Preview Edition: **WIDIA Value**

ADVANCES 2012

WIDIA™

The Gold Standard for Value •
WIDIA™ Value

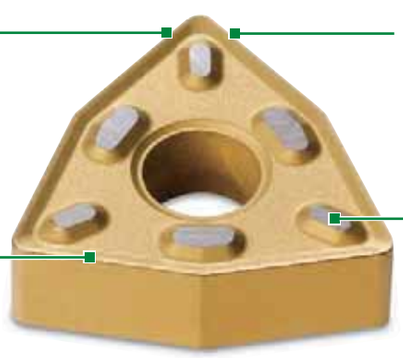
WIDIA Value is the cost-effective line of inserts from the brand you already know and trust for quality. Each insert is 100% manufactured by WIDIA to outperform competitive inserts when cutting steel, stainless steel, cast iron, and high-temperature alloys. With a simple grade selection method, and because these inserts can be used in an astounding 80% of all applications, WIDIA Value is perfect for small and midsize turning operations.

WIDIA™ Value

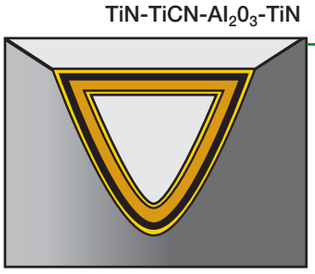
- Engineered to optimise performance.
- Gold coating on every insert.
- Proven grade technologies.

Post-coat treatment
- Improves edge toughness.
- Wide range of applications.

Improved edge toughness
- Provides smooth outer surface to reduce forces, friction, and workpiece sticking.



MT-CVD/CVD–TiN-TiCN-Al_2O_3-TiN



Post-coat grinding
- Provides secure seating surface.

Getting the Most from Every Insert

WIDIA™ Value products make it simple to get the most out of your inserts, and your money. Every insert is gold, which exposes wear as the tool continues to be used. This makes it easy to detect when an insert is ready to be changed — maximising the product's value and protecting the workpiece. Also, because WIDIA Value inserts can be used in most applications, a single insert can take on any number of tasks, thus reducing your inventory. WIDIA Value products are also reliable enough to cut steel, stainless steel, cast iron, and high-temperature alloys, enabling quick changes in workpiece materials without the need to swap inserts, saving time and money.

Save up to 50%

WIDIA Value inserts were developed to make it easy for small and midsize turning operations to utilise an affordable, quality product. With greater durability than competitively listed products, WIDIA Value inserts ensure an overall reduction of tooling costs. Locate the lowest prices for these inserts by purchasing through our distributor partners or online, where savings can be as much as 50%.

WIDIA Value Options

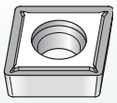
The WIDIA Value platform offers a quick and easy insert with a simple geometry selection system. This versaltile line offers eight grades to chose from, and eight geometries, including negative rake and screw-on. With this many options, it's no wonder WIDIA Value inserts cover 80% of all general turning applications.

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)			D • Heavy roughing (ap x f = 6 x 0,6)					
Material Group		Cutting Speed • vc m/min																	
		min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
P	Geometry	2P						2P • 6P			6P • 7N			7N					
	ap [mm]	0,20 – 2,00						0,80 – 5,00			1,00 – 8,00			2,00 – 15,00					
	f [mm]	0,05 – 0,20						0,16 – 0,40			0,20 – 0,60			0,40 – 1,00					
		TN10P						TN10P			TN20P			TN20P			TN30P		
	1	340	**490**	590				280	**400**	480	180	**260**	310	150	**220**	260	150	**210**	250
	2	340	**480**	580				260	**370**	440	130	**190**	230	110	**160**	190	110	**150**	180
	3	290	**420**	500				180	**260**	310	130	**180**	220	110	**150**	180	100	**140**	170
	4	260	**370**	440				190	**270**	320	110	**150**	180	90	**130**	160	70	**100**	120
	5	200	**280**	340				140	**200**	240	75	**110**	130	65	**90**	110	55	**80**	95
	6	270	**390**	470				200	**290**	350	110	**160**	190	90	**130**	160	75	**110**	130
	7	260	**370**	440				190	**270**	320	110	**150**	180	85	**120**	140	70	**100**	120
	8	220	**320**	380				160	**230**	280	85	**120**	140	70	**100**	120	65	**90**	110
	9	200	**280**	340				140	**200**	240	75	**110**	130	65	**90**	110	55	**80**	95
	10	270	**390**	470				200	**290**	350	110	**160**	190	90	**130**	160	75	**110**	130
	11	200	**280**	340				130	**190**	230	75	**110**	130	65	**90**	110	55	**80**	95
	12	150	**220**	260				140	**200**	240	110	**160**	190	110	**150**	180	100	**140**	170
	13.1	130	**190**	230				120	**170**	200	90	**130**	160	85	**120**	140	75	**110**	130
	13.2	65	**95**	115				60	**85**	100	45	**65**	80	45	**60**	70	40	**55**	65
M	Geometry	2P						2P • 4P			4P • 7N								
	ap [mm]	0,20 – 2,00						0,60 – 5,00			0,50 – 6,00								
	f [mm]	0,05 – 0,20						0,12 – 0,40			0,10 – 0,60								
		TN30M						TN30M			TN30M								
	14.1	180	**250**	300				150	**220**	260	140	**200**	240						
	14.2	140	**200**	240				130	**180**	220	110	**160**	190						
	14.3	110	**150**	180				100	**140**	170	85	**120**	140						
	14.4	90	**130**	160				75	**110**	130	70	**100**	120						
K	Geometry	2P						2P • 6P • ..MA			6P • 7P • ..MA			7N					
	ap [mm]	0,20 – 2,00						1,00 – 8,00			1,00 – 8,00			2,00 – 15,00					
	f [mm]	0,05 – 0,20						0,20 – 0,60			0,20 – 0,60			0,25 – 1,20					
		TN20K						TN20K			TN20K			TN20K					
	15	290	**410**	490				230	**330**	400	180	**260**	310	160	**230**	280			
	16	230	**330**	400				180	**250**	300	140	**200**	240	120	**170**	200			
	17	250	**360**	430				210	**300**	360	180	**250**	300	150	**220**	260			
	18	240	**340**	410				190	**270**	320	150	**210**	250	130	**180**	220			
	19	340	**490**	590				290	**410**	490	240	**340**	410	220	**310**	370			
	20	290	**410**	490				230	**330**	400	180	**260**	310	160	**230**	280			
S	Geometry	2P						2P • .NGP			4P			4P • 6P					
	ap [mm]	0,50 – 4,00						0,50 – 4,00			0,50 – 4,00			0,50 – 6,00					
	f [mm]	0,10 – 0,50						0,10 – 0,50			0,10 – 0,50			0,10 – 0,60					
		TN15U			TN10U			T10U			TN15U			TN15U					
	31	49	**70**	85	55	**80**	95	49	**70**	85	55	**80**	95	42	**60**	70			
	32	39	**55**	65	46	**65**	80	42	**60**	70	46	**65**	80	34	**49**	60			
	33	31	**44**	55	34	**48**	60	30	**43**	50	34	**48**	60	25	**36**	43			
	34	18	**26**	31	21	**30**	36	19	**27**	32	21	**30**	36	16	**23**	27			
	35	20	**28**	34	22	**32**	38	20	**29**	35	22	**32**	38	17	**24**	29			
	36																		
	37	39	**55**	65	42	**60**	70	39	**55**	65	42	**60**	70	32	**45**	55			

