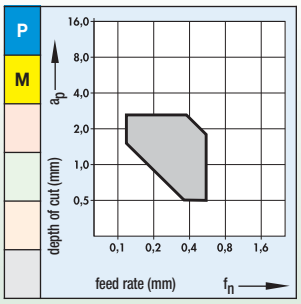
FL

Double-sided insert with adjusted inclination angle for good chip control at low depths of cut.



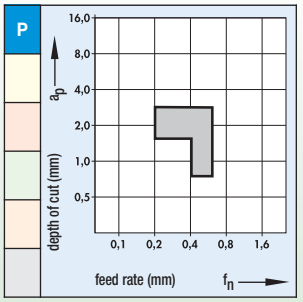
FM

For medium-duty turning operations. Soft-cutting chipbreaker. Used in applications producing varying chip sections, such as profile or copy turning. Good dimensional accuracy. For soft steel materials and stainless steels.



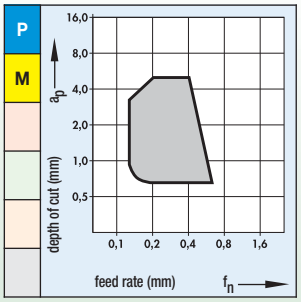
FR

Double-sided insert with medium positive geometry. Adjusted inclination angle reduces cutting forces, provides good chip control over wide range of feed rates.



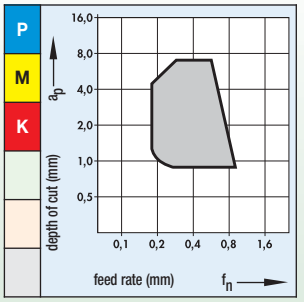
49

For medium to rough turning. Outstanding chip control due to specially configured chipbreaker element in corner area. Good chip forming with low depths of cut.

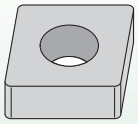


5

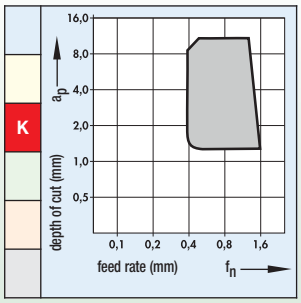
For medium-duty to roughing. Outstanding chip control. High edge strength, for interrupted cuts, forging skin, or scale. Preferred for all cast irons such as grey, malleable, and nodular.



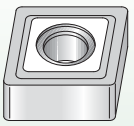
..MA



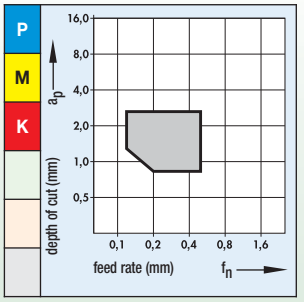
Flat top geometry for machining cast iron. For finishing to roughing applications.



..MG



For light machining to light roughing.

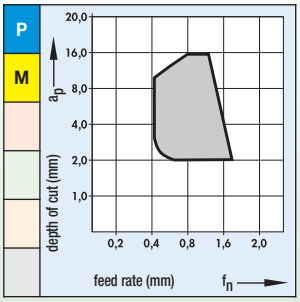


P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

Single-Sided, Negative Inserts

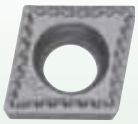
8

Stable cutting edge for heaviest chip sections and highest metal removal rates. For interrupted cut and applications involving high cutting edge loading. Depths of cut up to 16,0mm and feeds up to 1,6mm.

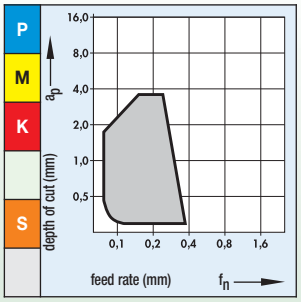


Single-Sided, Positive Inserts

MU

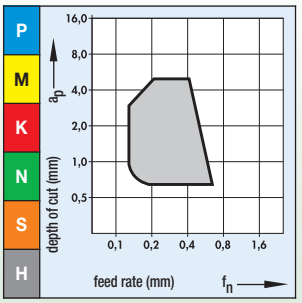


Medium universal turning includes rough machining with medium chip loads and finish machining with low chip loads.



..MT

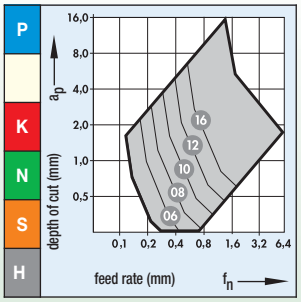
Stabilised cutting edge for medium chip sections. Effective in operations that make high demands on toughness or involve interrupted cuts.



Round, Positive Inserts

RCMT/RCMX

For straight turning, facing, and profile turning. Used at small depths of cut and high feeds up to 0,1 x D.

