

Turning

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New WIDIA™ Victory™ Turning Grades and New Geometries

Specifically engineered multilayer coating provides high-speed capability for finishing to roughing operations. New geometries enhance chip control for better tool life and superior surface finishes.

Victory™

- Reduce cycle times — high speed and feed capability.
- Long tool life — new multilayer coating provides better wear resistance.
- Proven seating — smooth and secure seating surface.
- New violet coating easily identifies flank wear.

Post-coat treatment

- Improves edge toughness.
- Long, predictable tool life.
- Reduces depth-of-cut notching.
- Wide range of applications.

Improved edge toughness

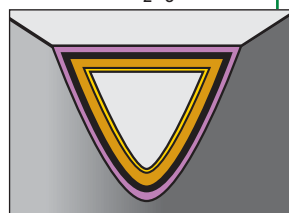
- Provides smooth outer surface to reduce forces, friction, and workpiece sticking.

Post-coat grinding

- Provides secure seating surface.

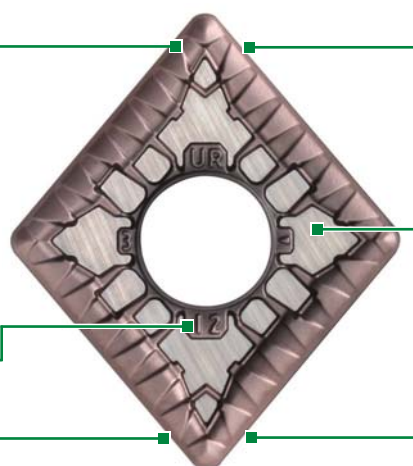
New geometry identification system

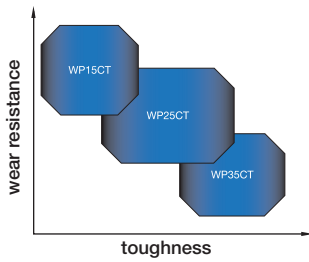
MT-CVD/CVD—
TiN-TiCN-Al₂O₃-ZrCN



Alpha alumina layer

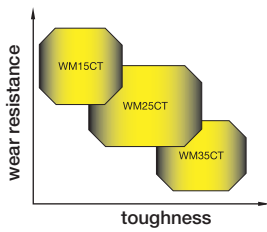
- Provides coating integrity at elevated speeds.
- Higher productivity and dependability at high cutting temperatures.





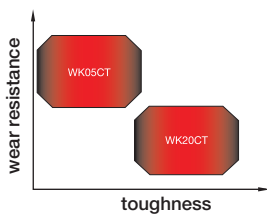
WP Grades for Steel

- Three grades and 11 geometries for use in roughing to finishing operations.
- Increase cutting speed and/or feed rate to gain productivity.



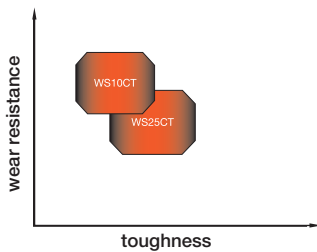
WM Grades for Stainless Steel

- Three grades across 11 geometries for use in roughing to finishing operations.
- Very good balance of wear resistance and toughness for long predictable tool life.



WK Grades for Cast Iron

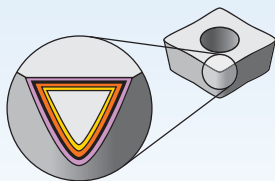
- Two grades to cover all of your cast iron turning operations.
- Increase cutting speed and/or feed rate by up to 30% over similar competitive grades.



WS Grades for High-Temp Alloys

- Two grades for your rough and finish turning operations.
- Very good wear resistance for longer tool life.






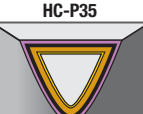
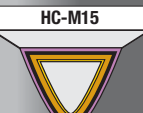
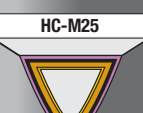
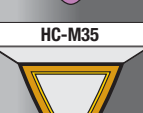





Coatings provide high-speed capability and are engineered for finishing to light roughing.

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

wear resistance \longleftrightarrow toughness

Grade

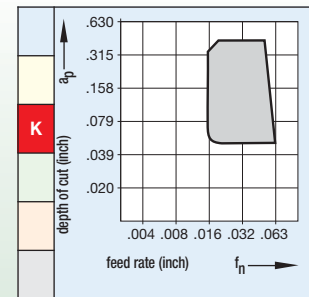
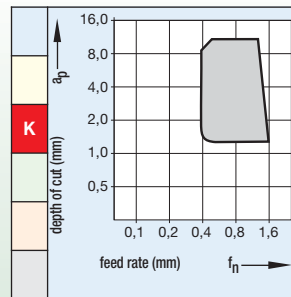
Coating	Grade Description		05	10	15	20	25	30	35	40	45
WP15CT  HC-P15	Coated carbide. MT-CVD/CVD — TiN-TiCN-Al ₂ O ₃ -ZrCN. Good balance of wear resistance and toughness properties. Light and medium machining. For steels.	P									
WP25CT  HC-P25	Coated carbide. MT-CVD/CVD — TiN-TiCN-Al ₂ O ₃ -ZrCN. Good toughness properties. Medium and heavy machining. For steels.	P M									
WP35CT  HC-P35	Coated carbide. MT-CVD/CVD — TiN-TiCN-Al ₂ O ₃ -ZrCN. Proven on all roughing and heavy roughing operations, wet or dry, on interrupted and non-interrupted cuts.	P									
WM15CT  HC-M15	Coated carbide. MT-CVD/CVD — TiN-TiCN-Al ₂ O ₃ -ZrCN. High degree of wear resistance and good resistance to depth-of-cut notching for long tool life in finishing to medium turning applications.	M									
WM25CT  HC-M25	Coated carbide. MT-CVD/CVD — TiN-TiCN-Al ₂ O ₃ -ZrCN. Good balance of wear resistance and toughness properties. Light and medium machining. For austenitic stainless steel AISI series.	M									
WM35CT  HC-M35	Coated carbide. MT-CVD/CVD — TiN-TiCN-Al ₂ O ₃ -ZrCN. Good toughness and wear resistance balance. For medium to roughing operations with light and heavily interrupted cuts.	M									
WK05CT  HC-K05	Coated carbide. MT-CVD/CVD — TiN-TiCN-Al ₂ O ₃ . Increased wear resistance for long tool life at high cutting speeds. Enhanced edge strength against depth-of-cut notching in interrupted cuts.	K									
WK20CT  HC-K20	Coated carbide. MT-CVD/CVD — TiN-TiCN-Al ₂ O ₃ . Light and medium machining. For cast irons.	K									
WS10PT  HC-S10	Coated carbide. PVD — TiAN Nano-multilayer. Light machining. For difficult-to-machine alloys and stainless steels.	M S									
WS25PT  HC-S25	Coated carbide. PVD — TiAN Nano-multilayer. Light and medium machining. For difficult-to-machine alloys and stainless steels.	M S									

Negative Inserts

..MA



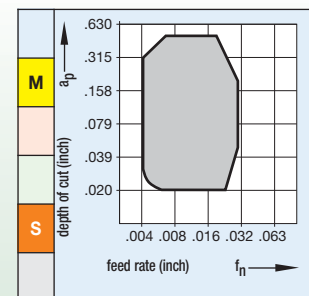
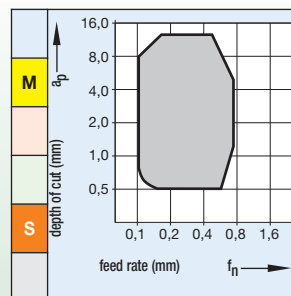
Flat top geometry for machining cast iron.
For finishing to roughing applications.



..NMP



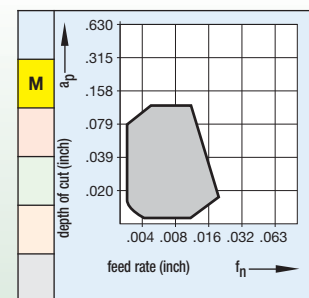
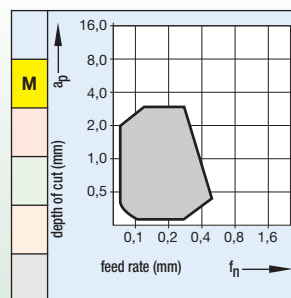
For medium duty machining of tough work materials, such as chrome- and nickel-based alloys. Minimizes tendency for materials to adhere to insert.



CT



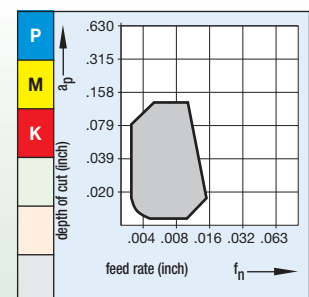
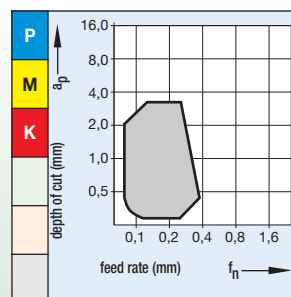
Designed for outward copy turning. Where other geometries produce long chips, the unique distribution of the cut results in good chip control.



FF



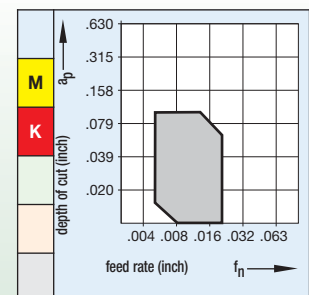
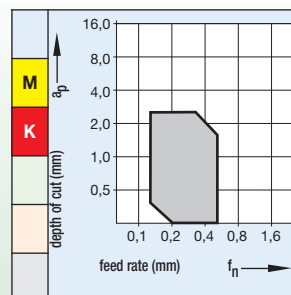
For finish turning, producing smooth, accurate surfaces. Very good chip control, especially at low depths of cut.



FW



Wiper geometry for finishing, when good surface finish is needed using high feed rates. First choice for high-performance finishing.

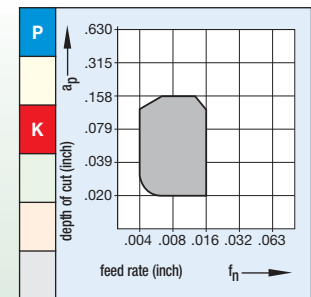
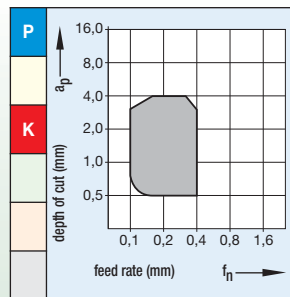


Negative Inserts

ML



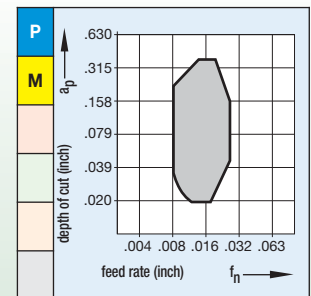
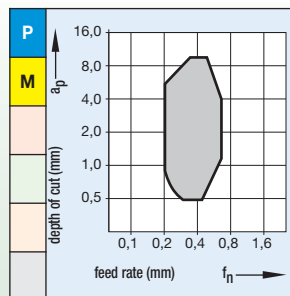
For finishing to medium machining with a negative, stable cutting edge.



MR



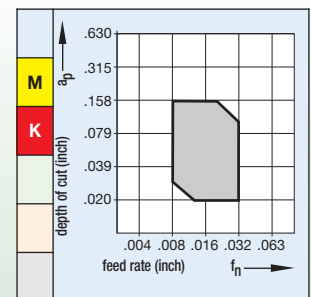
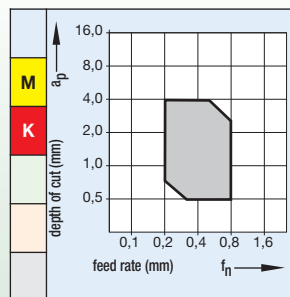
For medium to light roughing of steels, difficult-to-machine high-alloy titanium, and aluminum materials. High strength to deal with heavy chip deformation.



MW



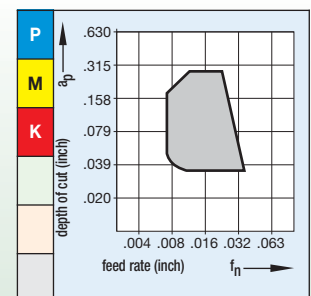
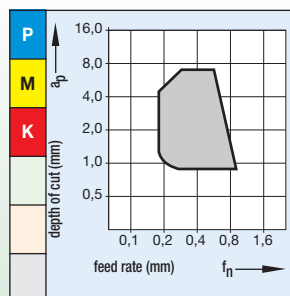
Wiper geometry for light to medium turning with high feed rates. Feed twice as high as with edges with full corner radii to produce same surface finish.



RH



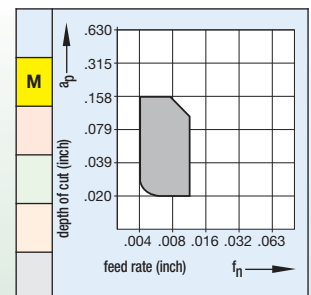
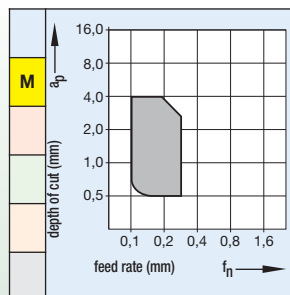
For medium-duty to roughing. Outstanding chip control. High edge strength for interrupted cuts, forging skin, or scale. Preferred for all cast iron such as gray, malleable, and nodular.



UF



For finishing with a positive cutting edge for reduced cutting forces and superior surface quality.

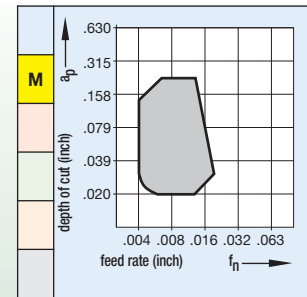
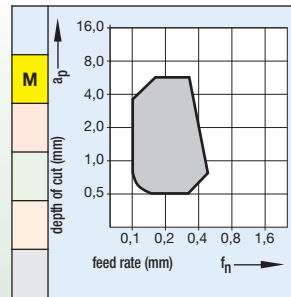


Negative Inserts

UM



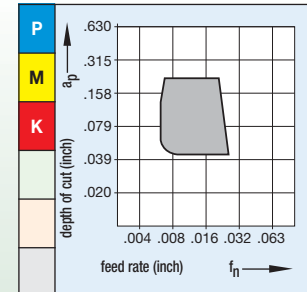
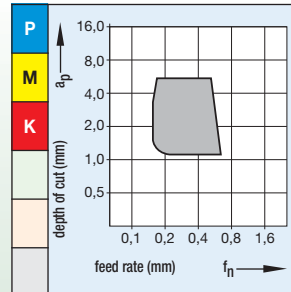
For medium-duty turning operations. Soft-cutting chipbreaker. Used in applications producing varying chip sections, such as profile or copy turning. Good dimensional accuracy. For soft steel materials and stainless steels.



UR

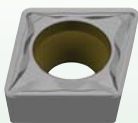


Roughing geometry with smooth chip forming and improved coolant flow for increased tool life. Positive geometry reduces cutting forces and improves depth-of-cut notching resistance. Ideally suitable for stainless steel applications and for smooth machining of steel.

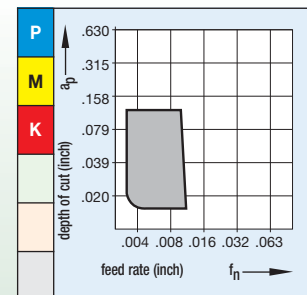
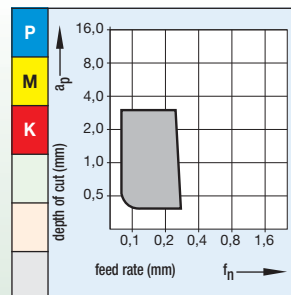


Positive Inserts

FP



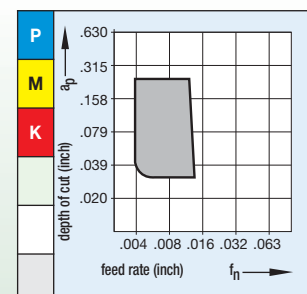
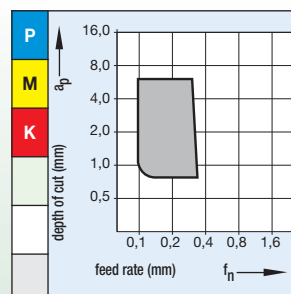
For finishing to medium turning operations with optimal chip control over a wide range of cutting conditions and workpiece materials.



MP

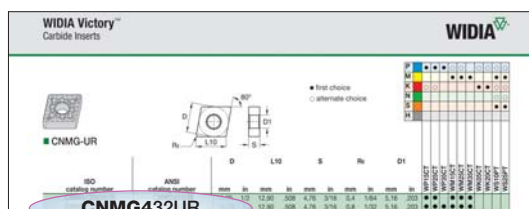


For medium to rough turning with reduced cutting forces and improved chip control for high feed rates. Suitable for high metal removal rates and spindling applications.



How Do Catalog Numbers Work?

Each character in our catalog 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

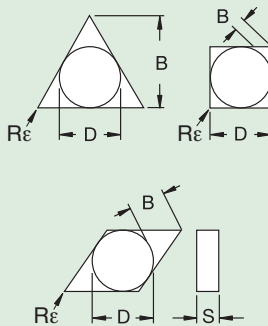
Insert Clearance
Angle

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

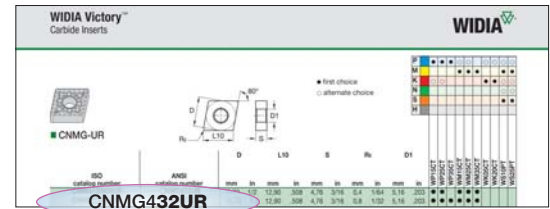
4

Size

		Code for inch cutting edge length "L10"							
inch	"D"	C	D	R	S	T	V	W	
1.2 (5)	5/32	S4	04	03	03	06	—	—	
1.5 (6)	3/16	04	05	04	04	08	08	S3	
1.8 (7)	7/32	05	06	05	05	09	09	03	
—	.236	—	—	06	—	—	—	—	
2	1/4	06	07	06	06	11	11	04	
2.5	5/16	08	09	07	07	13	13	05	
—	.315	—	—	08	—	—	—	—	
3	3/8	09	11	09	09	16	16	06	
—	.394	—	—	10	—	—	—	—	
3.5	7/16	11	13	11	11	19	19	07	
—	.472	—	—	12	—	—	—	—	
4	1/2	12	15	12	12	22	22	08	
4.5	9/16	14	17	14	14	24	24	09	
5	5/8	16	19	15	15	27	27	10	
—	.630	—	—	16	—	—	—	—	
5.5	11/16	17	21	17	17	30	30	11	
6	3/4	19	23	19	19	33	33	13	
—	.787	—	—	20	—	—	—	—	
7	7/8	22	27	22	22	38	38	15	
—	.984	—	—	25	—	—	—	—	
8	1	25	31	25	25	44	44	17	
10	1-1/4	32	38	31	31	54	54	21	
—	1.260	—	—	32	—	—	—	—	

tolerance class	tolerance on "D"	tolerance on "B"	tolerance on "S"
C	±.0010"	±.0005"	±.001"
H	±.0005"	±.0005"	±.001"
E	±.0010"	±.0010"	±.001"
G	±.0010"	±.0010"	±.005"
M	See tables in size column		±.005"
U	See tables in size column		±.005"

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


3

Thickness
S

symbol inch	thickness inch
.5 (1)	1/32
.6	.040
1 (2)	1/16
1.2	5/64
1.5 (3)	3/32
2	1/8
2.5	5/32
3	3/16
3.5	7/32
4	1/4
5	5/16
6	3/8
7	7/16
18	1/2

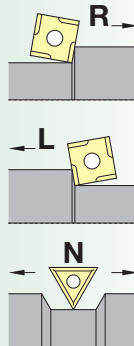
2

Corner
Radius "R_c"

symbol inch	corner radius inch
X0	.0015
0	.004
.5	.008
1	1/64
2	1/32
3	3/64
4	1/16
5	5/64
6	3/32
7	7/64
8	1/8
–	round insert

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

UR

Chipbreaker
(optional)

13 Railroad Light
CT Copy Turning
FF Fine Finishing
FP Finish Positive
FW Finish Wiper

ML Medium Light
MR Medium Roughing
MW Medium Wiper
RH Roughing Heavy
T Negative Land

UF Universal Finishing
UM Universal Medium
UR Universal Roughing
.NMP Sharp Medium

DIN ISO 513	VDI 3323	A Finishing (ap x f = 1 x 0,10)			B Medium (ap x f = 2 x 0,20)			C Roughing (ap x f = 4 x 0,25)			D Heavy Roughing (ap x f = 6 x 0,60)		
Material Group		min Start max			min Start max			min Start max			min Start max		
P	Geometry	FF • ML			ML • UR • MR			UR • MR • RH			RH		
	ap [mm]	0,2 – 2,0			0,8 – 5,0			1,0 – 8,0			2,0 – 15,0		
	f [mm]	0,05 – 0,20			0,16 – 0,40			0,20 – 0,60			0,40 – 1,00		
		WP15CT			WP15CT			WP25CT			WP25CT		
	1	340	490	590	280	400	480	250	360	430	200	290	350
	2	340	480	580	260	370	440	240	340	410	190	270	320
	3	290	420	500	180	260	310	170	240	290	160	230	280
	4	260	370	440	190	270	320	180	250	300	130	190	230
	5	200	280	340	140	200	240	130	190	230	90	130	160
	6	270	390	470	200	290	350	190	270	320	140	200	240
	7	260	370	440	190	270	320	180	250	300	130	190	230
	8	220	320	380	160	230	280	150	210	250	110	150	180
	9	200	280	340	140	200	240	130	190	230	90	130	160
	10	270	390	470	200	290	350	190	270	320	140	200	240
	11	200	280	340	130	190	230	120	170	200	90	130	160
	12	150	220	260	140	200	240	130	180	220	120	170	200
	13.1	130	190	230	120	170	200	110	150	180	100	140	170
	13.2	65	95	115	60	85	100	55	75	90	50	70	85
M	Geometry	FF • UF • FW			UF • UM • MW • .NMP			UM • .NMP • UR • RH			RH		
	ap [mm]	0,2 – 2,0			0,6 – 5,0			0,5 – 6,0			4,0 – 15,0		
	f [mm]	0,05 – 0,20			0,12 – 0,40			0,10 – 0,60			0,4 – 1,0		
		WM15CT			WM15CT			WM25CT			WM35CT		
	14.1	180	250	300	150	220	260	140	190	230	110	150	180
K	Geometry	FF • FW			MW • .NMA • ML			UR • .NMA • RH			UR • RH • .NMA		
	ap [mm]	0,2 – 2,0			1,0 – 8,0			1,0 – 8,0			2,0 – 15,0		
	f [mm]	0,05 – 0,20			0,20 – 0,60			0,2 – 0,6			0,25 – 1,20		
		WK05CT/WK20CT/ WS10PT			WK05CT/WK20CT/ WS10PT			WK05CT/WK20CT			WK05CT/WK20CT		
	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
S	Geometry	.NMP			.NMP • UM			.NMP • UR					
	ap [mm]	0,5 – 4,0			0,5 – 4,0			0,5 – 6,0					
	f [mm]	0,10 – 0,50			0,10 – 0,50			0,10 – 0,60					
		WS10PT/WS25PT			WS10PT/WS25PT/ WM25CT			WM25CT					
	21	55	80	95	49	70	85	42	60	70			
	22	46	65	80	42	60	70	34	49	60			
	23	34	48	60	30	43	50	25	36	43			
	24	21	30	36	19	27	32	16	23	27			
	25	22	32	38	20	29	35	17	24	29			
	26												
	27	42	60	70	39	55	65	32	45	55			

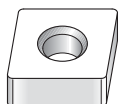
DIN ISO 513	VDI 3323	A Finishing (doc x feed = .0394 x .0039)	B Medium (doc x feed = .0787 x .0079)			C Roughing (d.o.c. x feed = .1575 x .0098)			D Heavy roughing (d.o.c. x feed = .2362 x .0236)				
Material Group													
		min	Start	max	min	Start	max	min	Start	max	min	Start	max
P	Geometry	FF • ML			ML • UR • MR			UR • MR • RH			RH		
	DOC [in]	.0079 – .0787			.0315 – .1969			.0394 – .3150			.0787 – .5906		
	f [in]	.0020 – .0079			.0663 – .0157			.0079 – .0236			.0157 – .0394		
		WP15CT			WP15CT			WP15CT			WP25CT		
	1	1115	1605	1935	915	1310	1570	655	950	1145	590	850	1015
	2	1115	1570	1900	850	1210	1440	620	885	1045	425	620	750
	3	950	1375	1640	590	850	1015	555	785	950	425	590	720
	4	850	1210	1440	620	885	1045	590	820	980	360	490	590
	5	655	915	1115	455	655	785	425	620	750	295	425	520
	6	885	1275	1540	655	950	1145	455	655	785	360	520	620
	7	850	1210	1440	620	885	1045	590	820	980	275	390	455
	8	720	1045	1245	520	750	915	490	685	820	225	325	390
	9	655	915	1115	455	655	785	425	620	750	210	295	360
	10	885	1275	1540	655	950	1145	455	655	785	245	360	425
	11	655	915	1115	425	620	750	390	555	655	210	295	360
	12	490	720	850	455	655	785	425	590	720	360	490	590
M	13.1	425	620	750	390	555	655	360	490	590	275	390	455
	13.2	210	310	375	195	275	325	160	225	275	145	195	225
	Geometry	FF • UF • FW • UM			FF • UM • MW • .NMP			UM • .NMP • UR • RH			RH		
	DOC [in]	.0079 – .0787			.0236 – .1969			.0197 – .2362			.1575 – .5906		
	f [in]	.0020 – .0079			.0047 – .0157			.0039 – .0236			.0157 – .0394		
K		WM15CT			WM15CT			WM25CT			WM35CT		
	14.1	590	820	980	490	720	850	455	620	750	360	490	590
	14.2	455	655	785	425	590	720	360	520	620	275	390	455
	14.3	360	490	590	325	455	555	275	390	455	210	295	360
S	14.4	295	425	520	245	360	425	225	310	360	195	260	310
	Geometry	FF • FW			MW • .NMA • ML			UR • .NMA • RH			UR • RH • .NMA		
	DOC [in]	.0079 – .0787			.0394 – .3150			.0394 – .3150			.0787 – .5906		
	f [in]	.0020 – .0079			.0079 – .0236			.0047 – .0236			.0098 – .0472		
		WK05CT/WK20CT/WS10PT			WK05CT/WK20CT/WS10PT			WK05CT/WK20CT			WK05CT/WK20CT		
	15	950	1345	1605	750	1080	1310	590	850	1015	520	750	915
S	16	750	1080	1310	590	820	980	455	655	785	390	555	655
	17	820	1180	1410	685	980	1180	590	820	980	490	720	850
	18	785	1115	1345	620	885	1045	490	685	820	425	590	720
	19	1115	1605	1935	950	1345	1605	785	1115	1345	720	1015	1210
	20	950	1345	1605	750	1080	1310	590	850	1015	520	750	915
	Geometry	.NMP			.NMP • UM			.NMP • UR					
	DOC [in]	.0197 – .0394			.0197 – .0394			.0197 – .2362					
	f [in]	.0039 – .1969			.0039 – .1969			.0039 – .0236					
		WS10PT/WS25PT			WS10PT/WS25PT/WM25CT			WM25CT					
	21	180	260	310	150	210	260	135	195	225			
S	22	150	210	260	110	160	195	110	160	195			
	23	110	155	195	90	130	155	80	115	140			
	24	65	95	115	50	75	90	50	75	85			
	25	70	100	120	55	80	95	55	75	95			
	26												
	27	135	195	225	110	160	195	100	145	180			