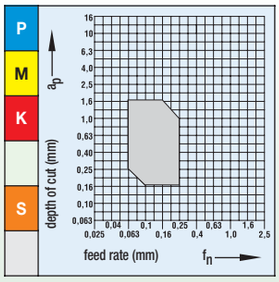
DIN ISO 513	VDI 3323	A • Finishing (ap x f = 1x 0,1)						B • Medium (ap x f = 2 x 0,2)						C • Roughing (ap x f = 4 x 0,25)					
Material Group		Cutting Speed • vc m/min																	
		min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
P	Geometry	1P						1P						1P					
	ap [mm]	0,20 – 2,00						0,30 – 4,50						0,70 – 5,00					
	f [mm]	0,05 – 0,20						0,08 – 0,35						0,12 – 0,40					
		TN10P						TN10P						TN20P					
	1	340	**490**	590				280	**400**	480				180	**260**	310			
	2	340	**480**	580				260	**370**	440				130	**190**	230			
	3	290	**420**	500				180	**260**	310				130	**180**	220			
	4	260	**370**	440				190	**270**	320				110	**150**	180			
	5	200	**280**	340				140	**200**	240				75	**110**	130			
	6	270	**390**	470				200	**290**	350				110	**160**	190			
	7	260	**370**	440				190	**270**	320				110	**150**	180			
	8	220	**320**	380				160	**230**	280				85	**120**	140			
	9	200	**280**	340				140	**200**	240				75	**110**	130			
	10	270	**390**	470				200	**290**	350				110	**160**	190			
	11	200	**280**	340				130	**190**	230				75	**110**	130			
	12	150	**220**	260				140	**200**	240				110	**160**	190			
	13.1	130	**190**	230				120	**170**	200				90	**130**	160			
	13.2	65	**95**	115				60	**85**	100				45	**65**	80			
M	Geometry	1P						1P						1P			1P		
	ap [mm]	0,20 – 2,00						0,30 – 4,50						0,30 – 4,50			0,30 – 4,50		
	f [mm]	0,05 – 0,20						0,08 – 0,35						0,08 – 0,35			0,08 – 0,35		
		TN30M						TN30M			TN15U			TN30M			TN15U		
	14.1	180	**250**	300				150	**220**	260	140	**190**	230	140	**200**	240	110	**150**	180
	14.2	140	**200**	240				130	**180**	220	110	**160**	190	110	**160**	190	85	**120**	140
	14.3	110	**150**	180				100	**140**	170	85	**120**	140	85	**120**	140	65	**90**	110
	14.4	90	**130**	160				75	**110**	130	70	**95**	110	70	**100**	120	55	**80**	95
K	Geometry	1P						1P						1P					
	ap [mm]	0,20 – 2,00						0,30 – 4,50						1,00 – 8,00					
	f [mm]	0,05 – 0,20						0,08 – 0,35						0,10 – 0,50					
		TN20K						TN20K						TN20K					
	15	290	**410**	490				230	**330**	400				180	**260**	310			
	16	230	**330**	400				180	**250**	300				140	**200**	240			
	17	250	**360**	430				210	**300**	360				180	**250**	300			
	18	240	**340**	410				190	**270**	320				150	**210**	250			
	19	340	**490**	590				290	**410**	490				240	**340**	410			
	20	290	**410**	490				230	**330**	400				180	**260**	310			
S	Geometry	1P						1P						1P					
	ap [mm]	0,30 – 2,00						0,30 – 4,50						0,30 – 4,50					
	f [mm]	0,08 – 0,20						0,08 – 0,35						0,08 – 0,35					
		TN15U			TN10U			TN15U			TN10U			TN15U					
	31	49	**70**	85	55	**80**	95	46	**65**	80	49	**70**	85	42	**60**	70			
	32	39	**55**	65	46	**65**	80	35	**50**	60	42	**60**	70	34	**49**	60			
	33	31	**44**	55	34	**48**	60	28	**40**	48	30	**43**	50	25	**36**	43			
	34	18	**26**	31	21	**30**	36	16	**23**	28	19	**27**	32	16	**23**	27			
	35	20	**28**	34	22	**32**	38	18	**25**	30	20	**29**	35	17	**24**	29			
	36																		
	37	39	**55**	65	42	**60**	70	35	**50**	60	39	**55**	65	32	**45**	55			

Positive and Negative Inserts

1P

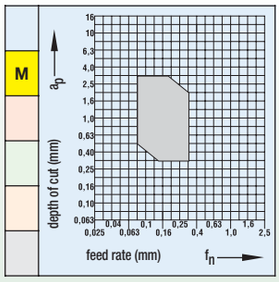


Preferred for light finishing. Low cutting forces and reduced power requirements due to positive rake angle. Good chip control over a wide range.