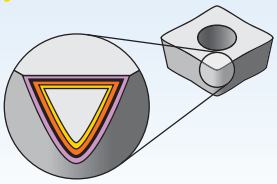


P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

Grades and Grade Descriptions

Inserts

WIDIA VALUE



Coatings provide high-speed capability and are engineered for finishing to light roughing.

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

Grade

Coating		Grade Description	05	10	15	20	25	30	35	40	45
TN1000	HC-P10	Coated carbide. MT-CVD/CVD — TiN-TiCN-Al_2O_3-TiN. CVD-coated hard metal grade with cobalt-enriched substrate has high deformation resistance. CVD coating consists of thick MTCVD – TiCN for wear resistance and thermally stable Al_2O_3 for crater resistance. TN1000 is a highly wear-resistant carbide grade, recommended for finishing and medium machining of steels and cast iron.	P	P	P	P					
			K	K	K	K					
TN2000	HC-P20	Coated carbide. MT-CVD/CVD — TiN-TiCN-Al_2O_3-TiN. CVD-coated cobalt-enriched substrate has required bulk toughness added with multi-layer MTCVD coating that provides the wear resistance and crater resistance required in steel machining. TN2000 is an optimum grade and the first choice in medium machining of steel. TN2000 provides required chip impact resistance to give longer tool life.			P	P	P	P			
TN4000	HC-P35	Coated carbide. MT-CVD/CVD — TiN-TiCN-Al_2O_3-TiN. CVD-coated hard metal substrate with higher cobalt content imparting good toughness required for roughing applications. Substrate has cobalt-enriched top layer to give the cutting edge the extra strength required in roughing applications. TN4000 is the first choice for roughing applications and can take heavy depths of cut and interrupted cuts.		P	P		P	P	P	P	
				M	M						
HK1500	HC-K15	Coated carbide. MT-CVD/CVD — TiN-TiCN-Al_2O_3-TiN. CVD-coated wear-resistant carbide substrate with thick TiCN and alpha alumina coating that provides the wear resistance required for machining materials that form discontinous chips, such as cast iron. TN1500 is suitable for machining cast iron. Finds applications in light and medium machining of cast irons.									
			K	K	K	K	K				
TTS	HW-P25	Universal uncoated grade for steel machining. Recommended for rough and finish turning of long chipping materials with large chip cross selection at medium cutting speeds. Also useful for grooving and threading.				P	P	P			
TTR-X	HW-P25	Very tough, uncoated grade. Suitable for rough machining of steel and stainless steel. Also for difficult-to-machine conditions with low cutting speeds.						P	P	P	
								M	M	M	
THM-X	HW-K15	Uncoated grade with good edge stability. Ideal grade for medium machining of cast irons and non-ferrous materials.									
			K	K	K	K					
			N	N	N	N					
THMF-X	HW-K10	Micro, fine-grain with good compressive strength. Used for light- to medium-duty machining of hard iron materials and alloy grey cast iron. Also suitable for non-ferrous metals and hard plastics. Ideal for finish machining of cast iron.									
			K	K	K						
			N	N	N						

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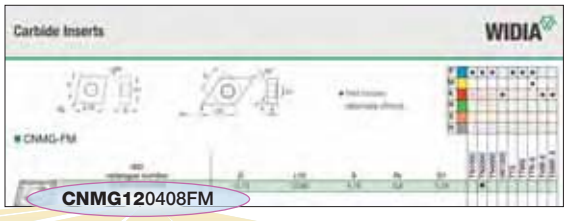
Whether your operation is turning, milling, or holemaking, WIDIA brands are the high-performance tooling you need. We offer standard and custom solutions for the general engineering market.