DIN ISO 513	VDI 3323	A Finishing (ap x f = 1 x 0,10)			B Medium (ap x f = 2 x 0,20)						C Roughing (ap x f = 4 x 0,25)					
Material Group		min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
Geometry ap [mm] f [mm]		FP 0,2 – 2,0 0,05 – 0,20			FP • MP 0,3 – 4,5 0,08 – 0,35						MP 0,7 – 5,0 0,12 – 0,40					
P	1 2 3 4 5 6 7 8 9 10 11 12 13.1 13.2	WP15CT			WP15CT			WP15CT/WP25CT			WP25CT			WP35CT		
		340	490	590	280	400	480	250	360	430	200	290	350	180	260	310
		340	480	580	260	370	440	240	340	410	190	270	320	130	190	230
		290	420	500	180	260	310	170	240	290	160	230	280	130	180	220
		260	370	440	190	270	320	180	250	300	130	190	230	110	150	180
		200	280	340	140	200	240	130	190	230	90	130	160	75	110	130
		270	390	470	200	290	350	190	270	320	140	200	240	110	160	190
		260	370	440	190	270	320	180	250	300	130	190	230	110	150	180
		220	320	380	160	230	280	150	210	250	110	150	180	85	120	140
		200	280	340	140	200	240	130	190	230	90	130	160	75	110	130
		270	390	470	200	290	350	190	270	320	140	200	240	110	160	190
		200	280	340	130	190	230	120	170	200	90	130	160	75	110	130
		150	220	260	140	200	240	130	180	220	120	170	200	110	160	190
		130	190	230	120	170	200	110	150	180	100	140	170	90	130	160
		65	95	115	60	85	100	55	75	90	50	70	85	45	65	80
M	14.1 14.2 14.3 14.4	FP 0,2 – 2,0 0,05 – 0,20			FP • MP 0,3 – 4,5 0,08 – 0,35						MP 0,3 – 4,5 0,08 – 0,35					
		WM15CT			WM15CT			WM25CT			WM25CT			WM35CT		
		180	250	300	150	220	260	140	190	230	140	200	240	110	150	180
		140	200	240	130	180	220	110	160	190	110	160	190	85	120	140
		110	150	180	100	140	170	85	120	140	85	120	140	65	90	110
		90	130	160	75	110	130	70	95	110	70	100	120	55	80	95
K	15 16 17 18 19 20	FP 0,2 – 2,0 0,05 – 0,20			FP • MP • .CMW 0,3 – 4,5 0,08 – 0,35						MP • .CMW 1,0 – 8,0 0,1 – 0,5					
		WK05CT/WK20CT			WK05CT/WK20CT			WK20CT			WK20CT					
		290	410	490	230	330	400				180	260	310			
		230	330	400	180	250	300				140	200	240			
		250	360	430	210	300	360				180	250	300			
		240	340	410	190	270	320				150	210	250			
		340	490	590	290	410	490				240	340	410			
		290	410	490	230	330	400				180	260	310			

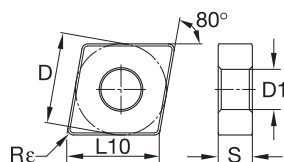
DIN ISO 513	VDI 3323	A Finishing (doc x feed = .0394 x .0039)			B Medium (doc x feed = .0787 x .0079)						C Roughing (doc x feed = .1575 x .0098)					
Material Group																
		min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
P	Geometry	FP			FP • MP						MP					
	DOC [in]	.0079 – .0787			.0118 – .1775						.0276 – .1969					
	f [in]	.0020 – .0079			.0315 – .1378						.0047 – .0157					
		WP15CT			WP15CT			WP15CT/WP25CT			WP25CT			WP35CT		
	1	1115	1605	1935	915	1310	1570	820	1180	1410	655	950	1145	590	850	1015
	2	1115	1570	1900	850	1210	1440	785	1115	1345	620	885	1045	425	620	750
	3	950	1375	1640	590	850	1015	555	785	950	520	750	915	425	590	720
	4	850	1210	1440	620	885	1045	590	820	980	425	620	750	360	490	590
	5	655	915	1115	455	655	785	425	620	750	295	425	520	245	360	425
	6	885	1275	1540	655	950	1145	620	885	1045	455	655	785	360	520	620
	7	850	1210	1440	620	885	1045	590	820	980	425	620	750	360	490	590
	8	720	1045	1245	520	750	915	490	685	820	360	490	590	275	390	455
	9	655	915	1115	455	655	785	425	620	750	295	425	520	245	360	425
	10	885	1275	1540	655	950	1145	620	885	1045	455	655	785	360	520	620
	11	655	915	1115	425	620	750	390	555	655	295	425	520	245	360	425
	12	490	720	850	455	655	785	425	590	720	390	555	655	360	520	620
	13.1	425	620	750	390	555	655	360	490	590	325	455	555	295	425	520
	13.2	210	310	375	195	275	325	180	245	295	160	225	275	145	210	260
M	Geometry	FP			FP • MP						MP					
	DOC [in]	.0079 – .0787			.0118 – .1772						.0118 – .1772					
	f [in]	.0020 – .0079			.0032 – .1378						.0032 – .1378					
		WM15CT			WM15CT			WM25CT			WM25CT			WM35CT		
	14.1	590	820	980	490	720	850	455	620	750	455	655	785	360	490	590
K	14.2	455	655	785	425	590	720	360	520	620	360	520	620	275	390	455
	14.3	360	490	590	325	455	555	275	390	455	275	390	455	210	295	360
	14.4	295	425	520	245	360	425	225	310	360	225	325	390	180	260	310
	Geometry	FP			FP • MP • .CMW						MP • .CMW					
	DOC [in]	.0079 – .0787			.0118 – .1772						.0394 – .3150					
	f [in]	.0020 – .0079			.0032 – .1378						.0039 – .0197					
		WK05CT/WK20CT			WK05CT/WK20CT						WK20CT					
	15	950	1345	1605	750	1080	1310				590	850	1015			
	16	750	1080	1310	590	820	980				455	655	785			
	17	820	1180	1410	685	980	1180				590	820	980			
	18	785	1115	1345	620	885	1045				490	685	820			
	19	1115	1605	1935	950	1345	1605				785	1115	1345			
	20	950	1345	1605	750	1080	1310				590	850	1015			

[illegible]

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1									
		mm	in	mm	in	mm	in	mm	in	mm	in								
CCMW060204	CCMW2151	6,35	1/4	6,45	.254	2,38	3/32	0,4	1/64	2,80	.110						●	●	
CCMW090304	CCMW321	9,53	3/8	9,67	.381	3,18	1/8	0,4	1/64	4,40	.173						●	●	
CCMW090308	CCMW322	9,53	3/8	9,67	.381	3,18	1/8	0,8	1/32	4,40	.173						●	●	
CCMW09T304	CCMW3251	9,53	3/8	9,67	.381	3,97	5/32	0,4	1/64	4,40	.173						●	●	
CCMW09T308	CCMW3252	9,53	3/8	9,67	.381	3,97	5/32	0,8	1/32	4,40	.173						●	●	
CCMW120404	CCMW431	12,70	1/2	12,90	.508	4,76	3/16	0,4	1/64	5,50	.217						●	●	
CCMW120408	CCMW432	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,50	.217						●	●	

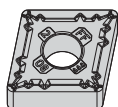


■ CNMA

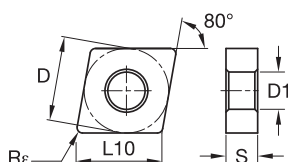


- first choice

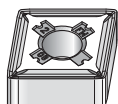
- alternate choice

[illegible][illegible]

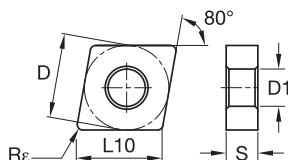
■ CNMG-FF



ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1									
		mm	in	mm	in	mm	in	mm	in	mm	in								
CNMG120404FF	CNMG431FF	12,70	1/2	12,90	.508	4,76	3/16	0,4	1/64	5,16	.203	●			●		●		
CNMG120408FF	CNMG432FF	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,16	.203	●			●		●		
CNMG120412FF	CNMG433FF	12,70	1/2	12,90	.508	4,76	3/16	1,2	3/64	5,16	.203	●			●		●		



■ CNMG-FW

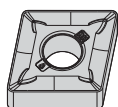


ISO catalog number	ANSI catalog number	D		L10		S		R _ε		D1										
		mm	in	mm	in	mm	in	mm	in	mm	in									
CNMG120404FW	CNMG431FW	12,70	1/2	12,90	.508	4,76	3/16	0,4	1/64	5,16	.203			●	●	●				
CNMG120408FW	CNMG432FW	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,16	.203			●	●	●				
CNMG120412FW	CNMG433FW	12,70	1/2	12,90	.508	4,76	3/16	1,2	3/64	5,16	.203			●	●	●				

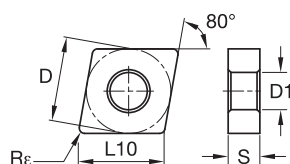
[illegible]

A technical drawing of a square plate with a circular hole in the center. The hole is positioned such that its center is at the intersection of the diagonals of the square. The hole is shaded with a gradient, and the square plate is outlined with a double line.

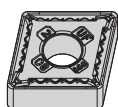
ISO catalog number	ANSI catalog number	D		L10		S		R _E		D1										
		mm	in	mm	in	mm	in	mm	in	mm	in									
CNMG120408MW	CNMG432MW	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,16	.203				●	●				
CNMG120412MW	CNMG433MW	12,70	1/2	12,90	.508	4,76	3/16	1,2	3/64	5,16	.203				●	●				



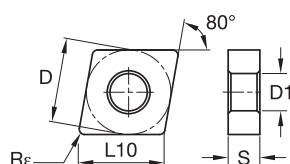
■ CNMG-RH



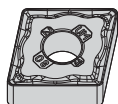
- first choice
- alternate choice

[illegible][illegible]

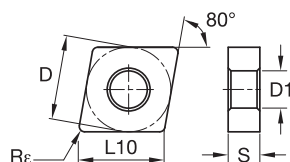
■ CNMG-UF




		D	L10	S	R _E	D1										
ISO catalog number	ANSI catalog number	mm	in	mm	in	mm	in	mm	in	mm	in					
CNMG120404UF	CNMG431UF	12,70	1/2	12,90	.508	4,76	3/16	0,4	1/64	5,16	.203			●	●	
CNMG120408UF	CNMG432UF	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,16	.203			●	●	
CNMG120412UF	CNMG433UF	12,70	1/2	12,90	.508	4,76	3/16	1,2	3/64	5,16	.203			●	●	



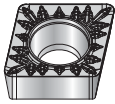
■ CNMG-UM



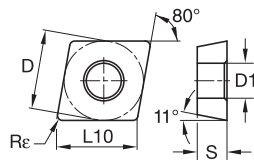
ISO catalog number	ANSI catalog number	D		L10		S		R _ε		D1									
		mm	in	mm	in	mm	in	mm	in	mm	in								
CNMG120404UM	CNMG431UM	12,70	1/2	12,90	.508	4,76	3/16	0,4	1/64	5,16	.203			●	●	●			
CNMG120408UM	CNMG432UM	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,16	.203			●	●	●			
CNMG120412UM	CNMG433UM	12,70	1/2	12,90	.508	4,76	3/16	1,2	3/64	5,16	.203			●	●	●			

[illegible]

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1									
		mm	in	mm	in	mm	in	mm	in	mm	in								
CPMT060202FP	CPMT21505FP	6,35	1/4	6,45	.254	2,38	3/32	0,2	.008	2,80	.110	●	●		●	●		●	
CPMT060204FP	CPMT2151FP	6,35	1/4	6,45	.254	2,38	3/32	0,4	1/64	2,80	.110	●	●		●	●		●	
CPMT060208FP	CPMT2152FP	6,35	1/4	6,45	.254	2,38	3/32	0,8	1/32	2,80	.110	●	●		●	●		●	
CPMT09T302FP	CPMT32505FP	9,53	3/8	9,67	.381	3,97	5/32	0,2	.008	4,40	.173								
CPMT09T304FP	CPMT3251FP	9,53	3/8	9,67	.381	3,97	5/32	0,4	1/64	4,40	.173	●	●		●	●		●	
CPMT09T308FP	CPMT3252FP	9,53	3/8	9,67	.381	3,97	5/32	0,8	1/32	4,40	.173	●	●		●	●		●	



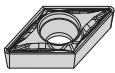
■ CPMT-MP



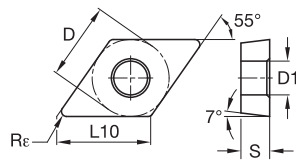
- first choice
- alternate choice

[illegible]

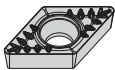
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT
		mm	in	mm	in	mm	in	mm	in	mm	in										
CPMT060208MP	CPMT2152MP	6,35	1/4	6,45	.254	2,38	3/32	0,8	1/32	2,80	.110	●	●								
CPMT09T308MP	CPMT3252MP	9,53	3/8	9,67	.381	3,97	5/32	0,8	1/32	4,40	.173	●	●		●	●			●		
CPMT09T312MP	CPMT3253MP	9,53	3/8	9,67	.381	3,97	5/32	1,2	3/64	4,40	.173		●		●				●		



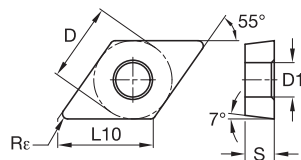
■ DCMT-FP



ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1								
		mm	in	mm	in	mm	in	mm	in	mm	in							
DCMT070202FP	DCMT21505FP	6,35	1/4	7,75	.305	2,38	3/32	0,2	.008	2,80	.110		●			●		
DCMT070204FP	DCMT2151FP	6,35	1/4	7,75	.305	2,38	3/32	0,4	1/64	2,80	.110	●	●			●	●	
DCMT070208FP	DCMT2152FP	6,35	1/4	7,75	.305	2,38	3/32	0,8	1/32	2,80	.110		●			●		
DCMT11T302FP	DCMT32505FP	9,53	3/8	11,63	.458	3,97	5/32	0,2	.008	4,40	.173	●	●			●		
DCMT11T304FP	DCMT3251FP	9,53	3/8	11,63	.458	3,97	5/32	0,4	1/64	4,40	.173	●	●			●		
DCMT11T308FP	DCMT3252FP	9,53	3/8	11,63	.458	3,97	5/32	0,8	1/32	4,40	.173	●	●			●	●	
DCMT11T312FP	DCMT3253FP	9,53	3/8	11,63	.458	3,97	5/32	1,2	3/64	4,40	.173	●	●					
DCMT150404FP	DCMT431FP	12,70	1/2	15,50	.610	4,76	3/16	0,4	1/64	5,50	.217	●	●			●		
DCMT150408FP	DCMT432FP	12,70	1/2	15,50	.610	4,76	3/16	0,8	1/32	5,50	.217	●	●			●		



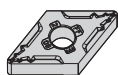
■ DCMT-MP



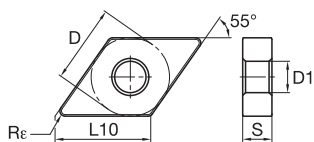
ISO catalog number	ANSI catalog number	D		L10		S		R _e		D1									
		mm	in	mm	in	mm	in	mm	in	mm	in								
DCMT11T304MP	DCMT3251MP	9,53	3/8	11,63	.458	3,97	5/32	0,4	1/64	4,40	.173	●	●					●	
DCMT11T308MP	DCMT3252MP	9,53	3/8	11,63	.458	3,97	5/32	0,8	1/32	4,40	.173	●	●	●	●			●	
DCMT11T312MP	DCMT3253MP	9,53	3/8	11,63	.458	3,97	5/32	1,2	3/64	4,40	.173	●	●						

Technical drawing of a mechanical part showing a cross-section. The drawing includes dimensions: D (outer diameter), 55° (angle), 7° (angle), R_ϵ (fillet radius), $L10$ (length), $D1$ (inner diameter), and S (thickness).

[illegible][illegible]



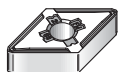
■ DNMG-FF



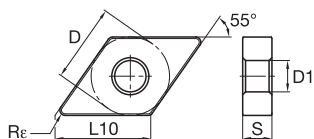
- first choice
- alternate choice

[illegible]

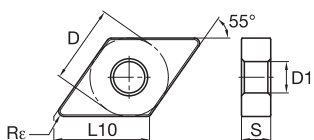
ISO catalog number	ANSI catalog number	D		L10		S		R _ε		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT
		mm	in	mm	in	mm	in	mm	in	mm	in										
DNMG110404FF	DNMG331FF	9,53	3/8	11,63	.458	4,76	3/16	0,4	1/64	3,81	.150	●				●			●		
DNMG110408FF	DNMG332FF	9,53	3/8	11,63	.458	4,76	3/16	0,8	1/32	3,81	.150	●				●			●		
DNMG110412FF	DNMG333FF	9,53	3/8	11,63	.458	4,76	3/16	1,2	3/64	3,81	.150					●					
DNMG150404FF	DNMG431FF	12,70	1/2	15,50	.610	4,76	3/16	0,4	1/64	5,16	.203	●				●					
DNMG150408FF	DNMG432FF	12,70	1/2	15,50	.610	4,76	3/16	0,8	1/32	5,16	.203	●				●			●		
DNMG150412FF	DNMG433FF	12,70	1/2	15,50	.610	4,76	3/16	1,2	3/64	5,16	.203								●		
DNMG150604FF	DNMG441FF	12,70	1/2	15,50	.610	6,35	1/4	0,4	1/64	5,16	.203	●				●			●		
DNMG150608FF	DNMG442FF	12,70	1/2	15,50	.610	6,35	1/4	0,8	1/32	5,16	.203	●				●			●		
DNMG150612FF	DNMG443FF	12,70	1/2	15,50	.610	6,35	1/4	1,2	3/64	5,16	.203	●				●			●		



■ DNMG-FW

[illegible]

■ DNMG-ML

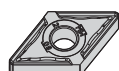


ISO catalog number	ANSI catalog number	D		L10		S		R _e		D1									
		mm	in	mm	in	mm	in	mm	in	mm	in								
DNMG120412ML	DNMG331ML	9,53	3/8	11,63	.458	4,76	3/16	0,4	1/64	3,81	.150	●	●				●	●	
DNMG110408ML	DNMG332ML	9,53	3/8	11,63	.458	4,76	3/16	0,8	1/32	3,81	.150	●	●				●	●	
DNMG110412ML	DNMG333ML	9,53	3/8	11,63	.458	4,76	3/16	1,2	3/64	3,81	.150	●					●	●	
DNMG150404ML	DNMG431ML	12,70	1/2	15,50	.610	4,76	3/16	0,4	1/64	5,16	.203	●	●				●	●	
DNMG150408ML	DNMG432ML	12,70	1/2	15,50	.610	4,76	3/16	0,8	1/32	5,16	.203	●	●				●	●	
DNMG150412ML	DNMG433ML	12,70	1/2	15,50	.610	4,76	3/16	1,2	3/64	5,16	.203	●					●	●	
DNMG150604ML	DNMG441ML	12,70	1/2	15,50	.610	6,35	1/4	0,4	1/64	5,16	.203	●	●				●	●	
DNMG150608ML	DNMG442ML	12,70	1/2	15,50	.610	6,35	1/4	0,8	1/32	5,16	.203	●	●				●	●	
DNMG150612ML	DNMG443ML	12,70	1/2	15,50	.610	6,35	1/4	1,2	3/64	5,16	.203	●	●				●	●	



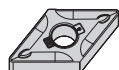
■ DNMG-MR

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT
		mm	in	mm	in	mm	in	mm	in	mm	in										
DNMG110408MR	DNMG332MR	9,53	3/8	11,63	.458	4,76	3/16	0,8	1/32	3,81	.150	●	●	●							
DNMG150404MR	DNMG431MR	12,70	1/2	15,50	.610	4,76	3/16	0,4	1/64	5,16	.203	●	●	●							
DNMG150408MR	DNMG432MR	12,70	1/2	15,50	.610	4,76	3/16	0,8	1/32	5,16	.203	●	●	●							
DNMG150412MR	DNMG433MR	12,70	1/2	15,50	.610	4,76	3/16	1,2	3/64	5,16	.203	●	●	●							
DNMG150604MR	DNMG441MR	12,70	1/2	15,50	.610	6,35	1/4	0,4	1/64	5,16	.203	●	●	●		●					
DNMG150608MR	DNMG442MR	12,70	1/2	15,50	.610	6,35	1/4	0,8	1/32	5,16	.203	●	●	●		●					
DNMG150612MR	DNMG443MR	12,70	1/2	15,50	.610	6,35	1/4	1,2	3/64	5,16	.203	●	●	●		●					



■ DNMG-MW

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT
		mm	in	mm	in	mm	in	mm	in	mm	in										
DNMG150408MW	DNMG432MW	12,70	1/2	15,50	.610	4,76	3/16	0,4	—	5,16	.203					●		●			
DNMG150412MW	DNMG433MW	12,70	1/2	15,50	.610	4,76	3/16	1,2	3/64	5,16	.203					●		●			
DNMG150608MW	DNMG442MW	12,70	1/2	15,50	.610	6,35	1/4	0,4	—	5,16	.203					●		●			
DNMG150612MW	DNMG443MW	12,70	1/2	15,50	.610	6,35	1/4	1,2	3/64	5,16	.203					●		●			

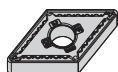


■ DNMG-RH

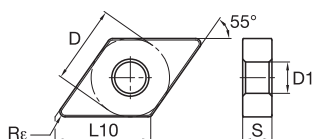
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT
		mm	in	mm	in	mm	in	mm	in	mm	in										
DNMG150408RH	DNMG432RH	12,70	1/2	15,50	.610	4,76	3/16	0,8	1/32	5,16	.203	●	●	●		●		●			
DNMG150412RH	DNMG433RH	12,70	1/2	15,50	.610	4,76	3/16	1,2	3/64	5,16	.203	●	●	●		●		●			
DNMG150608RH	DNMG442RH	12,70	1/2	15,50	.610	6,35	1/4	0,8	1/32	5,16	.203	●	●	●		●		●			
DNMG150612RH	DNMG443RH	12,70	1/2	15,50	.610	6,35	1/4	1,2	3/64	5,16	.203	●	●	●		●		●			
DNMG150616RH	DNMG444RH	12,70	1/2	15,50	.610	6,35	1/4	1,6	1/16	5,16	.203	●	●	●		●		●			
DNMG190612RH	DNMG543RH	15,88	5/8	19,38	.763	6,35	1/4	1,2	3/64	6,35	.250	●	●	●		●		●			

P	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
M	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
K	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

● first choice
○ alternate choice



■ DNMG-UF



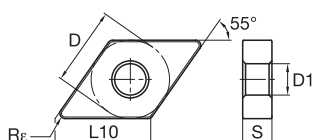
- first choice
- alternate choice

[illegible]

ISO catalog number	ANSI catalog number	D		L10		S		R _e		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT
		mm	in	mm	in	mm	in	mm	in	mm	in									
DNMG110404UF	DNMG331UF	9,53	3/8	11,63	.458	4,76	3/16	0,4	1/64	3,81	.150				●	●				
DNMG110408UF	DNMG332UF	9,53	3/8	11,63	.458	4,76	3/16	0,8	1/32	3,81	.150				●	●				
DNMG150404UF	DNMG431UF	12,70	1/2	15,50	.610	4,76	3/16	0,4	1/64	5,16	.203				●	●				
DNMG150408UF	DNMG432UF	12,70	1/2	15,50	.610	4,76	3/16	0,8	1/32	5,16	.203				●	●				
DNMG150412UF	DNMG433UF	12,70	1/2	15,50	.610	4,76	3/16	1,2	3/64	5,16	.203				●	●				
DNMG150604UF	DNMG441UF	12,70	1/2	15,50	.610	6,35	1/4	0,4	1/64	5,16	.203				●	●				
DNMG150608UF	DNMG442UF	12,70	1/2	15,50	.610	6,35	1/4	0,8	1/32	5,16	.203				●	●				
DNMG150612UF	DNMG443UF	12,70	1/2	15,50	.610	6,35	1/4	1,2	3/64	5,16	.203				●	●				



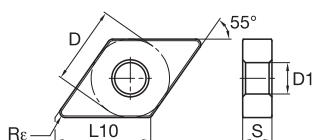
■ DNMG-UM



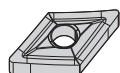
ISO catalog number	ANSI catalog number	D		L10		S		R _ε		D1									
		mm	in	mm	in	mm	in	mm	in	mm	in								
DNMG110404UM	DNMG331UM	9,53	3/8	11,63	.458	4,76	3/16	0,4	1/64	3,81	.150			●	●	●			
DNMG110408UM	DNMG332UM	9,53	3/8	11,63	.458	4,76	3/16	0,8	1/32	3,81	.150			●	●	●			
DNMG110412UM	DNMG333UM	9,53	3/8	11,63	.458	4,76	3/16	1,2	3/64	3,81	.150			●	●	●			
DNMG150404UM	DNMG431UM	12,70	1/2	15,50	.610	4,76	3/16	0,4	1/64	5,16	.203			●	●	●			
DNMG150408UM	DNMG432UM	12,70	1/2	15,50	.610	4,76	3/16	0,8	1/32	5,16	.203			●	●	●			
DNMG150412UM	DNMG433UM	12,70	1/2	15,50	.610	4,76	3/16	1,2	3/64	5,16	.203			●	●	●			
DNMG150604UM	DNMG441UM	12,70	1/2	15,50	.610	6,35	1/4	0,4	1/64	5,16	.203			●	●	●			
DNMG150608UM	DNMG442UM	12,70	1/2	15,50	.610	6,35	1/4	0,8	1/32	5,16	.203			●	●	●			
DNMG150612UM	DNMG443UM	12,70	1/2	15,50	.610	6,35	1/4	1,2	3/64	5,16	.203			●	●	●			
DNMG150616UM	DNMG444UM	12,70	1/2	15,50	.610	6,35	1/4	1,6	1/16	5,16	.203			●	●	●			



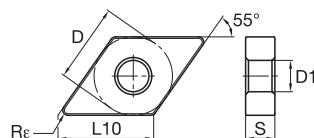
■ DNMG-UR



ISO catalog number	ANSI catalog number	D		L10		S		R _e		D1										
		mm	in	mm	in	mm	in	mm	in	mm	in									
DNMG110408UR	DNMG332UR	9,53	3/8	11,63	.458	4,76	3/16	0,8	1/32	3,81	.150	●	●	●	●	●	●	●	●	
DNMG110412UR	DNMG333UR	9,53	3/8	11,63	.458	4,76	3/16	1,2	3/64	3,81	.150	●	●		●	●	●	●	●	
DNMG150408UR	DNMG432UR	12,70	1/2	15,50	.610	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	●	●	●	●	●	
DNMG150412UR	DNMG433UR	12,70	1/2	15,50	.610	4,76	3/16	1,2	3/64	5,16	.203	●	●	●		●	●	●	●	
DNMG150416UR	DNMG434UR	12,70	1/2	15,50	.610	4,76	3/16	1,6	1/16	5,16	.203		●	●	●	●	●	●	●	
DNMG150608UR	DNMG442UR	12,70	1/2	15,50	.610	6,35	1/4	0,8	1/32	5,16	.203	●	●	●	●	●	●	●	●	
DNMG150612UR	DNMG443UR	12,70	1/2	15,50	.610	6,35	1/4	1,2	3/64	5,16	.203	●	●	●	●	●	●	●	●	
DNMG150616UR	DNMG444UR	12,70	1/2	15,50	.610	6,35	1/4	1,6	1/16	5,16	.203	●	●	●		●	●	●	●	



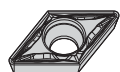
■ DNMP



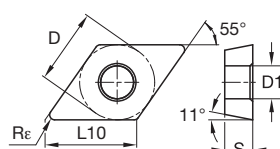
- first choice
○ alternate choice

P	●	●	●	○	○	○	○	○	○	○	○
M	●	●	●	●	●	●	●	●	●	●	●
K	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○