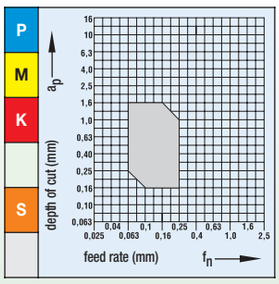
4P

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

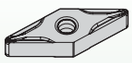


2P

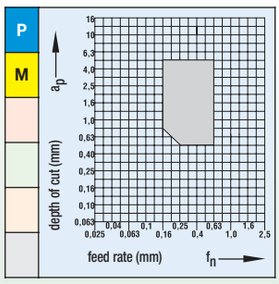
For finish turning, producing smooth, accurate surfaces. Very good chip control, especially at low depths of cut.



6P

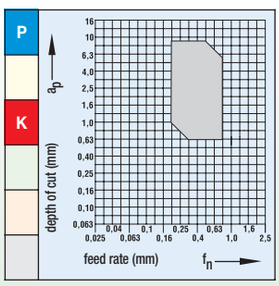


For medium to rough turning. Outstanding chip control due to specially configured chipbreaker element in corner area. Good chip forming with low depths of cut.



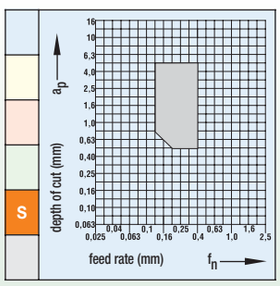
7N

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

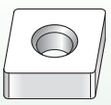


..GP

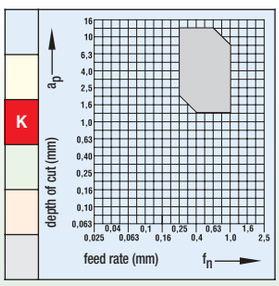
For light machining to light roughing.

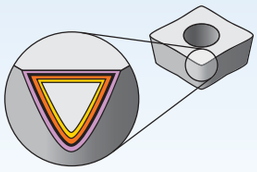


..MA



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





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

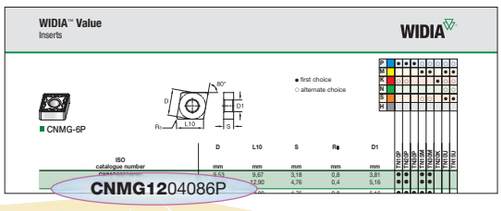
P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous Materials
S	High-Temp Alloys
H	Hardened Materials

Grade

Coating		Grade Description	05	10	15	20	25	30	35	40	45
TN10P	HC-P10	Coated carbide. MTCVD-TiN-TiCN-Al_2O_3-TiN. Ideal for light finishing to medium machining applications. Superior wear resistance.	P	P	P	P					
			K		K	K					
TN20P	HC-P20	Coated carbide. MTCVD-TiN-TiCN-Al_2O_3-TiN. Great general-purpose turning grade for steels. Ideal for semi-finishing to moderately heavy roughing.	P		P	P	P	P			
			K				K	K	K		
TN30P	HC-P30	Coated carbide. MTCVD-TiN-TiCN-Al_2O_3-TiN. Tough carbide grade. Ideal for roughing and heavy roughing applications.	P					P	P	P	P
TN15M	HC-M15	Coated carbide. MTCVD-TiN-TiCN-Al_2O_3-TiN. Ideal for finishing to medium machining of austentic stainless steels.	P		P	P	P				
			M	M	M	M					
TN30M	HC-M30	Coated carbide. MTCVD-TiN-TiCN-Al_2O_3-TiN. Ideal for general-purpose machining of stainless steels.	P					P	P	P	
			M				M	M	M	M	
TN20K	HC-K20	Coated carbide. MTCVD-TiN-TiCN-Al_2O_3-TiN. Great when used for straight or lightly interrupted cut applications of ductile and cast irons.	P	P	P	P					
			K		K	K	K	K			
TN10U	HC-S10	Coated carbide. PVD-TiAlN-TiN. Ideal for finishing of difficult to machine alloys and stainless steels.	P		P	P	P				
			M		M	M	M				
			K		K	K	K				
			N		N	N	N				
			S		S	S	S				
			H	H							
TN15U	HW-P15	Uncoated carbide. Excellent abarasion resistance for machining cast irons, austentic stainless steels, and most high-temperature alloys.	P		P	P	P				
			M		M	M	M				
			K	K	K	K					
			N		N	N	N				
			S		S	S	S				

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

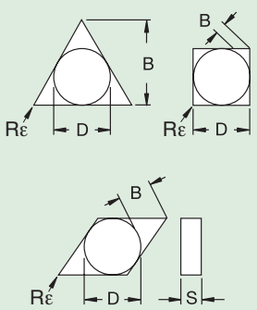
H	Hexagon 120°	
O	Octagon 135°	
P	Pentagon 108°	
R	Round —	
S	Square 90°	
T	Triangular 60°	
C	Rhomboid 80°	
D	55°	
E	75°	
M	86°	
V	35°	
W	Trigon 80° with enlarged corner angles	
L	Rectangular 90°	
A	Parallelogram 85°	
B	82°	
N/K	55°	

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

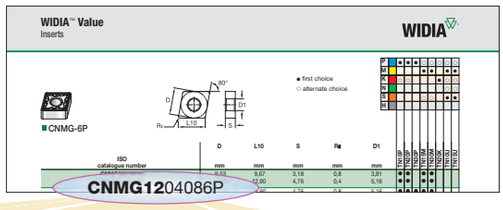
12 — Size

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	±0,13
M	See tables in size column		±0,13
U	See tables in size column		±0,13

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



04
Thickness
S

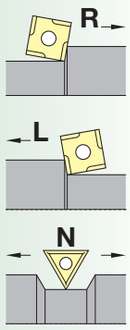
symbol mm	thickness mm
–	0,79
T0	1,00
01	1,59
T1	1,98
02	2,38
03	3,18
T3	3,97
04	4,76
05	5,56
06	6,35
07	7,94
09	9,52
11	11,11
12	12,70