DIN ISO 513	VDI 3323	A • Finishing (ap x f = 1 x 0,1)			B • Medium (ap x f = 2 x 0,2)						C • Roughing (ap x f = 4 x 0,25)					
Material Group		Cutting Speed • vc m/min														
		min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
	ap [mm]	- / -FL / -FR			-22 / -49 / - / -FR / -FM / -5						-49 / - / -5 / -8					
	f [mm]	0,3–2,0			0,3–2,5						0,3–2,5					
		0,05–0,35			0,10–0,40						0,10–0,40					
		TN1000			TN1000			TN2000			TN2000			TN4000		
P	1	340	**490**	590	280	**400**	480	250	**360**	430	200	**290**	350	180	**260**	310
	2	340	**480**	580	260	**370**	440	240	**340**	410	190	**270**	320	130	**190**	230
	3	290	**420**	500	180	**260**	310	170	**240**	290	160	**230**	280	130	**180**	220
	4	260	**370**	440	190	**270**	320	180	**250**	300	130	**190**	230	110	**150**	180
	5	200	**280**	340	140	**200**	240	130	**190**	230	90	**130**	160	75	**110**	130
	6	270	**390**	470	200	**290**	350	190	**270**	320	140	**200**	240	110	**160**	190
	7	260	**370**	440	190	**270**	320	180	**250**	300	130	**190**	230	110	**150**	180
	8	220	**320**	380	160	**230**	280	150	**210**	250	110	**150**	180	85	**120**	140
	9	200	**280**	340	140	**200**	240	130	**190**	230	90	**130**	160	75	**110**	130
	10	270	**390**	470	200	**290**	350	190	**270**	320	140	**200**	240	110	**160**	190
	11	200	**280**	340	130	**190**	230	120	**170**	200	90	**130**	160	75	**110**	130
	12	150	**220**	260	140	**200**	240	130	**180**	220	120	**170**	200	110	**160**	190
	13.1	130	**190**	230	120	**170**	200	110	**150**	180	100	**140**	170	90	**130**	160
	13.2	65	**95**	115	60	**85**	100	55	**75**	90	50	**70**	85	45	**65**	80
	ap [mm]	- / -5														
	f [mm]	0,2–2														
		0,05–0,2														
		HK1500														
K	15	180	**260**	310												
	16	140	**200**	240												
	17	180	**250**	300												
	18	150	**210**	250												
	19	240	**340**	410												
	20	180	**260**	310												
	ap [mm]	1,00 – 4,00			1,00 – 4,00						1,00 – 4,00					
	f [mm]	0,10 – 0,40			0,10 – 0,40						0,10 – 0,40					
		THM-X			THM-X						THM-X					
N	21	800	**1000**	3000	800	**1000**	3000				300	**1000**	2000			
	22	400	**1000**	2000	400	**1000**	2000				300	**1000**	1500			
	23	600	**1000**	1500	600	**1000**	1500				200	**700**	1200			
	24	600	**1000**	1500	600	**1000**	1500				200	**700**	1200			
	25	400	**700**	1000	400	**700**	1000				200	**500**	700			
	26	400	**500**	600	400	**500**	600				250	**350**	400			
	27	400	**500**	600	400	**500**	600				200	**300**	400			
	28	200	**300**	400	200	**300**	400				100	**200**	300			
	29	100	**150**	200	100	**150**	200				80	**120**	150			
	30	150	**200**	250	150	**200**	250				100	**150**	200			

DIN ISO 513	VDI 3323	A • Finishing (ap x f = 1 x 0,1)			B • Medium (ap x f = 2 x 0,2)						C • Roughing (ap x f = 4 x 0,25)					
Material Group		Cutting Speed • vc m/min														
		min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
		– / –R / –MU			– / – 2 / –MU						– / –MU					
	ap [mm]	0,3–2			0,3–2,5						0,7–5					
	f [mm]	0,05–0,35			0,10–0,40						0,12–0,4					
		TN1000			TN1000			TN2000			TN2000			TN4000		
P	1	340	**490**	590	280	**400**	480	250	**360**	430	200	**290**	350	180	**260**	310
	2	340	**480**	580	260	**370**	440	240	**340**	410	190	**270**	320	130	**190**	230
	3	290	**420**	500	180	**260**	310	170	**240**	290	160	**230**	280	130	**180**	220
	4	260	**370**	440	190	**270**	320	180	**250**	300	130	**190**	230	110	**150**	180
	5	200	**280**	340	140	**200**	240	130	**190**	230	90	**130**	160	75	**110**	130
	6	270	**390**	470	200	**290**	350	190	**270**	320	140	**200**	240	110	**160**	190
	7	260	**370**	440	190	**270**	320	180	**250**	300	130	**190**	230	110	**150**	180
	8	220	**320**	380	160	**230**	280	150	**210**	250	110	**150**	180	85	**120**	140
	9	200	**280**	340	140	**200**	240	130	**190**	230	90	**130**	160	75	**110**	130
	10	270	**390**	470	200	**290**	350	190	**270**	320	140	**200**	240	110	**160**	190
	11	200	**280**	340	130	**190**	230	120	**170**	200	90	**130**	160	75	**110**	130
	12	150	**220**	260	140	**200**	240	130	**180**	220	120	**170**	200	110	**160**	190
	13.1	130	**190**	230	120	**170**	200	110	**150**	180	100	**140**	170	90	**130**	160
	13.2	65	**95**	115	60	**85**	100	55	**75**	90	50	**70**	85	45	**65**	80
		– / –MU			– / –MU											
	ap [mm]	0,2–2			0,3–4,5											
	f [mm]	0,05–0,2			0,08–0,35											
		HK1500			HK1500											
K	15	290	**410**	490	230	**330**	400									
	16	230	**330**	400	180	**250**	300									
	17	250	**360**	430	210	**300**	360									
	18	240	**340**	410	190	**270**	320									
	19	340	**490**	590	290	**410**	490									
	20	290	**410**	490	230	**330**	400									
	ap [mm]	1,00 – 4,00			1,00 – 4,00						1,00 – 4,00					
	f [mm]	0,10 – 0,20			0,10 – 0,20						0,10 – 0,40					
		THM-X			THM-X						THM-X					
N	21	800	**1000**	3000	500	**1000**	2500				300	**1000**	2000			
	22	400	**1000**	2000	300	**1000**	1800				300	**1000**	1500			
	23	600	**1000**	1500	500	**800**	1300				200	**700**	1200			
	24	600	**1000**	1500	500	**800**	1300				200	**700**	1200			
	25	400	**700**	1000	300	**600**	800				200	**500**	700			
	26	400	**500**	600	300	**400**	500				250	**350**	400			
	27	400	**500**	600	300	**400**	500				200	**300**	400			
	28	200	**300**	400	150	**250**	350				100	**200**	300			
	29	100	**150**	200	100	**140**	180				80	**120**	150			
	30	150	**200**	250	120	**180**	220				100	**150**	200			

How Do Catalogue Numbers Work?