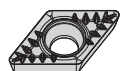
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT
		mm	in	mm	in	mm	in	mm	in	mm	in										
DNMP150404	DNMP431	12,70	1/2	15,50	.610	4,76	3/16	0,4	1/64	5,16	.203				●	●	●			●	
DNMP150408	DNMP432	12,70	1/2	15,50	.610	4,76	3/16	0,8	1/32	5,16	.203				●	●	●			●	
DNMP150412	DNMP433	12,70	1/2	15,50	.610	4,76	3/16	1,2	3/64	5,16	.203				●	●	●				
DNMP150604	DNMP441	12,70	1/2	15,50	.610	6,35	1/4	0,4	1/64	5,16	.203				●	●	●				
DNMP150608	DNMP442	12,70	1/2	15,50	.610	6,35	1/4	0,8	1/32	5,16	.203				●	●	●				
DNMP150612	DNMP443	12,70	1/2	15,50	.610	6,35	1/4	1,2	3/64	5,16	.203				●	●	●				



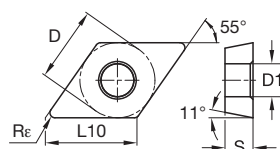
■ DPMT-FP



ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT
		mm	in	mm	in	mm	in	mm	in	mm	in										
DPMT070204FP	DPMT2151FP	6,35	1/4	7,75	.305	2,38	3/32	0,4	1/64	2,80	.110	●	●		●	●					
DPMT11T304FP	DPMT3251FP	9,53	3/8	11,63	.458	3,97	5/32	0,4	1/64	4,40	.173	●	●		●	●					
DPMT11T308FP	DPMT3252FP	9,53	3/8	11,63	.458	3,97	5/32	0,8	1/32	4,40	.173	●	●				●				



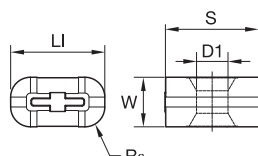
■ DPMT-MP



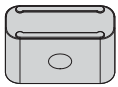
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT
		mm	in	mm	in	mm	in	mm	in	mm	in										
DPMT11T308MP	DPMT3252MP	9,53	3/8	11,63	.458	3,97	5/32	0,8	1/32	4,40	.173	●							●		



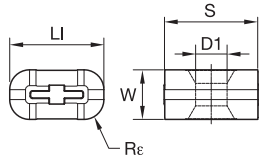
■ LNUX-13



ISO catalog number	ANSI catalog number	W		LI		S		Rε		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT
		mm	in	mm	in	mm	in	mm	in	mm	in										
LNUX19194013	LNUX19194013	10,00	.394	19,05	.750	19,05	3/4	4,0	.158	6,35	.250								●		
LNUX30194013	LNUX30194013	12,00	.472	30,00	1.181	19,05	3/4	4,0	.158	6,35	.250								●		



■ LNUX-T



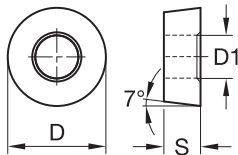
- first choice
- alternate choice

P	B	●	●	●	○	○	○	○	○
M	Y				●	●	●		●
K	R	○	○				●	●	○
N	G								○
S	O							●	●
H									

		W		Ll		S		Rε		D1									
ISO catalog number	ANSI catalog number	mm	in	mm	in	mm	in	mm	in	mm	in	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT
LINUX191940T	LINUX191940T	10,00	.3937	19,05	.750	19,05	3/4	4,0	.158	6,35	.250								●
LINUX301940T	LINUX301940T	12,00	.4724	30,00	1.181	19,05	3/4	4,0	.158	6,35	.250								●



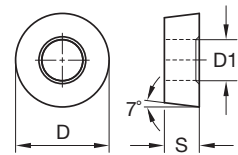
■ RCMT



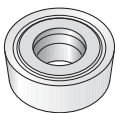
ISO catalog number	ANSI catalog number	D		L10		S		R _ε		D1									
		mm	in	mm	in	mm	in	mm	in	mm	in								
RCMT0602M0	RCMT0602M0	6,00	.236	—	—	2,38	3/32	—	—	2,80	.110	●	●					●	
RCMT0803M0	RCMT0803M0	8,00	.315	—	—	3,18	1/8	—	—	3,40	.134	●	●					●	
RCMT10T3M0	RCMT10T3M0	10,00	.394	—	—	3,97	5/32	—	—	4,40	.173	●	●	●				●	
RCMT1204M0	RCMT1204M0	12,00	.472	—	—	4,76	3/16	—	—	4,40	.173	●	●	●				●	
RCMT1606M0	RCMT1606M0	16,00	.630	—	—	6,35	1/4	—	—	5,50	.217	●		●				●	



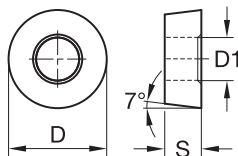
■ RCMT-T























































































		D	L10	S	R6	D1										
ISO catalog number	ANSI catalog number	mm	in	mm	in	mm	in	mm	in	mm	in					
RCMT1606M0T	RCMT1606M0T	16,00	.630	—	—	6,35	1/4	—	—	5,50	.217	●				



■ RCMX



ISO catalog number	ANSI catalog number	D		L10		S		R _e		D1										
		mm	in	mm	in	mm	in	mm	in	mm	in									
RCMX2006M0T	RCMX2006M0T	20,00	.787	—	—	6,35	1/4	—	—	6,50	.256	●	●	●					●	
RCMX2507M0T	RCMX2507M0T	25,00	.984	—	—	7,94	5/16	—	—	7,40	.291	●	●	●					●	
RCMX3209M0T	RCMX3209M0T	32,00	1.260	—	—	9,53	3/8	—	—	9,50	.374	●								

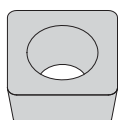
P														
M														
K														
N														
S														
H														

A technical drawing of a square flange. It features a central circular hole and four radial slots, one in each quadrant, extending from the center to the outer edge. The flange has a square outer profile with rounded corners and a central circular opening.

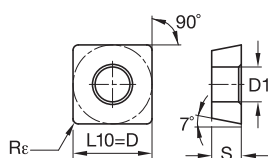
Technical drawing of a square thread plug. The left view shows a square cross-section with a central circular hole. The outer edge has a 90° chamfer. The width of the square is labeled $L_{10}=D$. The radius of the chamfer is labeled R_8 . The right view shows the thread profile, which is a square thread with a 7° lead-in angle. The thread height is labeled D_1 and the thread pitch is labeled S .



WIDIA



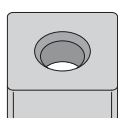
SCMW



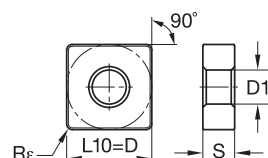
- first choice
- alternate choice

[illegible]

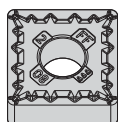
ISO catalog number	ANSI catalog number	D		L10		S		R _ε		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WK05CT	WK20CT	WS10PT
		mm	in	mm	in	mm	in	mm	in	mm	in								
SCMW090304	SCMW321	9,53	3/8	9,53	.375	3,18	1/8	0,4	1/64	4,40	.173						●	●	
SCMW09T308	SCMW3252	9,53	3/8	9,53	.375	3,97	5/32	0,8	1/32	4,40	.173						●	●	
SCMW120408	SCMW432	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,50	.217						●	●	



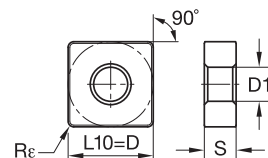
■ SNMA




ISO catalog number	ANSI catalog number	D		L10		S		Rø		D1									
		mm	in	mm	in	mm	in	mm	in	mm	in								
SNMA120408	SNMA432	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,16	.203						●	●	
SNMA120412	SNMA433	12,70	1/2	12,70	.500	4,76	3/16	1,2	3/64	5,16	.203						●	●	
SNMA120416	SNMA434	12,70	1/2	12,70	.500	4,76	3/16	1,6	1/16	5,16	.203						●	●	
SNMA150608	SNMA542	15,88	5/8	15,88	.625	6,35	1/4	0,8	1/32	6,35	.250							●	
SNMA150612	SNMA543	15,88	5/8	15,88	.625	6,35	1/4	1,2	3/64	6,35	.250						●	●	
SNMA150616	SNMA544	15,88	5/8	15,88	.625	6,35	1/4	1,6	1/16	6,35	.250						●	●	
SNMA190612	SNMA643	19,05	3/4	19,05	.750	6,35	1/4	1,2	3/64	7,93	.313						●	●	
SNMA190616	SNMA644	19,05	3/4	19,05	.750	6,35	1/4	1,6	1/16	7,93	.313						●	●	



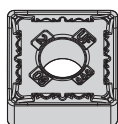
■ SNMG-FF



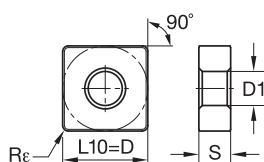
		D		L10		S		Rε		D1								
ISO catalog number	ANSI catalog number	mm	in	mm	in	mm	in	mm	in	mm	in							
SNMG090304FF	SNMG321FF	9,53	3/8	9,53	.375	3,18	1/8	0,4	1/64	3,81	.150	●					●	
SNMG090308FF	SNMG322FF	9,53	3/8	9,53	.375	3,18	1/8	0,8	1/32	3,81	.150	●			●		●	
SNMG120404FF	SNMG431FF	12,70	1/2	12,70	.500	4,76	3/16	0,4	1/64	5,16	.203	●			●		●	
SNMG120408FF	SNMG432FF	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,16	.203	●			●		●	
SNMG120412FF	SNMG433FF	12,70	1/2	12,70	.500	4,76	3/16	1,2	3/64	5,16	.203	●			●		●	
SNMG120416FF	SNMG434FF	12,70	1/2	12,70	.500	4,76	3/16	1,6	1/16	5,16	.203				●			

[illegible]

ISO catalog number	ANSI catalog number	D		L10		S		R6		D1									
		mm	in	mm	in	mm	in	mm	in	mm	in								
SNMG120408RH	SNMG432RH	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	●		●		
SNMG120412RH	SNMG433RH	12,70	1/2	12,70	.500	4,76	3/16	1,2	3/64	5,16	.203	●	●	●	●		●		
SNMG120416RH	SNMG434RH	12,70	1/2	12,70	.500	4,76	3/16	1,6	1/16	5,16	.203	●	●	●	●		●		
SNMG150608RH	SNMG542RH	15,88	5/8	15,88	.625	6,35	1/4	0,8	1/32	6,35	.250	●	●	●	●		●		
SNMG150612RH	SNMG543RH	15,88	5/8	15,88	.625	6,35	1/4	1,2	3/64	6,35	.250	●	●	●	●		●		
SNMG150616RH	SNMG544RH	15,88	5/8	15,88	.625	6,35	1/4	1,6	1/16	6,35	.250	●	●	●	●		●		
SNMG190608RH	SNMG642RH	19,05	3/4	19,05	.750	6,35	1/4	0,8	1/32	7,93	.313	●	●	●	●		●		
SNMG190612RH	SNMG643RH	19,05	3/4	19,05	.750	6,35	1/4	1,2	3/64	7,93	.313	●	●	●	●		●		
SNMG190616RH	SNMG644RH	19,05	3/4	19,05	.750	6,35	1/4	1,6	1/16	7,93	.313	●	●	●	●		●		



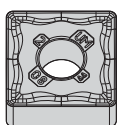
■ SNMG-UF



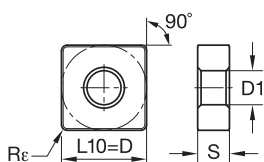
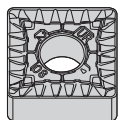
- first choice
- alternate choice

[illegible]

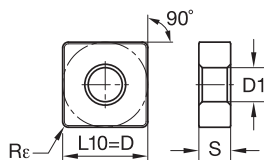
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT
		mm	in	mm	in	mm	in	mm	in	mm	in										
SNMG120404UF	SNMG431UF	12,70	1/2	12,70	.500	4,76	3/16	0,4	1/64	5,16	.203				●	●					
SNMG120408UF	SNMG432UF	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,16	.203				●	●					
SNMG120412UF	SNMG433UF	12,70	1/2	12,70	.500	4,76	3/16	1,2	3/64	5,16	.203				●	●					



■ SNMG-UM

[illegible]

■ SNMG-UR



ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1									
		mm	in	mm	in	mm	in	mm	in	mm	in								
SNMG120408UR	SNMG432UR	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	●	●	●	●	
SNMG120412UR	SNMG433UR	12,70	1/2	12,70	.500	4,76	3/16	1,2	3/64	5,16	.203	●	●	●	●	●	●	●	
SNMG120416UR	SNMG434UR	12,70	1/2	12,70	.500	4,76	3/16	1,6	1/16	5,16	.203	●	●	●	●	●	●	●	
SNMG150612UR	SNMG543UR	15,88	5/8	15,88	.625	6,35	1/4	1,2	3/64	6,35	.250	●	●	●	●	●	●	●	
SNMG150616UR	SNMG544UR	15,88	5/8	15,88	.625	6,35	1/4	1,6	1/16	6,35	.250	●	●	●	●	●	●	●	
SNMG190612UR	SNMG643UR	19,05	3/4	19,05	.750	6,35	1/4	1,2	3/64	7,93	.313	●	●	●	●	●	●	●	
SNMG190616UR	SNMG644UR	19,05	3/4	19,05	.750	6,35	1/4	1,6	1/16	7,93	.313	●	●	●	●	●	●	●	

[illegible]

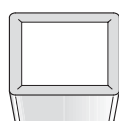
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS05PT
		mm	in	mm	in	mm	in	mm	in	mm	in										
SNMP120408	SNMP432	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,16	.203				●	●	●			●	●
SNMP120412	SNMP433	12,70	1/2	12,70	.500	4,76	3/16	1,2	3/64	5,16	.203				●	●	●			●	●
SNMP150608	SNMP542	15,88	5/8	15,88	.625	6,35	1/4	0,8	1/32	6,35	.250				●	●	●				●
SNMP150612	SNMP543	15,88	5/8	15,88	.625	6,35	1/4	1,2	3/64	6,35	.250				●	●	●				●
SNMP150616	SNMP544	15,88	5/8	15,88	.625	6,35	1/4	1,6	1/16	6,35	.250				●	●	●				●
SNMP190616	SNMP644	19,05	3/4	19,05	.750	6,35	1/4	1,6	1/16	7,93	.313				●	●	●				●



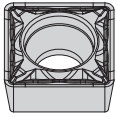
ISO catalog number	ANSI catalog number	D		L10		S		R _e		D1									
		mm	in	mm	in	mm	in	mm	in	mm	in								
SNUN120408	SNU432	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	—	—								●
SNUN120412	SNU433	12,70	1/2	12,70	.500	4,76	3/16	1,2	3/64	—	—								●



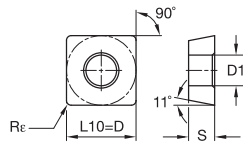
		D	L10	S	Rε	D1											
ISO catalog number	ANSI catalog number	mm	in	mm	in	mm	in	mm	in	mm	in						
SPGN090308	SPG322	9.53	3/8	9.53	.375	3.18	1/8	0.8	1/32	—	—						●
SPGN120308	SPG422	12.70	1/2	12.70	.500	3.18	1/8	0.8	1/32	—	—						●
SPGN120312	SPG423	12.70	1/2	12.70	.500	3.18	1/8	1.2	3/64	—	—						●



		D	L10	S	Rt	D1													
ISO catalog number	ANSI catalog number	mm	in	mm	in	mm	in	mm	in	mm	in								
SPMR090308	SPMR322	9,53	3/8	9,53	.375	3,18	1/8	0,8	1/32	—	—	●	●				●		
SPMR120304	SPMR421	12,70	1/2	12,70	.500	3,18	1/8	0,4	1/64	—	—	●	●				●		
SPMR120308	SPMR422	12,70	1/2	12,70	.500	3,18	1/8	0,8	1/32	—	—	●	●				●		
SPMR120312	SPMR423	12,70	1/2	12,70	.500	3,18	1/8	1,2	3/64	—	—	●	●				●		



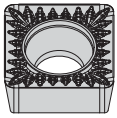
■ SPMT-FP



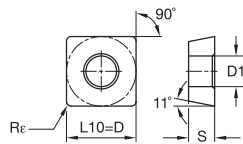
- first choice
- alternate choice

[illegible]

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT
		mm	in	mm	in	mm	in	mm	in	mm	in										
SPMT09T304FP	SPMT3251FP	9,53	3/8	9,53	.375	3,97	5/32	0,4	1/64	4,40	.173	●	●			●			●		
SPMT09T308FP	SPMT3252FP	9,53	3/8	9,53	.375	3,97	5/32	0,8	1/32	4,40	.173	●	●			●			●		



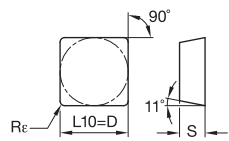
■ SPMT-MP



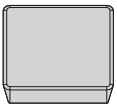
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1									
		mm	in	mm	in	mm	in	mm	in	mm	in								
SPMT09T308MP	SPMT3252MP	9,53	3/8	9,53	.375	3,97	5/32	0,8	1/32	4,40	.173	●	●				●		
SPMT120408MP	SPMT432MP	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,50	.217	●					●		



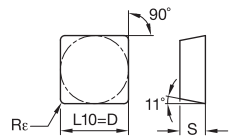
■ SPU



ISO catalog number	ANSI catalog number	D		L10		S		R _ε		D1									
		mm	in	mm	in	mm	in	mm	in	mm	in								
SPUN120304	SPU421	12,70	1/2	12,70	.500	3,18	1/8	0,4	1/64	—	—	●							
SPUN120308	SPU422	12,70	1/2	12,70	.500	3,18	1/8	0,8	1/32	—	—	●						●	
SPUN120312	SPU423	12,70	1/2	12,70	.500	3,18	1/8	1,2	3/64	—	—							●	



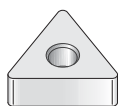
■ SPU-T



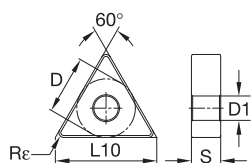
ISO catalog number	ANSI catalog number	D		L10		S		R _ε		D1									
		mm	in	mm	in	mm	in	mm	in	mm	in								
SPUN250620T	SPU845T	25.40	1	25.40	1.000	6.35	1/4	2.0	5/64	—	—	●							

[illegible]

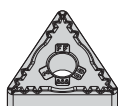
		D		L10		S		Rε		D1									
ISO catalog number	ANSI catalog number	mm	in	mm	in	mm	in	mm	in	mm	in								
TCMW110204	TCMW2151	6,35	1/4	11,00	.433	2,38	3/32	0,4	1/64	2,80	.110						●	●	
TCMW16T304	TCMW3251	9,53	3/8	16,50	.650	3,97	5/32	0,4	1/64	4,40	.173						●	●	



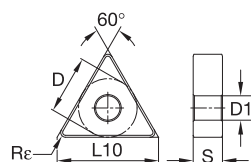
TNMA



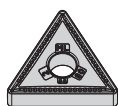
- first choice
- alternate choice

[illegible][illegible]

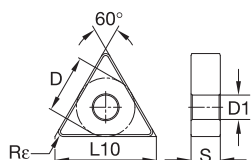
■ TNMG-FF



ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1								
		mm	in	mm	in	mm	in	mm	in	mm	in							
TNMG110304FF	TNMG221FF	6,35	1/4	11,00	.433	3,18	1/8	0,4	1/64	2,26	.089							●
TNMG110308FF	TNMG222FF	6,35	1/4	11,00	.433	3,18	1/8	0,8	1/32	2,26	.089							●
TNMG160404FF	TNMG331FF	9,53	3/8	16,50	.650	4,76	3/16	0,4	1/64	3,81	.150	●			●		●	
TNMG160408FF	TNMG332FF	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150	●			●		●	
TNMG160412FF	TNMG333FF	9,53	3/8	16,50	.650	4,76	3/16	1,2	3/64	3,81	.150	●			●		●	



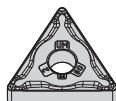
■ TNMG-ML



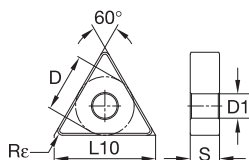
ISO catalog number	ANSI catalog number	D		L10		S		R _E		D1									
		mm	in	mm	in	mm	in	mm	in	mm	in								
TNMG110304ML	TNMG221ML	6,35	1/4	11,00	.433	3,18	1/8	0,4	1/64	2,26	.089							●	
TNMG110308ML	TNMG222ML	6,35	1/4	11,00	.433	3,18	1/8	0,8	1/32	2,26	.089							●	
TNMG160404ML	TNMG331ML	9,53	3/8	16,50	.650	4,76	3/16	0,4	1/64	3,81	.150	●	●				●	●	
TNMG160408ML	TNMG332ML	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150	●	●				●	●	
TNMG160412ML	TNMG333ML	9,53	3/8	16,50	.650	4,76	3/16	1,2	3/64	3,81	.150	●	●				●	●	
TNMG220404ML	TNMG431ML	12,70	1/2	22,00	.866	4,76	3/16	0,4	1/64	5,16	.203							●	
TNMG220408ML	TNMG432ML	12,70	1/2	22,00	.866	4,76	3/16	0,8	1/32	5,16	.203	●	●						

[illegible]

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1									
		mm	in	mm	in	mm	in	mm	in	mm	in								
TNMG160404UF	TNMG331UF	9,53	3/8	16,50	.650	4,76	3/16	0,4	1/64	3,81	.150			●	●				
TNMG160408UF	TNMG332UF	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150			●	●				
TNMG160412UF	TNMG333UF	9,53	3/8	16,50	.650	4,76	3/16	1,2	3/64	3,81	.150			●	●				
TNMG220404UF	TNMG431UF	12,70	1/2	22,00	.866	4,76	3/16	0,4	1/64	5,16	.203			●	●				
TNMG220408UF	TNMG432UF	12,70	1/2	22,00	.866	4,76	3/16	0,8	1/32	5,16	.203			●	●				



■ TNMG-UM



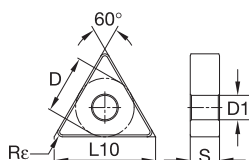
- first choice
- alternate choice

[illegible]

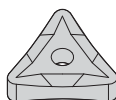
ISO catalog number	ANSI catalog number	D		L10		S		R _ε		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT
		mm	in	mm	in	mm	in	mm	in	mm	in										
TNMG160404UM	TNMG331UM	9,53	3/8	16,50	.650	4,76	3/16	0,4	1/64	3,81	.150				●	●	●				
TNMG160408UM	TNMG332UM	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150				●	●	●				
TNMG160412UM	TNMG333UM	9,53	3/8	16,50	.650	4,76	3/16	1,2	3/64	3,81	.150				●	●	●				
TNMG160416UM	TNMG334UM	9,53	3/8	16,50	.650	4,76	3/16	1,6	1/16	3,81	.150				●	●	●				
TNMG220404UM	TNMG431UM	12,70	1/2	22,00	.866	4,76	3/16	0,4	1/64	5,16	.203				●	●	●				
TNMG220408UM	TNMG432UM	12,70	1/2	22,00	.866	4,76	3/16	0,8	1/32	5,16	.203				●	●	●				
TNMG220412UM	TNMG433UM	12,70	1/2	22,00	.866	4,76	3/16	1,2	3/64	5,16	.203				●	●					



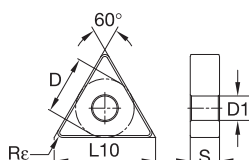
■ TNMG-UR



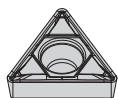
ISO catalog number	ANSI catalog number	D		L10		S		R _e		D1									
		mm	in	mm	in	mm	in	mm	in	mm	in								
TNMG160408UR	TNMG332UR	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150	●	●	●	●	●	●	●	●
TNMG160412UR	TNMG333UR	9,53	3/8	16,50	.650	4,76	3/16	1,2	3/64	3,81	.150	●	●	●	●	●	●	●	●
TNMG160416UR	TNMG334UR	9,53	3/8	16,50	.650	4,76	3/16	1,6	1/16	3,81	.150	●	●	●	●	●	●	●	●
TNMG220408UR	TNMG432UR	12,70	1/2	22,00	.866	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	●	●	●	●	●
TNMG220412UR	TNMG433UR	12,70	1/2	22,00	.866	4,76	3/16	1,2	3/64	5,16	.203	●	●	●	●	●	●	●	●
TNMG220416UR	TNMG434UR	12,70	1/2	22,00	.866	4,76	3/16	1,6	1/16	5,16	.203	●	●	●	●	●	●	●	●
TNMG270612UR	TNMG543UR	15,88	5/8	27,50	1.083	6,35	1/4	1,2	3/64	6,35	.250	●	●	●	●	●	●	●	●
TNMG270616UR	TNMG544UR	15,88	5/8	27,50	1.083	6,35	1/4	1,6	1/16	6,35	.250	●	●	●	●	●	●	●	●



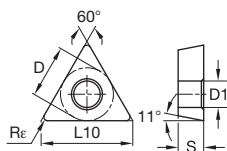
TNMP



		D	L10	S	Rε	D1												
ISO catalog number	ANSI catalog number	mm	in	mm	in	mm	in	mm	in	mm	in							
TNMP160404	TNMP331	9,53	3/8	16,50	.650	4,76	3/16	0,4	1/64	3,81	.150			●	●	●		●
TNMP160408	TNMP332	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150			●	●	●		●
TNMP160412	TNMP333	9,53	3/8	16,50	.650	4,76	3/16	1,2	3/64	3,81	.150			●	●	●		●
TNMP220404	TNMP431	12,70	1/2	22,00	.866	4,76	3/16	0,4	1/64	5,16	.203			●	●	●		●
TNMP220408	TNMP432	12,70	1/2	22,00	.866	4,76	3/16	0,8	1/32	5,16	.203			●	●	●		●
TNMP220412	TNMP433	12,70	1/2	22,00	.866	4,76	3/16	1,2	3/64	5,16	.203			●	●	●		●



■ TPMT-FP



- first choice

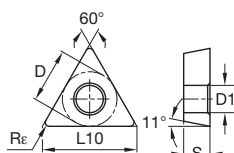
- alternate choice

[illegible]

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS20PT
		mm	in	mm	in	mm	in	mm	in	mm	in										
TPMT090208FP	TPMT18152FP	5,56	7/32	9,63	.379	2,38	3/32	0,8	1/32	2,50	.098	●	●		●	●		●			
TPMT110204FP	TPMT2151FP	6,35	1/4	11,00	.433	2,38	3/32	0,4	1/64	2,80	.110	●	●		●	●		●			
TPMT110208FP	TPMT2152FP	6,35	1/4	11,00	.433	2,38	3/32	0,8	1/32	2,80	.110	●	●		●	●		●			
TPMT16T304FP	TPMT3251FP	9,53	3/8	16,50	.650	3,97	5/32	0,4	1/64	4,40	.173	●	●		●	●		●			
TPMT16T308FP	TPMT3252FP	9,53	3/8	16,50	.650	3,97	5/32	0,8	1/32	4,40	.173	●	●		●	●		●			
TPMT16T312FP	TPMT3253FP	9,53	3/8	16,50	.650	3,97	5/32	1,2	3/64	4,40	.173				●	●					
TPMT220408FP	TPMT432FP	12,70	1/2	22,00	.866	4,76	3/16	0,8	1/32	5,50	.217		●								



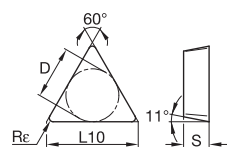
■ TPMT-MP



ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1									
		mm	in	mm	in	mm	in	mm	in	mm	in								
TPMT110208MP	TPMT2152MP	6,35	1/4	11,00	.433	2,38	3/32	0,8	1/32	2,80	.110	●						●	
TPMT16T308MP	TPMT3252MP	9,53	3/8	16,50	.650	3,97	5/32	0,8	1/32	4,40	.173	●						●	
TPMT16T312MP	TPMT3253MP	9,53	3/8	16,50	.650	3,97	5/32	1,2	3/64	4,40	.173	●						●	



