



TURNING/

carbide /5
PCBN /65
diamond /85
ceramic /101
holders /125





TURNING/**CARBIDE**

CARBIDE /TURNING

C

N

M

G

12

04

08

1

2

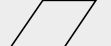
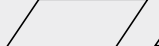
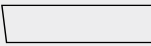
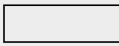
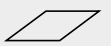
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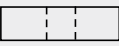
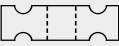
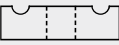
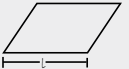
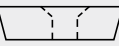
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5

6

7

1	GEOMETRY	2	CLEARANCE ANGLE	3	TOLERANCE
C	 80°	B	 5°		 
D	 55°	C	 7°	G	±0,025 ±0,13
K	 55°	P	 11°	M	±0,05 ±0,15 ±0,13
S	 90°	N	 0°	U	±0,08 ±0,25 ±0,13
T	 60°				
V	 35°				
W	 80°				

4	SHAPE	5	SHAPE (mm)	6	THICKNESS (mm)	7	CORNER RADIUS
A		C	06 09 12 16 19 25 	02	2,38	02	0,20 mm
G		D	07 11 15 	03	3,18	04	0,40 mm
M		K	16 	T3	3,97	08	0,80 mm
W		S	09 12 15 19 25 	04	4,76	12	1,20 mm
X	SPECIAL	T	09 11 16 22 	06	6,35	16	1,60 mm
		V	11 16 22 	09	9,52	24	2,40 mm
		W	06 08 				

U	M
8	9

CS	5	2	25
10	11	12	13

8	SERIES OF C/B
H	Huskar Series
U	Undying Series
S	Spirit Series
T	Tusk Series
A	Aluminium

9	ISO GRADE	
Heavy Machining	P	H. Roughing
	R	Roughing
	F	Functional
Turning	R	Roughing
	M	Medium
	F	Finishing
	J	Ultra Finishing
Stainless Steel	S	Standart
	K	Roughing
Aluminium	LU	Functional

10	COATING & MATERIAL
CS	CVD Coated Carbide
CD	Double CVD Coated
PS	PVD Coated Carbide
PB	New PVD Coating
KS	Ceramic
SS	Cermet
US	Uncoated

11	WORKPIECE MATERIAL
2	Non-Ferrous Material
4	Hardened Steel
5	Steel
7	Stainless Steel
8	Cast Iron
9	General Machining

12	MACHINING
1~3	Turning
4	Threading
5	Grooving
9	Milling

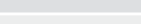
13	ISO GRADE
05	
10	
15	
20	
25	
30	
35	
40	
45	

CARBIDE /TURNING

GRADES

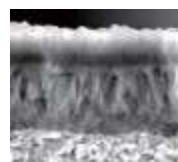
	K					P					M					N					S					H		
	ISO					DIN					513																	
	K01	K10	K20	K30	K40	P01	P10	P20	P30	P40	M01	M10	M20	M30	M40	N01	N10	N20	N30	N40	S01	S10	S20	S30	S40	H01	H10	H20
CARBIDE CVD	CS8205					CS5205																						
	CS8115					CS5210																						
	CS8215					CS5215																						
	CS8315					CS5215S																						
						CS5220																						
CARBIDE PVD						CS5225																						
						CS5225S																						
						CD5125																						
						CS5235																						
						CS5235S																						
CARBIDE UNCOATED						CS5240																						
CERMET UNCOATED																												

CVD TURNING GRADES

MATERIAL	GRADE	ISO	Color	Operation
P	CS5205	P05-P10	BLACK	MT-TiCN+Al ₂ O ₃ +TiN
				Wear-resistance materials coated on the gradient sintered substrate which has both good hardness and toughness. Can bear high temperatures. For steel and casting steel finishing to roughing processing. Continue cutting to light interrupted cutting.
	CS5210	P10-P20	YELLOW - BLACK	MT-TiCN+TiC+Al ₂ O ₃ +TiN
				Stable conditions for steel finishing can obtain high metal removal rate. Excellent resistance to crater wear and plastic deformation resistance. Recommended for stable conditions. Wet and dry processing
	CS5215	P05-P25	BLACK	MT-TiCN+TiC+Al ₂ O ₃ +TiN
				Optimization for high speed machining due to combining the substrate of superior wear resistance and toughness with the coating of excellent thermal crack/plastic deformation
	CS5215S	P05-P25	BLACK	MT-TiCN+TiC+Al ₂ O ₃ +TiN
				Optimization for high speed machining due to combining the substrate of superior wear resistance and toughness with the coating of excellent thermal crack/plastic deformation
	CS5220	P15-P35	YELLOW - BLACK	MT-TiCN+TiC+Al ₂ O ₃ +TiN
				stable conditions for steel semi-finishing to roughing, can obtain high metal removal rate. Excellent resistance to crater wear and plastic deformation. Recommended for stable conditions. Wet and dry processing.
	CS5225	P15-P35 M10-M20	BLACK	MT-TiCN+TiC+Al ₂ O ₃ +TiN
				First recommended grade for general machining with the use of high toughness substrate and coating layer with improved welding/chipping resistance
M	CS5225S	P15-P35 M10-M20	BLACK	MT-TiCN+TiC+Al ₂ O ₃ +TiN
				First recommended grade for general machining with the use of high toughness substrate and coating layer with improved welding/chipping resistance
	CD5125	P15-P35	YELLOW - BLACK	MT-TiCN+TiC+Al ₂ O ₃ +TiN
				For medium machining of steel 1st grade recommended for general machining using a high toughness substrate and an enhanced topcoat.
	CS5235	P25-P40	YELLOW - BLACK	weld / chip resistance
				Medium to low speed machining of steel
	CS5235S	P25-P40	YELLOW - BLACK	MT-TiCN+TiC+Al ₂ O ₃ +TiN
				High-strength alloy substrate with thick wear-resistant coating has good toughness and plastic deformation. Machining steel and cast steel in bad conditions, Edge line security for interrupted cutting and roughing operations high metal removal rate.
	CS5240	P30-P40	YELLOW - BLACK	MT-TiCN+TiC+Al ₂ O ₃ +TiN
				Medium to high speed machining of stainless steel
	CS7125S	M20-M30	BLACK	MT-TiCN+TiC+Al ₂ O ₃
				For high speed machining of stainless steel
K	CS8205	K01-K10	BLACK	MT-TiCN+TiC+Al ₂ O ₃ +TiN
				As adapting highly hard substrate with superior CVD coated which has excellent resistance for thermal oxidation, Excellent performance in casting iron continuous machining
	CS8115	K10-K20	BLACK	MT-TiCN+TiC+Al ₂ O ₃ +TiN
				Medium speed machining of cast iron
	CS8215	K10-K20	BLACK	MT-TiCN+TiC+Al ₂ O ₃ +TiN
				Medium speed machining of cast iron
	CS8315	K10-K25	YELLOW - BLACK	MT-TiCN+Al ₂ O ₃ +TiN
				The excellent combination of high wear resistance substrate and MT-TiCN, thick Al ₂ O ₃ , TiN coating is the first choice of ductile iron and gray cast iron, which allows a higher cutting speed.
	CS8125	K20-K30	BLACK	MT-TiCN+TiC+Al ₂ O ₃ +TiN
				Interrupted cutting for gray iron and ductile cast iron
	CS8325	K20-K35	YELLOW - BLACK	MT-TiCN+Al ₂ O ₃ +TiN
				The excellent combination of good wear resistance and toughness substrate and MT-TiCN, thick Al ₂ O ₃ , TiN coating is the first choice of ductile iron and gray cast iron for roughing cutting high metal remove rate.

CS5225

Universal grade especially for machining forged automobile components and bearing steel both in continuous and interrupted cutting. Available for all kinds of steels - carbon steel, alloy steel, rolled steel, tool steel, mild steel, bearing steel and other special kinds of steel. New coating technology increases welding resistance and chipping resistance, which leads to longer tool life



TiN coating layer with superior welding resistance
TiC + Al₂O₃ coating layer with superior heat resistance
TiCN coating layer with superior chipping resistance
Exclusive substrate material for coating with improved wear resistance.

CARBIDE /TURNING

PVD TURNING GRADES

MATERIAL	GRADE	ISO	Color	Operation
P	PS5125	P05-P25	BLACK	2-4 micron Nano TiAlN PVD Coating
				Stable machinability with chipping resistance fracture resistance and welding resistance, Medium, roughing and heavy interrupted cutting for stainless steel and forged steel
M	PS7110S	M20-M30	COPPER	PVD(Cotated) – TiAlSiN, Premium grade
	PS7120	M15-M25		As adapting highly hard substrate, Excellent in medium speed machining of stainless steel. As adapting Salina coating which has excellent resistance for thermal & oxidation
			YELLOW	2-4 micron Nano AlCrN AlCrSiN Coating
	PS7220S	M10-M30		Medium, roughing and heavy interrupted cutting for st. steel and forged steel
			COPPER	PVD(Cotated) – TiAlSiN, Premium grade
	PS7315S	M10-M15		Excellent in medium speed machining of stainless steel. As adapting Salina coating which has excellent resistance for thermal & oxidation
			GRAY	PVD (Cotated)-AlTiN, Premium grade
	PS7320S	M10-M30		High Co content and fine WC grain substrate, gives wonderful cutting edge strength, combines with new AlTiN coating, it has very small coefficient of friction,high antioxidant temperature, and good nano hardness.
			GRAY	PVD (Cotated)-AlTiN, Premium grade
				High Co content and fine WC grain substrate, gives wonderful cutting edge strength, combines with new AlTiN coating, it has very small coefficient of friction,high antioxidant temperature, and good nano hardness.

UNCOATED CARBIDE GRADES

MATERIAL	GRADE	ISO	Color	Operation
N	US2115	K05-K25	Silver	Ultra fine substrate
				Increased wear & chipping resistance as using a ultra fine substrate, Excellent tool life with special surface treatment & and sharp cutting edge of ALU chip breaker

CERMET CARBIDE GRADES

MATERIAL	GRADE	ISO	Color	Operation
UNI	SS9115	P05-P25	SILVER	For continuous machining of cold/hot forged steel and Sintered ferrous alloy at high speed and low depth of cut
				
	SS9115C	P05-P30	YELLOW	Superior wear and adhesion resistant TiC coating on the special reinforcement cermet Application: The 1st choice PVD coated cermet for steel machining provides high efficient machining and high quality surface finish
				
	SS9125	P05-P25	SILVER	For continuous machining of cold/hot forged steel and Sintered ferrous alloy at high speed and low depth of cut
				
	SS9125C	P05-P30	YELLOW	Superior wear and adhesion resistant TiC coating on the special reinforcement cermet Application: The 1st choice PVD coated cermet for steel machining provides high efficient machining and high quality surface finish
				

CHIPBREAKERS SELECTION (NEGATIVE)

	□□CN	□□DN	□□SN	□□TN	□□VN	WN
MA FLAT	21 	29 	35 	42 		53 
MG BOX	21 	29 	35 	42 	51 	53 
ALU	21 	29 	35 	42 		53 
HQ	21 	29 		43 	51 	53 
PM	22 			43 	51 	54 
ST		29 		43 		54 
TK	22 	29 	36 	43 		54 
TM		30 				54 
TS	23 	30 	36 	44 	51 	54 
UF		30 	36 	44 	51 	54 
UM	23 	30 	36 	44 	51 	55 
UR	24 	31 	37 	45 		55 
US	25 	31 	37 	45 		55 
OTHERS	22  (TF)		35  (TF)	42  (R/L-P)		55  (HA)
			37  (ZR)	43  (R/L-C)		55  (UT)
			37  (HTR)	44  (UH)		
				45  (VQ)		

TURNING

GROOVING

THREADING

MILLING

DRILLING

ENDMILLS

DRILLS

HSS
DRILLS & TAPSSPARE
PARTS

INDEX

CARBIDE /TURNING

CHIPBREAKERS SELECTION (POSITIVE)

	□□CC	□□DC	□□SC	□□TC	□□VB	□□VC
ER/L-U	18 	26 				
L-F	18 					
L/R-W	18 					
L-Y					47 	
ALU	19 	26 	34 	40 	47 	49 
CG	19 	26 		40 	47 	50 
HF	19 	26 	34 	40 		
HM	19 	26 	34 	40 		
HQ	20 	27 		40 	47 	
HR					47 	
TS	20 	28 		41 	48 	
VM	20 	28 		41 	48 	
VQ	20 	28 				
VW		28 			48 	

MACHINING EXAMPLES

P Carbon Steel (1.1040)

• Workpiece	Hub	
• Cutting Conditions	Vc (m/min)= 250	fn (mm/rev)= 0.2
	ap (mm)= 1,5	Wet
• Designation	Insert	CNMG120408-UM CS5225
	Toolholder	DCLNR2525-M12
• Test Result		

P Alloy Steel (2379)

• Workpiece	Automobile Part	
• Cutting Conditions	Vc (m/min)=250	fn (mm/rev)= 0.2
	ap (mm)= 1,5	Wet
• Designation	Insert	CNMG120408-UM CS5215S
	Toolholder	DCLNR2525-M12
• Test Result		

M Stainless Steel (316L)

• Workpiece	Valve	
• Cutting Conditions	Vc (m/min)=120	fn (mm/rev)= 0.2
	ap (mm)= 1,5	Wet
• Designation	Insert	CNMG120408-TS PS7220S
	Toolholder	DCLNR2525-M12
• Test Result		

K Gray Cast Iron (GG25)

• Workpiece	Disc	
• Cutting Conditions	Vc (m/min)=350	fn (mm/rev)= 0.25
	ap (mm)= 1,5	Wet
• Designation	Insert	CNMA120408 CS8215
	Toolholder	DCLNR2525-M12
• Test Result		