Each character in our catalogue number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



C — Insert Shape

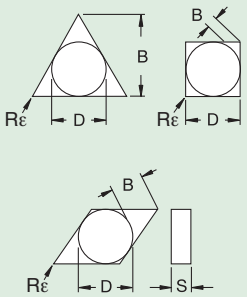
H	Hexagon 120°	
O	Octagon 135°	
P	Pentagon 108°	
R	Round —	
S	Square 90°	
T	Triangular 60°	
C D E M V	Rhomboid 80° 55° 75° 86° 35°	
W	Trigon 80° with enlarged corner angles	
L	Rectangular 90°	
A B N/K	Parallelogram 85° 82° 55°	

N — Insert Clearance Angle

A	3°	
B	5°	
C	7°	
D	15°	
E	20°	
F	25°	
G	30°	
N	0°	
P	11°	
O	Indicated for other clearance angles requiring descriptions.	

M — Tolerance Class

Tolerances apply prior to edge prep and coating



D: Theoretical diameter of the insert inscribed circle
S: Thickness
B: See figures below

G — Insert Features

N	
R	
F	
A	
M	
G	
W	
T	
Q	
U	
B	
H	
C	
J	
X	Special Design

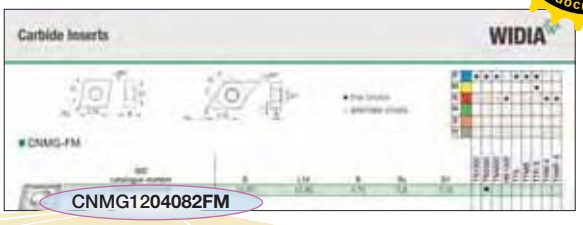
12 — Size

Code for metric cutting edge length "L10"

"D" mm	C	D	R	S	T	V	W
3,97	S4	04	03	03	06	—	—
4,76	04	05	04	04	08	08	S3
5,56	05	06	05	05	09	09	03
6,00	—	—	06	—	—	—	—
6,35	06	07	06	06	11	11	04
7,94	08	09	07	07	13	13	05
8,00	—	—	08	—	—	—	—
9,52	09	11	09	09	16	16	06
10,00	—	—	10	—	—	—	—
11,11	11	13	11	11	19	19	07
12,00	—	—	12	—	—	—	—
12,70	12	15	12	12	22	22	08
14,29	14	17	14	14	24	24	09
15,88	16	19	15	15	27	27	10
16,00	—	—	16	—	—	—	—
17,46	17	21	17	17	30	30	11
19,05	19	23	19	19	33	33	13
20,00	—	—	20	—	—	—	—
22,22	22	27	22	22	38	38	15
25,00	—	—	25	—	—	—	—
25,40	25	31	25	25	44	44	17
31,75	32	38	31	31	54	54	21
32,00	—	—	32	—	—	—	—

tolerance class	tolerance on "D"	tolerance on "B"	tolerance on "S"
C	±0,025	±0,013	±0,025
H	±0,013	±0,013	±0,025
E	±0,025	±0,025	±0,025
G	±0,025	±0,025	±0,013
M	See tables in size column		±0,013
U	See tables in size column		±0,013

By referencing this easy-to-use guide, you can identify the correct product to meet your needs.



CNMG1204082FM

04
Thickness
shown as "S"

symbol mm	thickness mm
—	0,79
T0	1,00
01	11,59
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
11	11,11
12	12,70

08
Corner Radius
shown as "Rε"

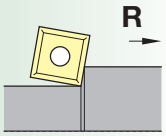
symbol mm	corner radius mm
X0	0,04
01	0,1
02	0,2
04	0,4
08	0,8
12	1,2
16	1,6
20	2,0
24	2,4
28	2,8
32	3,2
00	round insert
M0	

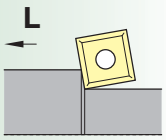
Hand of Insert
(optional)

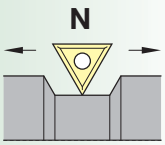
R = Right hand

L = Left hand

N = Neutral







Cutting Edge
(optional)

F

Sharp

E

Rounded

T

Chamfered

S

Chamfered and Rounded

K

Double-Chamfered

P

Double-Chamfered and Rounded

FM
Chipbreaker
(optional)