08
Corner
Radius "Rε"

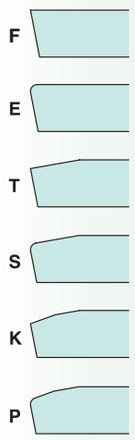
symbol mm	corner radius mm
X0	0,04
01	0,1
02	0,2
04	0,4
08	0,8
12	1,2
16	1,6
20	2,0
24	2,4
28	2,8
32	3,2
00	round insert
M0	

Hand of Insert
(optional)

R = Right hand
L = Left hand
N = Neutral



Cutting Edge
(optional)



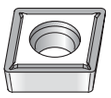
F Sharp
E Rounded
T Chamfered
S Chamfered and Rounded
K Double-Chamfered
P Double-Chamfered and Rounded

6P
Chipbreaker
(optional)

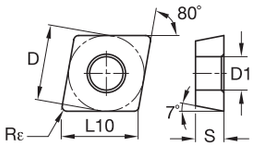
1P Finishing Finishing
2P Finishing
..GP Medium Machining
4P Medium Machining
6P Medium Roughing
..MA Roughing
7N Heavy Roughing

		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
P		●	●	●	○	○	○	○	○
M					●	●		●	●
K		○	○				●	○	○
N								○	○
S					○	○		●	●
H									

● first choice
○ alternate choice

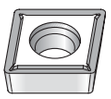


■ CCGT-1P

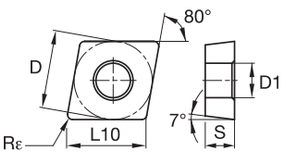


ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm
CCGT0602021P	6,35	6,45	2,38	0,2	2,80
CCGT0602041P	6,35	6,45	2,38	0,4	2,80
CCGT0602081P	6,35	6,45	2,38	0,8	2,80
CCGT09T3011P	9,53	9,67	3,97	0,1	4,40
CCGT09T3021P	9,53	9,67	3,97	0,2	4,40
CCGT09T3041P	9,53	9,67	3,97	0,4	4,40
CCGT09T3081P	9,53	9,67	3,97	0,8	4,40

ISO catalogue number	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
CCGT0602021P							●	●
CCGT0602041P							●	●
CCGT0602081P							●	
CCGT09T3011P							●	●
CCGT09T3021P							●	●
CCGT09T3041P							●	●
CCGT09T3081P							●	●



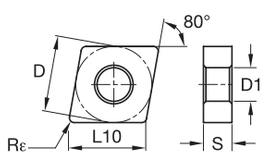
■ CCMT-1P



ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm
CCMT0602021P	6,35	6,45	2,38	0,2	2,80
CCMT0602041P	6,35	6,45	2,38	0,4	2,80
CCMT0602081P	6,35	6,45	2,38	0,8	2,80
CCMT09T3021P	9,53	9,67	3,97	0,2	4,40
CCMT09T3041P	9,53	9,67	3,97	0,4	4,40
CCMT09T3081P	9,53	9,67	3,97	0,8	4,40
CCMT1204041P	12,70	12,90	4,76	0,4	5,50
CCMT1204081P	12,70	12,90	4,76	0,8	5,50

ISO catalogue number	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
CCMT0602021P	●			●	●	●	●	●
CCMT0602041P	●	●		●	●	●	●	●
CCMT0602081P	●	●		●	●	●	●	
CCMT09T3021P							●	●
CCMT09T3041P	●	●		●	●	●	●	●
CCMT09T3081P	●	●		●	●	●	●	●
CCMT1204041P	●	●		●	●	●	●	
CCMT1204081P	●	●		●	●	●	●	

■ CNGP

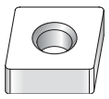


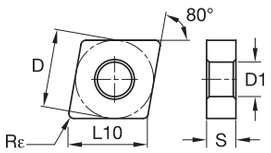
ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm
CNGP120401	12,70	12,90	4,76	0,1	5,16
CNGP120402	12,70	12,90	4,76	0,2	5,16
CNGP120404	12,70	12,90	4,76	0,4	5,16
CNGP120408	12,70	12,90	4,76	0,8	5,16
CNGP120412	12,70	12,90	4,76	1,2	5,16

ISO catalogue number	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
CNGP120401							●	
CNGP120402							●	
CNGP120404							●	●
CNGP120408							●	●
CNGP120412							●	●

	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
P	●	●	●	○	○	○	○	○
M				●	●		●	●
K	○	○				●	○	○
N							○	○
S				○	○		●	●
H								

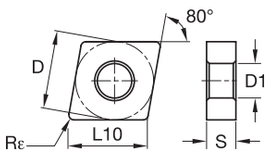
● first choice
○ alternate choice





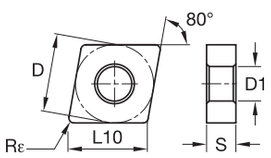
■ CNMA

ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
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						●		
CNMA120416	12,70	12,90	4,76	1,6	5,16						●		
CNMA160612	15,88	16,12	6,35	1,2	6,35						●		
CNMA160616	15,88	16,12	6,35	1,6	6,35						●		
CNMA190612	19,05	19,34	6,35	1,2	7,93						●		
CNMA190616	19,05	19,34	6,35	1,6	7,93						●		



■ CNMG-2P

ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
CNMG1204042P	12,70	12,90	4,76	0,4	5,16	●	●		●	●	●	●	●
CNMG1204082P	12,70	12,90	4,76	0,8	5,16	●	●		●	●	●	●	●
CNMG1204122P	12,70	12,90	4,76	1,2	5,16	●	●		●		●	●	