TURNING

GROOVING

THREADING

MILLING

DRILLING

ENDMILLS

DRILLS

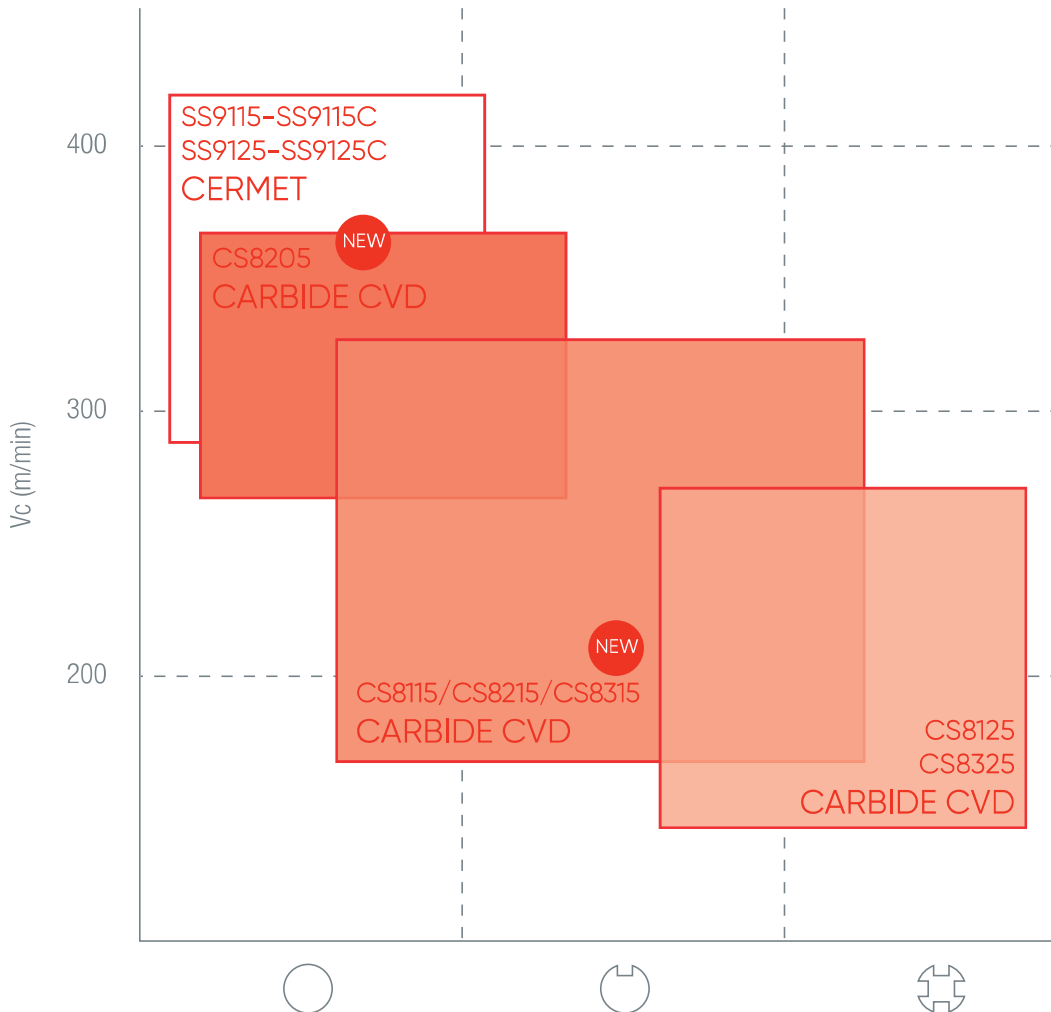
HSS
DRILLS & TAPS

SPARE
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CARBIDE /TURNING

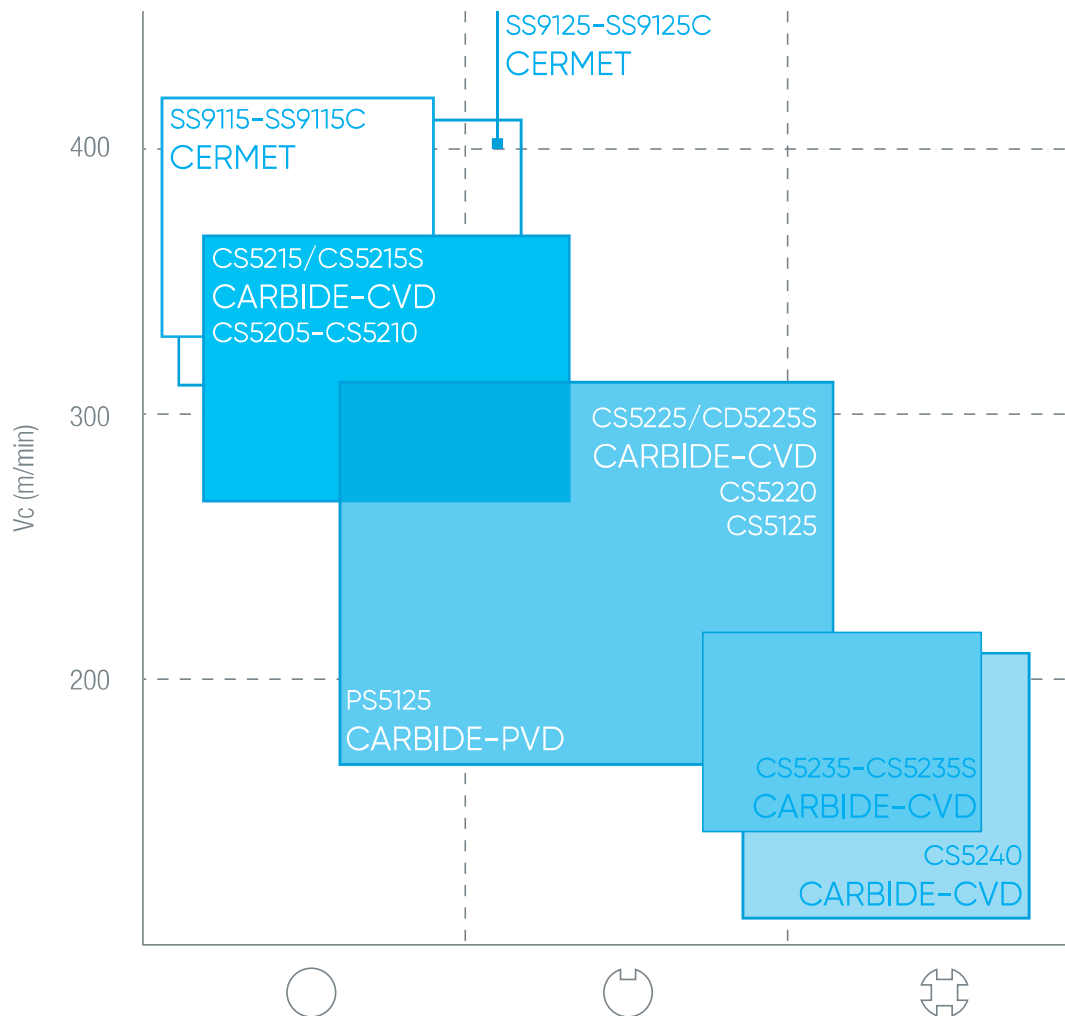
GRADES

Range ISO **K**

CARBIDE /TURNING

Range ISO **P**

GRADES



TURNING

GROOVING

THREADING

MILLING

DRILLING

ENDMILLS

DRILLS

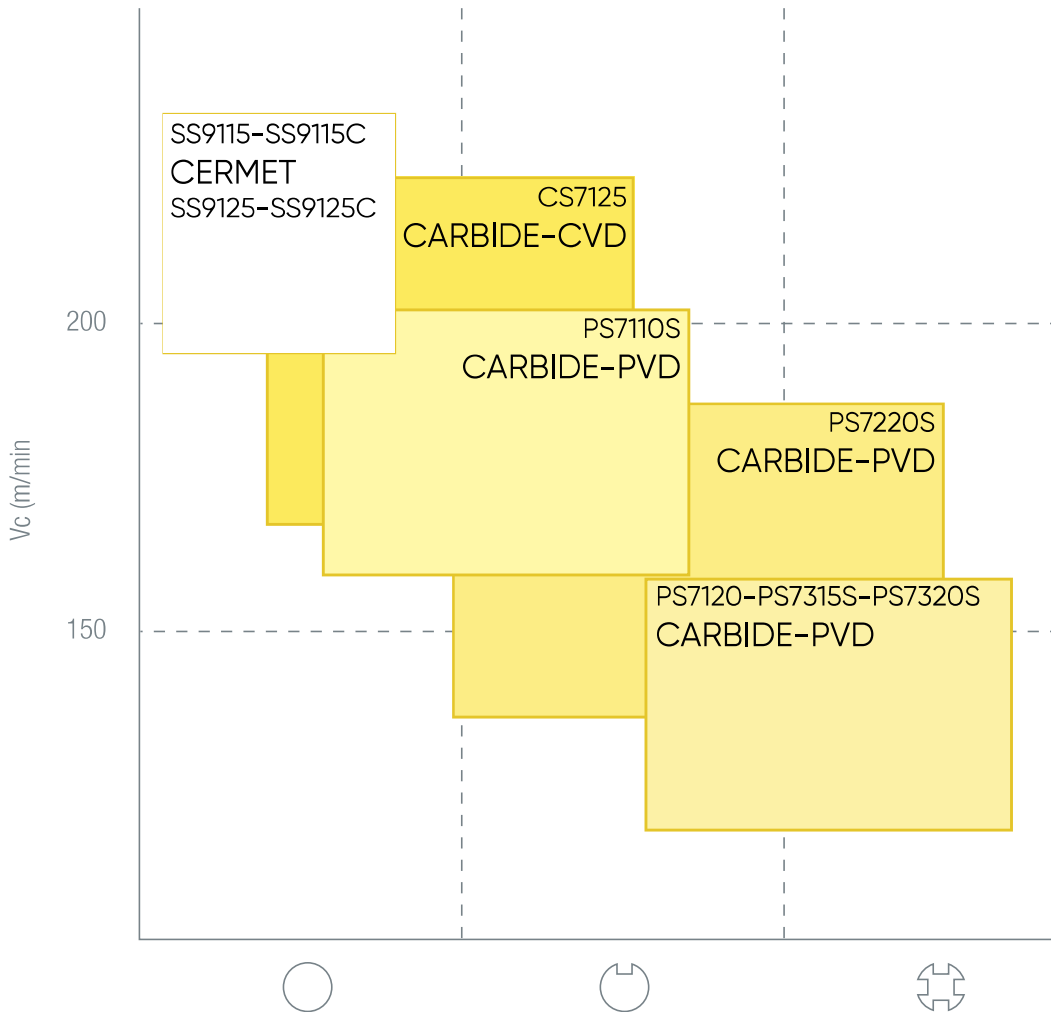
HSS
DRILLS & TAPS

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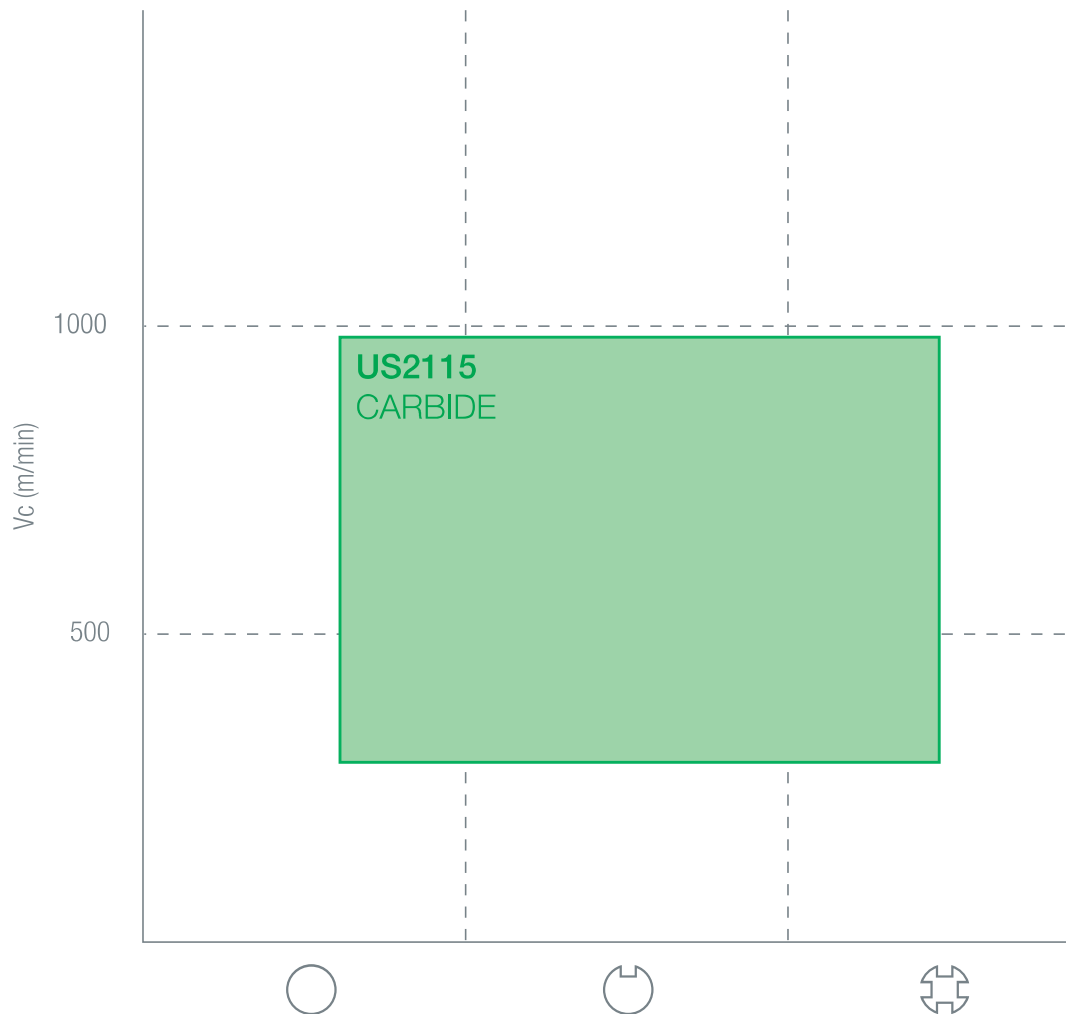
CARBIDE /TURNING

GRADES

Range ISO **M**

Range ISO **N**

GRADES



TURNING

GROOVING

THREADING

MILLING

DRILLING

ENDMILLS

DRILLS

HSS
DRILLS & TAPS

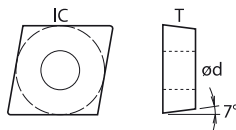
SPARE
PARTS

INDEX

CARBIDE /TURNING

POSITIVE 7°
with hole

CC □ □



CC □ □	0602 □ □	09T3 □ □	1204 □ □
IC	6,35	9,525	12,7
T	2,38	3,97	4,76
ød	2,80	4,40	5,50
Holder	134	134	134

DESCRIPTION		CARBIDE-CVD														CARBIDE-PVD					CERMET			CARBIDE							
		CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS7110S	PS7220S	PS7315S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115	
	CCGT060202EL-U																									•					
	CCGT060204EL-U																									•					
	CCGT09T302EL-U																									•					
	CCGT09T304EL-U																									•					
	CCGT060202ER-U																									•					
	CCGT060204ER-U																									•					
	CCGT09T302ER-U																									•					
	CCGT09T304ER-U																									•					
	CCGT030102L-F																									•					
	CCGT030104L-F																									•					
	CCGT040102L-F																									•					
	CCGT040104L-F																									•					
	CCGT060202L-W15																									•					
	CCGT060204L-W15																									•					
	CCGT060202R-W15																									•					
	CCGT060204R-W15																									•					
	CCGT09T302L-W20																									•					
	CCGT09T304L-W20																									•					
	CCGT09T302R-W20																									•					
	CCGT09T304R-W20																									•					



FINISHING



MEDIUM



ROUGHING

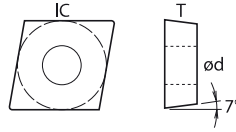
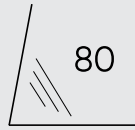
Vc • fn • ap



56

POSITIVE 7°
with hole

CC □ □



CC □ □	0602 □ □	09T3 □ □	1204 □ □
IC	6,35	9,525	12,7
T	2,38	3,97	4,76
Ød	2,80	4,40	5,50
Holder	134	134	134

DESCRIPTION		CARBIDE-CVD															CARBIDE-PVD					CERMET		CARBIDE							
		CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS7110S	PS7220S	PS7315S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115	
 	CCGT060202-ALU																														•
	CCGT060204-ALU																														•
	CCGT060208-ALU																														•
	CCGT09T302-ALU																														•
	CCGT09T304-ALU																														•
	CCGT09T308-ALU																														•
	CCGT09T312-ALU																														•
	CCGT120402-ALU																														•
	CCGT120404-ALU																														•
	CCGT120408-ALU																														•
CCGT120412-ALU																														•	
 	CCMT060202-CG																									•					
	CCMT060204-CG																									•	•				
	CCMT060208-CG																									•					
	CCMT09T304-CG																									•					
	CCMT09T308-CG																									•					
 	CCMT060202-HF	•																							•						
	CCMT060204-HF	•					•				•	•	•										•	•							
	CCMT09T302-HF	•																													
	CCMT09T304-HF	•					•	•																							
 	CCMT060204-HM	•					•	•			•	•	•												•						
	CCMT060208-HM	•					•	•			•	•	•												•						
	CCMT09T302-HM	•																													
	CCMT09T304-HM	•					•	•			•	•	•												•						
	CCMT09T308-HM	•					•	•			•	•	•												•						
	CCMT120404-HM	•					•	•			•	•	•											•	•						
	CCMT120408-HM	•					•	•			•	•	•										•	•							
	CCMT120412-HM											•																			



FINISHING



MEDIUM



ROUGHING

Vc • fn • ap

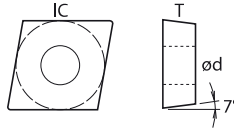
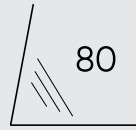