5
Medium Roughing

8
Heavy Roughing

22
Finishing

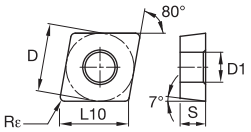
49
Medium Stainless

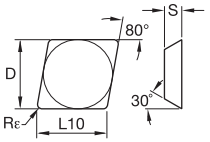
FL
Finish Light

FM
Finish Medium

FR
Finish Rough

MU
Medium Universal

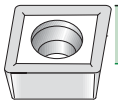




● first choice
○ alternate choice

		TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
P		●	●	●		●	●	●		
M								●		
K		○	○	○	●				●	●
N										
S										
H										

CCMT



ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
CCMT060204	6,35	6,45	2,38	0,4	2,80	●	●	●	●	●			●	
CCMT090304	9,53	9,67	3,18	0,4	4,40		●	●	●	●			●	
CCMT090308	9,53	9,67	3,18	0,8	4,40		●	●	●				●	
CCMT09T304	9,53	9,67	3,97	0,4	4,40		●	●	●	●			●	
CCMT09T308	9,53	9,67	3,97	0,8	4,40		●	●	●	●			●	
CCMT120408	12,70	12,90	4,76	0,8	5,50		●						●	

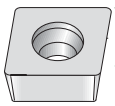
CCMT-MU

ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
CCMT09T304MU	9,53	9,67	3,97	0,4	4,40		●						●	
CCMT09T308MU	9,53	9,67	3,97	0,8	4,40		●						●	
CCMT090304MU	9,53	9,67	3,18	0,4	4,40		●							

CCMT-R

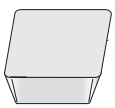
ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
CCMT060208R	6,35	6,45	2,38	0,8	2,80		●							

CCMW

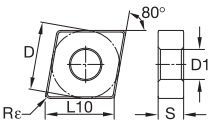


ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
CCMW060204	6,35	6,45	2,38	0,4	2,80								●	
CCMW090304	9,53	9,67	3,18	0,4	4,40								●	
CCMW090308	9,53	9,67	3,18	0,8	4,40								●	
CCMW120408	12,70	12,90	4,76	0,8	5,50								●	

CGGN



ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
CGGN120304	12,70	12,90	3,18	0,4	–								●	



● first choice
○ alternate choice

		TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
P		●	●	●		●	●	●		
M								●		
K		○	○	○	●				●	●
N										
S										
H										

■ CNMA

ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
CNMA120404	12,70	12,90	4,76	0,4	5,16				●				●	
CNMA120408	12,70	12,90	4,76	0,8	5,16				●				●	●
CNMA120412	12,70	12,90	4,76	1,2	5,16				●					●

■ CNMG

ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
CNMG120404	12,70	12,90	4,76	0,4	5,16		●	●	●	●			●	
CNMG120408	12,70	12,90	4,76	0,8	5,16		●	●	●	●		●	●	
CNMG120412	12,70	12,90	4,76	1,2	5,16		●							●
CNMG190612	19,05	19,34	6,35	1,2	7,93		●	●	●	●			●	
CNMG190616	19,05	19,34	6,35	1,6	7,93		●	●	●	●			●	

■ CNMG-22

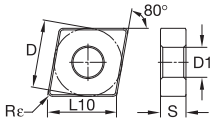
ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
CNMG12040422	12,70	12,90	4,76	0,4	5,16		●							
CNMG12040822	12,70	12,90	4,76	0,8	5,16		●							

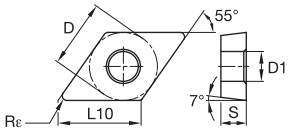
■ CNMG-49

ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
CNMG12040849	12,70	12,90	4,76	0,8	5,16		●	●						

■ CNMG-5

ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
CNMG1204085	12,70	12,90	4,76	0,8	5,16		●	●	●					
CNMG1204125	12,70	12,90	4,76	1,2	5,16		●	●	●					
CNMG1906125	19,05	19,34	6,35	1,2	7,93		●	●						
CNMG1906165	19,05	19,34	6,35	1,6	7,93		●	●						





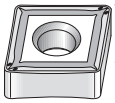
● first choice
○ alternate choice

		TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
P		●	●	●		●	●	●		
M								●		
K		○	○	○	●				●	●
N										
S										
H										

CNMG-FM

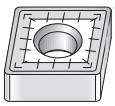
ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
CNMG120408FM	12,70	12,90	4,76	0,8	5,16		●							

CNMG-FR



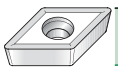
ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
CNMG120408FR	12,70	12,90	4,76	0,8	5,16	●	●							
CNMG120412FR	12,70	12,90	4,76	1,2	5,16	●								

CNMM-8



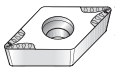
ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
CNMM1906168	19,05	19,34	6,35	1,6	7,93			●						

DCMT



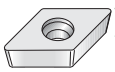
ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
DCMT11T304	9,53	11,63	3,97	0,4	4,40		●		●				●	
DCMT11T308	9,53	11,63	3,97	0,8	4,40		●		●				●	