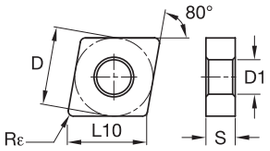


■ CNMG-4P

ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
CNMG1204044P	12,70	12,90	4,76	0,4	5,16				●	●			
CNMG1204084P	12,70	12,90	4,76	0,8	5,16				●	●			
CNMG1204124P	12,70	12,90	4,76	1,2	5,16				●	●			
CNMG1606124P	15,88	16,12	6,35	1,2	6,35				●	●			
CNMG1906124P	19,05	19,34	6,35	1,2	7,93				●	●			

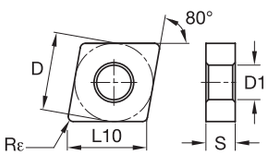
	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
P	●	●	●	○	○	○	○	○
M				●	●		●	●
K	○	○				●	○	○
N							○	○
S				○	○		●	●
H								

● first choice
○ alternate choice



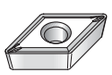
CNMG-6P

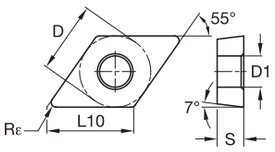
ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
CNMG0903086P	9,53	9,67	3,18	0,8	3,81	●	●		●	●			
CNMG1204046P	12,70	12,90	4,76	0,4	5,16	●	●		●	●			
CNMG1204086P	12,70	12,90	4,76	0,8	5,16	●	●	●	●	●			
CNMG1204126P	12,70	12,90	4,76	1,2	5,16	●	●	●	●	●			
CNMG1606126P	15,88	16,12	6,35	1,2	6,35		●	●	●	●			
CNMG1906126P	19,05	19,34	6,35	1,2	7,93		●	●	●	●			



CNMG-7N

ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
CNMG1204047N	12,70	12,90	4,76	0,4	5,16	●	●				●		
CNMG1204087N	12,70	12,90	4,76	0,8	5,16	●	●	●			●		
CNMG1204127N	12,70	12,90	4,76	1,2	5,16	●	●	●			●		
CNMG1204167N	12,70	12,90	4,76	1,6	5,16	●	●				●		
CNMG1606127N	15,88	16,12	6,35	1,2	6,35	●	●	●			●		
CNMG1606167N	15,88	16,12	6,35	1,6	6,35	●	●				●		
CNMG1906087N	19,05	19,34	6,35	0,8	7,93	●					●		
CNMG1906127N	19,05	19,34	6,35	1,2	7,93	●	●	●			●		
CNMG1906167N	19,05	19,34	6,35	1,6	7,93	●	●	●			●		
CNMG2509247N	25,40	25,79	9,53	2,4	9,12			●					



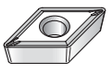


DCGT-1P

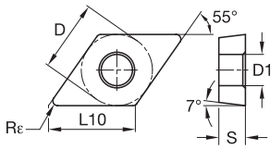
ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
DCGT0702011P	6,35	7,75	2,38	0,1	2,80							●	●
DCGT11T3011P	9,53	11,63	3,97	0,1	4,40							●	●
DCGT1504081P	12,70	15,50	4,76	0,8	5,50							●	

● first choice
○ alternate choice

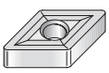
	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
P	●	●	●	○	○	○	○	○
M				●	●		●	●
K						●	○	○
N							○	○
S				○	○		●	●
H								



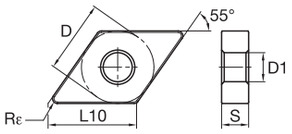
■ DCMT-1P



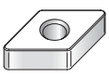
ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
DCMT0702021P	6,35	7,75	2,38	0,2	2,80							●	●
DCMT0702041P	6,35	7,75	2,38	0,4	2,80	●	●		●	●	●	●	●
DCMT11T3021P	9,53	11,63	3,97	0,2	4,40							●	●
DCMT11T3041P	9,53	11,63	3,97	0,4	4,40	●	●		●	●	●	●	●
DCMT11T3081P	9,53	11,63	3,97	0,8	4,40	●	●		●	●	●	●	
DCMT11T3121P	9,53	11,63	3,97	1,2	4,40	●			●		●	●	
DCMT1504041P	12,70	15,50	4,76	0,4	5,50	●	●				●		
DCMT1504081P	12,70	15,50	4,76	0,8	5,50	●	●				●		



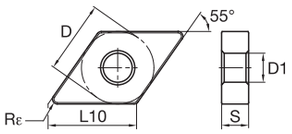
■ DNGP



ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
DNGP150401	12,70	15,50	4,76	0,1	5,16							●	
DNGP150402	12,70	15,50	4,76	0,2	5,16							●	●
DNGP150404	12,70	15,50	4,76	0,4	5,16							●	●
DNGP150408	12,70	15,50	4,76	0,8	5,16							●	●



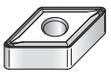
■ DNMA

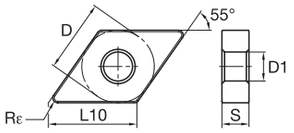


ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
DNMA150408	12,70	15,50	4,76	0,8	5,16						●		
DNMA150412	12,70	15,50	4,76	1,2	5,16						●		
DNMA150608	12,70	15,50	6,35	0,8	5,16						●		
DNMA150612	12,70	15,50	6,35	1,2	5,16						●		

	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
P	●	●	●	○	○	○	○	○
M				●	●		●	●
K	○	○				●	○	○
N							○	○
S				○	○		●	●
H								

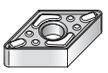
● first choice
○ alternate choice

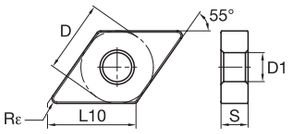




■ DNMG-2P

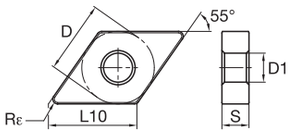
ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
DNMG1504042P	12,70	15,50	4,76	0,4	5,16	●	●		●	●	●	●	●
DNMG1504082P	12,70	15,50	4,76	0,8	5,16	●	●		●	●	●	●	●
DNMG1506042P	12,70	15,50	6,35	0,4	5,16	●	●		●		●	●	●
DNMG1506082P	12,70	15,50	6,35	0,8	5,16	●	●		●		●	●	●
DNMG1506122P	12,70	15,50	6,35	1,2	5,16	●	●		●	●	●	●	