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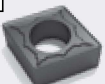
CARBIDE /TURNING

POSITIVE 7°
with hole

CC □ □



CC □ □	0602 □ □	09T3 □ □	1204 □ □
IC	6,35	9,525	12,7
T	2,38	3,97	4,76
Ød	2,80	4,40	5,50
Holder	134	134	134

DESCRIPTION		CARBIDE-CVD														CARBIDE-PVD					CERMET			CARBIDE							
		CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS7110S	PS7220S	PS7315S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115	
 	CCMT060204-HQ																										●	●	●		
	CCMT09T304-HQ																										●				
	CCMT09T308-HQ										●																	●	●		
 	CCMT060204-MF1																				●										
 	CCMT060204-MF2																				●										
 	CCMT09T304-ST																											●			
 	CCMT060204-TS																								●						
	CCMT060208-TS																					●			●						
	CCMT09T302-TS																							●							
	CCMT09T304-TS																							●							
	CCMT09T308-TS																							●							
 	CCMT060204-VM					●															●	●	●								
	CCMT060208-VM																					●		●							
	CCMT09T304-VM					●		●													●	●	●								
	CCMT09T308-VM					●															●	●	●								
 	CCMT060204-VQ					●		●	●											●	●	●									
	CCMT09T304-VQ					●		●	●											●	●	●									



FINISHING



MEDIUM



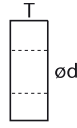
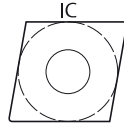
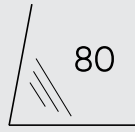
ROUGHING

Vc • fn • ap

56

NEGATIVE
with hole

CN□□



CN□□	1204□□	1606□□	1906□□
IC	12,7	15,875	12,7
T	4,76	6,35	4,76
Ød	5,16	6,35	5,50
Holder	137	137	137

DESCRIPTION		CARBIDE-CVD										CARBIDE-PVD					CERMET			CARBIDE										
		CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS7110S	PS7220S	PS7315S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115
 	CNMA120408											•	•	•	•															
	CNMA120412											•	•	•	•															
	CNMA160608											•		•	•															
	CNMA160612											•	•	•	•	•														
	CNMA160616											•	•	•	•	•														
	CNMA190612											•	•	•	•	•														
	CNMA190616											•	•	•	•	•														
 	CNMG120404				•			•				•	•							•	•									
	CNMG120408			•	•		•	•	•		•	•	•	•	•	•	•			•				•	•					
	CNMG120412			•	•		•	•	•		•	•	•	•	•	•				•	•			•	•					
	CNMG120416			•			•		•		•	•	•	•	•									•	•					
	CNMG160608			•	•		•	•	•		•	•	•	•	•	•				•	•			•	•					
	CNMG160612			•	•		•	•	•		•	•	•	•	•	•				•	•			•	•					
	CNMG160616				•			•					•	•	•	•				•	•									
	CNMG190608				•			•				•	•							•	•									
	CNMG190612											•		•	•															
	CNMG190616				•			•				•	•	•	•					•	•									
 	CNMG120402-ALU																													•
	CNMG120404-ALU																													•
	CNMG120408-ALU																													•
 	CNMG120404-HQ							•											•	•		•				•				
	CNMG120408-HQ																									•				
 	CNMG190612-HR				•																									



FINISHING



MEDIUM



ROUGHING

Vc • fn • ap

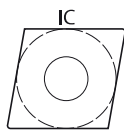


56

CARBIDE /TURNING

NEGATIVE
with hole

CN□□



CN□□	1204□□	1606□□	1906□□
IC	12,7	15,875	12,7
T	4,76	6,35	4,76
Ød	5,16	6,35	5,50
Holder	137	137	137

DESCRIPTION	CARBIDE-CVD														CARBIDE-PVD					CERMET		CARBIDE													
	CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS7110S	PS7220S	PS7315S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115						
 	CNMG120404-MF2																								•										
 	CNMG120408-MF3																								•										
 	CNMG120408-MF4																																		
 	CNMG120408-MM																																		
 	CNMG120404-PM																																		
	CNMG120408-PM																																		
 	CNMG120404-TF																																		
	CNMG120408-TF																																		
 	CNMG120408-TK																																		
	CNMG120412-TK																																		



FINISHING



MEDIUM



ROUGHING

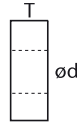
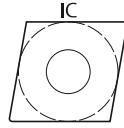
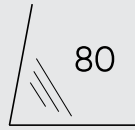
Vc • fn • ap



56

NEGATIVE
with hole

CN□□



CN□□	1204□□	1606□□	1906□□
IC	12,7	15,875	12,7
T	4,76	6,35	4,76
ød	5,16	6,35	5,50
Holder	137	137	137

DESCRIPTION		CARBIDE-CVD																CARBIDE-PVD				CERMET		CARBIDE						
		CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS7110S	PS7220S	PS7315S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115
 	CNMG090408-TS																			•	•									
	CNMG090412-TS																				•	•								
	CNMG120404-TS							•													•	•	•	•	•					
	CNMG120408-TS							•													•	•	•	•	•					
	CNMG120412-TS																				•	•								
	CNMG160608-TS																				•	•								
	CNMG160612-TS																				•	•								
	CNMG160616-TS																				•	•								
	CNMG190608-TS																				•	•								
	CNMG190612-TS																				•	•	•							
	CNMG190616-TS																				•	•								
 	CNMG120404-UF						•																							
 	CNMG120404-UM				•			•	•		•	•	•											•	•					
	CNMG120408-UM				•			•	•		•	•	•											•	•					
	CNMG120412-UM				•			•	•		•	•	•											•	•					
	CNMG120416-UM				•			•	•		•	•	•											•	•					
	CNMG160608-UM				•			•	•			•	•											•	•					
	CNMG160612-UM				•			•	•			•	•			•								•	•					
	CNMG160616-UM				•			•	•			•	•	•										•	•					
	CNMG190608-UM				•		•	•	•			•	•	•										•	•					
	CNMG190612-UM				•			•	•			•	•	•										•	•					
	CNMG190616-UM				•			•	•			•	•	•										•	•					



FINISHING



MEDIUM



ROUGHING

Vc • fn • ap

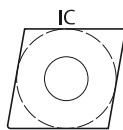


56

CARBIDE /TURNING

NEGATIVE
with hole

CN□□



CN□□	1204□□	1606□□	1906□□
IC	12,7	15,875	12,7
T	4,76	6,35	4,76
Ød	5,16	6,35	5,50
Holder	137	137	137

DESCRIPTION	CARBIDE-CVD														CARBIDE-PVD				CERMET		CARBIDE									
	CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS7110S	PS7220S	PS7315S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115	
CNMG120408-UM1																														
CNMG120408-UMC																														
CNMG120408-UMC																														
CNMG120408-UR																														
CNMG120412-UR																														
CNMG160612-UR																														
CNMG160616-UR																														
CNMG190612-UR																														
CNMG190616-UR																														
CNMG190624-UR																														
CNMM190612-UR																														
CNMM190616-UR																														
CNMM190624-UR																														
CNMM250924-UR																														



FINISHING



MEDIUM



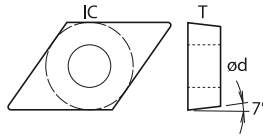
ROUGHING

Vc • fn • ap

56

POSITIVE 7°
with hole

DC□□



DC□□	0702□□	11T3□□
IC	6,35	9,525
T	2,38	3,97
Ød	2,80	4,40
Holder	143	143

DESCRIPTION		CARBIDE-CVD														CARBIDE-PVD					CERMET			CARBIDE							
		CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS710S	PS7220S	PS7315S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115	
 	DCMT070202-HQ																									•					
	DCMT070204-HQ																									•					
	DCMT11T302-HQ																									•	•				
	DCMT11T304-HQ																									•	•				
	DCMT11T308-HQ																										•				
 	DCMT11T304-HR				•			•		•		•	•	•										•	•						
 	DCMT070204-MF1																						•								
	DCMT070208-MF1																						•								
	DCMT11T302-MF1																				•										
	DCMT11T304-MF1																						•								
	DCMT11T308-MF1																						•								
 	DCMT11T302-MM1																				•										
	DCMT11T304-MM1																					•									
 	DCMT11T304-SG																											•			
 	DCMT11T304-ST																											•			



FINISHING



MEDIUM



ROUGHING

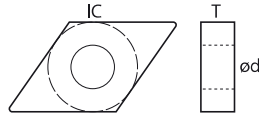
Vc • fn • ap



56

NEGATIVE
with hole

DN□□



DN□□	1104□□	1504□□	1506□□
IC	9,525	12,7	12,7
T	4,76	4,76	6,35
ød	3,81	5,16	5,16
Holder	150	150	150

DESCRIPTION		CARBIDE-CVD										CARBIDE-PVD					CERMET			CARBIDE										
		CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS7110S	PS7220S	PS7315S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115
 	DNMA150608												•	•	•	•	•	•												
	DNMA150612												•	•	•	•	•													
	DNMA150616												•	•	•	•														
 	DNMG110408				•			•					•	•						•	•									
	DNMG150604				•			•		•		•	•	•	•	•					•				•	•				
	DNMG150608				•	•		•	•	•		•	•	•	•	•	•	•		•	•			•	•					
	DNMG150612				•	•		•	•	•		•	•	•	•	•	•	•		•	•			•	•					
	DNMG150616														•	•														
 	DNMG150602-ALU																													•
	DNMG150604-ALU																													•
	DNMG150608-ALU																													•
 	DNMG150608-HA																							•						
 	DNMG150608-HQ																									•				
 	DNMG150604L-ST					•		•												•	•									
	DNMG150608L-ST					•		•													•									
	DNMG150604R-ST					•		•													•									
	DNMG150608R-ST					•		•														•								
 	DNMG110404-TK																							•	•					
	DNMG110408-TK																							•						
	DNMG150608-TK																							•						



FINISHING



MEDIUM



ROUGHING

Vc • fn • ap

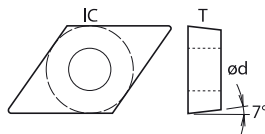


56

CARBIDE /TURNING

NEGATIVE
with hole

DN□□



DN□□	1104□□	1504□□	1506□□
IC	9,525	12,7	12,7
T	4,76	4,76	6,35
Ød	3,81	5,16	5,16
Holder	150	150	150

DESCRIPTION		CARBIDE-CVD														CARBIDE-PVD				CERMET		CARBIDE								
		CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS7110S	PS7220S	PS7315S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115
 	DNMG150608-TM				•			•												•	•		•							
	DNMG150612-TM				•																									
 	DNMG110404-TS																				•			•	•					
	DNMG110408-TS																					•		•	•					
	DNMG110412-TS																				•	•								
	DNMG150604-TS																							•	•					
	DNMG150608-TS																							•	•					
	DNMG150612-TS																								•	•				
 	DNMG150612-TR							•																						
 	DNMG150408-UF					•																								
	DNMG150604-UF				•				•																					
 	DNMG110404-UM				•			•		•		•	•	•										•	•					
	DNMG110408-UM				•		•	•		•		•	•	•										•	•					
	DNMG110412-UM				•			•		•																				
	DNMG150604-UM		•		•			•		•		•	•	•										•	•					
	DNMG150608-UM				•	•		•	•	•		•	•	•										•	•					
	DNMG150612-UM				•			•		•		•	•	•											•	•				
 	DNMG110408-UM1							•																						



FINISHING



MEDIUM



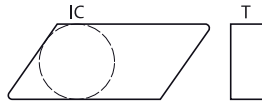
ROUGHING

Vc • fn • ap



56

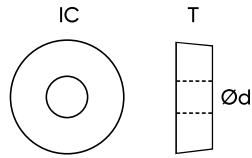
KN


$$V_c \bullet fn \bullet ap$$

56

POSITIVE 7°
with hole

RC□□



RC□□	0602□□	0803□□	10T3□□
IC	6,0	8,0	10,0
T	2,36	3,18	3,18
Ød	2,80	3,35	3,60
Holder	158	158	158

DESCRIPTION		CARBIDE-CVD										CARBIDE-PVD					CERMET			CARBIDE											
		CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS710S	PS720S	PS7315S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115	
	RCGT0602M0-ALU																														•
	RCGT0803M0-ALU																														•
	RCGT1003M0-ALU																														•
	RCGT10T3M0-ALU																														•
	RCGT1204M0-ALU																														•
	RCGT1605M0-ALU																														•
	RCMX0803M0																			•	•										
	RCMX1003M0																			•	•										
	RCMX1204M0																			•	•				•						
	RCMX1606M0																			•	•		•								
	RCMX2006M0																			•	•										
	RCMX2507M0																			•	•										
	RCMX3209M0																			•	•										
	RCMX200600												•		•	•															
	RCMX250700														•	•															



FINISHING



MEDIUM



ROUGHING

Vc • fn • ap

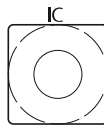


56

CARBIDE /TURNING

POSITIVE 7°
with hole

SC□□



SC□□	09T3□□	1204□□
IC	9,525	12,7
T	3,97	4,76
Ød	4,40	5,16

DESCRIPTION		CARBIDE-CVD														CARBIDE-PVD				CERMET			CARBIDE									
		CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS7110S	PS7220S	PS7315S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115		
	SCGT09T302-ALU																														•	
	SCGT09T304-ALU																														•	
	SCGT09T308-ALU																														•	
	SCGT09T312-ALU																														•	
	SCGT120404-ALU																														•	
	SCGT120408-ALU																														•	
	SCMT09T304-HF									•														•								
	SCMT09T304-HM																							•								
	SCMT09T308-HM				•		•		•		•	•	•	•										•	•							
	SCMT120404-HM				•		•		•		•	•	•	•										•	•							
	SCMT120408-HM				•		•		•		•	•	•	•										•	•							



FINISHING



MEDIUM



ROUGHING

Vc • fn • ap

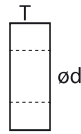
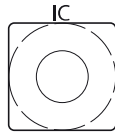


56

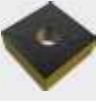
NEGATIVE
with hole

SN□□

90



SN□□	1204□□	1206□□	1506□□
IC	12,7	12,7	15,875
T	4,76	6,35	6,35
ød	5,16	5,16	6,35
Holder	162	162	162

DESCRIPTION		CARBIDE-CVD										CARBIDE-PVD					CERMET			CARBIDE										
		CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS7110S	PS7220S	PS7315S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115
 	SNMA120408											•	•	•	•									•						
	SNMA120412											•	•	•	•															
	SNMA120416											•	•	•	•															
	SNMA120424											•	•																	
	SNMA150612													•	•															
	SNMA150616													•	•															
	SNMA190612													•	•															
	SNMA190616											•		•	•															
 	SNMG120404				•	•		•	•	•										•	•									
	SNMG120408				•	•		•	•	•		•	•	•	•					•	•									
	SNMG120412				•	•		•	•	•		•	•	•	•	•				•	•									
	SNMG120416													•	•															
	SNMG150612													•	•															
	SNMG190612					•								•	•					•	•									
 	SNMG120402-ALU																													•
	SNMG120404-ALU																													•
	SNMG120408-ALU																													•
	SNMG120412-ALU																													•
 	SNMG120408-MF4																					•								
 	SNMG150612-PM				•																									
 	SNMG120408-TF																						•	•						



FINISHING



MEDIUM



ROUGHING

Vc • fn • ap

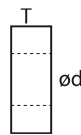
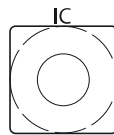


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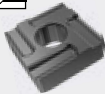
CARBIDE /TURNING

NEGATIVE
with hole

SN□□



SN□□	1906□□	2507□□	2509□□
IC	19,05	25,4	25,4
T	6,35	7,94	9,52
Ød	7,93	9,12	9,12
Holder	162	162	162