DCMT-MU

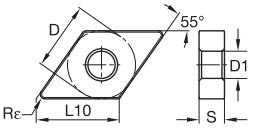


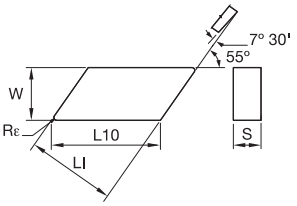
ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
DCMT11T308MU	9,53	11,63	3,97	0,8	4,40		●							

DCMW



ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
DCMW11T304	9,53	11,63	3,97	0,4	4,40								●	





● first choice
○ alternate choice

		TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
P		●	●	●		●	●	●		
M								●		
K		○	○	○	●				●	●
N										
S										
H										

■ DNMG

ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
DNMG150604	12,70	15,50	6,35	0,4	5,16		●	●		●				
DNMG150608	12,70	15,50	6,35	0,8	5,16		●	●	●				●	
DNMG150612	12,70	15,50	6,35	1,2	5,16			●						

■ DNMG-22

ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
DNMG15060422	12,70	15,50	6,35	0,4	5,16		●							

■ DNMG-49

ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
DNMG15060849	12,70	15,50	6,35	0,8	5,16		●							

■ DNMG-5

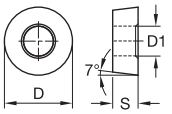
ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
DNMG1104085	9,53	11,63	4,76	0,8	3,81		●	●						
DNMG11T3085	9,53	11,63	3,97	0,8	4,05		●							
DNMG1506085	12,70	15,50	6,35	0,8	5,16		●	●						
DNMG1506125	12,70	15,50	6,35	1,2	5,16	●	●							
DNMG1506165	12,70	15,50	6,35	1,6	5,16			●						

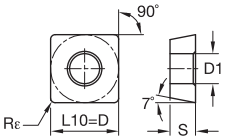
■ DNMG-FM

ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
DNMG110408FM	9,53	11,63	4,76	0,8	3,81		●							

■ KNUX

ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
KNUX160405L11	9,52	19,72	16,15	4,76	0,5		●	●		●				
KNUX160405R11	9,52	19,72	16,15	4,76	0,5		●	●		●				
KNUX160410L11	9,52	19,72	16,15	4,76	1,0		●							
KNUX160410L12	9,52	19,72	16,15	4,76	1,0			●						
KNUX160410R11	9,52	19,72	16,15	4,76	1,0		●							
KNUX160410R12	9,52	19,72	16,15	4,76	1,0			●						
KNUX160415R12	9,52	19,72	16,15	4,72	1,5			●						





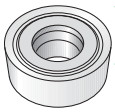
● first choice
○ alternate choice

		TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
P		●	●	●		●	●	●		
M								●		
K		○	○	○	●				●	●
N										
S										
H										

RCMT

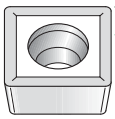
ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
RCMT0602M0	6,00	–	2,38	–	2,80		●						●	

RCMX



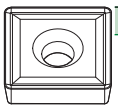
ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
RCMX1003M0	10,00	–	3,18	–	3,70			●						
RCMX1204M0	12,00	–	4,76	–	5,50		●	●						●
RCMX2006M0	20,00	–	6,35	–	6,65		●					●	●	
RCMX2507M0	25,00	–	7,94	–	7,40							●		
RCMX3209M0	32,00	–	9,53	–	10,35							●		

SCMT

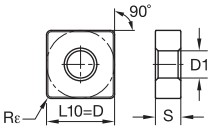


ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
SCMT120408	12,70	12,70	4,76	0,8	5,50			●						

SCMX



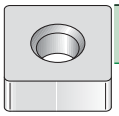
ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
SCMX190412	19,05	19,05	4,76	1,2	5,80							●		



● first choice
○ alternate choice

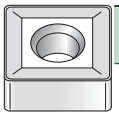
		TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
P		●	●	●		●	●	●		
M								●		
K		○	○	○	●				●	●
N										
S										
H										

■ SNMA



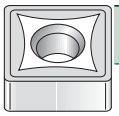
ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
SNMA120404	12,70	12,70	4,76	0,4	5,13				●					
SNMA120408	12,70	12,70	4,76	0,8	5,16				●				●	●
SNMA120412	12,70	12,70	4,76	1,2	5,16				●					●
SNMA250724	25,40	25,40	7,94	2,4	9,12							●	●	

■ SNMG



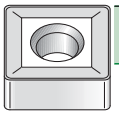
ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
SNMG120404	12,70	12,70	4,76	0,4	5,16		●							
SNMG120408	12,70	12,70	4,76	0,8	5,16		●	●	●	●			●	
SNMG120412	12,70	12,70	4,76	1,2	5,16				●					
SNMG190612	19,05	19,05	6,35	1,2	7,93		●	●		●		●	●	
SNMG190616	19,05	19,05	6,35	1,6	7,93			●						
SNMG250716	25,40	25,40	7,94	1,6	9,12		●	●						
SNMG250724	25,40	25,40	7,94	2,4	9,12			●				●		