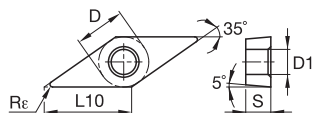
■ TPU



ISO catalog number	ANSI catalog number	D		L10		S		R _e		D1									
		mm	in	mm	in	mm	in	mm	in	mm	in								
TPUN110304	TPU221	6,35	1/4	11,00	.433	3,18	1/8	0,4	1/64	—	—	●	●						
TPUN110308	TPU222	6,35	1/4	11,00	.433	3,18	1/8	0,8	1/32	—	—	●							
TPUN160304	TPU321	9,53	3/8	16,50	.650	3,18	1/8	0,4	1/64	—	—	●	●					●	
TPUN160308	TPU322	9,53	3/8	16,50	.650	3,18	1/8	0,8	1/32	—	—	●	●					●	
TPUN160312	TPU323	9,53	3/8	16,50	.650	3,18	1/8	1,2	3/64	—	—	●	●					●	
TPUN220408	TPU432	12,70	1/2	22,00	.866	4,76	3/16	0,8	1/32	—	—	●	●	●					
TPUN220412	TPU433	12,70	1/2	22,00	.866	4,76	3/16	1,2	3/64	—	—	●	●					●	



■ VBMT



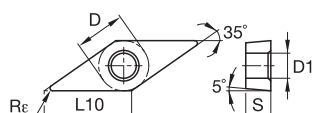
● first choice
○ alternate choice

P	●	●	●	○	○	○	○	○	○	○	○
M	●	●	●	●	●	●	●	●	●	●	●
K	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT
		mm	in	mm	in	mm	in	mm	in	mm	in										
VBMT160404	VBMT331	9,53	3/8	16,61	.654	4,76	3/16	0,4	1/64	4,40	.173	●	●	●							
VBMT160408	VBMT332	9,53	3/8	16,61	.654	4,76	3/16	0,8	1/32	4,40	.173	●	●	●							
VBMT160412	VBMT333	9,53	3/8	16,61	.654	4,76	3/16	1,2	3/64	4,40	.173	●	●	●							



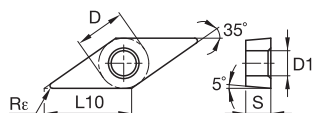
■ VBMT-FP



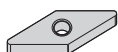
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT
		mm	in	mm	in	mm	in	mm	in	mm	in										
VBMT110302FP	VBMT2205FP	6,35	1/4	11,07	.436	3,18	1/8	0,2	.008	2,80	.110	●	●	●							
VBMT110304FP	VBMT221FP	6,35	1/4	11,07	.436	3,18	1/8	0,4	1/64	2,80	.110	●	●	●							
VBMT110308FP	VBMT222FP	6,35	1/4	11,07	.436	3,18	1/8	0,8	1/32	2,80	.110	●	●	●							
VBMT160402FP	VBMT3305FP	9,53	3/8	16,61	.654	4,76	3/16	0,2	.008	4,40	.173	●	●	●							
VBMT160404FP	VBMT331FP	9,53	3/8	16,61	.654	4,76	3/16	0,4	1/64	4,40	.173	●	●	●				●			
VBMT160408FP	VBMT332FP	9,53	3/8	16,61	.654	4,76	3/16	0,8	1/32	4,40	.173	●	●	●				●			
VBMT160412FP	VBMT333FP	9,53	3/8	16,61	.654	4,76	3/16	1,2	3/64	4,40	.173	●	●	●							



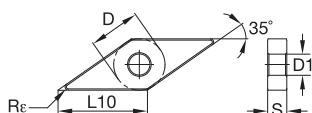
■ VBMT-MP



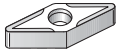
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT
		mm	in	mm	in	mm	in	mm	in	mm	in										
VBMT160404MP	VBMT331MP	9,53	3/8	16,61	.654	4,76	3/16	0,4	1/64	4,40	.173	●	●	●				●			
VBMT160408MP	VBMT332MP	9,53	3/8	16,61	.654	4,76	3/16	0,8	1/32	4,40	.173	●	●	●				●			



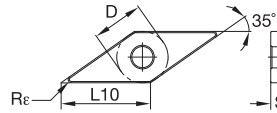
■ VNMA



ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT
		mm	in	mm	in	mm	in	mm	in	mm	in										
VNMA160408	VNMA332	9,53	3/8	16,61	.654	4,76	3/16	0,8	1/32	3,81	.150							●	●		



VNMG



- first choice

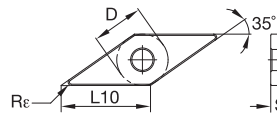
- alternate choice

[illegible]

		D	L10	S	Rε	D1	WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT
ISO catalog number	ANSI catalog number	mm	in	mm	in	mm	in	mm	in	mm	in					
VNMG12T308	VNMG12T308	7,14	9/32	12,45	.490	3,97	5/32	0,8	1/32	3,65	.144			●		



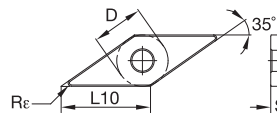
■ VNMG-FF



ISO catalog number	ANSI catalog number	D		L10		S		R _ε		D1								
		mm	in	mm	in	mm	in	mm	in	mm	in							
VNMG160404FF	VNMG331FF	9,53	3/8	16,61	.654	4,76	3/16	0,4	1/64	3,81	.150	●				●		
VNMG160408FF	VNMG332FF	9,53	3/8	16,61	.654	4,76	3/16	0,8	1/32	3,81	.150	●				●		



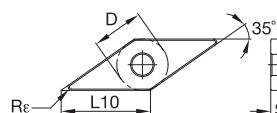
■ VNMG-ML



ISO catalog number	ANSI catalog number	D		L10		S		R _ε		D1									
		mm	in	mm	in	mm	in	mm	in	mm	in								
VNMG160404ML	VNMG331ML	9,53	3/8	16,61	.654	4,76	3/16	0,4	1/64	3,81	.150	●	●					●	●
VNMG160408ML	VNMG332ML	9,53	3/8	16,61	.654	4,76	3/16	0,8	1/32	3,81	.150	●	●					●	●



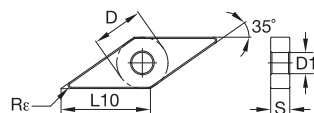
■ **VNMG-MR**



ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1									
		mm	in	mm	in	mm	in	mm	in	mm	in								
VNMG160408MR	VNMG332MR	9,53	3/8	16,61	.654	4,76	3/16	0,8	1/32	3,81	.150	●	●	●					



■ VNMG-RH



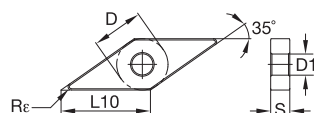
- first choice
- alternate choice

P	●	●	●	○	○	○	○	○	○	○	○
M	●	●	●	●	●	●	●	●	●	●	●
K	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT
		mm	in	mm	in	mm	in	mm	in	mm	in										
VNMG160408RH	VNMG332RH	9,53	3/8	16,61	.654	4,76	3/16	0,8	1/32	3,81	.150	●	●	●							
VNMG220408RH	VNMG432RH	12,70	1/2	22,14	.872	4,76	3/16	0,8	1/32	5,16	.203	●	●	●							
VNMG220412RH	VNMG433RH	12,70	1/2	22,14	.872	4,76	3/16	1,2	3/64	5,16	.203	●	●	●							



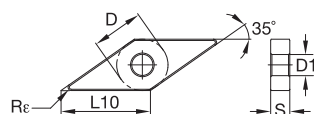
■ VNMG-UF



ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT
		mm	in	mm	in	mm	in	mm	in	mm	in										
VNMG160404UF	VNMG331UF	9,53	3/8	16,61	.654	4,76	3/16	0,4	1/64	3,81	.150				●	●					
VNMG160408UF	VNMG332UF	9,53	3/8	16,61	.654	4,76	3/16	0,8	1/32	3,81	.150				●	●					



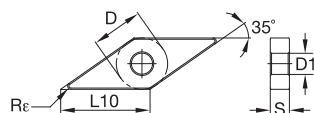
■ VNMG-UR



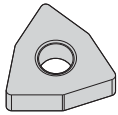
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT
		mm	in	mm	in	mm	in	mm	in	mm	in										
VNMG160408UR	VNMG332UR	9,53	3/8	16,61	.654	4,76	3/16	0,8	1/32	3,81	.150	●	●	●	●	●					
VNMG160412UR	VNMG333UR	9,53	3/8	16,61	.654	4,76	3/16	1,2	3/64	3,81	.150	●	●	●	●	●					



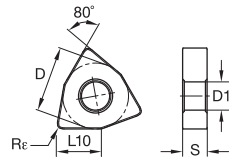
■ VNMP



ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT
		mm	in	mm	in	mm	in	mm	in	mm	in										
VNMP160404	VNMP331	9,53	3/8	16,61	.654	4,76	3/16	0,4	1/64	3,81	.150										●
VNMP160408	VNMP332	9,53	3/8	16,61	.654	4,76	3/16	0,8	1/32	3,81	.150										●



WNMA



- first choice

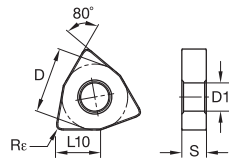
- alternate choice

[illegible]

ISO catalog number	ANSI catalog number	D		L10		S		R _ε		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT
		mm	in	mm	in	mm	in	mm	in	mm	in										
WNMA060408	WNMA332	9,53	3/8	6,52	.257	4,76	3/16	0,8	1/32	3,81	.150							●	●		
WNMA060412	WNMA333	9,53	3/8	6,52	.257	4,76	3/16	1,2	3/64	3,81	.150							●	●		
WNMA080408	WNMA432	12,70	1/2	8,69	.342	4,76	3/16	0,8	1/32	5,16	.203							●	●		
WNMA080412	WNMA433	12,70	1/2	8,69	.342	4,76	3/16	1,2	3/64	5,16	.203							●	●		
WNMA080416	WNMA434	12,70	1/2	8,69	.342	4,76	3/16	1,6	1/16	5,16	.203							●	●		



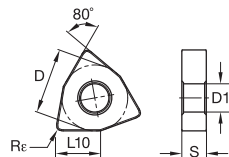
■ WNMG-FF



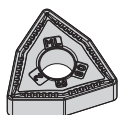
		D		L10		S		R ₈		D1									
ISO catalog number	ANSI catalog number	mm	in	mm	in	mm	in	mm	in	mm	in								
WNMG060404FF	WNMG331FF	9,53	3/8	6,52	.257	4,76	3/16	0,4	1/64	3,81	.150	●				●		●	
WNMG060408FF	WNMG332FF	9,53	3/8	6,52	.257	4,76	3/16	0,8	1/32	3,81	.150	●						●	
WNMG080404FF	WNMG431FF	12,70	1/2	8,69	.342	4,76	3/16	0,4	1/64	5,16	.203	●				●			
WNMG080408FF	WNMG432FF	12,70	1/2	8,69	.342	4,76	3/16	0,8	1/32	5,16	.203	●				●			



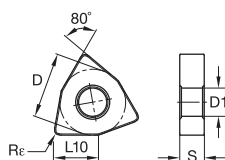
■ WNMG-FW



		D	L10	S	R8	D1											
ISO catalog number	ANSI catalog number	mm	in	mm	in	mm	in	mm	in	mm	in						
WNMG080404FW	WNMG431FW	12,70	1/2	8,69	.342	4,76	3/16	0,4	1/64	5,16	.203			●	●	●	
WNMG080408FW	WNMG432FW	12,70	1/2	8,69	.342	4,76	3/16	0,8	1/32	5,16	.203			●	●	●	
WNMG080412FW	WNMG433FW	12,70	1/2	8,69	.342	4,76	3/16	1,2	3/64	5,16	.203			●	●	●	



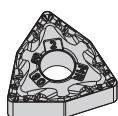
■ WNMG-ML



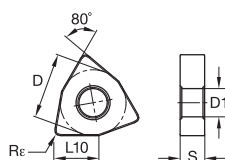
- first choice
- alternate choice

[illegible]

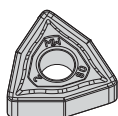
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT
		mm	in	mm	in	mm	in	mm	in	mm	in										
WNMG060404ML	WNMG331ML	9,53	3/8	6,52	.257	4,76	3/16	0,4	1/64	3,81	.150	●	●					●	●		
WNMG060408ML	WNMG332ML	9,53	3/8	6,52	.257	4,76	3/16	0,8	1/32	3,81	.150	●	●					●	●		
WNMG080404ML	WNMG431ML	12,70	1/2	8,69	.342	4,76	3/16	0,4	1/64	5,16	.203	●	●					●	●		
WNMG080408ML	WNMG432ML	12,70	1/2	8,69	.342	4,76	3/16	0,8	1/32	5,16	.203	●	●					●	●		



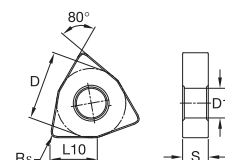
■ WNMG-MR

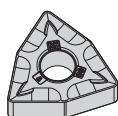


ISO catalog number	ANSI catalog number	D		L10		S		R _ε		D1										
		mm	in	mm	in	mm	in	mm	in	mm	in									
WNMG080408MR	WNMG432MR	12,70	1/2	8,69	.342	4,76	3/16	0,8	1/32	5,16	.203	●	●	●		●	●			
WNMG080412MR	WNMG433MR	12,70	1/2	8,69	.342	4,76	3/16	1,2	3/64	5,16	.203	●	●	●		●	●			
WNMG080416MR	WNMG434MR	12,70	1/2	8,69	.342	4,76	3/16	1,6	1/16	5,16	.203	●	●							

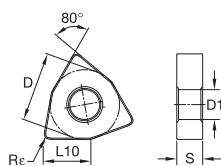


■ WNMG-MW

[illegible]



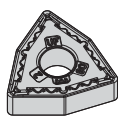
■ WNMG-RH



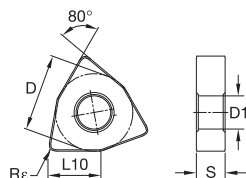
- first choice
- alternate choice

[illegible]

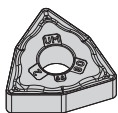
ISO catalog number	ANSI catalog number	D		L10		S		R _e		D1		WP15CT	WP25CT	WP35CT	WM15CT	WM25CT	WM35CT	WK05CT	WK20CT	WS10PT	WS25PT
		mm	in	mm	in	mm	in	mm	in	mm	in										
WNMG060408RH	WNMG332RH	9,53	3/8	6,52	.257	4,76	3/16	0,8	1/32	3,81	.150	●	●	●	●	●					
WNMG080408RH	WNMG432RH	12,70	1/2	8,69	.342	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	●	●		●			
WNMG080412RH	WNMG433RH	12,70	1/2	8,69	.342	4,76	3/16	1,2	3/64	5,16	.203	●	●	●	●	●		●			
WNMG080416RH	WNMG434RH	12,70	1/2	8,69	.342	4,76	3/16	1,6	1/16	5,16	.203	●	●	●	●	●		●			



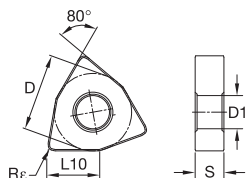
■ WNMG-UF



ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1								
		mm	in	mm	in	mm	in	mm	in	mm	in							
WNMG060404UF	WNMG331UF	9,53	3/8	6,52	.257	4,76	3/16	0,4	1/64	3,81	.150			●	●			
WNMG060408UF	WNMG332UF	9,53	3/8	6,52	.257	4,76	3/16	0,8	1/32	3,81	.150			●	●			
WNMG080404UF	WNMG431UF	12,70	1/2	8,69	.342	4,76	3/16	0,4	1/64	5,16	.203			●	●			
WNMG080408UF	WNMG432UF	12,70	1/2	8,69	.342	4,76	3/16	0,8	1/32	5,16	.203			●	●			
WNMG080412UF	WNMG433UF	12,70	1/2	8,69	.342	4,76	3/16	1,2	3/64	5,16	.203			●	●			



■ WNMG-UM



		D	L10	S	R _e	D1															
ISO catalog number	ANSI catalog number	mm	in	mm	in	mm	in	mm	in	mm	in										
WNMG060404UM	WNMG331UM	9,53	3/8	6,52	.257	4,76	3/16	0,4	1/64	3,81	.150				●	●	●				
WNMG060408UM	WNMG332UM	9,53	3/8	6,52	.257	4,76	3/16	0,8	1/32	3,81	.150				●	●	●				
WNMG060412UM	WNMG333UM	9,53	3/8	6,52	.257	4,76	3/16	1,2	3/64	3,81	.150					●	●	●			
WNMG080404UM	WNMG431UM	12,70	1/2	8,69	.342	4,76	3/16	0,4	1/64	5,16	.203				●	●	●				
WNMG080408UM	WNMG432UM	12,70	1/2	8,69	.342	4,76	3/16	0,8	1/32	5,16	.203				●	●	●				
WNMG080412UM	WNMG433UM	12,70	1/2	8,69	.342	4,76	3/16	1,2	3/64	5,16	.203				●	●	●				
WNMG080416UM	WNMG434UM	12,70	1/2	8,69	.342	4,76	3/16	1,6	1/16	5,16	.203					●	●				

- first choice
- alternate choice

[illegible][illegible]

WIN WITH WIDIA™



CBN Inserts for Hard Turning

CBN Inserts are available in a wide range of grades, making them ideal for all your continuous to heavily interrupted turning applications.

- Best choice for hardened steels and powdered metals.
- Coated grades for increased tool life and consistent results.
- Uncoated grades for superior surface finish in close-tolerance machining.

To learn more about our innovations, contact your local Authorised Distributor or visit www.widia.com.

WIDIA 

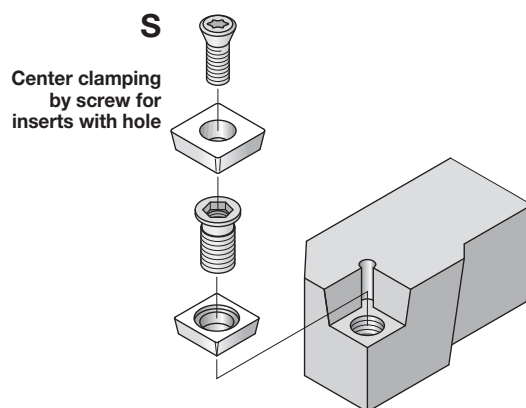
WIN WITH WIDIA™



S-Style Toolholders Now Available

An expanded selection of S-Style toolholders and boring bars (steel and carbide) are now available from WIDIA™.

- Screw clamping system for positive indexable inserts CPMT, DPMT, and TPMT (included in the new WIDIA Victory™ carbide insert line).
- Compact design for simplicity, high reliability, and cost effectiveness.
- A carbide shim provides additional tool protection. Toolholders with cutting edge heights upwards of 16mm and insert ICs from 9,52mm are secured by means of a threaded bushing.
- Qualified to current ISO standards.
- Visit us at www.widia.com for a complete listing of these new tools.



To learn more about our innovations, contact your local Authorized Distributor or visit www.widia.com.

WIDIA
VICTORY
Win with WIDIA™

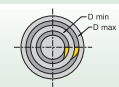
WMT™ System

Our WMT toolholders now have a smart new naming system. Here are some examples of the improved nomenclature for our WMT Toolholders.

Integral Toolholders

WMT Tooling System WMT = Groove and Turn (WMT Insert)	A Tool Style S = Straight C = Straight with circular support E = End mount A = Straight, face grooving inboard sweep B = Straight, face grooving outboard sweep	R Hand R = Right hand L = Left hand	16 Shank Size For square shanks, the number indicates the height and width in 1/16" increments. For rectangular shanks, the first digit indicates the number of eighths of width "B" and the second digit indicates the number of quarters of height "H".	6 Seat Size 1 2 2B 3 4 5 6 8	075 Max Grooving Depth CD _{max} in 1/100" Note: Values <1.00" use a preceeding zero e.g. 075 = .75" max groove depth	—	275-400 Face Grooving Diameter diameters are min and max for outer face groove diameter 999 = unlimited D max D min – D max in 1/100" e.g. 275-400 = 2.75" D min 4.00" D max
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Modular Blades

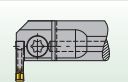
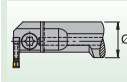
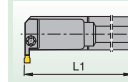
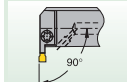
WMT Tooling System	SLS Connection Type	R Hand R = Right hand L = Left hand	6 Seat Size	19 Max Grooving Depth	B Tool Style	070-100 Face Grooving Diameter 
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Modular Toolholders

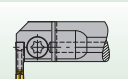
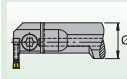
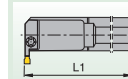
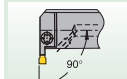
SLS Tooling System MDG = Modular Deep Grooving SLS = Modular Serrated Locking System	S Tool Style S = Straight E = End mount	R Hand R = Right hand L = Left hand	16 Shank Size For square shanks, the number indicates the height and width in 1/16" increments. For rectangular shanks, the first digit indicates the number of eighths of width "B" and the second digit indicates the number of quarters of height "H".
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Integral Boring Bars

A Bar Type 	16 Bar Diameter 	R Bar Length 	WMT Tooling System	E Tool Style 	R Hand R = Right hand L = Left hand	6 Seat Size	12 Max Grooving Depth	M Tool Units
---	--	---	------------------------------	---	---	-----------------------	---------------------------------	------------------------

Modular Boring Bars

M Bar Type 	16 Bar Diameter 	R Bar Length 	SLS Tooling System	E Tool Style 	R Hand R = Right hand L = Left hand	M Tool Units
---	--	---	------------------------------	---	---	------------------------

WIDIA
VICTORY
Win with WIDIA™

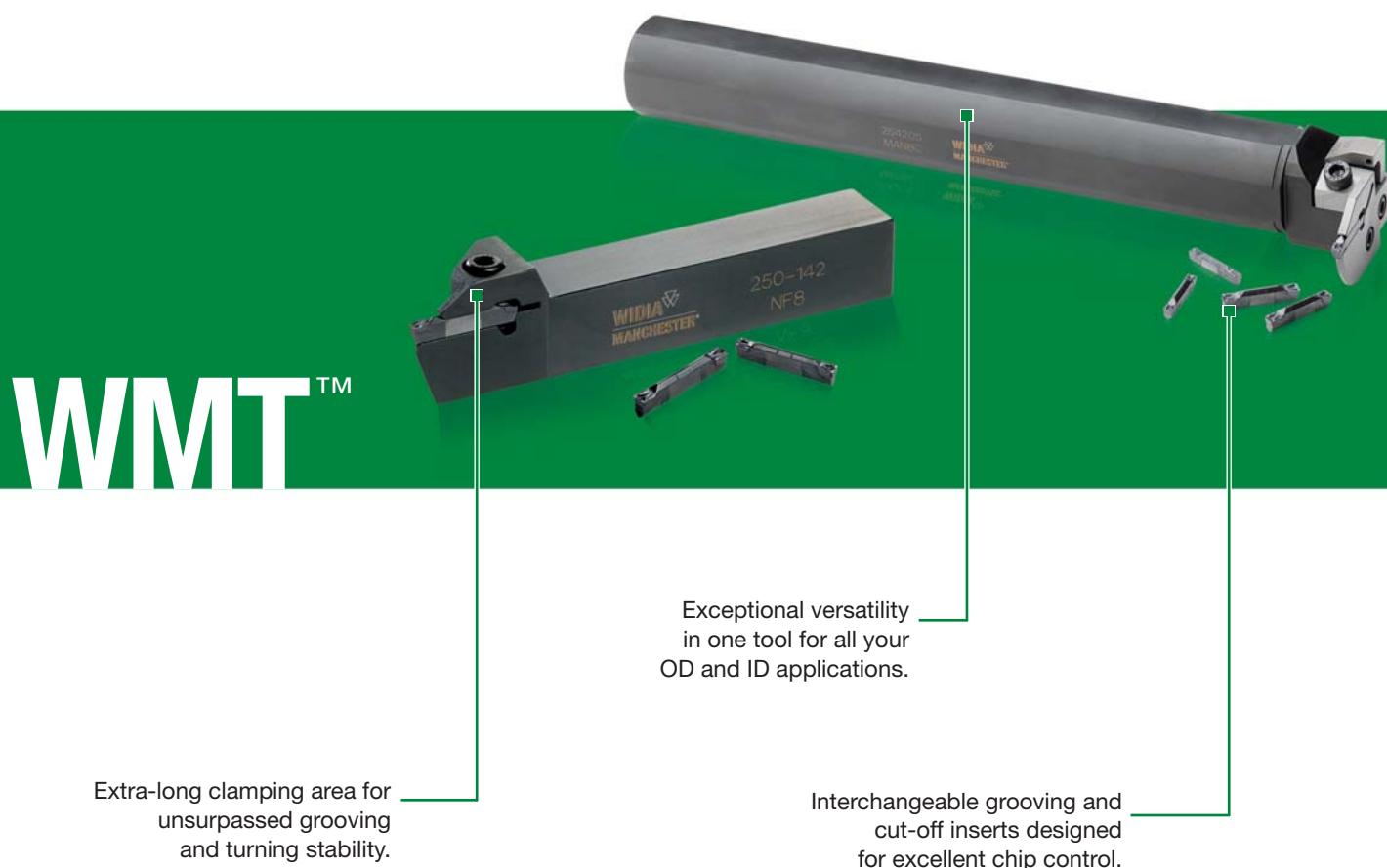


For more detailed information about our new nomenclature system, visit us at www.widia.com/WMT.

One System for Turning, Grooving, Cut-Off and Profiling •

WMT™ System

The WIDIA™ line of WMT toolholders is the economical and reliable option for all your grooving, cut-off, turning, and profiling applications. Trust the WMT system to ensure precise insert positioning and provide only the most accurate machining with exceptionally fast cycle times and superior performance.



Versatile and Well Constructed

- Specifically designed to increase speeds and feeds.
- Excellent geometry for even the most demanding deep grooving applications.
- The WMT™ system enables heavy stock removal in turning applications.
- Ensures finer surface finishes and a long, reliable tool life.

WMT Toolholders

- Outstanding system rigidity and clamping capabilities.
- Guarantees fast cycles times and limited turret indexes.
- Precise insert positioning for accurate machining.
- Double-V shape means operator-friendly insert indexing and optimum insert positioning.

WMT SLS

- Modular Serrated Locking System (SLS) accepts CM, CM-W, and PT/PC inserts.
- Replaceable cartridge makes changing applications quick and easy.
- Adaptable and easy to use, it reduces setup time and downtime between jobs.
- A variety of insert widths available to meet your specific needs.

CM and CM-W inserts

PC grooving and profiling inserts



PT grooving inserts

The Most Advanced Turning Solutions in the Industry

For unsurpassed quality, value, and performance, look no further than the WIDIA™ comprehensive line of specially engineered and dependable grooving and cut-off solutions. All the tools you need from the reliable name you can trust!