DESCRIPTION		CARBIDE-CVD														CARBIDE-PVD				CERMET		CARBIDE									
		CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS7110S	PS7220S	PS7315S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115	
 	SNMG150612R-ST				•																										
 	SNMG120404-TK																								•	•					
	SNMG120408-TK																								•	•					
	SNMG120412-TK																								•	•					
 	SNMG120404-TS				•	•														•	•			•	•						
	SNMG120408-TS																			•	•			•	•						
	SNMG120412-TS																			•	•			•							
	SNMG150608-TS																			•	•										
	SNMG150612-TS																							•							
	SNMG190608-TS																			•	•										
	SNMG190612-TS																			•	•										
	SNMG190616-TS																			•		•									
 	SNMG120404-UF				•		•	•																							
 	SNMG120404-UM				•		•	•		•	•	•												•	•						
	SNMG120408-UM				•		•	•		•	•	•												•	•						
	SNMG120412-UM				•		•	•		•	•	•												•	•						
	SNMG150608-UM						•	•		•														•	•						
	SNMG150612-UM						•																								
	SNMG190612-UM				•		•	•		•																					
	SNMG190616-UM						•	•		•																•					
 	SNMG150612-UM1				•																										



FINISHING



MEDIUM



ROUGHING

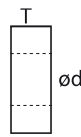
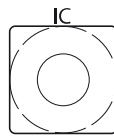
Vc • fn • ap



56

NEGATIVE
with hole

SN□□



SN□□	1204□□	1206□□	1506□□
IC	12,7	12,7	15,875
T	4,76	6,35	6,35
ød	5,16	5,16	6,35
Holder	162	162	162

DESCRIPTION		CARBIDE-CVD												CARBIDE-PVD				CERMET		CARBIDE											
		CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS7110S	PS7220S	PS7315S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115	
	SNMG120408-UR			•			•		•																						
	SNMG120412-UR			•			•		•																						
	SNMG150612-UR				•			•		•			•	•	•									•	•						
	SNMG190612-UR				•			•		•			•	•	•									•	•						
	SNMG190616-UR				•			•		•			•	•	•									•	•						
	SNMG190624-UR				•			•		•			•	•	•									•	•						
	SNMG250724-UR				•																										
	SNMG250924-UR				•			•						•	•									•							
	SNMG120404-US				•			•		•																					
	SNMG120408-US				•			•		•			•	•	•							•		•	•						
	SNMG120412-US				•			•		•																					
	SNMG120412-ZR													•	•																
	SNMG120416-ZR													•	•																
	SNMM250724-HTR				•				•		•																				
	SNMM250924-HTR								•		•																				
	SNMM250932-HTR				•																										



FINISHING



MEDIUM



ROUGHING

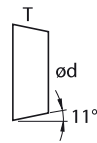
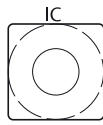
Vc • fn • ap



56

POSITIVE 11°
with hole

SP□□



SP□□	1203□□	1204□□
IC	12,7	12,7
T	3,18	4,76
Ød	5,16	5,16

DESCRIPTION		CARBIDE-CVD										CARBIDE-PVD					CERMET		CARBIDE											
		CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS7110S	PS7220S	PS7315S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115
 	SPMT120408																								●	●				
	SPMT120412												●	●																
	SPMT120416												●	●																
	SPMT120420												●	●																
	SPMT120430												●	●																
 	SPMT120408-HM				●																				●	●				
 	SPMT120408-MM																													

POSITIVE 5°
with hole

TB□□



TB□□	0601□□
IC	3,97
T	1,59
Ød	2,16

DESCRIPTION		CARBIDE-CVD														CARBIDE-PVD				CERMET		CARBIDE							
		CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS7110S	PS7220S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115
 	TBGT060102L																								•				
	TBGT060104L																								•		•		



FINISHING



MEDIUM



ROUGHING

Vc • fn • ap



56

CARBIDE /TURNING

POSITIVE 7°
with hole

TC □□



TC□□	0902□□	1102□□	16T3□□
IC	5,56	6,35	9,525
T	2,38	2,38	3,97
Ød	2,50	2,80	4,40
Holder	164	164	164

DESCRIPTION	CARBIDE-CVD																CARBIDE-PVD				CERMET			CARBIDE							
	CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS7110S	PS7220S	PS7315S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115		
	TCGT090202-ALU																														•
	TCGT090204-ALU																														•
	TCGT090208-ALU																														•
	TCGT110202-ALU																														•
	TCGT110204-ALU																														•
	TCGT110208-ALU																														•
	TCGT16T302-ALU																														•
	TCGT16T304-ALU																														•
	TCGT16T308-ALU																														•
	TCGT16T312-ALU																														•
	TCMT110204-CG																								•						
	TCMT090204-HF			•		•	•		•	•	•													•	•						
	TCMT110204-HF			•		•	•		•	•	•													•	•						
	TCMT16T304-HF			•		•	•		•	•	•													•	•						
	TCMT090204-HM			•		•	•		•	•	•													•	•						
	TCMT090208-HM			•		•	•		•	•	•													•	•						
	TCMT110204-HM			•		•	•		•	•	•														•						
	TCMT110208-HM			•		•	•		•	•	•													•	•						
	TCMT16T304-HM			•		•	•		•	•	•														•						
	TCMT16T308-HM			•		•	•		•	•	•														•						
	TCMT16T312-HM											•	•																		



FINISHING



MEDIUM



ROUGHING

Vc • fn • ap



56

CARBIDE /TURNING

NEGATIVE
with hole

TN□□



TN□□	1604□□	2204□□	2706□□
IC	9,525	12,7	15,875
T	4,76	4,76	6,35
ød	3,81	5,16	6,35
Holder	168	168	168

DESCRIPTION	CARBIDE-CVD														CARBIDE-PVD					CERMET			CARBIDE									
	CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS7110S	PS7220S	PS7315S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115			
 	TNMG160402L-P																									●						
	TNMG160404L-P																									●						
	TNMG160402R-P																									●		●				
	TNMG160404R-P																									●		●				
 	TNMA160404											●	●																			
	TNMA160408											●	●	●	●		●															
	TNMA160412											●	●	●	●																	
	TNMA160416											●	●	●	●																	
	TNMA220404											●	●																			
	TNMA220408											●	●	●	●																	
	TNMA220412											●	●	●	●																	
	TNMA220416											●	●	●	●																	
 	TNMG160404			●	●		●	●	●		●	●	●							●	●			●	●							
	TNMG160408			●	●		●	●	●		●	●	●	●	●	●				●	●			●	●							
	TNMG160412			●	●		●	●	●		●	●	●	●	●	●				●	●			●	●							
	TNMG160416													●	●																	
	TNMG220408			●			●		●		●	●	●	●	●									●	●							
	TNMG220412				●			●				●	●	●	●					●	●											
	TNMG220416				●			●				●	●							●	●											
	TNMG330704								●																							
	TNMG330724						●		●																							
 	TNMG160402-ALU																														●	
	TNMG160404-ALU																														●	
	TNMG160408-ALU																														●	
	TNMG160412-ALU																														●	
	TNMG220402-ALU																														●	
	TNMG220404-ALU																														●	
	TNMG220408-ALU																														●	
	TNMG220412-ALU																														●	



FINISHING



MEDIUM



ROUGHING

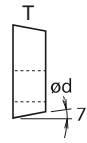
Vc • fn • ap



56

NEGATIVE
with hole

TN□□



TN□□	1604□□	2204□□	2706□□
IC	9,525	12,7	15,875
T	4,76	4,76	6,35
ød	3,81	5,16	6,35
Holder	168	168	168

DESCRIPTION		CARBIDE-CVD												CARBIDE-PVD				CERMET			CARBIDE										
		CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS7110S	PS7220S	PS7315S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115	
TNMG160404-HA TNMG160408-HA																															
TNMG160404-HQ TNMG160408-HQ																															
TNMG160404L-C TNMG160408L-C TNMG160404R-C TNMG160408R-C																															
TNMG160404-PM TNMG160408-PM TNMG160412-PM																															
TNMG160404-ST TNMG160404L-ST TNMG160408L-ST TNMG160404R-ST TNMG160408R-ST																															
TNMG160404-TK TNMG220408-TK																															



FINISHING



MEDIUM



ROUGHING

Vc • fn • ap



56

CARBIDE /TURNING

NEGATIVE
with hole

TN□□



TN□□	1604□□	2204□□	2706□□
IC	9,525	12,7	15,875
T	4,76	4,76	6,35
ød	3,81	5,16	6,35
Holder	168	168	168

DESCRIPTION		CARBIDE-CVD														CARBIDE-PVD					CERMET			CARBIDE							
		CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS7110S	PS7220S	PS7315S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115	
 	TNMG160404-TS																		•	•	•			•	•						
	TNMG160408-TS																		•	•	•			•	•						
	TNMG160412-TS																			•	•	•			•	•					
	TNMG160416-TS																			•	•	•									
	TNMG220404-TS																					•									
	TNMG220408-TS																						•								
	TNMG220412-TS																			•	•										
 	TNMG160404-UF				•		•		•																						
	TNMG160408-UF				•		•		•																						
 	TNMG220412-UH											•	•																		
	TNMG220416-UH											•	•																		
 	TNMG160404-UM				•		•		•		•	•	•											•	•						
	TNMG160408-UM				•		•		•		•	•	•											•	•						
	TNMG160412-UM				•		•		•		•	•	•											•	•						
	TNMG160416-UM											•	•																		
	TNMG220404-UM				•		•		•		•	•	•											•	•						
	TNMG220408-UM				•		•		•		•	•	•											•	•						
	TNMG220412-UM				•		•		•		•	•	•											•	•						
 	TNMG160404-UMC		•			•																									
	TNMG160408-UMC					•																									
	TNMG160412-UMC					•																									



FINISHING



MEDIUM



ROUGHING

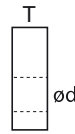
Vc • fn • ap



56

NEGATIVE
with hole

TN□□



TN□□	1604□□	2204□□	2706□□
IC	9,525	12,7	15,875
T	4,76	4,76	6,35
ød	3,81	5,16	6,35
Holder	168	168	168

DESCRIPTION	CARBIDE-CVD												CARBIDE-PVD				CERMET			CARBIDE										
	CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS7110S	PS7220S	PS7315S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115	
 TNMG160408-UR				•			•		•		•	•	•											•	•					
 TNMG160412-UR				•			•		•		•	•	•											•	•					
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 TNMG220416-UR				•			•		•		•	•	•											•	•					
 TNMG160404-US				•			•		•																					
 TNMG160408-US				•			•		•																					
 TNMG160404-VQ					•			•										•	•	•										
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FINISHING



MEDIUM



ROUGHING

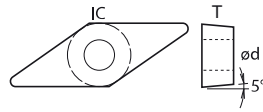
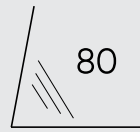
Vc • fn • ap



56

POSITIVE 5°
with hole

VB□□



VB□□	1103□□	1604□□
IC	6,35	9,525
T	3,18	4,76
Ød	2,80	4,40
Holder	172	172

DESCRIPTION		CARBIDE-CVD												CARBIDE-PVD					CERMET			CARBIDE									
		CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS7110S	PS7220S	PS7315S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115	
 	VBGT110302-ALU																														•
	VBGT110304-ALU																														•
	VBGT110308-ALU																														•
	VBGT160402-ALU																														•
	VBGT160404-ALU																														•
	VBGT160408-ALU																														•
	VBGT160412-ALU																														•
 	VBGT110302L-Y																										•				
	VBGT110304L-Y																										•				
	VBGT110302R-Y																										•				
	VBGT110304R-Y																										•				
 	VBMT160404				•			•		•		•	•	•										•	•						
	VBMT160408				•			•		•		•	•	•										•	•						
 	VBMT110302-CG																										•				
	VBMT110304-CG																										•				
 	VBMT110304-HQ																										•				
	VBMT110308-HQ																										•				
	VBMT160404-HQ																										•		•		
	VBMT160408-HQ																										•				
 	VBMT160408-HR																							•	•						
																			</												



FINISHING



MEDIUM



ROUGHING

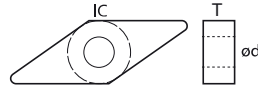
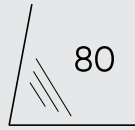
Vc • fn • ap



56

NEGATIVE
with hole

VN□□



VN□□	1604□□
IC	9,525
T	4,76
ød	3,81
Holder	177

DESCRIPTION		CARBIDE-CVD														CARBIDE-PVD					CERMET		CARBIDE								
		CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS7110S	PS7220S	PS7315S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115	
 	VNMG160404				•			•		•		•	•	•										•	•						
	VNMG160408				•			•		•		•	•	•						•	•			•	•						
	VNMG160412				•			•		•		•	•	•										•	•						
 	VNMG12T304-EM																						•								
 	VNMG160404-HQ																									•					
	VNMG160408-HQ																									•					
 	VNMG160404-PM					•			•											•	•										
	VNMG160408-PM					•			•											•	•										
 	VNMG160404-TS					•			•											•	•										
 	VNMG160404-UF				•			•		•																					
	VNMG160408-UF				•			•		•																					
 	VNMG160404-UM				•			•		•		•	•	•										•	•						
	VNMG160408-UM				•			•		•		•	•	•										•	•						
	VNMG160412-UM				•			•		•		•	•	•										•	•						



FINISHING



MEDIUM

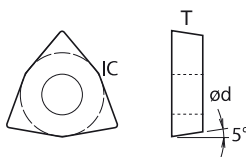


ROUGHING

Vc • fn • ap



56



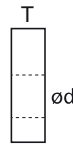
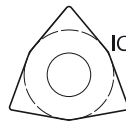
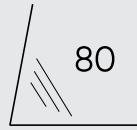
WB	0601
IC	4,76
T	1,59
Ød	2,20

[illegible] $V_c \bullet fn \bullet ap$ 

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NEGATIVE
with hole

WN□□



WN□□	0604□□	0804□□
IC	9,525	12,7
T	4,76	4,76
ød	3,81	5,16
Holder	178	178

DESCRIPTION		CARBIDE-CVD												CARBIDE-PVD					CERMET			CARBIDE								
		CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS7110S	PS7220S	PS7315S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115
 	WNMA080404												•	•			•	•												
	WNMA080408												•	•	•	•	•	•					•							
	WNMA080412												•	•	•	•			•											
	WNMA080416												•	•				•												
 	WNMG080404				•		•		•		•	•	•											•	•					
	WNMG080408				•		•		•		•	•	•	•	•									•	•					
	WNMG080412				•		•		•		•	•	•	•	•									•	•					
	WNMG080416											•	•																	
 	WNMG080404-ALU																													•
	WNMG080408-ALU																													•
 	WNMG060404-HA																							•						
	WNMG080408-HA																							•						
 	WNMG080404-HQ																									•				
	WNMG080408-HQ					•		•													•	•					•		•	
	WNMG080412-HQ																									•				
 	WNMG060404-MF2																						•							
	WNMG080404-MF2																				•	•								
 	WNMG080404-MF4																						•							
	WNMG080408-MF4																							•						
	WNMG080412-MF4																							•						



FINISHING



MEDIUM



ROUGHING

Vc • fn • ap

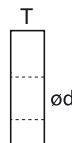


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CARBIDE /TURNING

NEGATIVE
with hole

WN□□



WN□□	0604□□	0804□□
IC	9,525	12,7
T	4,76	4,76
ød	3,81	5,16
Holder	178	178

DESCRIPTION		CARBIDE-CVD												CARBIDE-PVD					CERMET			CARBIDE									
		CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8115	CS8125	CS8205	CS8215	CS8315	CS8325	CS7125S	PS7110S	PS7220S	PS7315S	PS7320S	PS7120	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115	
	WNMG080404-PM				•			•												•											
	WNMG080408-PM	•			•			•												•	•										
	WNMG080412-PM				•			•												•	•										
	WNMG080404-ST																											•			
	WNMG080408-ST																										•	•			
	WNMG080404L-ST				•																										
	WNMG080408L-ST				•																										
	WNMG080404R-ST				•	•		•												•	•										
	WNMG080408R-ST				•			•												•	•										
	WNMG080408-TM				•			•		•										•	•		•								
	WNMG080412-TM																														
	WNMG080404-TK																							•	•						
	WNMG080408-TK																							•	•						
	WNMG080412-TK																							•							
	WNMG080404-TS				•			•												•	•		•	•	•						
	WNMG080408-TS				•	•		•												•	•		•	•	•						
	WNMG060404-UF								•																						
	WNMG080404-UF				•			•		•																					
	WNMG080408-UF				•			•		•																					