■ SNMG-5



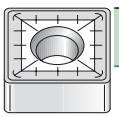
ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
SNMG1204085	12,70	12,70	4,76	0,8	5,16		●	●						
SNMG1204125	12,70	12,70	4,76	1,2	5,16		●	●						
SNMG1906125	19,05	19,05	6,35	1,2	7,93		●	●						

■ SNMM

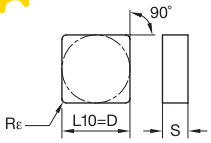


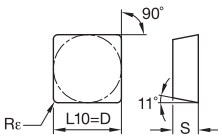
ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
SNMM190616	19,05	19,05	6,35	1,6	7,93			●						
SNMM250724	25,40	25,40	7,94	2,4	9,12			●				●		

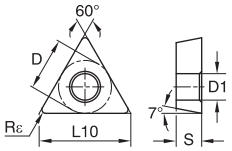
■ SNMM-8



ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
SNMM1204088	12,70	12,70	4,76	0,8	5,16			●						
SNMM1906168	19,05	19,05	6,35	1,6	7,93			●						
SNMM2507248	25,40	25,40	7,94	2,4	9,12			●						



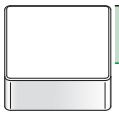




● first choice
○ alternate choice

		TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
P		●	●	●		●	●	●		
M								●		
K		○	○	○	●				●	●
N										
S										
H										

SNUN

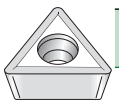


ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
SNUN120408	12,70	12,70	4,76	0,8	–					●			●	
SNUN190416	19,05	19,05	4,76	1,6	–					●				

SPUN

ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
SPUN090308	9,53	9,53	3,18	0,8	–					●				
SPUN120308	12,70	12,70	3,18	0,8	–		●		●	●			●	●
SPUN120312	12,70	12,70	3,18	1,2	–					●			●	
SPUN190416	19,05	19,05	4,76	1,6	–					●			●	

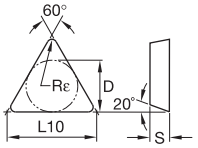
TCMT

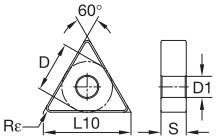


ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
TCMT110204	6,35	11,00	2,38	0,4	2,80		●		●	●			●	
TCMT16T304	9,53	16,50	3,97	0,4	4,40		●							
TCMT16T308	9,53	16,50	3,97	0,8	4,40		●	●					●	

TCMT-R

ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
TCMT110208R	6,35	11,00	2,38	0,8	2,80		●		●					

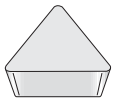




● first choice
○ alternate choice

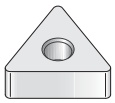
		TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
P		●	●	●		●	●	●		
M								●		
K		○	○	○	●				●	●
N										
S										
H										

TEGN



ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
TEGN110304	6,35	11,00	3,18	0,4	–								●	
TEGN160304	9,53	16,50	3,18	0,1	–								●	
TEGN160308	9,53	16,50	3,18	0,8	–								●	

TNMA

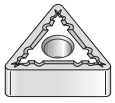


ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
TNMA160408	9,53	16,50	4,76	0,8	3,81				●				●	●

TNMG

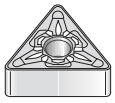
ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
TNMG160404	9,53	16,50	4,76	0,4	3,81		●		●				●	
TNMG160408	9,53	16,50	4,76	0,8	3,81		●	●	●	●			●	●
TNMG160412	9,53	16,50	4,76	1,2	3,81		●		●					
TNMG220408	12,70	22,00	4,76	0,8	5,16		●	●						
TNMG220412	12,70	22,00	4,76	1,2	5,16		●	●	●				●	
TNMG220416	12,70	22,00	4,76	1,6	5,16			●						

TNMG-22

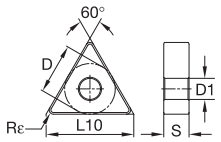


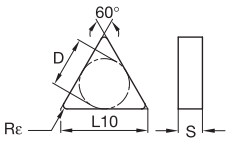
ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
TNMG16040422	9,53	16,50	4,76	0,4	3,81		●	●						
TNMG16040822	9,53	16,50	4,76	0,8	3,81		●							

TNMG-49



ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
TNMG16040849	9,53	16,50	4,76	0,8	3,81		●	●						

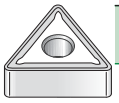




● first choice
○ alternate choice

		TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
P		●	●	●		●	●	●		
M								●		
K		○	○	○	●				●	●
N										
S										
H										

TNMG-5



ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
TNMG1604085	9,53	16,50	4,76	0,8	3,81		●	●	●				●	
TNMG1604125	9,53	16,50	4,76	1,2	3,81		●	●						
TNMG2204085	12,70	22,00	4,76	0,8	5,16		●	●						
TNMG2204125	12,70	22,00	4,76	1,2	5,16		●	●	●					
TNMG2204165	12,70	22,00	4,76	1,6	5,16			●						