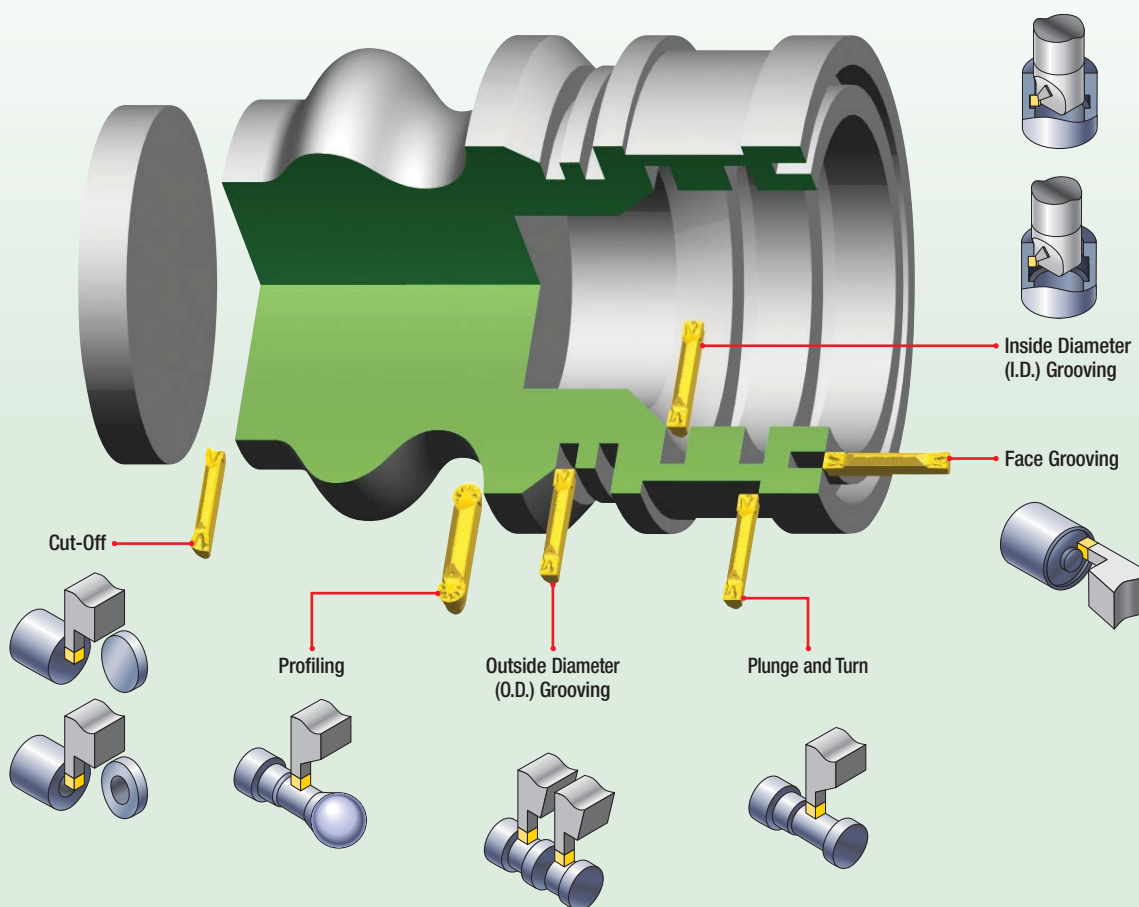
The WMT system, with its extra-long clamping area and precise insert positioning, ensures exceptionally fast and accurate machining, all-in-one tool, for your most demanding grooving, cut-off, turning, and profiling applications.

It is perfect for all general purpose operations, including both shallow and deep grooving.

Utilize this handy, easy-to-use guide to identify and select the appropriate grooving and cut-off tools for your specific needs.

1 Choose the application to be performed:

Groove depth, width, and profile.



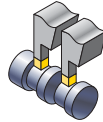
2 Identify the material to be machined:

Each tool has a material grid marked with a letter indicating the materials that can be machined.

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

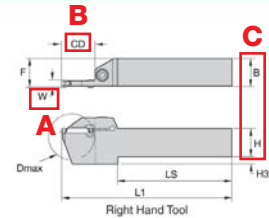
3 Select your toolholder based on the application:

- A Choose the appropriate width "W" required for the application.
- B Choose the shortest cutting depth "CD" dimension for increased tool rigidity.
- C Select the largest toolholder shank "H" and "B" dimensions for maximum rigidity.



WMT Grooving, Cut-Off, and Turning

Integral Toolholders



OD Grooving

OD Grooving		A B		C							
order number	catalog number	W	CD	D max	F	H	B	H3	L1	LS	clamp screw
	Right hand										
3656137	250319	.059	.650	—	.991	1.000	1.000	—	6.000	4.679	606266
3655938	250301	.079	—	1.062	.375	.375	.369	.125	4.500	3.500	606249
3655940	250303	.079	—	1.125	.500	.500	.494	.188	4.500	3.500	606249
3655942	250305	.079	.650	—	.625	.625	.603	.250	5.000	4.060	606249
3655944	250307	.079	.650	—	.750	.750	.719	—	5.000	3.680	606249
3655946	250309	.079	.650	—	1.000	1.000	.969	—	6.000	4.680	606249
3655888	250109	.094	—	1.062	.375	.375	.365	.125	4.500	3.500	606249
3655892	250111	.094	—	1.250	.500	.500	.490	.190	4.500	3.290	606249
3655894	250113	.094	.750	—	.625	.625	.603	.250	5.000	3.480	619205
3655896	250115	.094	.750	—	.750	.750	.719	.250	5.000	3.480	619205
3655934	250189	.094	.420	—	.750	.750	.719	—	5.000	3.695	619205
3655936	250193	.094	.750	—	.990	1.000	.969	—	6.000	4.500	619205
3655898	250117	.125	.440	—	.625	.625	.603	—	5.000	3.695	619205
3655900	250119	.125	.875	—	.625	.625	.603	.250	5.000	3.355	619205
3655906	250127	.125	.440	—	.750	.750	.719	—	5.000	3.695	619205
3655908	250129	.125	.875	—	.750	.750	.719	.250	5.000	3.355	619205
3655916	250141	.125	.440	—	1.000	1.000	.969	—	6.000	4.695	619205
3655918	250143	.125	.875	—	1.000	1.000	.969	—	6.000	4.375	619205
3655920	250145	.156	.875	—	1.000	1.000	.969	—	6.000	4.375	619205
3655930	250181	.156	.440	—	.625	.625	.603	—	5.000	3.695	619205
3655932	250183	.156	.440	—	.750	.750	.719	—	5.000	3.695	619205
3655902	250123	.188	.560	—	.629	.625	.603	—	5.000	3.562	619168
3655904	250125	.188	1.000	—	.629	.625	.603	.250	5.500	3.655	619168
3655910	250133	.188	.560	—	.750	.750	.719	—	5.000	3.562	619168
3655912	250135	.188	1.000	—	.750	.750	.719	.250	5.500	3.655	619168
3655922	250147	.188	.560	—	1.000	1.000	.969	—	6.000	4.562	619168
3655924	250149	.188	1.000	—	1.000	1.000	.969	—	6.000	4.175	619168
3655914	250137	.250	.560	—	.754	.750	.719	—	5.000	3.562	619168
3655926	250151	.250	.560	—	1.004	1.000	.969	—	6.000	4.562	619168
3655928	250153	.250	1.000	—	1.002	1.000	.969	—	6.000	4.174	619168
3539143	250175	.312	.560	—	1.250	1.250	1.207	—	6.000	4.553	619168
3539145	250177	.312	1.000	—	—	1.250	1.207	—	6.000	4.174	619168

	application	conventional toolholders	modular blades
	O.D. Grooving and Cut-Off	pages D10–D12	pages D16–D17
	Face Grooving	pages D13–D14	pages D18–D19
	I.D. Grooving	—	pages D20–D21
	Plunge and Turn	pages D10–D12	pages D16–D17

NOTE: Referenced pages are from the WIDIA Turning Catalog, A-09-02078.
Please visit www.widia.com/WMT for more information on available toolholders.

4 Select chipbreaker style for the application:

CM	Cut-off
CM-W	Cut-off with wipers
PT	Grooving and turning
PC	Profiling and turning

NOTE: Chart shows recommended starting feed rates.

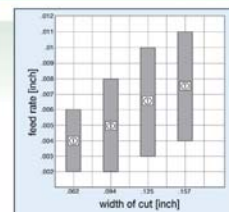
WMT™ Inserts Feed Values for Grooving

WIDIA
MANCHESTER

CM

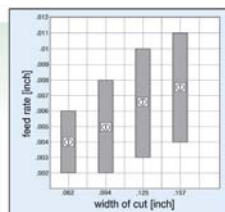


- Wiper flats where surface finish is critical.
- Double-ended, V-bottom, and top, mechanically clamped.
- Neutral, right-, and left-hand lead angles up to 12°.
- Designed to increase speed and feed.
- Chip geometry designed for excellent chip control and minimized cutting pressure on various materials.



① Recommended feed

CM-W



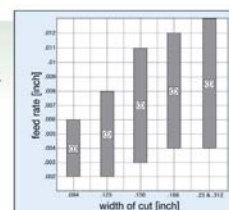
① Recommended feed

- Double-ended, V-bottom, and top, mechanically clamped.
- Neutral, right-, and left-hand lead angles up to 12°.
- Designed to increase speed and feed.
- Chip geometry designed for excellent chip control and minimized cutting pressure on various materials.
- Ideal for 300 Series stainless steel, tool steel, titanium, INCONEL®, and other nickel-based alloys at moderate speeds and feeds.

PT Grooving Inserts

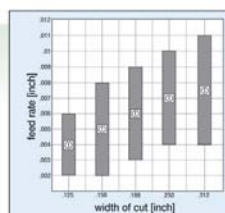


- High positive rake geometry for low cutting force, especially in soft materials.
- Deep grooving tool for plunge and turn OD and face grooving operations.
- Delivers chip control over full range of DOC when turning.
- Cuts in both axial and radial direction.



① Recommended feed

PC Grooving and Profiling Inserts



① Recommended feed

- Superior chip control.
- Full nose radius geometry for plunge and contour operations.
- Effective cutting edge geometry exceeds 180° for increased versatility.

D22

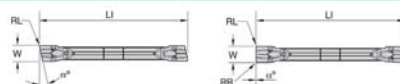
WWW.WIDIA.COM

A Choose the appropriate insert width "W" for your specific application.

B Select the required corner radius value "RR".

WMT™ Turning, Grooving, and Cut-Off Cut-Off Inserts

WIDIA
MANCHESTER



RR = RL on neutral inserts

- first choice
- alternate choice



WMT-CM

catalog number	A		B		LI		hand	WU25PT
	mm	in	mm	in	mm	in		
WMT015N00CM08	1.50	.059	0.08	.003	19.30	.760	N - Neutral	●
WMT020N00CM08	2.00	.079	0.08	.003	19.21	.756	N - Neutral	●
WMT094N00CM13	2.39	.094	0.13	.005	22.32	.879	N - Neutral	●
WMT030N00CM17	3.00	.118	0.17	.007	25.38	.999	N - Neutral	●
WMT125N00CM17	3.17	.125	0.17	.007	25.41	1.000	N - Neutral	●
WMT040N00CM17	4.00	.157	0.17	.007	25.40	1.000	N - Neutral	●

5 Select grade:

		Recommended Grades					
cutting condition		steel	stainless steel	cast iron	non-ferrous metals	high-temp alloys	hardened materials
smooth cut, pre-turned surface		WP10CT	WU10PT	WP10CT	WU10PT	WU10PT	WU10PT
varying depth of cut, casting, or forging skin		WP10CT	WU10PT	WP10CT	WP10CT	WP10CT	WP10CT
lightly interrupted cut		WP25CT	WU25PT	WP25CT	WU25PT	WU25PT	WU25PT
heavily interrupted cut		WU25PT	WU25PT	WP25CT	WU25PT	WU25PT	WU25PT

See page D54 for Grades and Grade Descriptions.

6 Determine cutting data:

- A Based on material group and grade, identify starting speed (vc).
- B First choice starting speed is in **bold**.

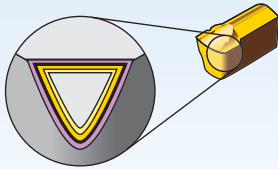
See pages D56 and D57 for cutting data.

WMT™ Turning, Grooving, and Cut-Off

Speed and Feed Chart • Metric



ANSI ISO 513		VDI 3323		Cutting Speed • vc m/min														
Material Group																		
				min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
P	1	WU10HT			WU10PT			WU25PT			WP10CT			WP25CT				
		100	100	110	190	200	210	170	175	180	210	225	240	170	175	180		
		100	100	110	190	200	210	170	175	180	240	250	260	210	225	240		
		100	100	110	170	175	180	140	150	160	190	200	210	170	175	180		
		100	100	110	170	175	180	140	150	160	210	225	240	190	200	210		
		100	100	110	170	175	180	140	150	160	190	200	210	170	175	180		
		100	100	110	170	175	180	140	150	160	210	225	240	190	200	210		
		70	75	80	190	200	210	170	175	180	190	200	210	170	175	180		
		70	75	80	170	175	180	140	150	160	170	175	180	140	150	160		
		50	50	50	170	175	180	140	150	160	120	125	130	100	100	110		
		70	75	80	170	175	180	140	150	160	140	150	160	120	125	130		
		50	50	50	140	150	160	120	125	130	100	100	110	100	100	110		
		100	100	110	170	175	180	140	150	160	190	200	210	170	175	180		
		70	75	80	170	175	180	140	150	160	170	175	180	140	150	160		
50	50	50	140	150	160	120	125	130	70	75	80	70	75	80				
M		WU10HT			WU10PT			WU25PT			WP10CT			WP25CT				
		70	75	80	120	125	130	120	125	130								
		50	50	50	120	125	130	100	100	110								
		50	50	50	100	100	110	70	75	80								
K		WU10HT			WU10PT			WU25PT			WP10CT			WP25CT				
		100	100	110	210	225	240	170	175	180	240	250	260	190	200	210		
		70	75	80	170	175	180	140	150	160	190	200	210	170	175	180		
		70	75	80	170	175	180	140	150	160	210	225	240	190	200	210		
		50	50	50	170	175	180	140	150	160	170	175	180	140	150	160		
		100	100	110	210	225	240	190	200	210	240	250	260	190	200	210		
70	75	80	170	175	180	140	150	160	210	225	240	190	200	210				
N		WU10HT			WU10PT			WU25PT			WP10CT			WP25CT				
		70	75	80	140	150	160	110	120	130								
		70	75	79	140	150	79	110	120	79								
		70	75	79	140	150	79	110	120	79								
		70	75	79	140	150	79	110	120	79								
		70	75	79	140	150	79	110	120	79								
		70	75	79	140	150	79	110	120	79								
		70	75	79	140	150	79	110	120	79								
		70	75	79	140	150	79	110	120	79								
		70	75	79	140	150	79	110	120	79								
S		WU10HT			WU10PT			WU25PT			WP10CT			WP25CT				
		20	25	30	70	75	80	70	75	80								
		20	25	30	70	75	80	50	50	50								
		20	25	30	70	75	80	50	50	50								
		20	25	30	50	50	50	50	50	50								
		20	25	30	70	75	80	50	50	50								
		50	50	50	100	100	110	70	75	80								
		20	25	30	70	75	80	50	50	50								

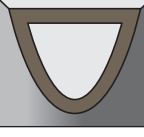
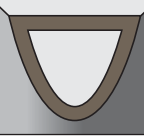
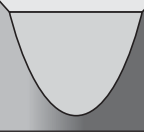




Coatings provide high-speed capability and are engineered for finishing to light roughing.

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

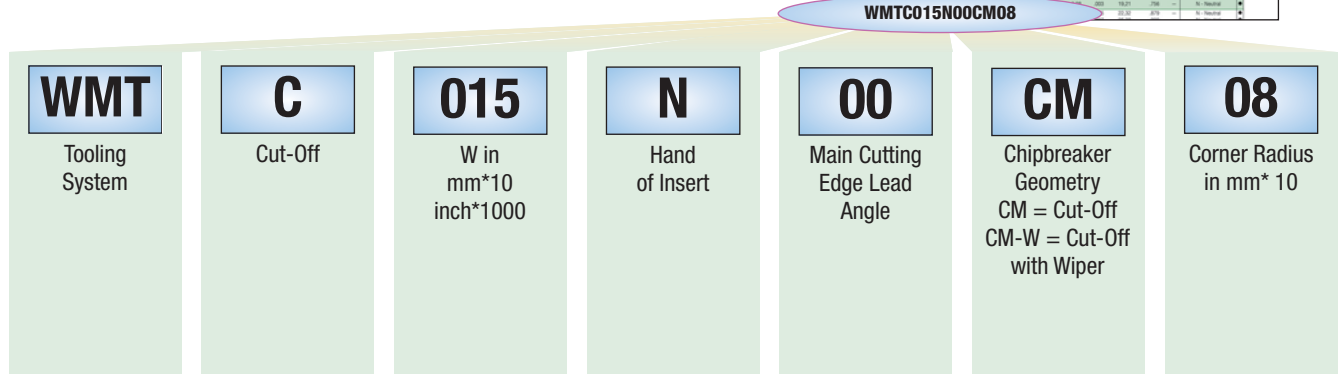
wear resistance \longleftrightarrow toughness

Grade

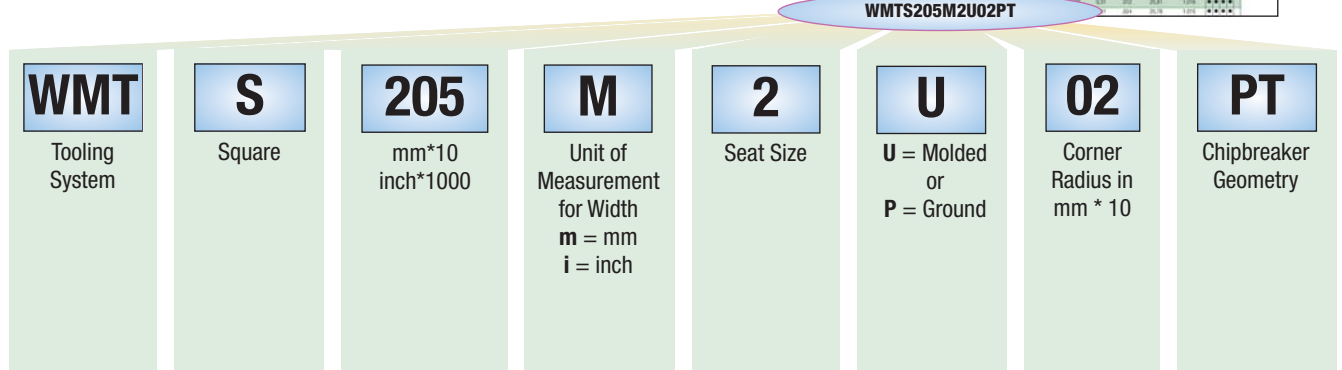
Coating	Grade Description	05	10	15	20	25	30	35	40	45
WU10PT  HC-P15	An advanced PVD-TiAlN coating over a very deformation-resistant unalloyed carbide substrate. The WU10PT grade's new and improved coating enables speeds to be increased by 50–100%. The WU10PT grade is ideal for finishing to general machining of most workpiece materials at higher speeds. Excellent for machining most steels, stainless steels, cast irons, non-ferrous materials, and super alloys under stable conditions. It also performs well machining hardened and short chipping materials.	P								
		M								
		K								
		N								
		S								
		H								
WU25PT  HC-P30	An advanced PVD-TiAlN-coated grade with a tough, ultra-fine-grain, unalloyed substrate. For general-purpose machining of most steels, stainless steels, high-temperature alloys, titanium, irons, and non-ferrous materials. Speeds may vary from low to medium and will handle interruptions and high feed rates.	P								
		M								
		K								
		N								
		S								
WU10HT  HW-K15	A hard, low binder content, unalloyed WC/Co fine-grained grade. Exceptional edge wear resistance combined with very high strength for machining titanium, cast irons, austenitic stainless steels, non-ferrous metals, non-metals, and most high-temperature alloys. Superior thermal deformation and depth of cut notch resistance. The grain structure is well controlled for minimal pits and flaws, which contributes to long, reliable service.									
		M								
		K								
		N								
		S								
WP10CT  HC-P10	A specially engineered, patented, cobalt-enriched carbide grade with thick K-MTCVD-TiCN coating layer, an Al ₂ O ₃ layer of controlled grain size, and outer layers of TiCN and TiN for maximum wear resistance. An excellent finishing to medium machining grade for a variety of workpiece materials including most steels, ferritic and martensitic stainless steels, and cast irons. The specially engineered, cobalt-enriched substrate offers a balanced combination of deformation resistance and edge toughness, while the thick coating layers offer outstanding abrasion resistance and crater wear resistance for high-speed machining. The smooth coating provides good resistance to edge build-up and microchipping and produces excellent surface finishes. For rougher cutting, use the WP10CT grade.	P								
		M								
		K								
WP25CT  HC-P25	A tough cobalt-enriched carbide grade with a newly designed multilayer K-MTCVD TiCN-Al ₂ O ₃ -TiCN-TiN coating with superior interlayer adhesion. This is the industry's best general-purpose turning grade for most steels and ferritic and martensitic stainless steels. The substrate design, with cobalt-enrichment, ensures adequate deformation resistance along with excellent bulk toughness and insert edge strength. The coating layers offer good wear resistance over a wide range of machining conditions. The smoothness of the coating leads to reduced frictional heat, minimizes microchipping, and improves workpiece surface finishes. The WP25CT grade performs well in moderately heavy roughing to semi-finishing cuts. Use the WP25CT grade for finishing cuts.	P								
		M								
		K								

WMT Identification System

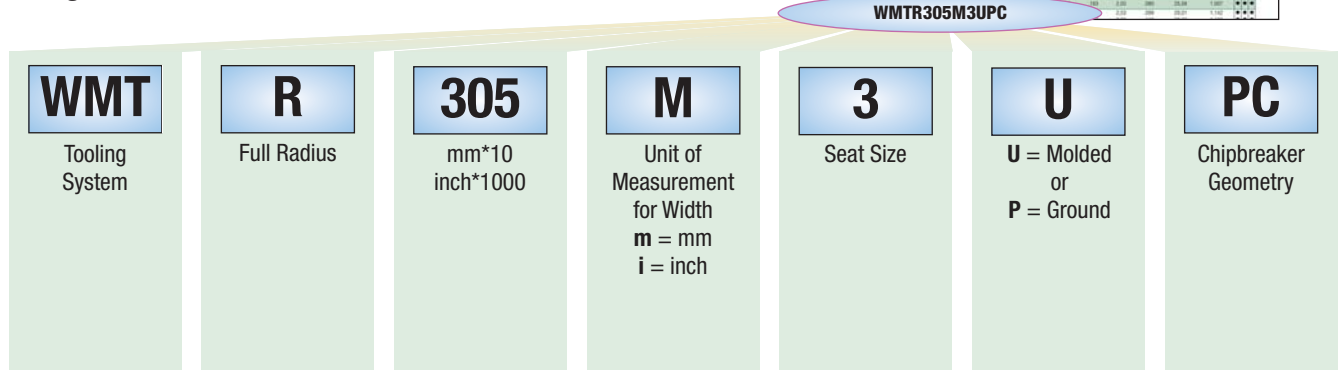
Cut-Off



Grooving

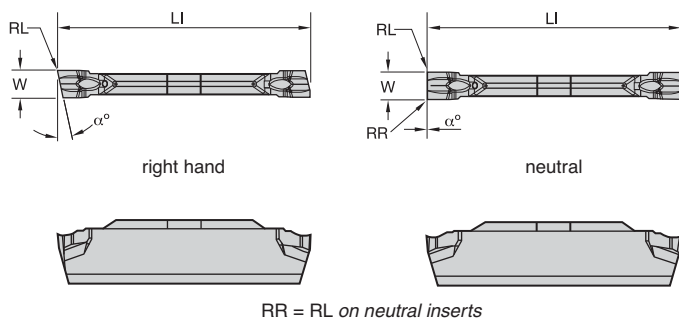


Plunge • Contour



ANSI ISO 513	VDI 3323	Cutting Speed • vc m/min														
Material Group																
		min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
P	1	WU10HT			WU10PT			WU25PT			WP10CT			WP25CT		
		100	100	110	190	200	210	170	175	180	210	225	240	170	175	180
		100	100	110	190	200	210	170	175	180	240	250	260	210	225	240
		100	100	110	170	175	180	140	150	160	190	200	210	170	175	180
		100	100	110	170	175	180	140	150	160	210	225	240	190	200	210
		100	100	110	170	175	180	140	150	160	190	200	210	170	175	180
		100	100	110	170	175	180	140	150	160	210	225	240	190	200	210
		70	75	80	190	200	210	170	175	180	190	200	210	170	175	180
		70	75	80	170	175	180	140	150	160	170	175	180	140	150	160
		50	50	50	170	175	180	140	150	160	120	125	130	100	100	110
		70	75	80	170	175	180	140	150	160	140	150	160	120	125	130
		50	50	50	140	150	160	120	125	130	100	100	110	100	100	110
		100	100	110	170	175	180	140	150	160	190	200	210	170	175	180
		70	75	80	170	175	180	140	150	160	170	175	180	140	150	160
		50	50	50	140	150	160	120	125	130	70	75	80	70	75	80
M	14.1	WU10HT			WU10PT			WU25PT			WP10CT			WP25CT		
		70	75	80	120	125	130	120	125	130						
		50	50	50	120	125	130	100	100	110						
		50	50	50	100	100	110	70	75	80						
K	14.2	WU10HT			WU10PT			WU25PT			WP10CT			WP25CT		
		50	50	50	100	100	110	70	75	80						
		50	50	50	70	75	80	70	75	80						
		50	50	50	70	75	80	70	75	80						
N	15	WU10HT			WU10PT			WU25PT			WP10CT			WP25CT		
		100	100	110	210	225	240	170	175	180	240	250	260	190	200	210
		70	75	80	170	175	180	140	150	160	190	200	210	170	175	180
		70	75	80	170	175	180	140	150	160	210	225	240	190	200	210
		50	50	50	170	175	180	140	150	160	170	175	180	140	150	160
		100	100	110	210	225	240	190	200	210	240	250	260	190	200	210
S	16	WU10HT			WU10PT			WU25PT			WP10CT			WP25CT		
		70	75	80	140	150	160	110	120	130						
		70	75	79	140	150	79	110	120	79						
		70	75	79	140	150	79	110	120	79						
		70	75	79	140	150	79	110	120	79						
		70	75	79	140	150	79	110	120	79						
		70	75	79	140	150	79	110	120	79						
		70	75	79	140	150	79	110	120	79						
		70	75	79	140	150	79	110	120	79						
		70	75	79	140	150	79	110	120	79						
		70	75	79	140	150	79	110	120	79						
S	17	WU10HT			WU10PT			WU25PT			WP10CT			WP25CT		
		20	25	30	70	75	80	70	75	80						
		20	25	30	70	75	80	50	50	50						
		20	25	30	70	75	80	50	50	50						
		20	25	30	50	50	50	50	50	50						
		20	25	30	70	75	80	50	50	50						
		50	50	50	100	100	110	70	75	80						
		20	25	30	70	75	80	50	50	50						
		20	25	30	70	75	80	50	50	50						
		20	25	30	70	75	80	50	50	50						

ANSI ISO 513	VDI 3323															
Material Group		Cutting Speed • vc SFM														
		min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
P		WU10HT			WU10PT			WU25PT			WP10CT			WP25CT		
	1	290	300	320	620	650	680	520	550	580	670	700	740	590	625	660
	2	330	350	370	620	650	680	570	600	630	760	800	840	670	700	740
	3	290	300	320	520	550	580	480	500	530	640	675	710	550	575	600
	4	330	350	370	570	600	630	520	550	580	710	750	790	620	650	680
	5	290	300	320	520	550	580	480	500	530	590	625	660	520	550	580
	6	330	350	370	520	550	580	480	500	530	710	750	790	620	650	680
	7	260	275	290	620	650	680	550	575	600	590	625	660	520	550	580
	8	240	250	260	520	550	580	480	500	530	520	550	580	450	475	500
	9	140	150	160	520	550	580	480	500	530	380	400	420	330	350	370
	10	210	225	240	550	575	600	500	525	550	480	500	530	400	425	450
	11	140	150	160	480	500	530	430	450	470	330	350	370	290	300	320
	12	290	300	320	520	550	580	480	500	530	640	675	710	570	600	630
	13.1	240	250	260	520	550	580	480	500	530	520	550	580	450	475	500
	13.2	120	125	130	480	500	530	430	450	470	260	275	290	240	250	260
M		WU10HT			WU10PT			WU25PT			WP10CT			WP25CT		
	14.1	240	250	260	430	450	470	400	425	450						
	14.2	190	200	210	360	375	390	330	350	370						
	14.3	140	150	160	310	325	340	290	300	320						
	14.4	120	125	130	260	275	290	240	250	260						
K		WU10HT			WU10PT			WU25PT			WP10CT			WP25CT		
	15	290	300	320	670	700	740	620	650	680	760	800	840	640	675	710
	16	190	200	210	520	550	580	480	500	530	620	650	680	550	575	600
	17	210	225	240	570	600	630	520	550	580	710	750	790	620	650	680
	18	170	175	180	550	575	600	500	525	550	520	550	580	450	475	500
	19	290	300	320	710	750	790	640	675	710	760	800	840	640	675	710
	20	240	250	260	520	550	580	480	500	530	710	750	790	620	650	680
N		WU10HT			WU10PT			WU25PT			WP10CT			WP25CT		
	21	240	250	260	480	500	530	380	400	420						
	22	240	250	260	480	500	530	380	400	420						
	23	240	250	260	480	500	530	380	400	420						
	24	240	250	260	480	500	530	380	400	420						
	25	240	250	260	480	500	530	380	400	420						
	26	240	250	260	480	500	530	380	400	420						
	27	240	250	260	480	500	530	380	400	420						
	28	240	250	260	480	500	530	380	400	420						
	29	240	250	260	480	500	530	380	400	420						
	30	240	250	260	480	500	530	380	400	420						
S		WU10HT			WU10PT			WU25PT			WP10CT			WP25CT		
	31	120	125	130	260	275	290	240	250	260						
	32	100	100	110	210	225	240	190	200	210						
	33	70	75	80	210	225	240	210	225	240						
	34	50	50	50	190	200	210	190	200	210						
	35	50	50	50	190	200	210	190	200	210						
	36	190	200	210	310	325	340	290	300	320						
	37	100	100	110	210	225	240	210	225	240						