FINISHING



MEDIUM



ROUGHING

Vc • fn • ap



56

CARBIDE /TURNING

CUTTING PARAMETERS Vc (m/min)

KG	GREY CAST IRON	MM	MARTENSITIC AND FERRITIC STAINLESS STEEL
KN	NODULAR CAST IRON	MA	AUSTENITIC STAINLESS STEEL
PL	LOCARBON AND FREE CUTTING STEEL	NA	ALUMINIUM ALLOYS
PM	MEDIUM CARBON STEEL	NH	ALUMINIUM ALLOYS AGED AND HARDENED
PH	HIGH CARBON STEEL	NB	BRASS
PA	ALLOY STEEL	NC	BRONZE AND ELECTROLYTIC COPPER

MATERIAL		CARBIDE-CVD																	
		CD5125	CS5205	CS5210	CS5215	CS5215S	CS5220	CS5225	CS5225S	CS5235	CS5235S	CS5240	CS8205	CS8215	CS8115	CS8125	CS8315	CS8325	CS7125S
K	KG												250~450	200~360	200~360	160~300	200~360	160~300	
	KN												180~300	150~280	150~280	120~250	150~280	120~250	
P	PL	250~350	200~320	200~320	250~350	200~320	250~350	200~320	200~320	160~250	160~250								
	PM	220~300	180~260	180~260	220~300	180~260	220~300	180~260	180~260	140~200	140~200								
	PH	200~280	160~250	160~250	200~280	160~250	200~280	160~250	160~250	120~180	120~180	100~160							
	PA	180~250	150~220	150~220	180~250	150~220	180~250	150~220	150~220	100~170	100~170	90~160							
M	MM																		160~260
	MA																		140~220

MATERIAL		CARBIDE-PVD					CERMET				CARBIDE		
		PS7110S	PS7220S	PS7120	PS7320S	PS5125	SS9115	SS9115C	SS9125	SS9125C	US2115		
K	KG						250~400	250~400	250~400	250~400			
	KN						180~300	180~300	180~300	180~300			
P	PL					100~180	280~380	280~380	280~380	280~380			
	PM					80~160	240~330	240~330	240~330	240~330			
	PH					80~140	220~300	220~300	220~300	220~300			
	PA					60~120	200~280	200~280	200~280	200~280			
M	MM	120~220	100~150	100~150	120~220		180~250	180~250	180~250	180~250			
	MA	100~180	80~120	80~120	100~180		160~220	160~220	160~220	160~220			
N	NA										600~1500		
	NH										300~700		
	NB										250~400		
	NC										150~250		

CUTTING PARAMETERS a_p (mm) & f_n (mm/rev)

NEGATIVE



NEGATIVE INSERT SIZE		CN□□	-	1204..	1606..	1906..	2507.. 2509..
		DN□□	1104..	1504.. 1506..	-	-	-
		SN□□	0903..	1204..	-	1906..	2507.. 2509..
		TN□□	-	1604..	2204..	-	-
		VN□□	-	1604..	-	-	-
		WN□□	0604..	0804..	-	-	-

Chip Breaker Form	Corner Radius	a_p (mm)	f_n (mm/rev)	a_p (mm)	f_n (mm/rev)	a_p (mm)	f_n (mm/rev)	a_p (mm)	f_n (mm/rev)	a_p (mm)	f_n (mm/rev)
MA FLAT	R02										
	R04			2,00-4,00	0,20-0,35						
	R08			2,00-6,00	0,25-0,50	4,00-8,00	0,34-0,60				
	R12			2,00-6,00	0,33-0,58	4,00-10,0	0,40-0,70	5,00-11,0	0,43-0,76	8,00-16,0	0,45-1,00
	R16 / R24			2,00-7,00	0,37-0,65	4,00-10,0	0,45-0,78	5,00-13,0	0,49-0,8	8,00-18,0	0,50-1,10
MG BOX	R02										
	R04			1,00-4,00	0,16-0,25					8,00-16,0	0,45-0,89
	R08	1,00-4,00	0,23-0,40	1,00-4,00	0,22-0,38	4,00-7,00	0,34-0,58	5,00-10,0	0,42-0,76		
	R12			1,00-5,00	0,26-0,44	4,00-8,00	0,40-0,68	5,00-11,0	0,43-0,76		
	R16 / R24			1,00-5,00	0,29-0,50	4,00-8,00	0,45-0,76	5,00-11,0	0,49,0,85	8,00-18,0	0,50-1,10
ALU	R02				0,10-3,00		0,05-0,30				
	R04				0,80-3,50		0,10-0,40				
	R08				0,80-3,50		0,10-0,40				
	R12				0,80-3,50		0,10-0,42				
	R16 / R24										
HA	R02										
	R04										
	R08										
	R12			0,80-3,50	0,05-0,30						
	R16 / R24										
HQ	R02										
	R04			0,50-2,50	0,05-0,25						
	R08			0,50-4,00	0,10-0,50						
	R12			0,50-4,00	0,13-0,60						
	R16 / R24										
HTR	R02										
	R04										
	R08										
	R12										
	R16 / R24									1,80-10,00	0,30-0,80
PM	R02										
	R04										
	R08			1,00-5,00	0,10-0,50						
	R12										
	R16 / R24										

CARBIDE /TURNING

CUTTING PARAMETERS a_p (mm) & f_n (mm/rev)

NEGATIVE



NEGATIVE INSERT SIZE		CN□□	-	1204..	1606..	1906..	2507.. 2509..
		DN□□	1104..	1504.. 1506..	-	-	-
		SN□□	0903..	1204..	-	1906..	2507.. 2509..
		TN□□	-	1604..	2204..	-	-
		VN□□	-	1604..	-	-	-
		WN□□	0604..	0804..	-	-	-

Chip Breaker Form	Corner Radius	a_p (mm)	f_n (mm/rev)	a_p (mm)	f_n (mm/rev)	a_p (mm)	f_n (mm/rev)	a_p (mm)	f_n (mm/rev)	a_p (mm)	f_n (mm/rev)
ST	R02										
	R04			1,00-3,50	0,12-0,30						
	R08			1,80-7,00	0,15-0,50						
	R12										
	R16 / R24										
TF	R02										
	R04			0,05-1,00	0,04-0,28						
	R08			0,07-1,00	0,05-0,03						
	R12										
	R16 / R24										
TK	R02										
	R04	0,50-1,00	0,10-0,25	0,50-1,20	0,10-0,28						
	R08	0,50-1,20	0,10-0,28	0,50-1,50	0,10-0,30	0,80-2,00	0,10-0,35				
	R12			0,50-1,60	0,10-0,30						
	R16 / R24										
TM	R02										
	R04										
	R08			0,50-3,00	0,05-0,40						
	R12										
	R16 / R24										
TS	R02										
	R04	1,00-3,00	0,13-0,23	0,80-4,00	0,05-0,30						
	R08			0,80-4,00	0,10-0,40						
	R12			0,80-4,00	0,10-0,40						
	R16 / R24										
UF	R02										
	R04			0,30-1,80	0,05-0,35						
	R08			0,30-2,00	0,05-0,35						
	R12										
	R16 / R24										
UH	R02										
	R04										
	R08										
	R12					1,30-8,00	0,25-0,70				
	R16 / R24					1,80-8,00	0,30-0,80				

CUTTING PARAMETERS a_p (mm) & f_n (mm/rev)

NEGATIVE



NEGATIVE INSERT SIZE		CN□□	-	1204..	1606..	1906..	2507.. 2509..
		DN□□	1104..	1504.. 1506..	-	-	-
		SN□□	0903..	1204..	-	1906..	2507.. 2509..
		TN□□	-	1604..	2204..	-	-
		VN□□	-	1604..	-	-	-
		WN□□	0604..	0804..	-	-	-

Chip Breaker Form	Corner Radius	a_p (mm)	f_n (mm/rev)	a_p (mm)	f_n (mm/rev)	a_p (mm)	f_n (mm/rev)	a_p (mm)	f_n (mm/rev)	a_p (mm)	f_n (mm/rev)
UM	R02										
	R04			1,00-4,50	0,10-0,33	2,00-7,50	0,13-0,33				
	R08			1,50-5,00	0,15-0,45	2,00-8,00	0,18-0,45	3,00-9,00	0,20-0,46		
	R12			1,50-5,50	0,15-0,50	2,00-8,00	0,22-0,50	3,00-10,0	0,24-0,50		
	R16 / R24			1,50-5,50	0,15-0,60	2,00-8,00	0,25-0,60	3,00-10,0	0,32-0,50		
UT	R02										
	R04										
	R08										
	R12					1,30-7,00	0,25-0,65				
	R16 / R24										
UR	R02										
	R04										
	R08			3,00-10,0	0,30-0,72	3,00-15,0	0,27-0,48	3,00-17,0	0,34-0,60		
	R12			3,00-15,00	0,30-0,80	3,00-15,5	0,32-0,50	3,00-18,0	0,38-0,68		
	R16 / R24					3,00-16,00	0,35-0,63	3,00-18,0	0,38-0,68	5,00-17,0	0,45-0,90
US	R02										
	R04			1,50-4,50	0,15-0,45						
	R08			1,50-5,00	0,15-0,5						
	R12			1,50-5,00	0,15-0,50						
	R16 / R24										
VQ	R02										
	R04										
	R08										
	R12										
	R16 / R24										
ZR	R02										
	R04										
	R08										
	R12			1,00-7,00	0,20-0,50						
	R16 / R24			1,80-7,00	0,32-0,75						
R/L-P R/L-C	R02			0,50-3,50	0,08-0,30						
	R04			1,00-3,50	0,12-0,30						
	R08			1,30-3,50	0,15-0,35						
	R12										
	R16 / R24										

CARBIDE /TURNING

CUTTING PARAMETERS a_p (mm) & f_n (mm/rev)

POSITIVE



NEGATIVE INSERT SIZE		CC/CP□□	0602..	09T3.. 0903..	1204..	-	-
		DC□□	0702..	11T3..	..	-	-
		SC/SP□□	-	09T3..	1204..	-	-
		TC/TP□□	0902..	1102..	16T3..	2204..	-
		VB/VC□□	-	1103..	1604..	2205..	-
		WB□□	0601..	-	-	-	-

Chip Breaker Form	Corner Radius	a_p (mm)	f_n (mm/rev)	a_p (mm)	f_n (mm/rev)	a_p (mm)	f_n (mm/rev)	a_p (mm)	f_n (mm/rev)	a_p (mm)	f_n (mm/rev)
ER/L-U	R02	0,10-0,50	0,01-0,10	0,02-2,00	0,04-0,15						
	R04	0,10-0,50	0,01-0,10	0,50-3,00	0,08-0,30						
	R08										
	R12										
	R16 / R24										
L-F	R02	0,30-1,00	0,10-0,20	0,50-1,20	0,10-0,25						
	R04	0,50-1,00	0,10-0,25	0,70-1,50	0,12-0,30	0,20-4,00	0,02-0,30				
	R08					0,30-5,00	0,03-0,50				
	R12										
	R16 / R24										
L/R-W	R02	0,07-1,80	0,03-0,15	0,08-2,00	0,04-0,15						
	R04	0,1-2,00	0,05-0,2	0,1-2,20	0,08-0,2						
	R08										
	R12										
	R16 / R24										
L-Y	R02			0,06-1,70	0,03-0,13						
	R04			0,09-2,00	0,06-0,22						
	R08										
	R12										
	R16 / R24										
ALU	R02	0,03-3,00	0,01-0,12	0,05-4,00	0,02-0,30	0,05-4,00	0,02-0,30				
	R04	0,10-3,00	0,02-0,13	0,10-5,00	0,03-0,50	0,10-5,00	0,03-0,50				
	R08	0,10-4,00	0,02-0,20	0,10-5,00	0,03-0,50	0,10-5,50	0,04-0,80				
	R12			0,15-5,00	0,04-0,60	0,50-6,50	0,08-0,70	0,10-7,00	0,03-0,60		
	R16 / R24										
CG	R02	0,30-1,00	0,05-0,20								
	R04	0,30-1,00	0,10-0,25	0,30-1,5	0,10-0,25						
	R08	0,40-2,40	0,80-0,25	0,30-1,5	0,10-0,28						
	R12										
	R16 / R24										
HF	R02										
	R04										
	R08										
	R12										
	R16 / R24										

CUTTING PARAMETERS a_p (mm) & f_n (mm/rev)

POSITIVE



NEGATIVE INSERT SIZE		CC/CP□□	0602..	09T3.. 0903..	1204..	-	-
		DC□□	0702..	11T3..	..	-	-
		SC/SP□□	-	09T3..	1204..	-	-
		TC/TP□□	0902..	1102..	16T3..	2204..	-
		VB/VC□□	-	1103..	1604..	2205..	-
		WB□□	0601..	-	-	-	-

Chip Breaker Form	Corner Radius	a_p (mm)	f_n (mm/rev)	a_p (mm)	f_n (mm/rev)	a_p (mm)	f_n (mm/rev)	a_p (mm)	f_n (mm/rev)	a_p (mm)	f_n (mm/rev)
HM	R02	1.0~6.0	0.10~0.70								
	R04										
	R08										
	R12										
	R16 / R24										
HQ	R02	0,06~1,70	0,06~0,19	0,10~2,00	0,07~0,22						
	R04	0,10~2,00	0,11~0,25	0,80~3,00	0,08~0,30	0,80~3,00	0,08~0,28				
	R08	0,20~2,00	0,08~0,30	1,00~3,00	0,10~0,30	1,00~3,00	0,10~0,33				
	R12										
	R16 / R24										
HR	R02										
	R04										
	R08										
	R12										
	R16 / R24										
TS	R02										
	R04										
	R08										
	R12										
	R16 / R24										
VM	R02										
	R04										
	R08										
	R12										
	R16 / R24										
VQ	R02										
	R04										
	R08										
	R12										
	R16 / R24										
VW	R02										
	R04										
	R08										
	R12										
	R16 / R24										

TURNING PVD COMPARISON TABLE

MATERIAL	SANGEO	ISCAR	SECO	TEAGUTEC	KYOCERA	SANDVIK	KENAMETAL	MITSUBISHI	WALTER	KORLOY
P	PS7110S	IC507	CP200		PR1005					
		IC808			PR915		KU10T			PC8110
					PR1115		KU25T			PC230
	PS7220S		CP250		PR930					
	PS7320S									
	PS7120					GC1025		VP15TF	WTA43	PC5300
		IC3028		TT5030	PR1025			VP20MF	WTA41	PC8115
		IC908			PR630	GC4125				
		IC830			PR660					PC3545
M	PS5125		CP500							
	PS7110S	IC808	CP200			GC1005		MP9005	WSM10S	PC8110
		IC907			PR915	GC1105	KC5010	VP19RT	WSM20S	PC8115
	PS7220S		CP250				KC5510			
		IC3028			PR930	GC1020	KC5025	VP15TF	WSM30S	PC5300
	PS7120	IC830		TT5030	PR1125	GC1025	KC5525	VP20MF	WSM40S	
					PR630	GC4125				PC9030
S					PR660	GC2035				
	PS5125		CP500	TT8020						PC5400
	PS7110S	IC808	TS2000					VP05RT	WSM10	PC8105
		IC907	CP500		PR915	GC1105				
	PS7120						KC5010			
	PS7220S	IC328	TS2500	TT5030	PR660	GC1025		VP10RT	WSM20S	PC8110
	PS7320S				PR1325	GC2035	KC5025	VP15TF	WSM30S	PC8115
										PC5300
										PC5400