■ DNMG-4P

ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
DNMG1504044P	12,70	15,50	4,76	0,4	5,16				●	●			
DNMG1504084P	12,70	15,50	4,76	0,8	5,16				●	●			
DNMG1506044P	12,70	15,50	6,35	0,4	5,16				●	●			
DNMG1506084P	12,70	15,50	6,35	0,8	5,16				●	●			
DNMG1506124P	12,70	15,50	6,35	1,2	5,16				●	●			

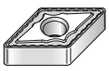


■ DNMG-6P

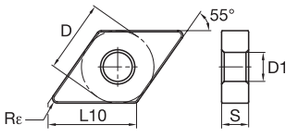
ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
DNMG1104086P	9,53	11,63	4,76	0,8	3,81	●	●			●			
DNMG1504046P	12,70	15,50	4,76	0,4	5,16	●	●		●	●			
DNMG1504086P	12,70	15,50	4,76	0,8	5,16	●	●	●	●	●			
DNMG1504126P	12,70	15,50	4,76	1,2	5,16	●	●		●	●			
DNMG1506046P	12,70	15,50	6,35	0,4	5,16	●	●		●	●			
DNMG1506086P	12,70	15,50	6,35	0,8	5,16	●	●	●	●	●			
DNMG1506126P	12,70	15,50	6,35	1,2	5,16	●	●	●	●	●			
DNMG1906126P	15,88	19,38	6,35	1,2	6,35			●					

	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
P	●	●	●	○	○	○	○	○
M				●	●		●	●
K	○	○				●	○	○
N							○	○
S				○	○		●	●
H								

● first choice
○ alternate choice

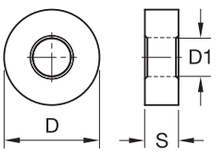


■ DNMG-7N

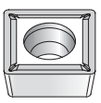


ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
DNMG1504047N	12,70	15,50	4,76	0,4	5,16	●	●						
DNMG1504087N	12,70	15,50	4,76	0,8	5,16	●	●	●			●		
DNMG1504127N	12,70	15,50	4,76	1,2	5,16	●	●	●			●		
DNMG1506087N	12,70	15,50	6,35	0,8	5,16	●	●	●			●		
DNMG1506127N	12,70	15,50	6,35	1,2	5,16	●	●	●			●		
DNMG1906127N	15,88	19,38	6,35	1,2	6,35		●	●					

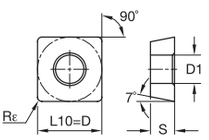
■ RNMG-7N



ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
RNMG12047N	12,70	–	4,76	–	5,16		●				●		
RNMG19067N	19,05	–	6,35	–	7,93	●	●						



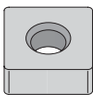
■ SCMT-1P



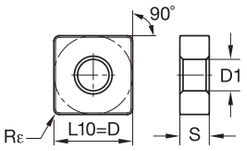
ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
SCMT09T3041P	9,53	9,53	3,97	0,4	4,40	●	●		●	●	●	●	
SCMT09T3081P	9,53	9,53	3,97	0,8	4,40	●	●		●	●	●	●	
SCMT1204041P	12,70	12,70	4,76	0,4	5,50							●	
SCMT1204081P	12,70	12,70	4,76	0,8	5,50	●	●		●	●	●	●	

	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
P	●	●	●	○	○	○	○	○
M				●	●		●	●
K	○	○				●	○	○
N							○	○
S				○	○		●	●
H								

● first choice
○ alternate choice

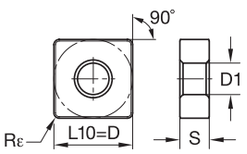


■ SNMA



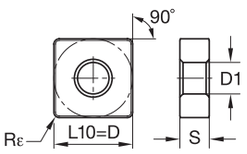
ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
SNMA120408	12,70	12,70	4,76	0,8	5,16						●		
SNMA120412	12,70	12,70	4,76	1,2	5,16						●		
SNMA150612	15,88	15,88	6,35	1,2	6,35						●		
SNMA190612	19,05	19,05	6,35	1,2	7,93						●		

■ SNMG-2P



ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
SNMG0903082P	9,53	9,53	3,18	0,8	3,81	●	●				●	●	
SNMG1204082P	12,70	12,70	4,76	0,8	5,16	●	●		●		●	●	●

■ SNMG-4P

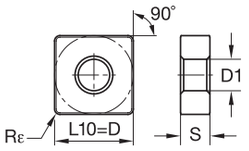


ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
SNMG1204084P	12,70	12,70	4,76	0,8	5,16				●	●			
SNMG1204124P	12,70	12,70	4,76	1,2	5,16				●	●			

● first choice
○ alternate choice

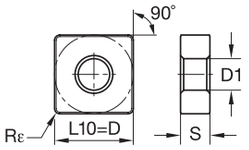
	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
P	●	●	●	○	○	○	○	○
M				●	●		●	●
K	○	○				●	○	○
N							○	○
S				○	○		●	●
H								

■ SNMG-6P

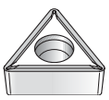


ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
SNMG0903086P	9,53	9,53	3,18	0,8	3,81	●	●						
SNMG1204046P	12,70	12,70	4,76	0,4	5,16	●	●		●	●			
SNMG1204086P	12,70	12,70	4,76	0,8	5,16	●	●	●	●	●			
SNMG1204126P	12,70	12,70	4,76	1,2	5,16	●	●	●	●	●			
SNMG1906126P	19,05	19,05	6,35	1,2	7,93		●	●	●	●			

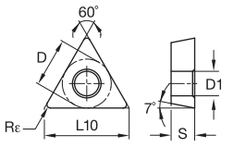
■ SNMG-7N



ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
SNMG1204087N	12,70	12,70	4,76	0,8	5,16	●	●				●		
SNMG1204127N	12,70	12,70	4,76	1,2	5,16	●	●	●			●		
SNMG1204167N	12,70	12,70	4,76	1,6	5,16	●	●	●			●		
SNMG1506127N	15,88	15,88	6,35	1,2	6,35		●	●			●		
SNMG1506167N	15,88	15,88	6,35	1,6	6,35		●	●			●		
SNMG1906127N	19,05	19,05	6,35	1,2	7,93		●	●			●		
SNMG1906167N	19,05	19,05	6,35	1,6	7,93		●	●			●		