TNMG-FL

ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
TNMG160404FL	9,53	16,50	4,76	0,4	3,81	●								
TNMG160408FL	9,53	16,50	4,76	0,8	3,81	●								

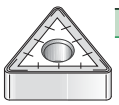
TNMG-FM

ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
TNMG160404FM	9,53	16,50	4,76	0,4	3,81	●	●							
TNMG160408FM	9,53	16,50	4,76	0,8	3,81		●							

TNMG-FR

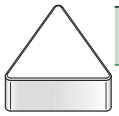
ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
TNMG160408FR	9,53	16,50	4,76	0,8	3,81	●								
TNMG160412FR	9,53	16,50	4,76	1,2	3,81	●								

TNMM-8

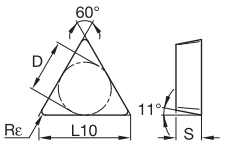


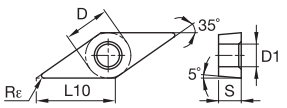
ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
TNMM2204168	12,70	22,00	4,76	1,6	5,16			●						

TNUN



ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
TNUN160308	9,53	16,50	3,18	0,8	–					●				
TNUN160408	9,53	16,50	4,76	0,8	–					●				
TNUN220412	12,70	22,00	4,76	1,2	–					●				





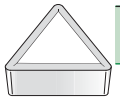
● first choice
○ alternate choice

		TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
P		●	●	●		●	●	●		
M								●		
K		○	○	○	●				●	●
N										
S										
H										

■ TPGN

ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
TPGN110304	6,35	11,00	3,18	0,4	–								●	

■ TPMR

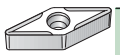


ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
TPMR110304	6,35	11,00	3,18	0,4	–		●			●			●	
TPMR110308	6,35	11,00	3,18	0,8	–		●	●						
TPMR160304	9,53	16,50	3,18	0,4	–		●			●				
TPMR160308	9,53	16,50	3,18	0,8	–		●							

■ TPUN

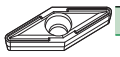
ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
TPUN110304	6,35	11,00	3,18	0,4	–					●			●	
TPUN110308	6,35	11,00	3,18	0,8	–					●			●	●
TPUN160304	9,53	16,50	3,18	0,4	–		●	●		●		●	●	●
TPUN160308	9,53	16,50	3,18	0,8	–		●	●	●	●		●	●	●
TPUN160312	9,53	16,50	3,18	1,2	–					●			●	●
TPUN220412	12,70	22,00	4,76	1,2	–					●		●	●	

■ VBMT

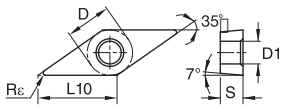


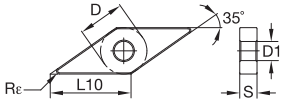
ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
VBMT160404	9,53	16,61	4,76	0,4	4,40		●	●						
VBMT160408	9,53	16,61	4,76	0,8	4,40		●	●	●				●	

■ VBMT-T



ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
VBMT160412T	9,53	16,60	4,76	1,2	4,40		●							





● first choice
○ alternate choice

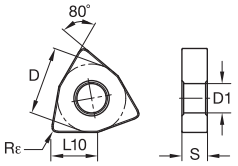
		TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
P		●	●	●		●	●	●		
M								●		
K		○	○	○	●				●	●
N										
S										
H										

■ VCMT

ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
VCMT16T304	9,53	16,61	3,97	0,4	4,40		●						●	
VCMT16T308	9,53	16,61	3,97	0,8	4,40		●	●	●					

■ VNMG

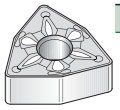
ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
VNMG12T304	7,14	12,45	3,97	0,4	3,60	●	●	●						
VNMG12T308	7,14	12,45	3,97	0,8	3,65		●		●					



● first choice
○ alternate choice

		TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
P		●	●	●		●	●	●		
M								●		
K		○	○	○	●				●	●
N										
S										
H										

■ WNMG-49

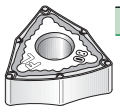


ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
WNMG08040849	12,70	8,69	4,76	0,8	5,16		●							

■ WNMG-5

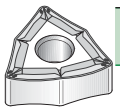
ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
WNMG0604085	9,53	6,52	4,76	0,8	3,81		●	●	●					
WNMG0804085	12,70	8,69	4,76	0,8	5,16		●	●	●					
WNMG0804125	12,70	8,69	4,76	1,2	5,16		●		●					

■ WNMG-FL



ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
WNMG060404FL	9,53	6,52	4,76	0,4	3,81	●								

■ WNMG-FR



ISO catalogue number	D	L10	S	Rε	D1	TN1000	TN2000	TN4000	HK1500	TTS	TTMS	TTR-X	THM-X	THMF-X
WNMG060408FR	9,53	6,52	4,76	0,8	3,81	●								
WNMG060412FR	9,53	6,52	4,76	1,2	3,81	●								

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