TURNING CVD COMPARISON TABLE

MATERIAL	SANGE	ISCAR	SECO	TEAGUTEC	KYOCERA	SANDVIK	KENAMETAL	MITSUBISHI	WALTER	KORLOY
P	CS5205			TT8105	CA5505	GC4305	KCP05(B)	UE6105	WPP10S	NC3010
	CS5210	IC8150		TT8110	CA510	GC4205		UE6110	WKP13S	
	CS5215		TP0500	TT8115	CA515	GC4315	KCP10(B)	MY5015		NC3215
	CS5215S		TP0501	TT8120		GC4215		MC6015		
	CS5220		TP1500			GC4325	KCP30(B)	UE6020		NC3220
	CS5225		TP2500		CA525	GC4225			WPP20S	
	CS5225S	IC8250	TP2501	LC025P	CA5525	GC4235	KCP40(B)		WKP23S	
	CD5125		T350M	TT8125						NC3225
	CS5235	IC8350	TP3500	TT5100	CA5535			UE6035	WPP30S	NC3030
	CS5235S			TT8135					WKP33S	NC500H
	CS5240		TGP45	TT7100						NC5330
M	CS7125S	IC6015	TM2000	TT9215	CA6515	GC2015	KCM15(M)	MC7015	WAM10	NC9020
			TM4000	TT9225	CA6525	GC2025	KCM25(B)	US7020	WAM20	NC9025
								US735	WAM30	
K	CS8205	IC5005	TK1001	TT7005	CA4505	GC3205	KCK05(B)	MC5005	WKK10S	
	CS8115	IC5015		TT7310	CA4510	GC3210		MC5015		
	CS8125		TK2001	TT7015					WKK20S	
	CS8215		TGK1500		CA4515	GC3215	KCK15(B)	UC5105		NC6210
	CS8315			TT7015	CA4115	GC3225		UC5115		NC6215
	CS8325								WKK20S	

TURNING CERMET

MATERIAL	SANGE	ISCAR	SECO	TEAGUTEC	KYOCERA	SANDVIK	KENAMETAL	MITSUBISHI	WALTER	KORLOY
UNI	SS9115	IC20N	C15M	CT3000	TN60	CT525	KT125	NX2525		CC1500
	SS9115C			CT3000						
	SS9125	IC520N					HT5	NX3035		CN1500
	SS9125C									

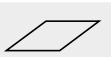


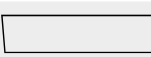
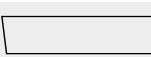
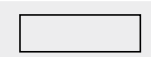


TURNING/**PCBN**

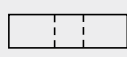
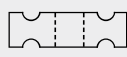
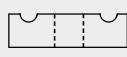
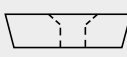
PCBN /TURNING

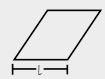
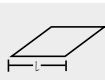
C	C	G	W	12	04	08
1	2	3	4	5	6	7

1	GEOMETRY
C	 80
D	 55
R	 360
S	 90
T	 60
V	 35
W	 80

2	CLEARANCE ANGLE
B	 5°
C	 7°
P	 11°
N	 0°

3	TOLERANCE
	 
G	±0,025 ±0,13
M	±0,05 ±0,13
U	±0,08 ±0,13

4	SHAPE
A	
G	
M	
W	
X	SPECIAL

5	SHAPE (mm)
C	06 09 12 16 19 25 
D	07 11 15 
R	06 09 12 15 19 25 
S	09 12 15 19 25 
T	09 11 16 22 
V	11 16 22 
W	06 08 

6	THICKNESS (mm)
02	2,38
03	3,18
T3	3,97
04	4,76
06	6,35
07	7,94
09	9,52
10	10,00

7	CORNER RADIUS
02	0,20 mm
04	0,40 mm
08	0,80 mm
12	1,20 mm
16	1,60 mm
24	2,40 mm

4C

8

BC

9

420

10

8	NUMBER OF EDGES
1C	1 CORNER
2C	2 CORNER
3C	3 CORNER
4C	4 CORNER
6C	6 CORNER
8C	8 CORNER
FF	FULL FACE
SO	SOLID PcBN

9	
BC	PCBN
SC	TIN COATING PCBN

10	APPLICATION
1□□	HARDENED STEEL
2□□	CAST IRON
3□□	SUPER ALLOY
4□□	UNIVERSAL

PCBN /TURNING

GRADES

ISO DIN 513	K					H					S				
															
	K01	K10	K20	K30	K40	P01	P10	P20	P30	P40	S01	S10	S20	S30	S40
PCBN								BC150							
								SC150							
								BC170					BC350		
													BC420		
								BC350							
								BC420				BC4000			
												BCX4000			
								BC4000							
								BCX4000							

COATED

RC

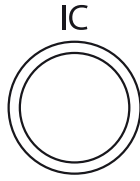
360



RC	0603	0903	1204
IC	6,35	9,525	12,7
T	3,18	2,38	4,76
Ød	-	-	-
			

[illegible]
$$V_c \bullet fn \bullet ap$$

84

RN 

RN□□	0603□□	0903□□	1204□□
IC	6,35	9,525	12,70
T	3,18	3,18	4,76
Ød	-	-	-

[illegible]
$$V_c \bullet fn \bullet ap$$

84

90



SN□□	1204□□
IC	12,7
T	4,76
Ød	5,16
 Holder	 162

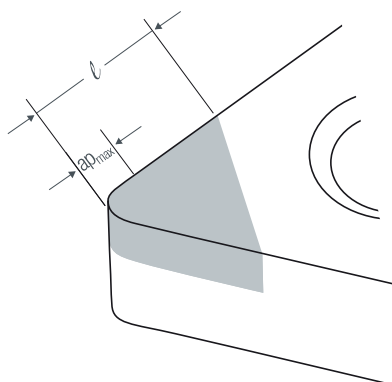
Vc • fn • ap

PCBN /TURNING

CUTTING PARAMETERS

KG	GREY CAST IRON
KN	NODULAR CAST IRON
KW	WHITE CAST IRON
KS	SINTERED MATERIAL

HH	HARDENED STEEL
HC	CASE HARDENED STEEL
HB	BEARING STEEL
SA	SUPER ALLOYS (Ni Based)



$$ap_{\max} < 20 \sim 30\% \ l$$

MATERIAL		ap (mm)	fn (mm/ rev)	CUTTING CONDITION		PCBN										
						BC150	BC170	SC150	BC250	SC250	SC250	BC350	BC420	BC4000	BCX4000	
H	HH	0,05-0,25	0,05-0,20	○	◊	120-250	100-230	100-200					100-220	100-250	80-250	
				⊕	◊			80-180				80-180	100-180	100-250		
	HC	0,05-0,25	0,08-0,25	○	◊			100-180				100-200	100-200	100-250		
				⊕	◊			80-160				80-160	80-160	80-250		
	HB	0,05-0,25	0,05-0,20	○	◊	120-220	100-200	100-180					100-200	100-250	100-250	
				⊕	◊			80-150				90-150	90-150	90-250		
K	KG	0,10-0,50	0,10-0,30	○	◊					400-1000	350-1000		400-1200	350-1200	350-1500	
				⊕	◊					400-800	350-800		400-1000	350-1200	350-1500	
	KN	0,10-0,30	0,05-0,20	○	◊				250-400		250-400		250-500	250-500	250-500	
				⊕	◊				150-300		150-300		200-400	200-400	200-400	
	KW	0,10-0,30	0,10-0,30	○	◊					60-100	100-120		60-120	100-250	100-300	
				⊕	◊					50-80	60-100		50-100	100-250	100-300	
	KS	0,05	0,05-0,25	○	◊					160-250	160-250	160-250		160-280	150-280	150-300
				⊕	◊								120-220	100-250	100-300	
S	SA	0,05-0,20	0,10-0,20	○	◊							120-300			120-300	



TURNING/**DIAMOND**

DIAMOND /TURNING

D

C

G

W

11

T3

04

1

2

3

4

5

6

7

1

GEOMETRY

C



80

D



55

R



360

S



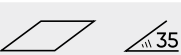
90

T



60

V



35

W

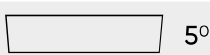


80

2

CLEARENCE ANGLE

B



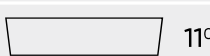
5°

C



7°

P



11°

N



0°

3

TOLERANCE



±0,025



±0,13

G

M

U

±0,05
±0,15

±0,08
±0,25

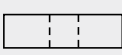
±0,13

±0,13

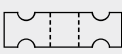
4

SHAPE

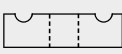
A



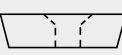
G



M



W



X

SPECIAL

5

SHAPE (mm)

C

06 09 12
16 19 25


D

07 11 15



R

06 09 12
15 19 25


S

09 12 15
19 25


T

09 11 16
22


V

11 16 22



W

06 08



6

THICKNESS (mm)

02

2,38

03

3,18

T3

3,97

04

4,76

06

6,35

07

7,94

09

9,52

10

10,00

7

CORNER RADIUS

02

0,20 mm

04

0,40 mm

08

0,80 mm

12

1,20 mm

16

1,60 mm

24

2,40 mm

1C

8

PC

9

150

10

8	NUMBER OF EDGES
1C	1 CORNER
2C	2 CORNER
3C	3 CORNER
FE	FULL EDGE

9	
PC	PCD

10	APPLICATION
1 □□ 3 □□	NON-FERROUS METAL

TURNING

GROOVING

THREADING

MILLING

DRILLING

ENDMILLS

DRILLS

HSS
DRILLS & TAPS

SPARE
PARTS

INDEX

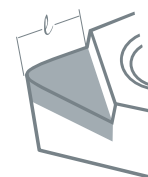
DIAMOND /TURNING

GRADES

ISO DIN 513	N				
					
PCD	N01	N10	N20	N30	N40
		PC100			
		PC150			
			PC200		
			PC300		

CUTTING EDGE STYLE

POSITIVE INSERTS

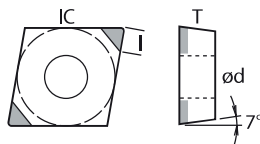


NEGATIVE INSERTS



POSITIVE 7°
with hole

CC□□



CC□□	0602□□	09T3□□	1204□□
IC	6,35	9,525	12,7
T	2,38	3,97	4,76
Ød	2,80	4,40	5,50
Holder	134	134	134

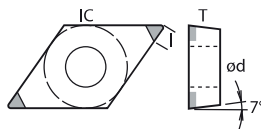
DESCRIPTION		EDGE		PCD					
				PC100	PC150	PC200	PC300		
	CCGT060202	1C			•	•	•		
	CCGT060204	1C		•	•	•	•		
	CCGT060208	1C		•	•		•		
	CCGT09T302	1C			•	•	•		
	CCGT09T304	1C		•	•	•	•		
	CCGT09T308	1C		•	•		•		
	CCGT120404	1C			•	•	•		
	CCGT120408	1C		•	•		•		
	CCGT09T302	2C			•	•	•		
	CCGT09T304	2C		•	•	•	•		
	CCGT09T308	2C		•	•		•		
	CCGT120404	2C			•	•	•		
	CCGT120408	2C		•	•		•		
	CCGW060202	1C			•	•	•		
	CCGW060204	1C		•	•	•	•		
	CCGW060208	1C		•	•		•		
	CCGW09T302	1C			•	•	•		
	CCGW09T304	1C		•	•	•	•		
	CCGW09T308	1C		•	•		•		
	CCGW120404	1C			•	•	•		
	CCGW120408	1C		•	•		•		
	CCGW09T302	2C			•	•	•		
	CCGW09T304	2C		•	•	•	•		
	CCGW09T308	2C		•	•		•		
	CCGW120404	2C			•	•	•		
	CCGW120408	2C		•	•		•		
	CCGX060204R/L	FE			•		•		
	CCGX09T304R/L	FE			•		•		

Vc • fn • ap

99

99

INDEX



DC□□	0702□□	11T3□□
IC	6,35	9,525
T	2,38	3,97
Ød	2,80	4,40
 Holder	143	143

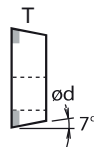
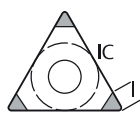
[illegible]
$$V_c \bullet fn \bullet ap$$

99

TURNING

TC

60



TC	0902	1102	16T3
IC	5,56	6,35	9,525
T	2,38	2,38	3,97
Ød	2,50	2,80	4,40
			

[illegible]

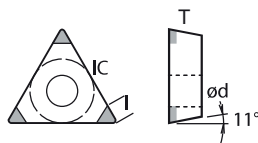
Vc • fn • ap

99

TURNING

TP

A diagram showing a triangle with a horizontal base. A line segment is drawn parallel to the base, intersecting the two slanted sides. The angle between the left slanted side and the base is labeled 60. The line segment is parallel to the base, indicated by three short tick marks on the segment and three longer tick marks on the base.



TP□□	0802□□	0902□□	1103□□
IC	4,76	5,56	6,35
T	2,38	2,38	3,18
Ød	2,30	3,00	3,40
			

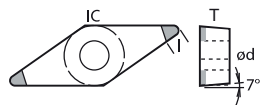
Vc • fn • ap

99

TURNING

VC ☐ ☐

80



VC□□	1103□□	1604□□
IC	6,35	9,525
T	3,18	4,76
Ød	2,80	4,40
 Holder	 176	 176

[illegible]

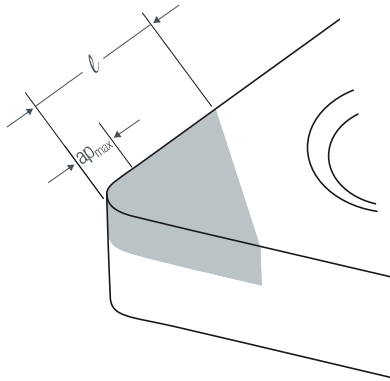
Vc • fn • ap

99

CUTTING PARAMETERS

NA	ALUMINIUM ALLOYS
NS	ALUMINIUM ALLOYS (Si≤15%)
NH	AL ALLOYS AGED AND HARDENED
NB	BRASS

NC	BRONZE AND ELECTROLYTIC COPPER
NG	GRAPHITE
HM	HARD METAL (Co≤16%)
ST	TITANIUM ALLOYS



$$ap_{\max} < 60\sim 70\% \ l$$

MATERIAL		ap (mm)	fn (mm/ rev)	CUTTING CONDITION	PCD					
					PC100	PC150	PC200	PC300		
N	NA	0,10~1,00	0,08~0,25	○ ⊕ ♀		600~2500		600~2500		
		1,00~2,50	0,15~0,50	○ ⊕ ♀		600~1600		600~1600		
	NS	0,10~1,00	0,05~0,20	○ ⊕ ♀			500~1800			
		1,00~2,50	0,08~0,35	○ ⊕ ♀			500~1200			
	NH	0,10~1,00	0,05~0,35	○ ⊕ ♀			400~1000			
		1,00~2,50	0,08~0,35	○ ⊕ ♀			400~800			
	NB	0,10~1,00	0,10~0,30	○ ⊕ ♀	400~1200	400~1200		400~1200		
		1,00~2,50	0,15~0,25	○ ⊕ ♀	400~1000	400~1000		400~1000		
	NC	0,10~1,00	0,10~0,30	○ ⊕ ♀	300~800	300~800		300~800		
		1,00~2,50	0,15~0,25	○ ⊕ ♀	300~500	300~500		300~500		
	NG	0,10~1,00	0,08~0,25	○ ⊕ ♀		300~800	300~800	300~800		
		1,00~2,50	0,15~0,50	○ ⊕ ♀		300~600	300~600	300~600		
H	HM	0,10~0,50	0,08~0,25	○ ♀			10~40			
S	ST	0,10~1,00	0,05~0,20	○ ⊕ ♀	100~200	100~200	100~220	100~200		
		1,00~2,50	0,08~0,20	○ ⊕ ♀	100~150	100~150	100~220	100~150		