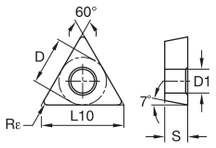
■ TCGT-1P



ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
TCGT1102011P	6,35	11,00	2,38	0,1	2,80							●	●
TCGT1102041P	6,35	11,00	2,38	0,4	2,80							●	●
TCGT16T3021P	9,53	16,50	3,97	0,2	4,40							●	
TCGT16T3041P	9,53	16,50	3,97	0,4	4,40							●	●
TCGT16T3081P	9,53	16,50	3,97	0,8	4,40							●	

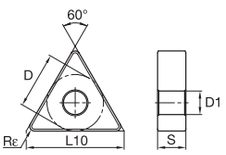
● first choice
○ alternate choice

	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
P	●	●	●	○	○	○	○	○
M				●	●		●	●
K	○	○				●	○	○
N							○	○
S				○	○		●	●
H								



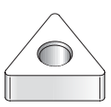
■ TCMT-1P

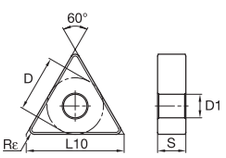
ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
TCMT1102021P	6,35	11,00	2,38	0,2	2,90	●					●	●	
TCMT1102041P	6,35	11,00	2,38	0,4	2,80	●	●		●	●	●	●	
TCMT1102081P	6,35	11,00	2,38	0,8	2,80	●	●				●	●	
TCMT16T3021P	9,53	16,50	3,97	0,2	4,40							●	
TCMT16T3041P	9,53	16,50	3,97	0,4	4,40	●	●		●	●	●	●	
TCMT16T3081P	9,53	16,50	3,97	0,8	4,40	●	●		●	●	●	●	
TCMT16T3121P	9,53	16,50	3,97	1,2	4,40							●	
TCMT2204081P	12,70	22,00	4,76	0,8	5,50	●	●		●	●	●	●	



■ TNGP

ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
TNGP160402	9,53	16,50	4,76	0,2	3,81							●	●
TNGP160404	9,53	16,50	4,76	0,4	3,81							●	●
TNGP160408	9,53	16,50	4,76	0,8	3,81							●	





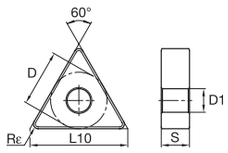
■ TNMA

ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
TNMA160408	9,53	16,50	4,76	0,8	3,81						●		
TNMA160412	9,53	16,50	4,76	1,2	3,81						●		
TNMA220408	12,70	22,00	4,76	0,8	5,16						●		

		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
P		●	●	●	○	○	○	○	○
M					●	●		●	●
K		○	○				●	○	○
N								○	○
S					○	○		●	●
H									

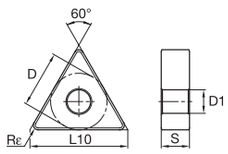
● first choice
○ alternate choice

■ TNMG-2P



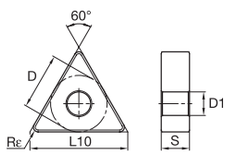
ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
TNMG1604042P	9,53	16,50	4,76	0,4	3,81	●	●		●	●	●	●	●
TNMG1604082P	9,53	16,50	4,76	0,8	3,81	●	●		●		●	●	●
TNMG1604122P	9,53	16,50	4,76	1,2	3,81	●	●		●	●	●	●	
TNMG2204082P	12,70	22,00	4,76	0,8	5,16	●	●		●		●	●	●

■ TNMG-4P



ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
TNMG1604044P	9,53	16,50	4,76	0,4	3,81				●	●			
TNMG1604084P	9,53	16,50	4,76	0,8	3,81				●	●			
TNMG1604124P	9,53	16,50	4,76	1,2	3,81				●	●			
TNMG2204044P	12,70	22,00	4,76	0,4	5,16				●	●			
TNMG2204084P	12,70	22,00	4,76	0,8	5,16				●	●			

■ TNMG-6P

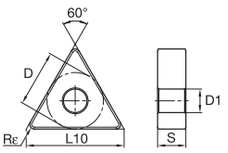


ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
TNMG1604046P	9,53	16,50	4,76	0,4	3,81	●	●		●	●			
TNMG1604086P	9,53	16,50	4,76	0,8	3,81	●	●	●	●	●			
TNMG1604126P	9,53	16,50	4,76	1,2	3,81	●	●		●	●			
TNMG2204046P	12,70	22,00	4,76	0,4	5,16	●	●		●	●			
TNMG2204086P	12,70	22,00	4,76	0,8	5,16	●	●	●	●	●			

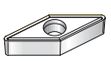
	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
P	●	●	●	○	○	○	○	○
M				●	●		●	●
K	○	○				●	○	○
N							○	○
S				○	○		●	●
H								

● first choice
○ alternate choice

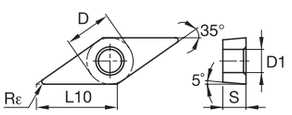
■ TNMG-7N



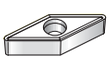
ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
TNMG1604047N	9,53	16,50	4,76	0,4	3,81		●						
TNMG1604087N	9,53	16,50	4,76	0,8	3,81	●	●	●			●		
TNMG1604127N	9,53	16,50	4,76	1,2	3,81	●	●	●			●		
TNMG2204047N	12,70	22,00	4,76	0,4	5,16	●	●						
TNMG2204087N	12,70	22,00	4,76	0,8	5,16	●	●	●			●		
TNMG2204127N	12,70	22,00	4,76	1,2	5,16		●	●			●		
TNMG2706127N	15,88	27,50	6,35	1,2	6,35	●	●	●			●		
TNMG3309247N	19,05	33,00	9,53	2,4	7,93	●	●	●			●		