- first choice
○ alternate choice

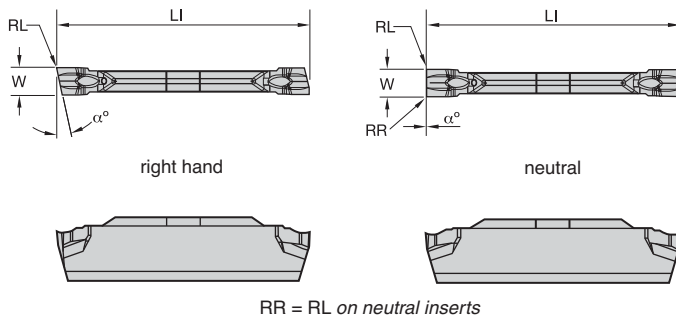
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■ WMT-CM

catalog number	seat size	W		RR		LI		α°	hand	WU25PT
		mm	in	mm	in	mm	in			
WMT-C015N00CM08	1	1,50	.059	0,08	.003	19,30	.760	—	N - Neutral	●
WMT-C020N00CM08	2	2,00	.079	0,08	.003	19,21	.756	—	N - Neutral	●
WMT-C094N00CM13	2B	2,39	.094	0,13	.005	22,32	.879	—	N - Neutral	●
WMT-C030N00CM17	3	3,00	.118	0,17	.007	25,38	.999	—	N - Neutral	●
WMT-C125N00CM17	3	3,17	.125	0,17	.007	25,41	1.000	—	N - Neutral	●
WMT-C040N00CM17	4	4,00	.157	0,17	.007	25,40	1.000	—	N - Neutral	●

catalog number	seat size	W		RR		LI		α°	hand	WU25PT
		mm	in	mm	in	mm	in			
WMT-C015L05CM08	1	1,50	.059	0,08	.003	19,31	.760	5	L - Left	●
WMT-C020L05CM08	2	2,00	.079	0,08	.003	19,20	.756	5	L - Left	●
WMT-C020L12CM08	2	2,00	.079	0,08	.003	19,25	.758	12	L - Left	●
WMT-C030L05CM17	3	3,00	.118	0,17	.007	25,34	.998	5	L - Left	●
WMT-C030L12CM17	3	3,00	.118	0,17	.007	25,40	1.000	12	L - Left	●
WMT-C040L12CM17	4	4,00	.157	0,17	.007	25,40	1.000	12	L - Left	●
WMT-C040L05CM17	4	4,00	.157	0,17	.007	25,40	1.000	5	L - Left	●

catalog number	seat size	W		RL		LI		α°	hand	WU25PT
		mm	in	mm	in	mm	in			
WMT-C015R12CM08	1	1,50	.059	0,08	.003	19,28	.759	12	R - Right	●
WMT-C015R05CM08	1	1,50	.059	0,08	.003	19,31	.760	5	R - Right	●
WMT-C020R05CM08	2	2,00	.079	0,08	.003	19,26	.758	5	R - Right	●
WMT-C020R12CM08	2	2,00	.079	0,08	.003	19,26	.758	12	R - Right	●
WMT-C094R12CM13	2B	2,39	.094	0,13	.005	22,28	.877	12	R - Right	●
WMT-C094R05CM13	2B	2,39	.094	0,13	.005	22,32	.879	5	R - Right	●
WMT-C030R05CM17	3	3,00	.118	0,17	.007	25,34	.998	5	R - Right	●
WMT-C030R12CM17	3	3,00	.118	0,17	.007	25,40	1.000	12	R - Right	●
WMT-C125R05CM17	3	3,17	.125	0,17	.007	25,40	1.000	5	R - Right	●
WMT-C125R12CM17	3	3,18	.125	0,17	.007	25,40	1.000	12	R - Right	●
WMT-C040R05CM17	4	4,00	.157	0,17	.007	25,40	1.000	5	R - Right	●
WMT-C040R12CM17	4	4,00	.157	0,17	.007	25,40	1.000	12	R - Right	●



- first choice
- alternate choice

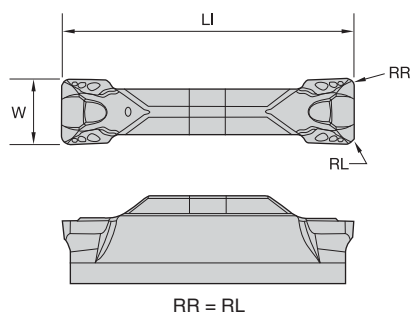
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N	●
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H	●

■ WMT-CM-W

catalog number	seat size	W		RR		LI		α°	hand	WU25PT
		mm	in	mm	in	mm	in			
WMTC015N00CMW08	1	1,50	.059	0,08	.003	19,30	.760	—	N - Neutral	●
WMTC020N00CMW08	2	2,00	.079	0,08	.003	19,21	.756	—	N - Neutral	●
WMTC094N00CMW13	2B	2,39	.094	0,13	.005	22,32	.879	—	N - Neutral	●
WMTC030N00CMW17	3	3,00	.118	0,17	.007	25,38	.999	—	N - Neutral	●
WMTC125N00CMW17	3	3,18	.125	0,17	.007	25,41	1.000	—	N - Neutral	●
WMTC040N00CMW17	4	4,00	.157	0,17	.007	25,40	1.000	—	N - Neutral	●

catalog number	seat size	W		RR		LI		α°	hand	WU25PT
		mm	in	mm	in	mm	in			
WMTC020L12CMW08	2	2,00	.079	0,08	.003	19,27	.758	12	L - Left	●
WMTC030L05CMW17	3	3,00	.118	0,17	.007	25,35	.998	5	L - Left	●
WMTC030L12CMW17	3	3,00	.118	0,17	.007	25,40	1.000	12	L - Left	●

catalog number	seat size	W		RL		LI		α°	hand	WU25PT
		mm	in	mm	in	mm	in			
WMTC020R05CMW08	2	2,00	.079	0,08	.003	19,20	.756	5	R - Right	●
WMTC020R12CMW08	2	2,00	.079	0,08	.003	19,27	.758	12	R - Right	●
WMTC094R12CMW13	2B	2,39	.094	0,13	.005	22,29	.877	12	R - Right	●
WMTC094R05CMW13	2B	2,39	.094	0,13	.005	22,32	.879	5	R - Right	●
WMTC030R05CMW17	3	2,00	.118	0,17	.007	25,35	.998	5	R - Right	●
WMTC030R12CMW17	3	2,00	.118	0,17	.007	25,40	1.000	12	R - Right	●
WMTC125R05CMW17	3	3,17	.125	0,17	.007	25,41	1.000	5	R - Right	●
WMTC125R12CMW17	3	3,17	.125	0,17	.007	25,41	1.000	12	R - Right	●



● first choice
○ alternate choice

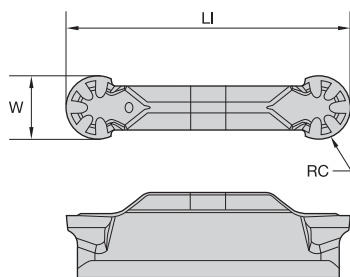
P	M	K	N	S	H
●	●	●	○	○	○
●	●	○	○	○	○
●	○	○	○	○	○
○	○	○	○	○	○
○	○	○	○	○	○

■ WMT-U-PT • Molded

catalog number	seat size	W		RR		LI		WP10CT	WP25CT	WU10PT	WU25PT	WU10HT
		mm	in	mm	in	mm	in					
WMTS205M2U02PT	2	2,05	.081	0,15	.006	19,23	.757	●	●	●	●	○
WMTS305M3U03PT	3	3,05	.120	0,31	.012	25,81	1.016	●	●	●	●	○
WMTS305M3U06PT	3	3,05	.120	0,61	.024	25,78	1.015	●	●	●	●	○
WMTS405M4U03PT	4	4,05	.159	0,31	.012	25,53	1.005	●	●	●	●	○
WMTS405M4U06PT	4	4,05	.159	0,61	.024	25,53	1.005	●	●	●	●	○
WMTS505M5U03PT	5	5,05	.199	0,31	.012	28,69	1.300	●	●	●	●	○
WMTS505M5U06PT	5	5,05	.199	0,61	.024	28,69	1.300	●	●	●	●	○
WMTS605M6U03PT	6	6,05	.238	0,30	.012	28,76	1.320	●	●	●	●	○
WMTS605M6U06PT	6	6,05	.238	0,59	.023	28,76	1.320	●	●	●	●	○
WMTS805M8U06PT	8	8,05	.317	0,61	.024	28,70	1.130	●	●	●	●	○
WMTS805M8U15PT	8	8,05	.317	1,50	.059	28,71	1.130	●	●	●	●	○

■ WMT-P-PT • Precision

catalog number	seat size	W		RR		LI		WP10CT	WP25CT	WU10PT	WU25PT	WU10HT
		mm	in	mm	in	mm	in					
WMTS200M2P02PT	2	2,00	.079	0,15	.006	19,10	.752	○	○	○	○	○
WMTS094I2BP02PT	2B	2,38	.094	0,15	.006	22,15	.872	○	○	○	○	○
WMTS094I2BP04PT	2B	2,38	.094	0,38	.015	22,14	.872	○	○	○	○	○
WMTS300M3P03PT	3	3,00	.118	0,31	.012	25,65	1.010	○	○	○	○	○
WMTS300M3P06PT	3	3,00	.118	0,61	.024	25,65	1.010	○	○	○	○	○
WMTS125I3P03PT	3	3,17	.125	0,23	.009	25,40	1.000	○	○	○	○	○
WMTS125I3P08PT	3	3,17	.125	0,76	.030	25,40	1.000	○	○	○	○	○
WMTS400M4P03PT	4	4,00	.157	0,31	.012	25,40	1.000	○	○	○	○	○
WMTS400M4P06PT	4	4,00	.157	0,60	.024	25,40	1.000	○	○	○	○	○
WMTS188I5P03PT	5	4,76	.188	0,26	.010	28,63	1.127	○	○	○	○	○
WMTS188I5P08PT	5	4,77	.188	0,76	.030	28,63	1.127	○	○	○	○	○
WMTS500M5P03PT	5	5,00	.197	0,30	.012	28,63	1.127	○	○	○	○	○
WMTS500M5P06PT	5	5,00	.197	0,61	.024	28,63	1.127	○	○	○	○	○
WMTS600M6P03PT	6	6,00	.236	0,30	.012	28,63	1.127	○	○	○	○	○
WMTS600M6P06PT	6	6,00	.236	0,58	.022	28,63	1.127	○	○	○	○	○
WMTS250I6P08PT	6	6,34	.250	0,76	.030	28,63	1.127	○	○	○	○	○
WMTS250I6P03PT	6	6,35	.250	0,25	.010	28,63	1.127	○	○	○	○	○
WMTS800M8P06PT	8	8,00	.315	0,61	.024	28,57	1.125	○	○	○	○	○
WMTS800M8P15PT	8	8,00	.315	1,50	.059	28,57	1.125	○	○	○	○	○



- first choice
- alternate choice

P	M	K	N	S	H
●	○	○	○	○	○
●	○	○	○	○	○
●	○	○	○	○	○
●	○	○	○	○	○
●	○	○	○	○	○

■ WMT-U-PC • Molded

catalog number	seat size	W		RC		LI		WP10CT	WU10PT	WU25PT
		mm	in	mm	in	mm	in			
WMTR305M3UPC	3	3,05	.120	1,53	.060	25,53	1.005	●	●	●
WMTR405M4UPC	4	4,05	.163	2,03	.080	25,58	1.007	●	●	●
WMTR505M5UPC	5	5,05	.202	2,53	.099	29,01	1.142	●	●	●
WMTR605M6UPC	6	6,05	.238	3,03	.119	28,77	1.133	●	●	●
WMTR805M8UPC	8	8,05	.317	4,03	.159	29,22	1.150	●	●	●

■ WMT-P-PC • Precision

catalog number	seat size	W		RC		LI		WU10PT	WU25PT	WU10HT
		mm	in	mm	in	mm	in			
WMTR300M3PPC	3	3,00	.118	1,50	.059	25,40	1.000	●	●	●
WMTR125I3PPC	3	3,17	.125	1,59	.063	25,58	1.007	●	●	●
WMTR400M4PPC	4	4,00	.158	2,00	.079	25,45	1.002	●	●	●
WMTR188I5PPC	5	4,78	.188	2,39	.094	28,65	1.128	●	●	●
WMTR500M5PPC	5	5,00	.197	2,50	.098	28,88	1.137	●	●	●
WMTR600M6PPC	6	6,00	.236	3,00	.118	28,65	1.128	●	●	●
WMTR250I6PPC	6	6,36	.250	3,18	.125	29,01	1.142	●	●	●
WMTR312I8PPC	8	7,94	.312	3,96	.156	29,00	1.142	●	●	●
WMTR800M8PPC	8	8,00	.315	4,00	.158	29,08	1.145	●	●	●

Turning • WMT Turning, Grooving, and Cut-Off

WIN WITH WIDIA™

WIDIA 



ProGroove™

With easy-to-change inserts available in multiple high-performance carbide grades, the ProGroove system ensures accurate, reliable, and reproducible cutting edge performance.

ProGroove Grooving and Cut-Off

- Single-end inserts for grooving and cut-off.
- Offered with integral shanks and blades.
- Shallow, deep grooving, and cut-off capabilities.
- Available in four different geometries.

To learn more about our innovations, contact your local Authorized Distributor or visit www.widia.com.

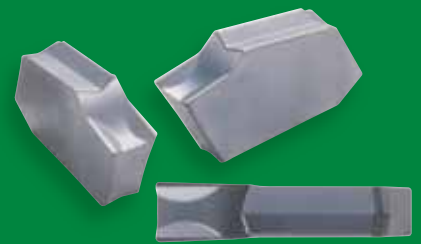
WIDIA 
Win with WIDIA™

WGT and WGF Cut-Off Inserts

WGT and WGF inserts specifically designed to fit the SELF-GRIP® toolholders available from Iscar®.
For traditional cut-off applications, the original WGT-style inserts are available in widths ranging from 2,25–4,80mm. For increased stability in large diameter cut-off applications, the WGF geometry is available in widths ranging from 1,60–9,50mm.

**SELF-GRIP is a registered trademark owned by ISCAR Ltd.*

WGT & WGF

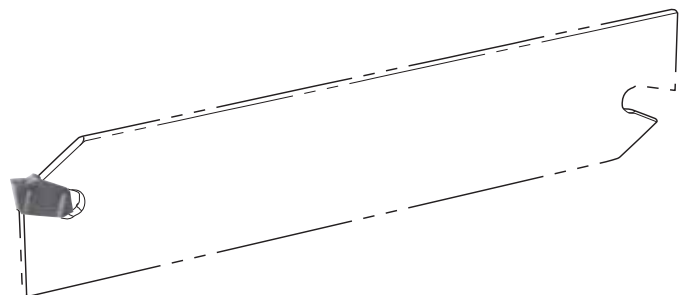
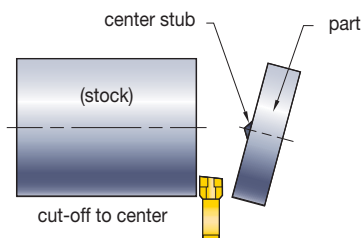


WGT inserts

- WGT inserts are T-type with no stopper.
The WGT inserts replace single-end cutting inserts.

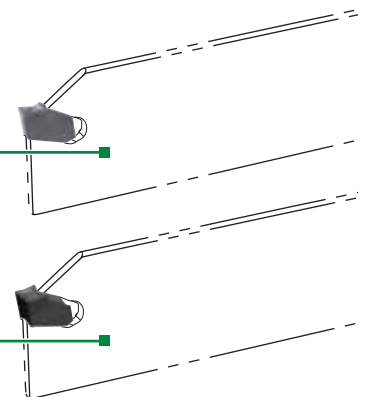
WGF inserts

- Single-side insert for cut-off applications.
This insert has a hard stop that seats insert securely into the pocket.



WGT

The WGT inserts fit into all T-cut type integral and blade toolholders.

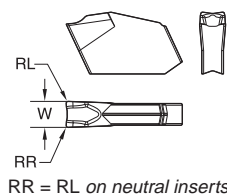


WGF

The WGF inserts fit into all F-type integral and blade toolholders.



WGT-N



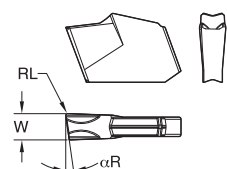
- first choice
- alternate choice

P	
M	○
K	○
N	○
S	○
H	○

catalog number	W		RL		TN6025
	mm	in	mm	in	
WGTN2	2,25	.089	0,18	.007	●
WGTN24	2,40	.095	0,18	.007	●
WGTN3J	3,05	.120	0,22	.009	●
WGTN3	3,05	.120	0,22	.009	●
WGTN6	6,45	.254	0,28	.011	●
WGTN3W	3,05	.120	0,22	.009	●
WGTN5	5,05	.199	0,26	.010	●
WGTN4	4,05	.159	0,24	.009	●
WGTN48	4,80	.189	0,26	.010	●



WGT-R



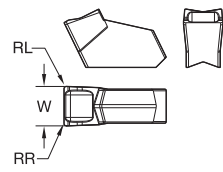
catalog number	W		αR	RL		
	mm	in		mm	in	
WGTR28D	2,25	.089	8	0,18	.007	●
WGTR24D	2,25	.089	4	0,18	.007	●
WGTR248D	2,40	.095	8	0,18	.007	●
WGTR244D	2,40	.095	4	0,18	.007	●
WGTR38D	3,05	.120	8	0,22	.009	●
WGTR34D	3,05	.120	4	0,22	.009	●
WGTR44D	4,05	.159	4	0,24	.009	●

P	
M	
K	
N	
S	
H	

- first choice
- alternate choice



WGF-N

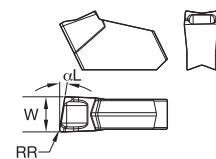


RR = RL on neutral inserts

catalog number	W		RL		TN6025
	mm	in	mm	in	
WGFN16	1,60	.063	0,16	.006	●
WGFN2J	2,00	.079	0,16	.006	●
WGFN2	2,20	.087	0,16	.006	●
WGFN24	2,40	.095	0,16	.006	●
WGFN3	3,00	.118	0,25	.010	●
WGFN3J	3,00	.118	0,25	.010	●
WGFN3M	3,03	.119	0,20	.008	●
WGFN4J	4,00	.157	0,25	.010	●
WGFN4B	4,10	.161	0,40	.016	●
WGFN4	4,10	.161	0,28	.011	●
WGFN48	4,80	.189	0,28	.011	●
WGFN6	6,39	.251	0,35	.014	●
WGFN9	9,50	.374	0,47	.019	●



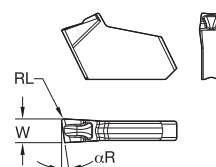
WGF-L



catalog number	W		αL	RR		
	mm	in		mm	in	
WGFL38D	2,99	.118	8	0,25	.010	●
WGFL48D	4,09	.161	8	0,28	.011	●



WGF-R

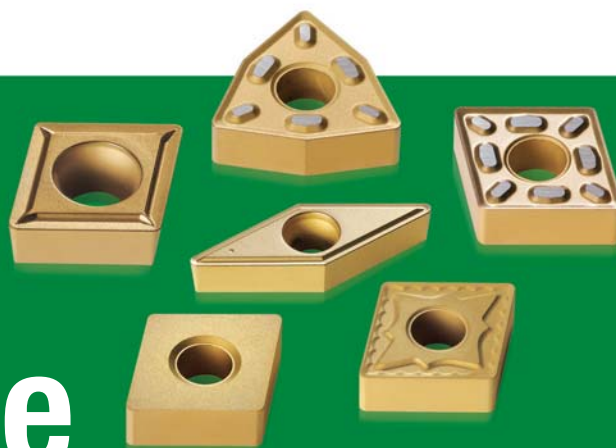


catalog number	W		αR	RL		
	mm	in		mm	in	
WGFR168D	1,60	.063	8	0,16	.006	●
WGFR248D	2,39	.094	8	0,16	.006	●
WGFR315D	2,98	.117	15	0,25	.010	●
WGFR38D	2,99	.118	8	0,25	.010	●
WGFR34D	3,00	.118	4	0,25	.010	●

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 optimize performance.
- Gold coating on every insert.
- Proven grade technologies.

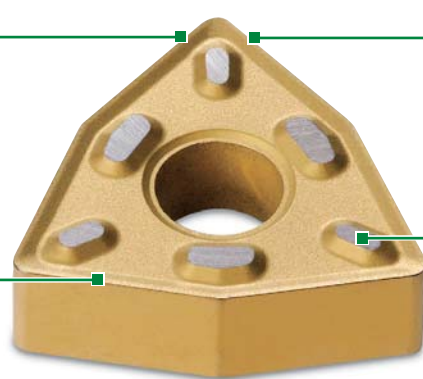
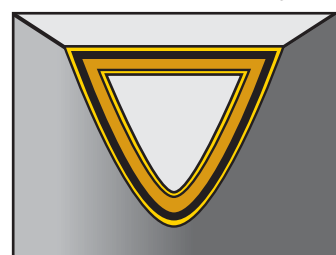
Post-coat treatment

- 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-Al₂O₃-TiN



Post-coat grinding

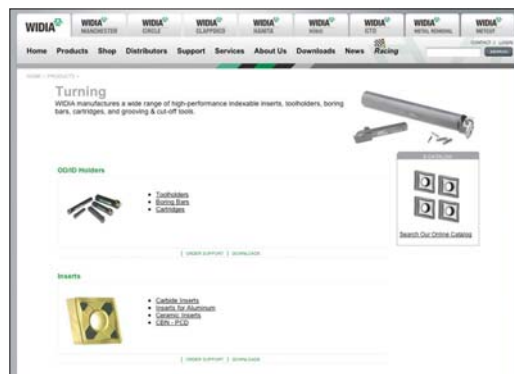
- Provides secure seating surface.

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 — maximizing 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 utilize 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 high as 50%.



WIDIA Value Options

This platform offers a simple geometry selection system. This versatile line offers eight grades to choose 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				

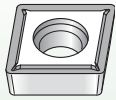
ANSI ISO 513	VDI 3323	A • Finishing (DOC x feed = .0394 x .0039)						B • Medium (DOC x feed = .0787 x .0079)			C • Roughing (DOC x feed = .1575 x .0098)			D • Heavy roughing (DOC x feed = .2362 x .0236)					
Material Group		Cutting Speed • vc SFM																	
		min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
P	Geometry	2P						2P • 6P			6P • 7N			7N					
	DOC [inch]	.0079-.0787						.0315 – .1969			.0394 – .3150			.0787 – .5906					
	feed [inch]	.0020-.0079						.0663 – .0157			.0079 – .0236			.0157 – .0394					
	1	TN10P						TN10P			TN20P			TN20P			TN30P		
		1115	1605	1935				915	1310	1570	590	850	1015	490	720	850	490	685	820
		1115	1570	1900				850	1210	1440	425	620	750	360	520	620	360	490	590
		950	1375	1640				590	850	1015	425	590	720	360	490	590	325	455	555
		850	1210	1440				620	885	1045	360	490	590	295	425	520	225	325	390
		655	915	1115				455	655	785	245	360	425	210	295	360	180	260	310
		885	1275	1540				655	950	1145	360	520	620	295	425	520	245	360	425
		850	1210	1440				620	885	1045	360	490	590	275	390	455	225	325	390
		720	1045	1245				520	750	915	275	390	455	225	325	390	210	295	360
		655	915	1115				455	655	785	245	360	425	210	295	360	180	260	310
		885	1275	1540				655	950	1145	360	520	620	295	425	520	245	360	425
		655	915	1115				425	620	750	245	360	425	210	295	360	180	260	310
		490	720	850				455	655	785	360	520	620	360	490	590	325	455	555
		425	620	750				390	555	655	295	425	520	275	390	455	245	360	425
	210	310	375				195	275	325	145	210	260	145	195	225	130	180	210	
M	Geometry	2P						2P • 4P			4P • 7N								
	DOC [inch]	.0079-.0787						.0236 – .1969			.0197 – .2362								
	feed [inch]	.0020-.0079						.0047 – .0157			.0039 – .0236								
	14.1	TN30M						TN30M			TN30M								
		590	820	980				490	720	850	455	655	785						
455		655	785				425	590	720	360	520	620							
360		490	590				325	455	555	275	390	455							
14.4	295	425	520				245	360	425	225	325	390							
K	Geometry	2P						2P • 6P • ..MA			6P • 7P • ..MA			7N					
	DOC [inch]	.0079-.0787						.0394 – .3150			.0394 – .3150			.0787 – .5906					
	feed [inch]	.0020-.0079						.0079 – .0236			.0047 – .0236			.0098 – .0472					
	15	TN20K						TN20K			TN20K			TN20K					
		950	1345	1605				750	1080	1310	590	850	1015	520	750	915			
		750	1080	1310				590	820	980	455	655	785	390	555	655			
		820	1180	1410				685	980	1180	590	820	980	490	720	850			
785		1115	1345				620	885	1045	490	685	820	425	590	720				
1115	1605	1935				950	1345	1605	785	1115	1345	720	1015	1210					
20	950	1345	1605				750	1080	1310	590	850	1015	520	750	915				
S	Geometry	2P						2P • .NGP			4P			4P • 6P					
	DOC [inch]	.0197-.0394						.0197-.0394			.0197-.0394			.0197-.0394					
	feed [inch]	.0039-.1969						.0039-.1969			.0039-.1969			.0039-.1969					
	31	TN15U			TN10U			TN10U			TN15U			TN15U					
		160	225	275	180	260	310	150	210	260	180	260	310	135	195	225			
		125	180	210	150	210	260	110	160	195	150	210	260	110	160	195			
		100	140	180	110	155	195	90	130	155	110	155	195	80	115	140			
		55	85	100	65	95	115	50	75	90	65	95	115	50	75	85			
		65	90	110	70	100	120	55	80	95	70	100	120	55	75	95			
125		180	210	135	195	225	110	160	195	135	195	225	100	145	180				