TURNING

GROOVING

THREADING

MILLING

DRILLING

ENDMILLS

DRILLS

HSS
DRILLS & TAPSSPARE
PARTS

INDEX





TURNING/**CERAMIC**

CERAMIC /TURNING

C

N

G

A

12

04

08

1

2

3

4

5

6

7

1

GEOMETRY

C



D



R



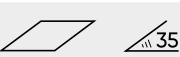
S



T



V



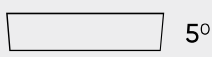
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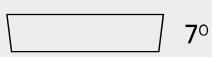
2

CLEARANCE ANGLE

B



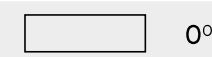
C



P



N



3

TOLERANCE



G

±0,025

±0,13

M

±0,05

±0,15

±0,13

U

±0,08

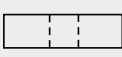
±0,25

±0,13

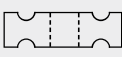
4

SHAPE

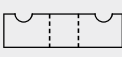
A



G



M



T



X

SPECIAL

5

SHAPE (mm)

C

06 09 12

16 19 25



D

07 11 15



R

06 09 12

15 19 25



S

09 12 15

19 25



T

09 11 16

22



V

11 16 22



W

06 08



6

THICKNESS (mm)

02

2,38

03

3,18

T3

3,97

04

4,76

06

6,35

07

7,94

09

9,52

10

10,00

7

CORNER RADIUS

02

0,20 mm

04

0,40 mm

08

0,80 mm

12

1,20 mm

16

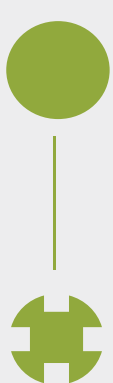
1,60 mm

24

2,40 mm

T	04	00	0	KS	81	50
8	9	10	11	12	13	14

8	CHAMFER	9	CHAMFER WIDTH 1	10	CF WIDTH 2 X DEGREE
T	Mono 20° Chamfer	01	0,05 mm	00	Mono Type
K	Mono 30° Chamfer	02	0,10 mm	01	0,20 x 25
D	Double 10° Chamfer	03	0,15 mm	02	0,10 x 30
S	Double 15° Chamfer	04	0,20 mm	03	0,20 x 30
AD	After Double 10° Chamfer	05	1,00 mm	04	0,15 x 30
AS	After Double 15° Chamfer	06	2,00 mm	05	0,45 x 25
		10	1,20 mm		
		20	1,50 mm		
		30	0,75 mm		
		40	1,25 mm		

11	HONING (µm)	12	GRADE	13	WORKPIECE	14	APPLICATION
0	No Honing	KS	Al ₂ O ₃ + TiC(N)	41	Cast Iron	10	
1	10	KSC	Al ₂ O ₃ +TiC(N)+TiN	71	Inconel & High Temp. Alloy	20	
2	20	KZ	Al ₂ O ₃ + ZrO ₂	81	Hardened Steel	30	
3	30	KN	Si ₃ N ₄			40	
5	50	KA	TiC + Al ₂ O ₃			50	
		KL	SiAlON			60	
		KW	Whisker			70	

CERAMIC /TURNING

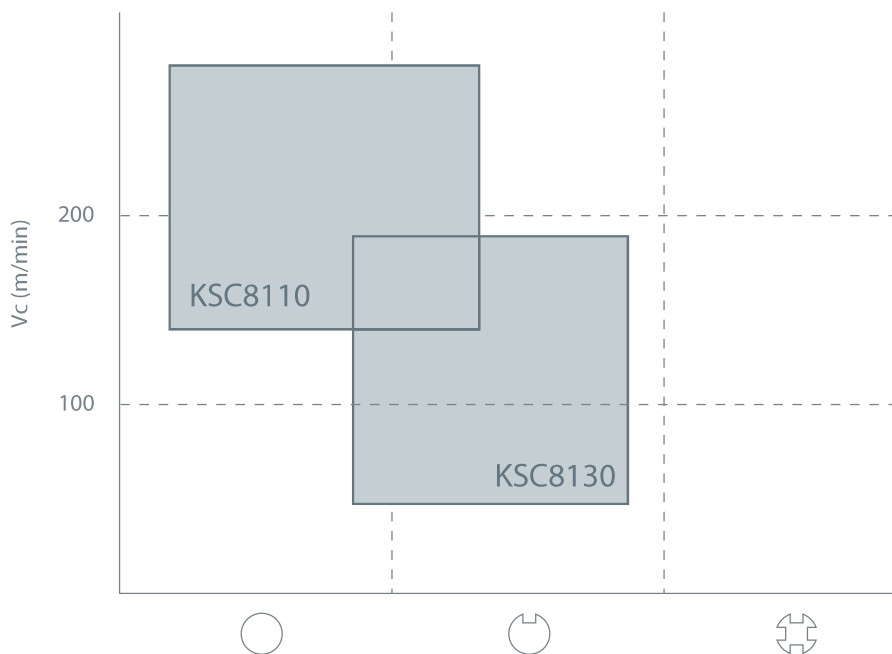
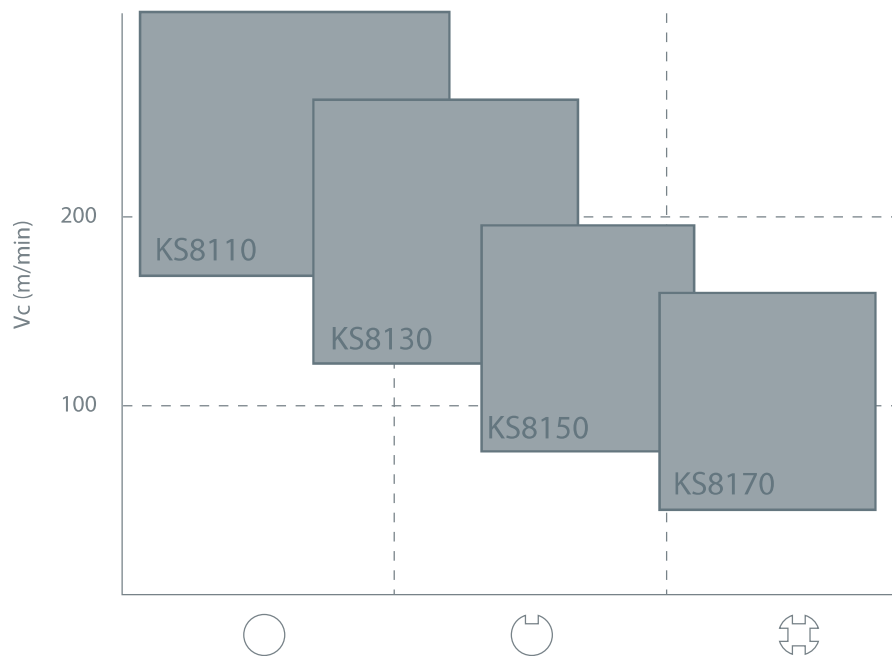
GRADES

ISO DIN 513	K					H					S				
	K01	K10	K20	K30	K40	H01	H10	H20	H30	H40	S01	S10	S20	S30	S40
$Al_2O_3 + TiC(N)$						KS8110									
							KS8130								
								KS8150							
									KS8170						
$Al_2O_3 + Ti-C(N)$ PVD						KSC8110									
							KSC8130								
$Al_2O_3 + ZrO_2$	KZ4120														
	KZ4130														
			KZ4180												
Si_3N_4	KN4110														
	KN4120														
		KN4130													
			KN4140												
			KN4150												
			KN1000												
			KA4110												
TiC + Al_2O_3															
SiAlON											KL7110				
											KL7120				
Whisker											KW7110				
											KW7120				

COATED

Range ISO **H**

GRADES



TURNING

GROOVING

THREADING

MILLING

DRILLING

ENDMILLS

DRILLS

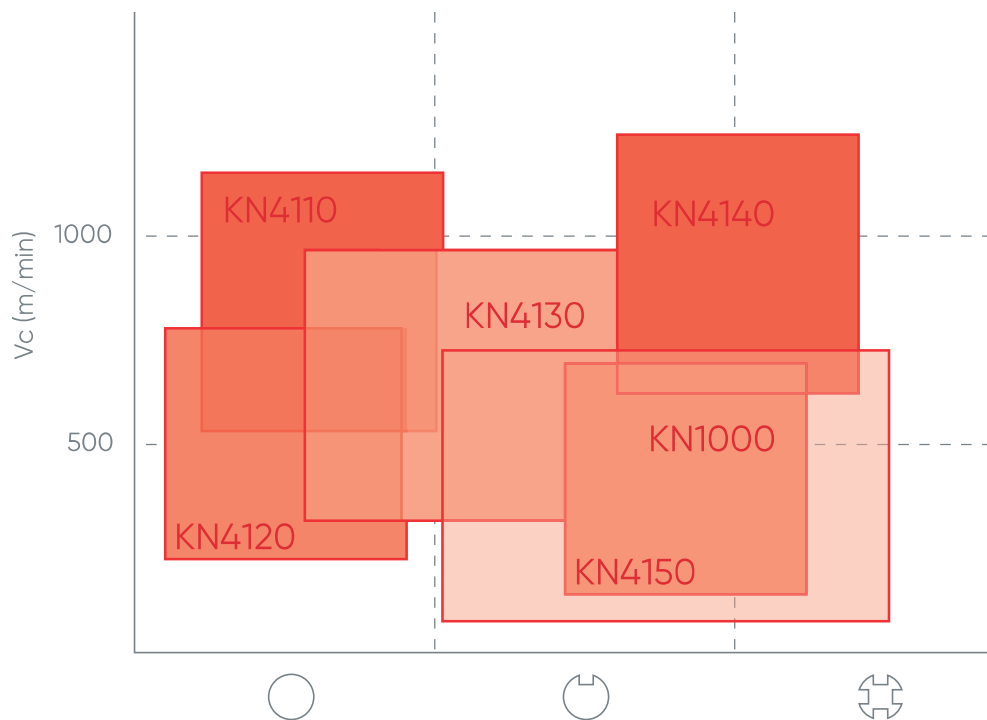
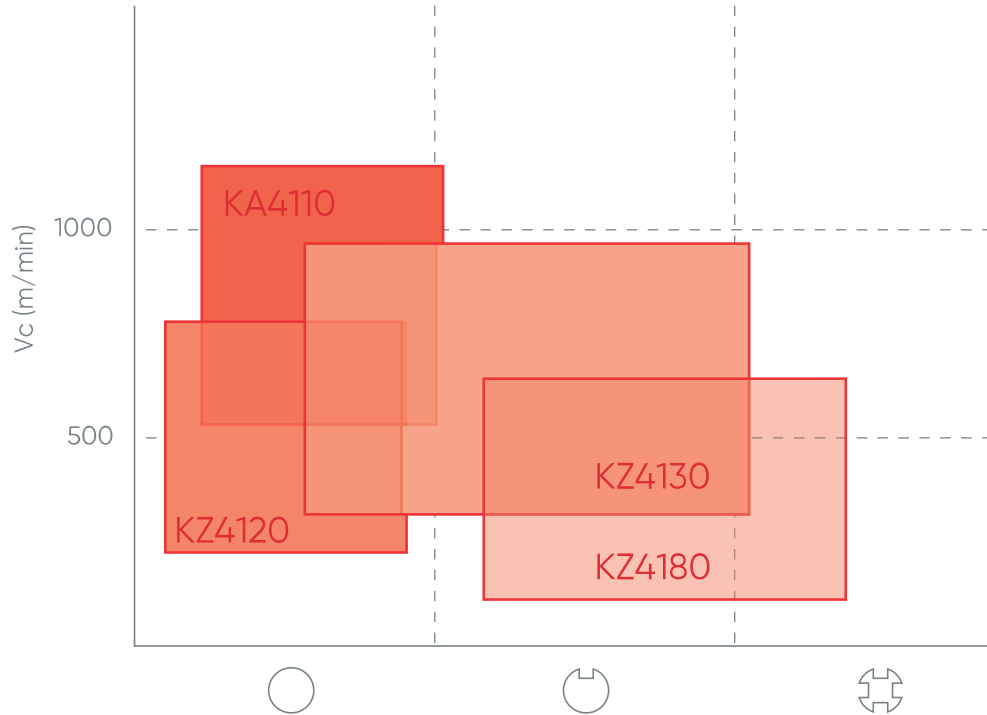
HSS
DRILLS & TAPS

SPARE
PARTS

INDEX

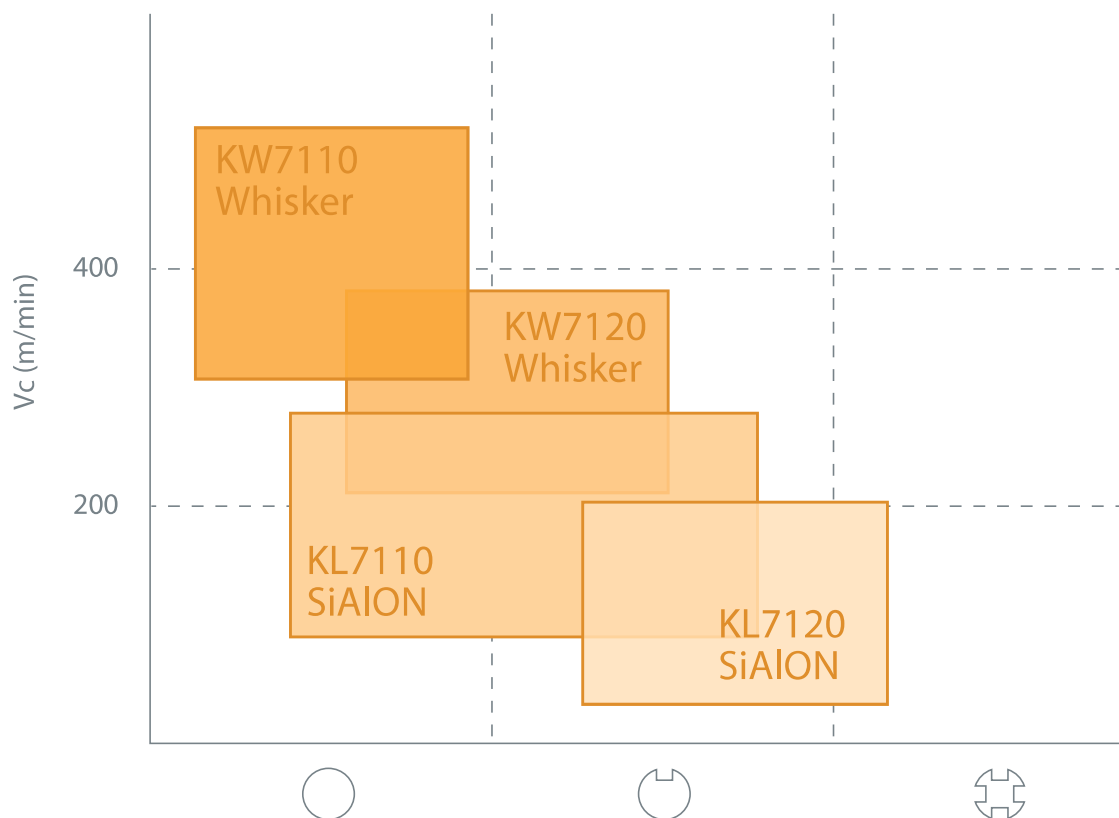
CERAMIC /TURNING

GRADES

Range ISO **K**

Range ISO **S**

GRADES



TURNING

GROOVING

THREADING

MILLING

DRILLING

ENDMILLS

DRILLS

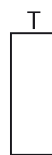
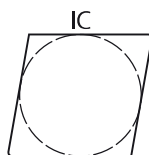
HSS
DRILLS & TAPS