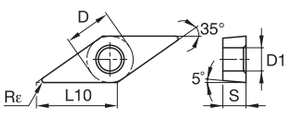
■ VBGT-1P



ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
VBGT1103011P	6,35	11,07	3,18	0,1	2,80							●	●
VBGT1103021P	6,35	11,07	3,18	0,2	2,80							●	●
VBGT1103041P	6,35	11,07	3,18	0,4	2,80							●	
VBGT1604011P	9,53	16,61	4,76	0,1	4,40							●	
VBGT1604021P	9,53	16,61	4,76	0,2	4,40							●	●
VBGT1604041P	9,53	16,61	4,76	0,4	4,40							●	●



■ VBMT-1P

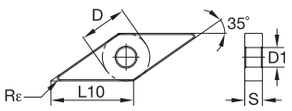


ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
VBMT1103021P	6,35	11,07	3,18	0,2	2,80							●	●
VBMT1103041P	6,35	11,07	3,18	0,4	2,80	●	●		●	●	●	●	●
VBMT1103081P	6,35	11,07	3,18	0,8	2,80	●	●		●		●	●	
VBMT1604021P	9,53	16,61	4,76	0,2	4,40	●				●	●	●	●
VBMT1604041P	9,53	16,61	4,76	0,4	4,40	●	●		●	●	●	●	●
VBMT1604081P	9,53	16,61	4,76	0,8	4,40	●	●		●	●	●	●	●

		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
P		●	●	●	○	○	○	○	○
M					●	●		●	●
K		○	○				●	○	○
N								○	○
S					○	○		●	●
H									

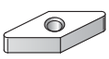
● first choice
○ alternate choice

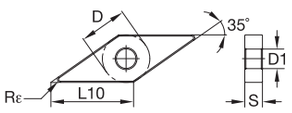
■ VNGP



ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
VNGP160401	9,53	16,61	4,76	0,1	3,81							●	●
VNGP160402	9,53	16,61	4,76	0,2	3,81							●	
VNGP220404	12,70	22,14	4,76	0,4	5,16							●	●
VNGP220408	12,70	22,14	4,76	0,8	5,16							●	●

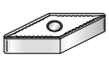
■ VNMA

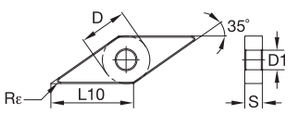




ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
VNMA160408	9,53	16,61	4,76	0,8	3,81						●		

■ VNMG-2P

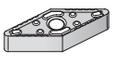




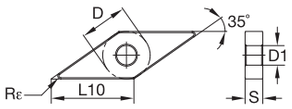
ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
VNMG1604042P	9,53	16,61	4,76	0,4	3,81	●	●		●	●	●	●	●
VNMG1604082P	9,53	16,61	4,76	0,8	3,81	●	●		●		●	●	●

● first choice
○ alternate choice

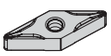
		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
P		●	●	●	○	○	○	○	○
M					●	●		●	●
K		○	○				●	○	○
N								○	○
S					○	○		●	●
H									



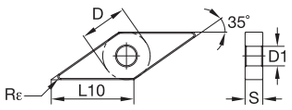
■ VNMG-4P



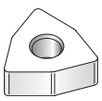
ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
VNMG1604044P	9,53	16,61	4,76	0,4	3,81				●	●			
VNMG1604084P	9,53	16,61	4,76	0,8	3,81				●	●			



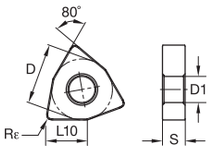
■ VNMG-6P



ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
VNMG1604086P	9,53	16,61	4,76	0,8	3,81	●	●		●	●			



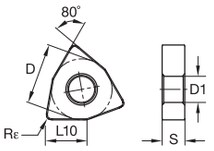
■ WNMA



ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
WNMA060408	9,53	6,52	4,76	0,8	3,81						●		
WNMA080408	12,70	8,69	4,76	0,8	5,16						●		
WNMA080412	12,70	8,69	4,76	1,2	5,16						●		

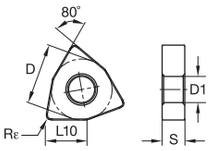
● first choice
○ alternate choice

	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
P	●	●	●	○	○	○	○	○
M				●	●		●	●
K	○	○				●	○	○
N							○	○
S				○	○		●	●
H								



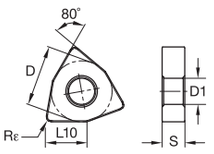
■ WNMG-2P

ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
WNMG0804042P	12,70	8,69	4,76	0,4	5,16	●	●		●	●	●	●	●
WNMG0804082P	12,70	8,69	4,76	0,8	5,16	●	●		●		●	●	●



■ WNMG-4P

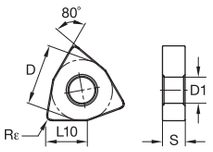
ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
WNMG0804044P	12,70	8,69	4,76	0,4	5,16				●	●			
WNMG0804084P	12,70	8,69	4,76	0,8	5,16				●	●			
WNMG0804124P	12,70	8,69	4,76	1,2	5,16					●			



■ WNMG-6P

ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
WNMG0604086P	9,53	6,52	4,76	0,8	3,81	●	●		●	●			
WNMG0804086P	12,70	8,69	4,76	0,8	5,16	●	●	●	●	●			
WNMG0804126P	12,70	8,69	4,76	1,2	5,16	●	●	●	●	●			

WNMG-7N



● first choice
○ alternate choice

	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
P	●	●	●	○	○	○	○	○
M				●	●		●	●
K	○	○				●	○	○
N							○	○
S				○	○		●	●
H								

ISO catalogue number	D mm	L10 mm	S mm	Rε mm	D1 mm	TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
WNMG0804087N	12,70	8,69	4,76	0,8	5,16	●	●	●			●		
WNMG0804127N	12,70	8,69	4,76	1,2	5,16	●	●	●			●		
WNMG0804167N	12,70	8,69	4,76	1,6	5,16		●	●			●		