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			

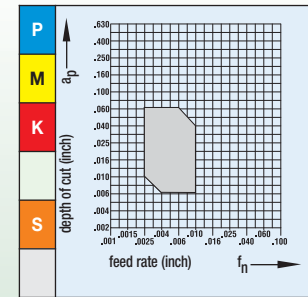
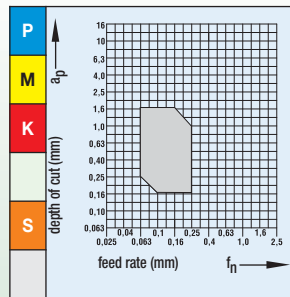
ANSI ISO 513	VDI 3323	A • Finishing (doc x feed = .0394 x .0039)						B • Medium (doc x feed = .0787 x .0079)						C • Roughing (d.o.c. x feed = .1575 x .0098)					
Material Group		Cutting Speed • vc SFM																	
		min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max	min	Start	max
P	DOC [inch]	1P .0079 – .0787						1P .0118– .1775			.0079 – .0787			1P .0276 – .1969					
	feed [inch]	.0020 – .0079						.0315 – .1378			.0020 – .0079			.0047 – .0157					
		TN10P						TN10P						TN20P					
	1	1115	1605	1935				915	1310	1570				590	850	1015			
	2	1115	1570	1900				850	1210	1440				425	620	750			
	3	950	1375	1640				590	850	1015				425	590	720			
	4	850	1210	1440				620	885	1045				360	490	590			
	5	655	915	1115				455	655	785				245	360	425			
	6	885	1275	1540				655	950	1145				360	520	620			
	7	850	1210	1440				620	885	1045				360	490	590			
	8	720	1045	1245				520	750	915				275	390	455			
	9	655	915	1115				455	655	785				245	360	425			
	10	885	1275	1540				655	950	1145				360	520	620			
	11	655	915	1115				425	620	750				245	360	425			
	12	490	720	850				455	655	785				360	520	620			
13.1	425	620	750				390	555	655				295	425	520				
13.2	210	310	375				195	275	325				145	210	260				
M	DOC [inch]	1P .0079 – .0787						1P .0118 – .1772						1P .0118 – .1772			1P .0079 – .0787		
	feed [inch]	.0020 – .0079						.0032 – .1378						.0032 – .1378			.0020 – .0079		
		TN30M						TN30M			TN15U			TN30M			TN15U		
	14.1	590	820	980				490	720	850	455	620	750	455	655	785	360	490	590
	14.2	455	655	785				425	590	720	360	520	620	360	520	620	275	390	455
14.3	360	490	590				325	455	555	275	390	455	275	390	455	210	295	360	
14.4	295	425	520				245	360	425	225	310	360	225	325	390	180	260	310	
K	DOC [inch]	1P .0079 – .0787						1P .0118 – .1772						1P .0394 – .3150					
	feed [inch]	.0020 – .0079						0.08 – 0.35						.0039– .0197					
		TN20K						TN20K						TN20K					
	15	950	1345	1605				750	1080	1310				590	850	1015			
	16	750	1080	1310				590	820	980				455	655	785			
	17	820	1180	1410				685	980	1180				590	820	980			
	18	785	1115	1345				620	885	1045				490	685	820			
	19	1115	1605	1935				950	1345	1605				785	1115	1345			
20	950	1345	1605				750	1080	1310				590	850	1015				
S	DOC [inch]	1P .0276 – .1181			1P .118 – .0787			1P .276 – .1969			1P .0118 – .1772			1P .0118 – .1772					
	f [inch]	.0047 – .0079			.0032 – .0079			.0047 – .0157			.0032 – .1378			.0032 – .1378					
		TN15U			TN10U			TN15U			TN10U			TN15U					
	31	160	225	275	180	260	310	150	210	260	160	225	275	135	195	225			
	32	125	180	210	150	210	260	110	160	195	135	195	225	110	160	195			
	33	100	140	180	110	155	195	90	130	155	95	140	160	80	115	140			
	34	55	85	100	65	95	115	50	75	90	60	85	100	50	75	85			
	35	65	90	110	70	100	120	55	80	95	65	95	110	55	75	95			
	36												0	0	0	0			
37	125	180	210	135	195	225	110	160	195	125	180	210	100	145	180				

Positive and Negative Inserts

1P



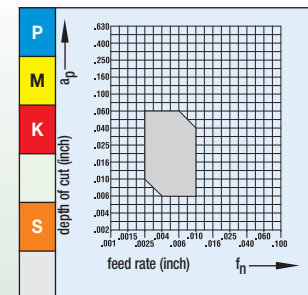
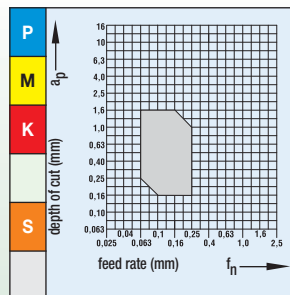
Preferred for light finishing. Low cutting forces and reduced power requirements due to positive rake angle. Good chip control over a wide range.



2P



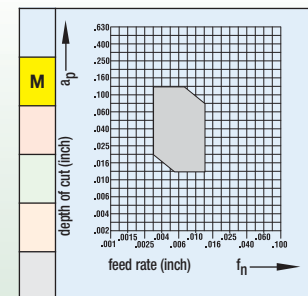
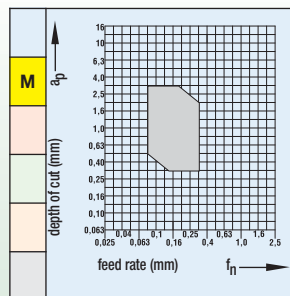
For finish turning, producing smooth, accurate surfaces. Very good chip control, especially at low depths of cut.



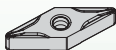
4P



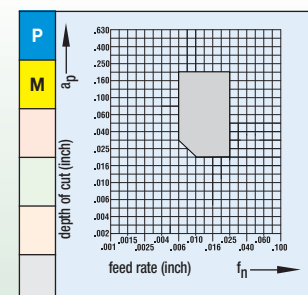
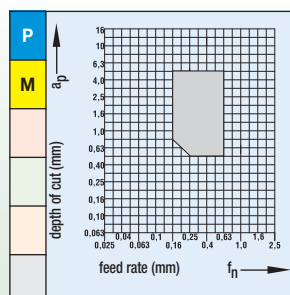
For medium-duty turning operations. Soft-cutting chipbreaker. Used in applications producing varying chip sections, such as profile or copy turning. Good dimensional accuracy. For soft steel materials and stainless steels.



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.

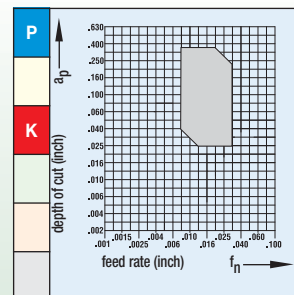
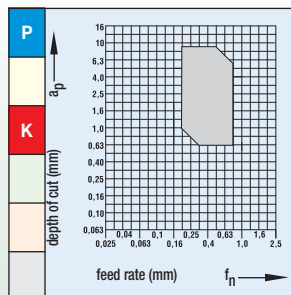


Positive and Negative Inserts

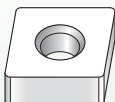
7N



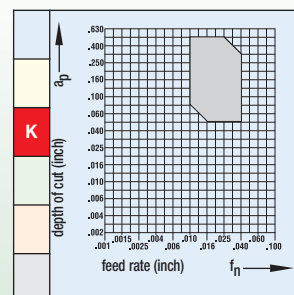
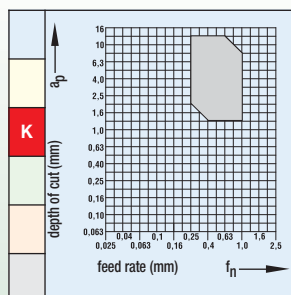
For medium-duty to roughing. Outstanding chip control. High edge strength for interrupted cuts, forging skin or scale. Preferred for all cast iron such as gray, malleable, and nodular.



..MA



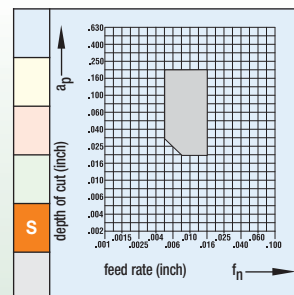
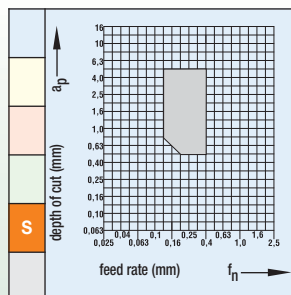
Flat top geometry for machining cast iron. For finishing to roughing applications.

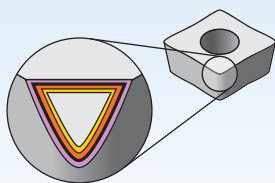


..GP



For light machining to light roughing.





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

wear resistance ← → toughness

Grade

Coating	Grade Description		05	10	15	20	25	30	35	40	45
TN10P HC-P10	Coated carbide. MTCVD-TiN-TiCN-Al ₂ O ₃ -TiN. Ideal for light finishing to medium machining applications. Superior wear resistance.	P									
		K									
TN20P HC-P20	Coated carbide. MTCVD-TiN-TiCN-Al ₂ O ₃ -TiN. Great general-purpose turning grade for steels. Ideal for semi-finishing to moderately heavy roughing.	P									
		K									
TN30P HC-P30	Coated carbide. MTCVD-TiN-TiCN-Al ₂ O ₃ -TiN. Tough carbide grade. Ideal for roughing and heavy roughing applications.	P									
		K									
TN15M HC-M15	Coated carbide. MTCVD-TiN-TiCN-Al ₂ O ₃ -TiN. Ideal for finishing to medium machining of austenitic stainless steels.	P									
		M									
TN30M HC-M30	Coated carbide. MTCVD-TiN-TiCN-Al ₂ O ₃ -TiN. Ideal for general-purpose machining of stainless steels.	P									
		M									
TN20K HC-K20	Coated carbide. MTCVD-TiN-TiCN-Al ₂ O ₃ -TiN. Great when used for straight or lightly interrupted cut applications of ductile and cast irons.	P									
		K									
TN10U HC-S10	Coated carbide. PVD-TiAlN-TiN. Ideal for finishing of difficult to machine alloys and stainless steels.	P									
		M									
TN15U HW-P15	Uncoated carbide. Excellent abrasion resistance for machining cast irons, austenitic stainless steels, and most high-temperature alloys.	K									
		N									
		S									

WIN WITH WIDIA™



WIDIA-CIRCLE™ Small-Hole Tooling Series

The WIDIA™ line of small-hole boring tools is an excellent, economical choice for a wide range of applications. Our solid carbide bars provide exceptional machining versatility and rupture strength. Indexable inserts are available in both steel and carbide shanks.

A/B Series

- Unique locking system enables quick, accurate insert changes.

Quadralock™

- V-slots and limit-stop bolts for increased indexability.

Micro Boring Bars

- Free cutting action, better surface finishes, and greater chip evacuation.

Solid Carbide Bars

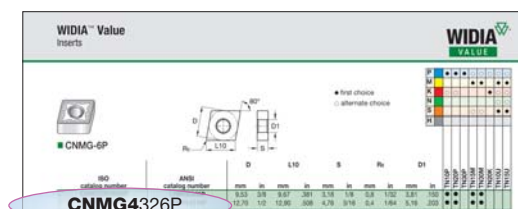
- Accurate, quick-change tooling and toolholders are ideal for small parts machining applications.

To learn more about our innovations, contact your local Authorized Distributor or visit www.widia.com.

WIDIA 

How Do Catalog Numbers Work?

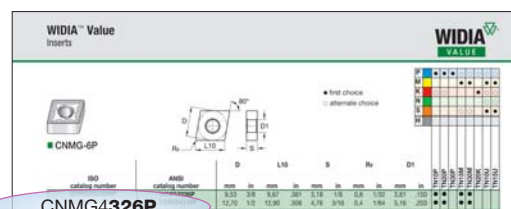
Each character in our catalog number signifies a specific trait of that product. Use the following key columns and corresponding images to easily identify which attributes apply.



C	N	M	G	4																																																																																																																																																																																																																								
Insert Shape	Insert Clearance Angle	Tolerance Class	Insert Features	Size																																																																																																																																																																																																																								
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°	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.	<p>Tolerances apply prior to edge prep and coating</p> <p>D = Theoretical diameter of the insert inscribed circle S = Thickness B = See figures below</p>	N R F A M G W T Q U B H C J X Special Design	<p>Code for inch cutting edge length "L10"</p> <table border="1"> <thead> <tr> <th>inch</th> <th>"D"</th> <th>C</th> <th>D</th> <th>R</th> <th>S</th> <th>T</th> <th>V</th> <th>W</th> </tr> </thead> <tbody> <tr><td>1.2 (5)</td><td>5/32</td><td>S4</td><td>04</td><td>03</td><td>03</td><td>06</td><td>—</td><td>—</td></tr> <tr><td>1.5 (6)</td><td>3/16</td><td>04</td><td>05</td><td>04</td><td>04</td><td>08</td><td>S3</td><td>—</td></tr> <tr><td>1.8 (7)</td><td>7/32</td><td>05</td><td>06</td><td>05</td><td>05</td><td>09</td><td>03</td><td>—</td></tr> <tr><td>—</td><td>.236</td><td>—</td><td>—</td><td>06</td><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>2</td><td>1/4</td><td>06</td><td>07</td><td>06</td><td>06</td><td>11</td><td>11</td><td>04</td></tr> <tr><td>2.5</td><td>5/16</td><td>08</td><td>09</td><td>07</td><td>07</td><td>13</td><td>13</td><td>05</td></tr> <tr><td>—</td><td>.315</td><td>—</td><td>—</td><td>08</td><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>3</td><td>3/8</td><td>09</td><td>11</td><td>09</td><td>09</td><td>16</td><td>16</td><td>06</td></tr> <tr><td>—</td><td>.394</td><td>—</td><td>—</td><td>10</td><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>3.5</td><td>7/16</td><td>11</td><td>13</td><td>11</td><td>11</td><td>19</td><td>19</td><td>07</td></tr> <tr><td>—</td><td>.472</td><td>—</td><td>—</td><td>12</td><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>4</td><td>1/2</td><td>12</td><td>15</td><td>12</td><td>12</td><td>22</td><td>22</td><td>08</td></tr> <tr><td>4.5</td><td>9/16</td><td>14</td><td>17</td><td>14</td><td>14</td><td>24</td><td>24</td><td>09</td></tr> <tr><td>5</td><td>5/8</td><td>16</td><td>19</td><td>15</td><td>15</td><td>27</td><td>27</td><td>10</td></tr> <tr><td>—</td><td>.630</td><td>—</td><td>—</td><td>16</td><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>5.5</td><td>11/16</td><td>17</td><td>21</td><td>17</td><td>17</td><td>30</td><td>30</td><td>11</td></tr> <tr><td>6</td><td>3/4</td><td>19</td><td>23</td><td>19</td><td>19</td><td>33</td><td>33</td><td>13</td></tr> <tr><td>—</td><td>.787</td><td>—</td><td>—</td><td>20</td><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>7</td><td>7/8</td><td>22</td><td>27</td><td>22</td><td>22</td><td>38</td><td>38</td><td>15</td></tr> <tr><td>—</td><td>.984</td><td>—</td><td>—</td><td>25</td><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>8</td><td>1</td><td>25</td><td>31</td><td>25</td><td>25</td><td>44</td><td>44</td><td>17</td></tr> <tr><td>10</td><td>1-1/4</td><td>32</td><td>38</td><td>31</td><td>31</td><td>54</td><td>54</td><td>21</td></tr> <tr><td>—</td><td>1.260</td><td>—</td><td>—</td><td>32</td><td>—</td><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>	inch	"D"	C	D	R	S	T	V	W	1.2 (5)	5/32	S4	04	03	03	06	—	—	1.5 (6)	3/16	04	05	04	04	08	S3	—	1.8 (7)	7/32	05	06	05	05	09	03	—	—	.236	—	—	06	—	—	—	—	2	1/4	06	07	06	06	11	11	04	2.5	5/16	08	09	07	07	13	13	05	—	.315	—	—	08	—	—	—	—	3	3/8	09	11	09	09	16	16	06	—	.394	—	—	10	—	—	—	—	3.5	7/16	11	13	11	11	19	19	07	—	.472	—	—	12	—	—	—	—	4	1/2	12	15	12	12	22	22	08	4.5	9/16	14	17	14	14	24	24	09	5	5/8	16	19	15	15	27	27	10	—	.630	—	—	16	—	—	—	—	5.5	11/16	17	21	17	17	30	30	11	6	3/4	19	23	19	19	33	33	13	—	.787	—	—	20	—	—	—	—	7	7/8	22	27	22	22	38	38	15	—	.984	—	—	25	—	—	—	—	8	1	25	31	25	25	44	44	17	10	1-1/4	32	38	31	31	54	54	21	—	1.260	—	—	32	—	—	—	—
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tolerance class	tolerance on "D"	tolerance on "B"	tolerance on "S"
C	±.0010"	±.0005"	±.001"
H	±.0005"	±.0005"	±.001"
E	±.0010"	±.0010"	±.001"
G	±.0010"	±.0010"	±.0005"
M	See tables in size column		±.0005"
U	See tables in size column		±.0005"

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



3

Thickness
S

symbol inch	thickness inch
.5 (1)	1/32
.6	.040
1 (2)	1/16
1.2	5/64
1.5 (3)	3/32
2	1/8
2.5	5/32
3	3/16
3.5	7/32
4	1/4
5	5/16
6	3/8
7	7/16
18	1/2

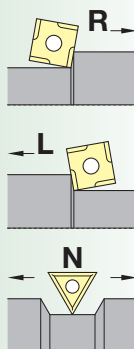
2

Corner
Radius "R_c"

symbol inch	corner radius inch
X0	.0015
0	.004
.5	.008
1	1/64
2	1/32
3	3/64
4	1/16
5	5/64
6	3/32
7	7/64
8	1/8
–	round insert

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

4P Medium Machining

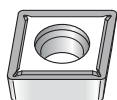
7N Heavy Roughing

2P Finishing

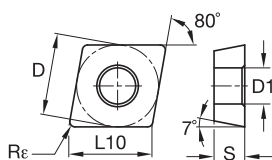
6P Medium Roughing

..GP Medium Machining

..MA Roughing



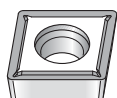
■ CCGT-1P



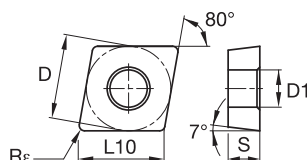
- first choice
○ alternate choice

P	●	●	●	○	○	○	○	○	○	○	○
M	●	●	●	●	●	●	●	●	●	●	●
K	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○

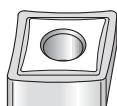
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
CCGT0602021P	CCGT215051P	6,35	1/4	6,45	.254	2,38	3/32	0,2	.008	2,80	.110							●	●
CCGT0602041P	CCGT21511P	6,35	1/4	6,45	.254	2,38	3/32	0,4	1/64	2,80	.110							●	●
CCGT0602081P	CCGT21521P	6,35	1/4	6,45	.254	2,38	3/32	0,8	1/32	2,80	.110							●	●
CCGT09T3011P	CCGT32501P	9,53	3/8	9,67	.381	3,97	5/32	0,1	.004	4,40	.173							●	●
CCGT09T3021P	CCGT325051P	9,53	3/8	9,67	.381	3,97	5/32	0,2	.008	4,40	.173							●	●
CCGT09T3041P	CCGT32511P	9,53	3/8	9,67	.381	3,97	5/32	0,4	1/64	4,40	.173							●	●
CCGT09T3081P	CCGT32521P	9,53	3/8	9,67	.381	3,97	5/32	0,8	1/32	4,40	.173							●	●



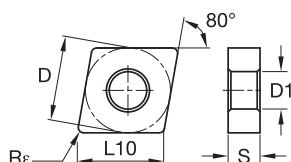
■ CCMT-1P



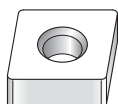
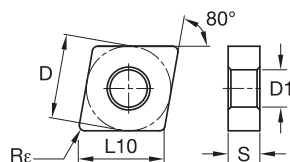
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
CCMT0602021P	CCMT215051P	6,35	1/4	6,45	.254	2,38	3/32	0,2	.008	2,80	.110	●			●	●	●	●	●
CCMT0602041P	CCMT21511P	6,35	1/4	6,45	.254	2,38	3/32	0,4	1/64	2,80	.110	●	●		●	●	●	●	●
CCMT0602081P	CCMT21521P	6,35	1/4	6,45	.254	2,38	3/32	0,8	1/32	2,80	.110	●	●		●	●	●	●	●
CCMT09T3021P	CCMT325051P	9,53	3/8	9,67	.381	3,97	5/32	0,2	.008	4,40	.173							●	●
CCMT09T3041P	CCMT32511P	9,53	3/8	9,67	.381	3,97	5/32	0,4	1/64	4,40	.173	●	●		●	●	●	●	●
CCMT09T3081P	CCMT32521P	9,53	3/8	9,67	.381	3,97	5/32	0,8	1/32	4,40	.173	●	●		●	●	●	●	●
CCMT1204041P	CCMT4311P	12,70	1/2	12,90	.508	4,76	3/16	0,4	1/64	5,50	.217	●	●		●	●	●	●	●
CCMT1204081P	CCMT4321P	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,50	.217	●	●		●	●	●	●	●



■ CNGP



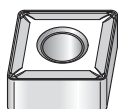
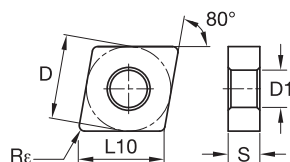
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
CNGP120401	CNGP430	12,70	1/2	12,90	.508	4,76	3/16	0,1	.004	5,16	.203							●	●
CNGP120402	CNGP4305	12,70	1/2	12,90	.508	4,76	3/16	0,2	.008	5,16	.203							●	●
CNGP120404	CNGP431	12,70	1/2	12,90	.508	4,76	3/16	0,4	1/64	5,16	.203							●	●
CNGP120408	CNGP432	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,16	.203							●	●
CNGP120412	CNGP433	12,70	1/2	12,90	.508	4,76	3/16	1,2	3/64	5,16	.203							●	●


■ CNMA


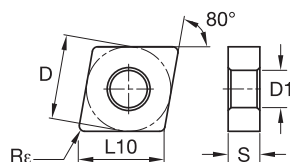
- first choice
○ alternate choice

P	●	●	●	○	○	○	○	○	○	○	○
M	●	●	●	●	●	●	●	●	●	●	●
K	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○

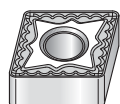
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
CNMA120404	CNMA431	12,70	1/2	12,90	.508	4,76	3/16	0,4	1/64	5,16	.203								
CNMA120408	CNMA432	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,16	.203						●		
CNMA120412	CNMA433	12,70	1/2	12,90	.508	4,76	3/16	1,2	3/64	5,16	.203						●		
CNMA120416	CNMA434	12,70	1/2	12,90	.508	4,76	3/16	1,6	1/16	5,16	.203						●		
CNMA160612	CNMA543	15,88	5/8	16,12	.635	6,35	1/4	1,2	3/64	6,35	.250						●		
CNMA160616	CNMA544	15,88	5/8	16,12	.635	6,35	1/4	1,6	1/16	6,35	.250						●		
CNMA190612	CNMA643	19,05	3/4	19,34	.762	6,35	1/4	1,2	3/64	7,93	.313						●		
CNMA190616	CNMA644	19,05	3/4	19,34	.762	6,35	1/4	1,6	1/16	7,93	.313						●		


■ CNMG-2P


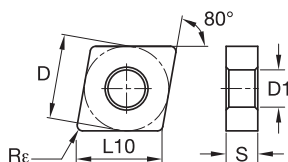
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
CNMG1204042P	CNMG4312P	12,70	1/2	12,90	.508	4,76	3/16	0,4	1/64	5,16	.203	●	●			●	●	●	●
CNMG1204082P	CNMG4322P	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,16	.203	●	●			●	●	●	●
CNMG1204122P	CNMG4332P	12,70	1/2	12,90	.508	4,76	3/16	1,2	3/64	5,16	.203	●	●			●	●	●	●


■ CNMG-4P


ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
CNMG1204044P	CNMG4314P	12,70	1/2	12,90	.508	4,76	3/16	0,4	1/64	5,16	.203					●	●		
CNMG1204084P	CNMG4324P	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,16	.203					●	●		
CNMG1204124P	CNMG4334P	12,70	1/2	12,90	.508	4,76	3/16	1,2	3/64	5,16	.203					●	●		
CNMG1606124P	CNMG5434P	15,88	5/8	16,12	.635	6,35	1/4	1,2	3/64	6,35	.250					●	●		
CNMG1906124P	CNMG6434P	19,05	3/4	19,34	.762	6,35	1/4	1,2	3/64	7,93	.313					●	●		



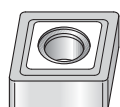
■ **CNMG-6P**



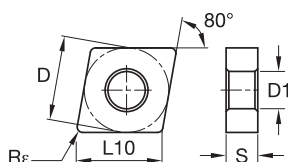
- first choice
○ alternate choice

P	●	●	●	○	○	○	○	○	○	○	○
M	●	●	●	●	●	●	●	●	●	●	●
K	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○

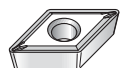
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
CNMG0903086P	CNMG3226P	9,53	3/8	9,67	.381	3,18	1/8	0,8	1/32	3,81	.150	●	●	●	●	●	●	●	●
CNMG1204046P	CNMG4316P	12,70	1/2	12,90	.508	4,76	3/16	0,4	1/64	5,16	.203	●	●	●	●	●	●	●	●
CNMG1204086P	CNMG4326P	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	●	●	●	●	●
CNMG1204126P	CNMG4336P	12,70	1/2	12,90	.508	4,76	3/16	1,2	3/64	5,16	.203	●	●	●	●	●	●	●	●
CNMG1606126P	CNMG5436P	15,88	5/8	16,12	.635	6,35	1/4	1,2	3/64	6,35	.250	●	●	●	●	●	●	●	●
CNMG1906126P	CNMG6436P	19,05	3/4	19,34	.762	6,35	1/4	1,2	3/64	7,93	.313	●	●	●	●	●	●	●	●



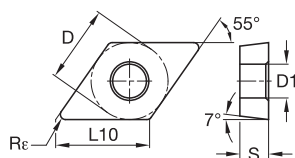
■ **CNMG-7N**



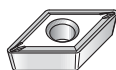
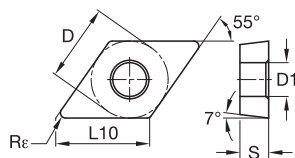
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
CNMG1204047N	CNMG4317N	12,70	1/2	12,90	.508	4,76	3/16	0,4	1/64	5,16	.203	●	●	●	●	●	●	●	●
CNMG1204087N	CNMG4327N	12,70	1/2	12,90	.508	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	●	●	●	●	●
CNMG1204127N	CNMG4337N	12,70	1/2	12,90	.508	4,76	3/16	1,2	3/64	5,16	.203	●	●	●	●	●	●	●	●
CNMG1204167N	CNMG4347N	12,70	1/2	12,90	.508	4,76	3/16	1,6	1/16	5,16	.203	●	●	●	●	●	●	●	●
CNMG1606127N	CNMG5437N	15,88	5/8	16,12	.635	6,35	1/4	1,2	3/64	6,35	.250	●	●	●	●	●	●	●	●
CNMG1606167N	CNMG5447N	15,88	5/8	16,12	.635	6,35	1/4	1,6	1/16	6,35	.250	●	●	●	●	●	●	●	●
CNMG1906087N	CNMG6427N	19,05	3/4	19,34	.762	6,35	1/4	0,8	1/32	7,93	.313	●	●	●	●	●	●	●	●
CNMG1906127N	CNMG6437N	19,05	3/4	19,34	.762	6,35	1/4	1,2	3/64	7,93	.313	●	●	●	●	●	●	●	●
CNMG1906167N	CNMG6447N	19,05	3/4	19,34	.762	6,35	1/4	1,6	1/16	7,93	.313	●	●	●	●	●	●	●	●
CNMG2509247N	CNMG8667N	25,40	1	25,79	1.015	9,53	3/8	2,4	3/32	9,12	.359	●	●	●	●	●	●	●	●