SPARE
PARTS

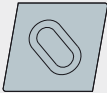
INDEX

NEGATIVE
with hole

CN□□



CN□□	1204□□	1207□□
IC	12,7	12,7
T	4,76	7,94
Ød	-	-
Holder	137	137

DESCRIPTION			Al ₂ O ₃ + TiC(N)				+ PVD		ZrO ₂			Si ₃ N ₄						SiAlON		Whisker		
			KS8110	KS8130	KS8150	KS8170	KSC8110	KSC8130	KZ4120	KZ4130	KZ4180	KN4110	KN4120	KN4130	KN4140	KN4150	KN1000	KA4110	KL7110	KL7120	KW7110	KW7120
	CNGN120408	T04000																				•
	CNGN120412	T04000																				•
	CNGN120708	T04000																				•
	CNGN120712	T04000																				•
	CNGN120408	T04002		•	•									•	•							•
	CNGN120412	T04002		•	•									•	•							•
	CNGN120416	T04002		•	•									•	•							•
	CNGN120708	T04002		•	•									•	•							•
	CNGN120712	T04002		•	•									•	•		•					•
	CNGN120716	T04002		•	•				•					•	•							•
	CNGX120712	T04000								•						•						
	CNGX120712	T04002								•												
	CNGN120716	T04000							•													
	CNMX120712	T04000												•	•			•	•			
	CNMX120716	T04000												•	•			•	•			
	CNMX120712	T04002												•	•			•	•			
	CNMX120716	T04002												•	•			•	•			

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TURNING

GROOVING

THREADING

MILLING

DRILLING

ENDMILLS

DRILLS

HSS
DRILLS & TAPS

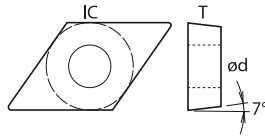
SPARE
PARTS

INDEX

CERAMIC /TURNING

NEGATIVE
with hole

DN□□



CN□□	1504□□	1506□□	1507□□
IC	12,7	12,7	12,7
T	4,76	6,35	7,94
Ød	5,16	5,16	5,16
Holder 			
150 			

DESCRIPTION			Al ₂ O ₃ + TiC(N)				+ PVD		ZrO ₂			Si ₃ N ₄							SiAlON		Whisker	
			KS8110	KS8130	KS8150	KS8170	KSC8110	KSC8130	KZ4120	KZ4130	KZ4180	KN4110	KN4120	KN4130	KN4140	KN4150	KN1000	KA4110	KL7110	KL7120	KW7110	KW7120
	DNGA150404	T04000	●	●		●																
	DNGA150408	T04000	●	●	●	●		●			●	●	●							●	●	
	DNGA150412	T04000	●	●	●	●							●	●	●				●	●	●	
	DNGA150604	T04000	●	●	●	●																
	DNGA150608	T04000	●	●	●	●		●			●	●	●				●					
	DNGA150612	T04000	●	●	●	●					●	●	●				●					
	DNGA150616	T04000	●	●	●						●	●	●									
	DNGA150704	T04000	●	●																		
	DNGA150708	T04000	●	●							●	●	●									
	DNGA150712	T04000	●	●								●	●				●	●				
	DNGA150404	T04002	●	●		●																
	DNGA150408	T04002	●	●	●	●		●			●	●	●							●	●	
	DNGA150412	T04002	●	●	●	●							●	●	●				●	●	●	
	DNGA150604	T04002	●	●	●	●																
	DNGA150608	T04002	●	●	●	●					●	●	●				●					
	DNGA150612	T04002	●	●	●	●					●	●	●				●					
	DNGA150616	T04002	●	●	●						●	●	●									
	DNGA150704	T04002	●	●																		
	DNGA150708	T04002	●	●							●	●	●									
	DNGA150712	T04002	●	●								●	●	●		●	●	●				

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CERAMIC /TURNING

POSITIVE 7°
with hole

RC□□



RC□□	0606□□	0607□□	0907□□	1207□□	1510□□	1910□□
IC	6,35	6,35	9,525	12,70	15,87	19,05
T	6,35	7,94	7,94	7,94	10,00	10,00
Ød	-	-	-	-	-	-
Holder	158	158	158	158	158	158

DESCRIPTION			Al ₂ O ₃ + TiC(N)				+ PVD		ZrO ₂			Si ₃ N ₄						SiAlON		Whisker		
			KS8110	KS8130	KS8150	KS8170	KSC8110	KSC8130	KZ4120	KZ4130	KZ4180	KN4110	KN4120	KN4130	KN4140	KN4150	KN1000	KA4110	KL7110	KL7120	KW7110	KW7120
	RCGX 060600	T04000	●	●	●		●	●													●	●
	RCGX 060700	T04000	●	●	●		●	●													●	●
	RCGX 090700	T04000	●	●	●		●	●													●	●
	RCGX 120700	T04000	●	●	●		●	●													●	●
	RCGX 151000	T04000	●	●	●		●	●													●	●
	RCGX 191000	T04000	●	●	●		●	●													●	●
	RCGX 251200	T04000	●	●	●		●	●													●	●
	RCGX 060600	S20022	●	●	●		●	●													●	●
	RCGX 060700	S20022	●	●	●		●	●													●	●
	RCGX 090700	S20022	●	●	●		●	●													●	●
	RCGX 120700	S20022	●	●	●		●	●													●	●
	RCGX 151000	S20022	●	●	●		●	●													●	●
	RCGX 191000	S20022	●	●	●		●	●													●	●
	RCGX 251200	S20022	●	●	●		●	●													●	●
	RCGX 060600	S06032	●	●	●		●	●													●	●
	RCGX 060700	S06032	●	●	●		●	●													●	●
	RCGX 090700	S06032	●	●	●		●	●													●	●
	RCGX 120700	S06032	●	●	●		●	●													●	●
	RCGX 151000	S06032	●	●	●		●	●													●	●
	RCGX 191000	S06032	●	●	●		●	●													●	●
	RCGX 251200	S06032	●	●	●		●	●													●	●
	RCGX 060600	AS06032	●	●	●		●	●													●	●
	RCGX 060700	AS06032	●	●	●		●	●													●	●
	RCGX 090700	AS06032	●	●	●		●	●													●	●
	RCGX 120700	AS06032	●	●	●		●	●													●	●
	RCGX 151000	AS06032	●	●	●		●	●													●	●
	RCGX 191000	AS06032	●	●	●		●	●													●	●
	RCGX 251200	AS06032	●	●	●		●	●													●	●
	RCGX060600	AS20022		●																		

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RN	1204	1207	1907
IC	12,70	12,70	19,05
T	4,76	7,94	7,94
Ød			

[illegible]

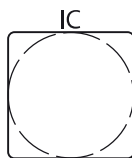
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CERAMIC /TURNING

NEGATIVE
with hole

SN□□



SN□□	0904□□	1204□□	1207□□
IC	9,52	12,70	12,70
T	4,76	4,76	7,94
Ød	3,81	5,16	5,16
Holder	162	162	162

DESCRIPTION			Al ₂ O ₃ + TiC(N)				+ PVD		ZrO ₂			Si ₃ N ₄						SiAlON		Whisker		
			KS8110	KS8130	KS8150	KS8170	KSC8110	KSC8130	KZ4120	KZ4130	KZ4180	KN4110	KN4120	KN4130	KN4140	KN4150	KN1000	KA4110	KL7110	KL7120	KW7110	KW7120
	SNGN090304	T04000	●	●																		
	SNGN090308	T04000	●	●																		
	SNGN090312	T04000	●		●						●						●					
	SNGN120408	T04000	●	●	●	●					●	●		●			●				●	●
	SNGN120412	T04000	●	●	●	●			●		●	●	●				●	●	●			
	SNGN120416	T04000									●						●	●	●			
	SNGN120708	T04000	●																			
	SNGN120712	T04000	●									●	●									
	SNGN120716	T04000	●						●			●	●								●	
	SNGN120412	S20022	●	●	●	●			●			●	●	●			●	●	●			
	SNGN120416	S20022										●					●	●	●			
	SNGN120708	S20022	●																			
	SNGN120712	S20022	●								●	●										
	SNGN120716	S20022	●						●			●	●							●		
	SNGX120708	T04000	●									●		●								
	SNGX120712	T04000	●	●								●	●	●				●	●			
	SNGX120716	T04000										●	●	●	●			●	●			
	SNGX120708	T04002	●									●		●								
	SNGX120712	T04002	●	●								●	●	●				●	●			
	SNGX120716	T04002										●	●	●	●			●	●			

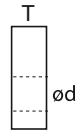
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NEGATIVE
with hole

TN□□

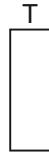


TN□□	1604□□	2204□□	2706□□
IC	9,525	12,7	15,875
T	4,76	4,76	6,35
ød	3,81	5,16	6,35
Holder	168	168	168

DESCRIPTION			Al ₂ O ₃ + TiC(N)				+ PVD		ZrO ₂			Si ₃ N ₄						SiAlON		Whisker	
			KS8110	KS8130	KS8150	KS8170	KSC8110	KSC8130	KZ4120	KZ4130	KZ4180	KN4110	KN4120	KN4130	KN4140	KN4150	KN1000	KA4110	KL7110	KL7120	KW7110
	TNGA160404	T04000	●	●	●				●								●				
	TNGA160408	T04000	●	●	●	●		●	●			●	●		●		●				
	TNGA160412	T04000	●	●	●	●		●				●	●							●	●
	TNGA160416	T04000	●	●	●	●						●	●								
	TNGA220408	T04000		●	●							●	●					●		●	●
	TNGA220412	T04000		●	●							●	●					●		●	●
	TNGA270608	T04000	●	●																	
	TNGA270612	T04000	●	●																	
	TNGA270616	T04000		●														●			
	TNGA160404	T04002	●	●					●								●				
	TNGA160408	T04002	●	●	●	●		●	●			●	●		●		●				
	TNGA160412	T04002	●	●	●	●		●				●	●							●	●
	TNGA160416	T04002	●	●	●	●					●	●	●								
	TNGA220408	T04002		●	●							●	●					●		●	●
	TNGA220412	T04002		●	●							●	●					●		●	●
	TNGA270608	T04002	●	●																	
	TNGA270612	T04002	●	●																	
	TNGA270616	T04002		●														●			
									</												

Vc • fn • ap

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TN 

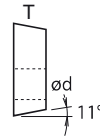
TN□□	1604□□	2204□□	2706□□
IC	9,525	12,7	15,875
T	4,76	4,76	6,35
Ød	-	-	-
			

[illegible]
$$V_c \bullet fn \bullet ap$$

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POSITIVE 11°
with hole

TP□□



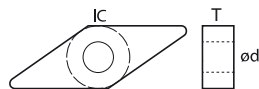
TP□□	1103□□	1603□□
IC	6,35	9,525
T	3,18	3,18
Ød	-	-
Holder	167	167

DESCRIPTION			Al ₂ O ₃ + TiC(N)				+ PVD		ZrO ₂			Si ₃ N ₄						SiAlON		Whisker	
			KS8110	KS8130	KS8150	KS8170	KSC8110	KSC8130	KZ4120	KZ4130	KZ4180	KN4110	KN4120	KN4130	KN4140	KN4150	KN1000	KA4110	KL7110	KL7120	KW7110
	TPGN110304	T04000	●	●							●		●				●				
	TPGN110308	T04000	●	●							●	●	●				●			●	●
	TPGN160304	T04000	●	●	●			●			●		●				●				
	TPGN160308	T04000	●	●				●			●	●	●	●			●			●	●
	TPGN160312	T04000	●	●									●	●						●	●
	TPGN160404	T04000	●		●																
	TPGN160408	T04000	●	●														●			
	TPGN160412	T04000	●															●			
	TPGN220404	T04000	●	●																	
	TPGN220408	T04000	●	●							●									●	●
	TPGN220412	T04000	●	●								●	●								
TPGN220416	T04000	●	●	●																	
	TPGN110304	T04002	●	●							●		●				●				
	TPGN110308	T04002	●	●							●	●	●				●			●	●
	TPGN160304	T04002	●	●	●			●			●		●				●				
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	TPGN160312	T04002	●	●									●	●						●	●
	TPGN160404	T04002	●		●																
	TPGN160408	T04002	●	●														●			
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	TPGN220404	T04002	●	●																	
	TPGN220408	T04002	●	●							●									●	●
	TPGN220412	T04002	●	●								●	●								
	TPGN220416	T04002	●	●	●																

Vc • fn • ap

122

80



VN□□	1604□□
IC	9,525
T	4,76
Ød	3,81
 Holder 	 177

[illegible]

Vc • fn • ap

CERAMIC /TURNING

CUTTING PARAMETERS

HH	HARDENED STEEL
HC	CASE HARDENED STEEL
HB	BEARING STEEL

KG	GREY CAST IRON
KN	NOCULAR CAST IRON
SA	SUPER ALLOYS (Ni Based)

MATERIAL		ap (mm)	fn (mm/ rev)	CUTTING CONDITION		Al ₂ O ₃ + TiC(N)				+ PVD		SiAlON		Whisker	
						KS8110	KS8130	KS8150	KS8170	KSC8110	KSC8130	KL7110	KL7120	KW7110	KW7120
H	HH	0,10~0,50	0,05~0,20	○	⊗	130~250	120~240	110~230	100~220	100~220	120~240				
		0,50~2,00	0,10~0,30	○	⊗	110~180	100~170	90~160	80~150	80~160	100~180				
	HC	0,10~0,50	0,05~0,20	○	⊗	110~210	100~200	90~190	80~180	80~180	100~200				
		0,50~2,00	0,10~0,30	○	⊗	90~150	80~140	70~130	60~120	60~120	80~140				
	HB	0,10~0,50	0,05~0,20	○	⊗	110~230	100~220	90~210	80~200	80~200	100~220				
		0,50~2,00	0,10~0,30	○	⊗	80~160	70~150	60~140	60~140	60~140	80~160				
K	KG	0,20~0,50	0,10~0,30	○	⊗			300~700							
				⊕	⊗										
		1,00~4,00	0,25~0,50	⊕	⊗										
	KN	0,20~0,50	0,10~0,30	○	⊗			300~600							
				⊕	⊗							250~500			
		1,00~4,00	0,25~0,50	⊕	⊗							350~700			
S	SA			⊕	⊗							250~500			
		0,50~1,00	0,10~0,30	○	⊗							200~350		250~500	
				⊕	⊗							180~300	150~280	200~350	200~350
		1,00~4,00	0,15~0,40	⊕	⊗							150~250		200~400	
				⊕	⊗							140~240	120~220		

CUTTING PARAMETERS

HH	HARDENED STEEL
HC	CASE HARDENED STEEL
HB	BEARING STEEL

KG	GREY CAST IRON
KN	NOCULAR CAST IRON
SA	SUPER ALLOYS (Ni Based)

MATERIAL		ap (mm)	fn (mm/ rev)	CUTTING CONDITION		ZrO ₂		Si ₃ N ₄					
						KZ4120	KZ4130	KN4110	KN4120	KN4130	KN4140	KN4150	
H	HH	0,10~0,50	0,05~0,20	○	∅								
		0,50~2,00	0,10~0,30	○	∅								
	HC	0,10~0,50	0,05~0,20	○	∅								
		0,50~2,00	0,10~0,30	○	∅								
	HB	0,10~0,50	0,05~0,20	○	∅								
		0,50~2,00	0,10~0,30	○	∅								
K	KG	0,20~0,50	0,10~0,30	○	∅	350~750	400~800	650~1200	600~1200	600~1200	500~1000		
				⊕	∅			550~1100	500~1000	500~1000	450~800		
		1,00~4,00	0,25~0,50	○	∅			650~1200	600~1200	600~1200	500~1000	450~800	
	KN			⊕	∅			550~1100	500~1000	500~1000	450~800	400~600	
		0,20~0,50	0,10~0,30	○	∅			450~800	400~800	400~800	350~700		450~800
				⊕	∅			350~650	300~600	300~600	250~500		400~600
S	SA	0,20~0,50	0,10~0,30	○	∅			450~900	400~800	400~800	350~700		
				⊕	∅			300~600	300~600	300~600	250~500		
		1,00~4,00	0,25~0,50	○	∅								
		0,50~1,00	0,10~0,30	○	∅								
				⊕	∅								
		1,00~4,00	0,15~0,40	○	∅								

TURNING

GROOVING

THREADING

MILLING

DRILLING

ENDMILLS

DRILLS

HSS
DRILLS & TAPSSPARE
PARTS

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