■ **DCGT-1P**



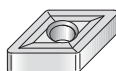
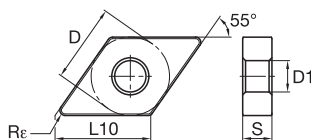
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
DCGT0702011P	DCGT21501P	6,35	1/4	7,75	.305	2,38	3/32	0,1	.004	2,80	.110	●	●	●	●	●	●	●	●
DCGT11T3011P	DCGT32501P	9,53	3/8	11,63	.458	3,97	5/32	0,1	.004	4,40	.173	●	●	●	●	●	●	●	●
DCGT1504081P	DCGT4321P	12,70	1/2	15,50	.610	4,76	3/16	0,8	1/32	5,50	.217	●	●	●	●	●	●	●	●


DCMT-1P


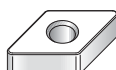
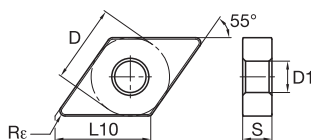
- first choice
 ○ alternate choice

P	●	●	●	○	○	○	○	○	○	○	○
M	●	●	●	●	●	●	●	●	●	●	●
K	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
DCMT0702021P	DCMT215051P	6,35	1/4	7,75	.305	2,38	3/32	0,2	.008	2,80	.110	●	●	●	●	●	●	●	●
DCMT0702041P	DCMT21511P	6,35	1/4	7,75	.305	2,38	3/32	0,4	1/64	2,80	.110	●	●	●	●	●	●	●	●
DCMT11T3021P	DCMT325051P	9,53	3/8	11,63	.458	3,97	5/32	0,2	.008	4,40	.173	●	●	●	●	●	●	●	●
DCMT11T3041P	DCMT32511P	9,53	3/8	11,63	.458	3,97	5/32	0,4	1/64	4,40	.173	●	●	●	●	●	●	●	●
DCMT11T3081P	DCMT32521P	9,53	3/8	11,63	.458	3,97	5/32	0,8	1/32	4,40	.173	●	●	●	●	●	●	●	●
DCMT11T3121P	DCMT32531P	9,53	3/8	11,63	.458	3,97	5/32	1,2	3/64	4,40	.173	●	●	●	●	●	●	●	●
DCMT1504041P	DCMT4311P	12,70	1/2	15,50	.610	4,76	3/16	0,4	1/64	5,50	.217	●	●	●	●	●	●	●	●
DCMT1504081P	DCMT4321P	12,70	1/2	15,50	.610	4,76	3/16	0,8	1/32	5,50	.217	●	●	●	●	●	●	●	●

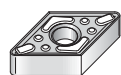

DNGP


ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
DNGP150401	DNGP430	12,70	1/2	15,50	.610	4,76	3/16	0,1	.004	5,16	.203	●	●	●	●	●	●	●	●
DNGP150402	DNGP4305	12,70	1/2	15,50	.610	4,76	3/16	0,2	.008	5,16	.203	●	●	●	●	●	●	●	●
DNGP150404	DNGP431	12,70	1/2	15,50	.610	4,76	3/16	0,4	1/64	5,16	.203	●	●	●	●	●	●	●	●
DNGP150408	DNGP432	12,70	1/2	15,50	.610	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	●	●	●	●	●


DNMA


ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
DNMA150408	DNMA432	12,70	1/2	15,50	.610	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	●	●	●	●	●
DNMA150412	DNMA433	12,70	1/2	15,50	.610	4,76	3/16	1,2	3/64	5,16	.203	●	●	●	●	●	●	●	●
DNMA150608	DNMA442	12,70	1/2	15,50	.610	6,35	1/4	0,8	1/32	5,16	.203	●	●	●	●	●	●	●	●
DNMA150612	DNMA443	12,70	1/2	15,50	.610	6,35	1/4	1,2	3/64	5,16	.203	●	●	●	●	●	●	●	●























































ISO catalog number	ANSI catalog number	D		L10		S		R _e		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN45U
		mm	in	mm	in	mm	in	mm	in	mm	in								
DNMG1504042P	DNMG4312P	12,70	1/2	15,50	.610	4,76	3/16	0,4	1/64	5,16	.203	●	●		●	●	●	●	●
DNMG1504082P	DNMG4322P	12,70	1/2	15,50	.610	4,76	3/16	0,8	1/32	5,16	.203	●	●		●	●	●	●	●
DNMG1506042P	DNMG4412P	12,70	1/2	15,50	.610	6,35	1/4	0,4	1/64	5,16	.203	●	●	●	●		●	●	●
DNMG1506082P	DNMG4422P	12,70	1/2	15,50	.610	6,35	1/4	0,8	1/32	5,16	.203	●	●	●	●		●	●	●
DNMG1506122P	DNMG4432P	12,70	1/2	15,50	.610	6,35	1/4	1,2	3/64	5,16	.203	●	●	●	●	●	●	●	●



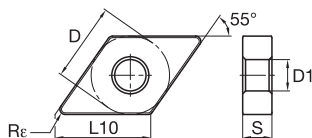
ISO catalog number	ANSI catalog number	D		L10		S		R _e		D1							
		mm	in	mm	in	mm	in	mm	in	mm	in						
DNMG1504044P	DNMG4314P	12,70	1/2	15,50	.610	4,76	3/16	0,4	1/64	5,16	.203			●	●		
DNMG1504084P	DNMG4324P	12,70	1/2	15,50	.610	4,76	3/16	0,8	1/32	5,16	.203			●	●		
DNMG1506044P	DNMG4414P	12,70	1/2	15,50	.610	6,35	1/4	0,4	1/64	5,16	.203			●	●		
DNMG1506084P	DNMG4424P	12,70	1/2	15,50	.610	6,35	1/4	0,8	1/32	5,16	.203			●	●		
DNMG1506124P	DNMG4434P	12,70	1/2	15,50	.610	6,35	1/4	1,2	3/64	5,16	.203			●	●		



ISO catalog number	ANSI catalog number	D		L10		S		R _e		D1							
		mm	in	mm	in	mm	in	mm	in	mm	in						
DNMG1104086P	DNMG3326P	9,53	3/8	11,63	.458	4,76	3/16	0,8	1/32	3,81	.150	●	●		●		
DNMG1504046P	DNMG4316P	12,70	1/2	15,50	.610	4,76	3/16	0,4	1/64	5,16	.203	●	●	●	●		
DNMG1504086P	DNMG4326P	12,70	1/2	15,50	.610	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	●		
DNMG1504126P	DNMG4336P	12,70	1/2	15,50	.610	4,76	3/16	1,2	3/64	5,16	.203	●	●	●	●		
DNMG1506046P	DNMG4416P	12,70	1/2	15,50	.610	6,35	1/4	0,4	1/64	5,16	.203	●	●	●	●		
DNMG1506086P	DNMG4426P	12,70	1/2	15,50	.610	6,35	1/4	0,8	1/32	5,16	.203	●	●	●	●		
DNMG1506126P	DNMG4436P	12,70	1/2	15,50	.610	6,35	1/4	1,2	3/64	5,16	.203	●	●	●	●		
DNMG1906126P	DNMG5436P	15,88	5/8	19,38	.763	6,35	1/4	1,2	3/64	6,35	.250			●			

P									
M									
K									
N									
S									
H									

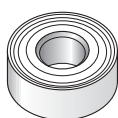
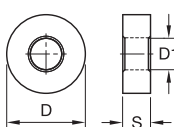
- first choice
- alternate choice


■ DNMG-7N


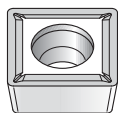
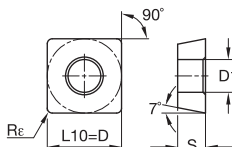
● first choice
 ○ alternate choice

P	●	●	●	○	○	○	○	○	○	○	○
M	●	●	●	●	●	●	●	●	●	●	●
K	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○

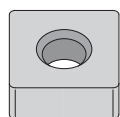
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
DNMG1504047N	DNMG4317N	12,70	1/2	15,50	.610	4,76	3/16	0,4	1/64	5,16	.203	●	●	●					
DNMG1504087N	DNMG4327N	12,70	1/2	15,50	.610	4,76	3/16	0,8	1/32	5,16	.203	●	●	●			●		
DNMG1504127N	DNMG4337N	12,70	1/2	15,50	.610	4,76	3/16	1,2	3/64	5,16	.203	●	●	●			●		
DNMG1506087N	DNMG4427N	12,70	1/2	15,50	.610	6,35	1/4	0,8	1/32	5,16	.203	●	●	●			●		
DNMG1506127N	DNMG4437N	12,70	1/2	15,50	.610	6,35	1/4	1,2	3/64	5,16	.203	●	●	●			●		
DNMG1906127N	DNMG5437N	15,88	5/8	19,38	.763	6,35	1/4	1,2	3/64	6,35	.250	●	●	●					


■ RNMG-7N


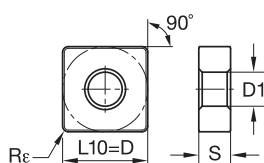
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
RNMG12047N	RNMG437N	12,70	1/2	—	—	4,76	3/16	—	—	5,16	.203	●	●				●		
RNMG19067N	RNMG647N	19,05	3/4	—	—	6,35	1/4	—	—	7,93	.313	●	●						


■ SCMT-1P


ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
SCMT09T3041P	SCMT32511P	9,53	3/8	9,53	.375	3,97	5/32	0,4	1/64	4,40	.173	●	●	●	●	●	●	●	●
SCMT09T3081P	SCMT32521P	9,53	3/8	9,53	.375	3,97	5/32	0,8	1/32	4,40	.173	●	●	●	●	●	●	●	●
SCMT1204041P	SCMT4311P	12,70	1/2	12,70	.500	4,76	3/16	0,4	1/64	5,50	.217	●	●					●	
SCMT1204081P	SCMT4321P	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,50	.217	●	●					●	



■ SNMA



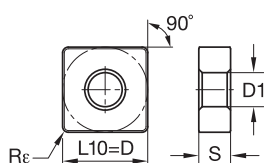
● first choice
○ alternate choice

P	●	●	●	○	○	○	○	○	○
M	●	●	●	●	●	●	●	●	●
K	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○

ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
SNMA120408	SNMA432	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,16	.203						●		
SNMA120412	SNMA433	12,70	1/2	12,70	.500	4,76	3/16	1,2	3/64	5,16	.203						●		
SNMA150612	SNMA543	15,88	5/8	15,88	.625	6,35	1/4	1,2	3/64	6,35	.250						●		
SNMA190612	SNMA643	19,05	3/4	19,05	.750	6,35	1/4	1,2	3/64	7,93	.313						●		



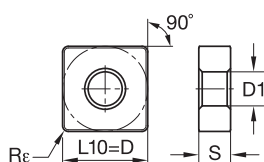
■ SNMG-2P



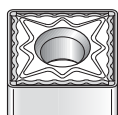
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
SNMG0903082P	SNMG3222P	9,53	3/8	9,53	.375	3,18	1/8	0,8	1/32	3,81	.150	●	●				●	●	
SNMG1204082P	SNMG4322P	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,16	.203	●	●		●		●	●	●



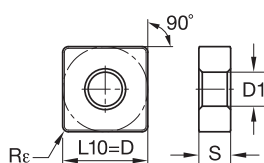
■ SNMG-4P



ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
SNMG1204084P	SNMG4324P	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,16	.203				●	●			
SNMG1204124P	SNMG4334P	12,70	1/2	12,70	.500	4,76	3/16	1,2	3/64	5,16	.203				●	●			



■ SNMG-6P



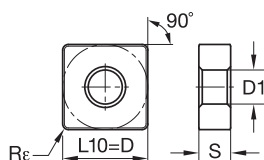
- first choice
- alternate choice

P								
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ISO catalog number	ANSI catalog number	D		L10		S		R _e		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN41U
		mm	in	mm	in	mm	in	mm	in	mm	in								
SNMG0903086P	SNMG3226P	9,53	3/8	9,53	.375	3,18	1/8	0,8	1/32	3,81	.150	●	●						
SNMG1204046P	SNMG4316P	12,70	1/2	12,70	.500	4,76	3/16	0,4	1/64	5,16	.203	●	●		●	●			
SNMG1204086P	SNMG4326P	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	●	●			
SNMG1204126P	SNMG4336P	12,70	1/2	12,70	.500	4,76	3/16	1,2	3/64	5,16	.203	●	●	●	●	●			
SNMG1906126P	SNMG6436P	19,05	3/4	19,05	.750	6,35	1/4	1,2	3/64	7,93	.313		●	●	●	●			



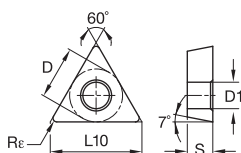
■ SNMG-7N

























































ISO catalog number	ANSI catalog number	D		L10		S		R _e		D1							
		mm	in	mm	in	mm	in	mm	in	mm	in						
SNMG1204087N	SNMG4327N	12,70	1/2	12,70	.500	4,76	3/16	0,8	1/32	5,16	.203	●	●			●	
SNMG1204127N	SNMG4337N	12,70	1/2	12,70	.500	4,76	3/16	1,2	3/64	5,16	.203	●	●	●		●	
SNMG1204167N	SNMG4347N	12,70	1/2	12,70	.500	4,76	3/16	1,6	1/16	5,16	.203	●	●	●		●	
SNMG1506127N	SNMG5437N	15,88	5/8	15,88	.625	6,35	1/4	1,2	3/64	6,35	.250		●	●		●	
SNMG1506167N	SNMG5447N	15,88	5/8	15,88	.625	6,35	1/4	1,6	1/16	6,35	.250		●	●		●	
SNMG1906127N	SNMG6437N	19,05	3/4	19,05	.750	6,35	1/4	1,2	3/64	7,93	.313		●	●		●	
SNMG1906167N	SNMG6447N	19,05	3/4	19,05	.750	6,35	1/4	1,6	1/16	7,93	.313		●	●		●	



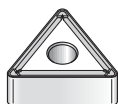
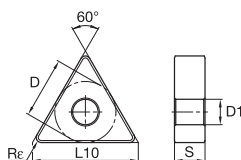
■ TCGT-1P



ISO catalog number	ANSI catalog number	D		L10		S		R _e		D1									
		mm	in	mm	in	mm	in	mm	in	mm	in								
TCGT1102011P	TCGT21501P	6,35	1/4	11,00	.433	2,38	3/32	0,1	.004	2,80	.110							●	●
TCGT1102041P	TCGT21511P	6,35	1/4	11,00	.433	2,38	3/32	0,4	1/64	2,80	.110							●	●
TCGT16T3021P	TCGT325051P	9,53	3/8	16,50	.650	3,97	5/32	0,2	.008	4,40	.173							●	●
TCGT16T3041P	TCGT32511P	9,53	3/8	16,50	.650	3,97	5/32	0,4	1/64	4,40	.173							●	●
TCGT16T3081P	TCGT32521P	9.53	3/8	16.50	.650	3.97	5/32	0.8	1/32	4.40	.173							●	

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K									
N									
S									
H									

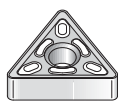
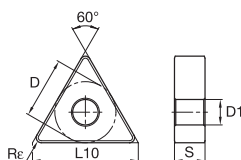
ISO catalog number	ANSI catalog number	D		L10		S		R _e		D1							
		mm	in	mm	in	mm	in	mm	in	mm	in						
TNMA160408	TNMA332	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150					●	
TNMA160412	TNMA333	9,53	3/8	16,50	.650	4,76	3/16	1,2	3/64	3,81	.150					●	
TNMA220408	TNMA432	12,70	1/2	22,00	.866	4,76	3/16	0,8	1/32	5,16	.203					●	


■ TNMG-2P


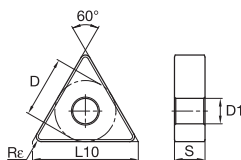
● first choice
 ○ alternate choice

P	●	●	●	○	○	○	○	○	○	○	○
M	●	●	●	●	●	●	●	●	●	●	●
K	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
TNMG1604042P	TNMG3312P	9,53	3/8	16,50	.650	4,76	3/16	0,4	1/64	3,81	.150	●	●	●	●	●	●	●	●
TNMG1604082P	TNMG3322P	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150	●	●	●	●	●	●	●	●
TNMG1604122P	TNMG3332P	9,53	3/8	16,50	.650	4,76	3/16	1,2	3/64	3,81	.150	●	●	●	●	●	●	●	●
TNMG2204082P	TNMG4322P	12,70	1/2	22,00	.866	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	●	●	●	●	●


■ TNMG-4P


ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
TNMG1604044P	TNMG3314P	9,53	3/8	16,50	.650	4,76	3/16	0,4	1/64	3,81	.150	●	●	●	●	●	●	●	●
TNMG1604084P	TNMG3324P	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150	●	●	●	●	●	●	●	●
TNMG1604124P	TNMG3334P	9,53	3/8	16,50	.650	4,76	3/16	1,2	3/64	3,81	.150	●	●	●	●	●	●	●	●
TNMG2204044P	TNMG4314P	12,70	1/2	22,00	.866	4,76	3/16	0,4	1/64	5,16	.203	●	●	●	●	●	●	●	●
TNMG2204084P	TNMG4324P	12,70	1/2	22,00	.866	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	●	●	●	●	●

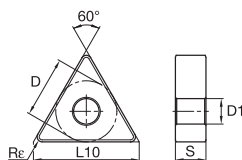

■ TNMG-6P


ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
TNMG1604046P	TNMG3316P	9,53	3/8	16,50	.650	4,76	3/16	0,4	1/64	3,81	.150	●	●	●	●	●	●	●	●
TNMG1604086P	TNMG3326P	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150	●	●	●	●	●	●	●	●
TNMG1604126P	TNMG3336P	9,53	3/8	16,50	.650	4,76	3/16	1,2	3/64	3,81	.150	●	●	●	●	●	●	●	●
TNMG2204046P	TNMG4316P	12,70	1/2	22,00	.866	4,76	3/16	0,4	1/64	5,16	.203	●	●	●	●	●	●	●	●
TNMG2204086P	TNMG4326P	12,70	1/2	22,00	.866	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	●	●	●	●	●

Turning • WIDIA Value



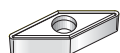
■ **TNMG-7N**



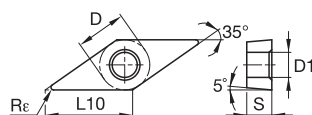
● first choice
○ alternate choice

P	●	●	●	○	○	○	○	○	○	○	○
M	●	●	●	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○

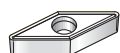
ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
TNMG1604047N	TNMG3317N	9,53	3/8	16,50	.650	4,76	3/16	0,4	1/64	3,81	.150	●	●	●					
TNMG1604087N	TNMG3327N	9,53	3/8	16,50	.650	4,76	3/16	0,8	1/32	3,81	.150	●	●	●			●		
TNMG1604127N	TNMG3337N	9,53	3/8	16,50	.650	4,76	3/16	1,2	3/64	3,81	.150	●	●	●			●		
TNMG2204047N	TNMG4317N	12,70	1/2	22,00	.866	4,76	3/16	0,4	1/64	5,16	.203	●	●						
TNMG2204087N	TNMG4327N	12,70	1/2	22,00	.866	4,76	3/16	0,8	1/32	5,16	.203	●	●	●			●		
TNMG2204127N	TNMG4337N	12,70	1/2	22,00	.866	4,76	3/16	1,2	3/64	5,16	.203	●	●	●			●		
TNMG2706127N	TNMG5437N	15,88	5/8	27,50	1.083	6,35	1/4	1,2	3/64	6,35	.250	●	●	●			●		
TNMG3309247N	TNMG6667N	19,05	3/4	33,00	1.299	9,53	3/8	2,4	3/32	7,93	.313	●	●	●			●		



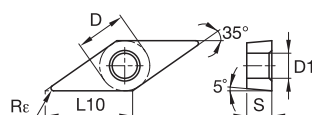
■ **VBGT-1P**



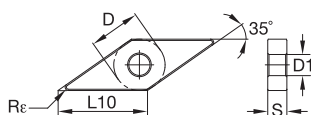
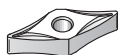
ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
VBGT1103011P	VBGT2201P	6,35	1/4	11,07	.436	3,18	1/8	0,1	.004	2,80	.110							●	●
VBGT1103021P	VBGT22051P	6,35	1/4	11,07	.436	3,18	1/8	0,2	.008	2,80	.110							●	●
VBGT1103041P	VBGT2211P	6,35	1/4	11,07	.436	3,18	1/8	0,4	1/64	2,80	.110							●	
VBGT1604011P	VBGT3301P	9,53	3/8	16,61	.654	4,76	3/16	0,1	.004	4,40	.173							●	
VBGT1604021P	VBGT33051P	9,53	3/8	16,61	.654	4,76	3/16	0,2	.008	4,40	.173							●	●
VBGT1604041P	VBGT3311P	9,53	3/8	16,61	.654	4,76	3/16	0,4	1/64	4,40	.173							●	●



■ **VBMT-1P**



ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
VBMT1103021P	VBMT22051P	6,35	1/4	11,07	.436	3,18	1/8	0,2	.008	2,80	.110							●	●
VBMT1103041P	VBMT2211P	6,35	1/4	11,07	.436	3,18	1/8	0,4	1/64	2,80	.110	●	●					●	●
VBMT1103081P	VBMT2221P	6,35	1/4	11,07	.436	3,18	1/8	0,8	1/32	2,80	.110	●	●					●	●
VBMT1604021P	VBMT33051P	9,53	3/8	16,61	.654	4,76	3/16	0,2	.008	4,40	.173	●	●					●	●
VBMT1604041P	VBMT3311P	9,53	3/8	16,61	.654	4,76	3/16	0,4	1/64	4,40	.173	●	●					●	●
VBMT1604081P	VBMT3321P	9,53	3/8	16,61	.654	4,76	3/16	0,8	1/32	4,40	.173	●	●					●	●

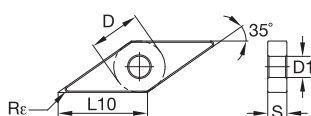
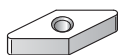


- first choice
○ alternate choice

P	●	●	●	○	○	○	○	○	○	○	○
M	●	●	●	○	○	○	○	○	○	○	○
K	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○

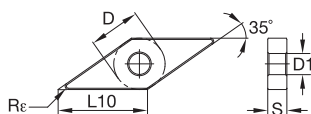
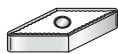
VNGP

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
VNGP160401	VNGP330	9,53	3/8	16,61	.654	4,76	3/16	0,1	.004	3,81	.150								
VNGP160402	VNGP3305	9,53	3/8	16,61	.654	4,76	3/16	0,2	.008	3,81	.150								
VNGP220404	VNGP431	12,70	1/2	22,14	.872	4,76	3/16	0,4	1/64	5,16	.203								
VNGP220408	VNGP432	12,70	1/2	22,14	.872	4,76	3/16	0,8	1/32	5,16	.203								



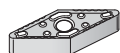
VNMA

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
VNMA160408	VNMA332	9,53	3/8	16,61	.654	4,76	3/16	0,8	1/32	3,81	.150								

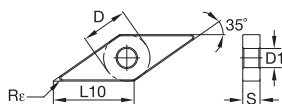


VNMG-2P

ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
VNMG1604042P	VNMG3312P	9,53	3/8	16,61	.654	4,76	3/16	0,4	1/64	3,81	.150	●	●	●	●	●	●	●	●
VNMG1604082P	VNMG3322P	9,53	3/8	16,61	.654	4,76	3/16	0,8	1/32	3,81	.150	●	●	●	●	●	●	●	●



■ VNMG-4P



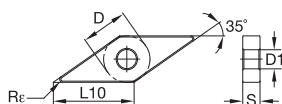
● first choice
○ alternate choice

P	●	●	●	○	○	○	○	○	○	○	○
M	●	●	●	●	●	●	●	●	●	●	●
K	○	○	○	○	○	○	○	○	○	○	○
N	○	○	○	○	○	○	○	○	○	○	○
S	○	○	○	○	○	○	○	○	○	○	○
H	○	○	○	○	○	○	○	○	○	○	○

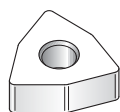
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
VNMG1604044P	VNMG3314P	9,53	3/8	16,61	.654	4,76	3/16	0,4	1/64	3,81	.150								
VNMG1604084P	VNMG3324P	9,53	3/8	16,61	.654	4,76	3/16	0,8	1/32	3,81	.150				●	●			



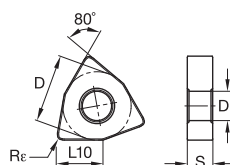
■ VNMG-6P



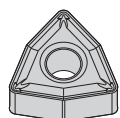
ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
VNMG1604086P	VNMG3326P	9,53	3/8	16,61	.654	4,76	3/16	0,8	1/32	3,81	.150	●	●		●	●			



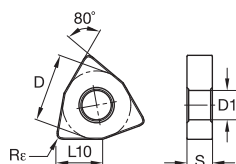
■ WNMA



ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
WNMA060408	WNMA332	9,53	3/8	6,52	.257	4,76	3/16	0,8	1/32	3,81	.150						●		
WNMA080408	WNMA432	12,70	1/2	8,69	.342	4,76	3/16	0,8	1/32	5,16	.203						●		
WNMA080412	WNMA433	12,70	1/2	8,69	.342	4,76	3/16	1,2	3/64	5,16	.203						●		



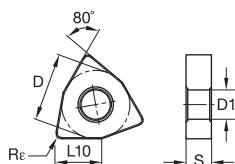
■ WNMG-2P



ISO catalog number	ANSI catalog number	D		L10		S		Rε		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
WNMG0804042P	WNMG4312P	12,70	1/2	8,69	.342	4,76	3/16	0,4	1/64	5,16	.203	●	●		●	●	●	●	●
WNMG0804082P	WNMG4322P	12,70	1/2	8,69	.342	4,76	3/16	0,8	1/32	5,16	.203	●	●		●	●	●	●	●



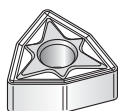
■ WNMG-4P



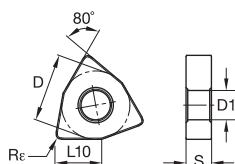
- first choice
- alternate choice

P									
M									
K									
N									
S									
H									

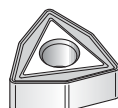
ISO catalog number	ANSI catalog number	D		L10		S		Re		D1		TN10P	TN20P	TN30P	TN15M	TN30M	TN20K	TN10U	TN15U
		mm	in	mm	in	mm	in	mm	in	mm	in								
WNMG0804044P	WNMG4314P	12,70	1/2	8,69	.342	4,76	3/16	0,4	1/64	5,16	.203				●	●			
WNMG0804084P	WNMG4324P	12,70	1/2	8,69	.342	4,76	3/16	0,8	1/32	5,16	.203				●	●			
WNMG0804124P	WNMG4334P	12,70	1/2	8,69	.342	4,76	3/16	1,2	3/64	5,16	.203					●			



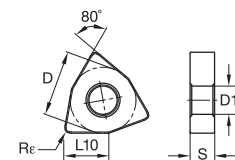
■ WNMG-6P



		D		L10		S		R _e		D1							
ISO catalog number	ANSI catalog number	mm	in	mm	in	mm	in	mm	in	mm	in						
WNMG0604086P	WNMG3326P	9,53	3/8	6,52	.257	4,76	3/16	0,8	1/32	3,81	.150	●	●	●	●		
WNMG0804086P	WNMG4326P	12,70	1/2	8,69	.342	4,76	3/16	0,8	1/32	5,16	.203	●	●	●	●		
WNMG0804126P	WNMG4336P	12,70	1/2	8,69	.342	4,76	3/16	1,2	3/64	5,16	.203	●	●	●	●		



■ WNMG-7N



ISO catalog number	ANSI catalog number	D		L10		S		R _e		D1								
		mm	in	mm	in	mm	in	mm	in	mm	in							
WNMG0804087N	WNMG4327N	12,70	1/2	8,69	.342	4,76	3/16	0,8	1/32	5,16	.203	●	●	●		●		
WNMG0804127N	WNMG4337N	12,70	1/2	8,69	.342	4,76	3/16	1,2	3/64	5,16	.203	●	●	●		●		
WNMG0804167N	WNMG4347N	12,70	1/2	8,69	.342	4,76	3/16	1,6	1/16	5,16	.203		●	●		●		