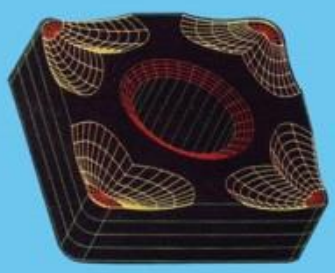
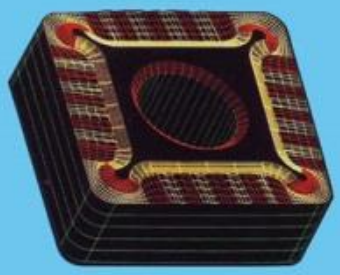
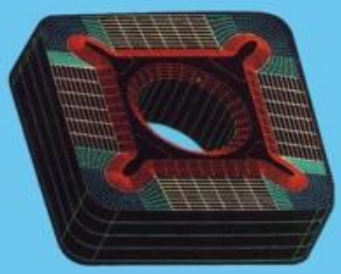
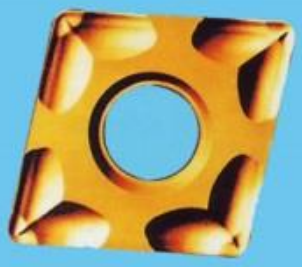
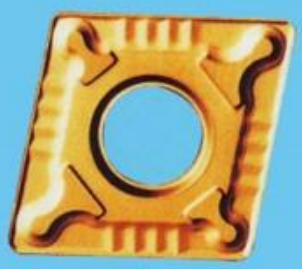
CARMET

INDEXABLE INSERTS

CUTTING TOOLS FOR LATHES AND MILLS

SPEED CHART FOR MULTIPHASE COATED INSERTS
REDUCE SPEED BY 35% FOR UNCOATED INSERTS

DIAMETER IN MM	ALUMINIUM	MILD STEEL CAST IRON	LOW CARBON ALLOY STEEL	HIGH CARBON ALLOY STEEL	ANNEALED TOOL STEEL
6	27,000	9,000	7,200	5,300	3,700
8	20,000	6,800	5,400	4,000	2,800
10	16,000	5,400	4,300	3,200	2,200
12	13,000	4,500	3,600	2,700	1,900
16	9,900	3,400	2,700	2,000	1,400
20	8,000	2,700	2,100	1,600	1,100
25	6,400	2,200	1,700	1,300	890
30	5,300	1,800	1,400	1,100	740
40	4,000	1,400	1,100	800	560
50	3,200	1,100	860	640	450
60	2,700	900	720	530	370
80	2,000	680	540	400	280
100	1,600	540	430	320	220
125	1,300	430	340	250	180
150	1,100	360	290	210	150
200	800	270	210	160	110
300	530	180	140	110	74
500	320	110	86	64	45

REVOLUTIONS PER MINUTE

MULTIPHASE COATED INSERTS

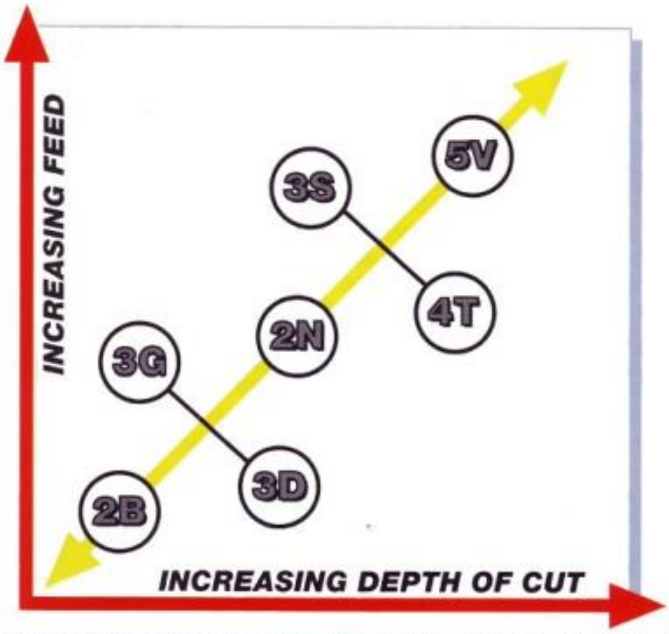
NL25	ALUMINIUM OXIDE COATED INSERT SUITABLE FOR FINISHING TO LIGHT ROUGHING OVER A BROAD RANGE OF MATERIALS – CARBON STEEL, ALLOY STEEL AND ALL CAST IRONS. EXCELLENT WEAR RESISTANCE AT ELEVATED SPEEDS PARTICULARLY IN FINISHING APPLICATIONS.
MP37	ALUMINIUM OXIDE COATED INSERT SUITABLE FOR FINISHING TO MEDIUM ROUGHING OVER A BROAD RANGE OF MATERIALS – CARBON STEEL, ALLOY STEEL, CAST IRON AND SOME STAINLESS STEELS. EXCELLENT WEAR RESISTANCE AT LIGHT ROUGHING – TOUGHER GRADE THAN NL25.
MP26	COMPLEX COATED INSERT WHICH DELIVERS OUTSTANDING PERFORMANCE IN SEMI-FINISHING TO MODERATE ROUGHING OPERATIONS. DESIGNED FOR GENERAL PURPOSE MACHINING IN ALL TYPES OF STEEL, SOME STAINLESS STEELS AND SOME CAST IRONS.
MP51	COMPLEX COATED INSERT WHICH IS DESIGNED FOR DIFFICULT JOBS. IDEALLY SUITED FOR HEAVY ROUGHING OF STEELS, STEEL FORGINGS AND ALL STAINLESS STEELS. THE SUBSTRATE ENABLES MP51 TO WITHSTAND HEAVY CUTS WITHOUT LOSING EDGE INTEGRITY.
NL92	ALUMINIUM OXCIDE COATED INSERT WHICH IS THE TOUGHEST IN THE RANGE. IT IS DESIGNED FOR DEMANDING METAL REMOVAL OPERATIONS INCLUDING CUTTING THROUGH SCALE, AT LOW SURFACE SPEEDS THROUGH HEAVY INTERRUPTIONS, OR PROBLEM MACHINING OF STAINLESS STEEL.
MP23	ALUMINIUM OXIDE COATED INSERT WHICH IS DESIGNED FOR MILLING AND TURNING OF CAST IRON. MP23 IS RECOMMENDED FOR USE AS GENERAL PURPOSE K10–K20 CARBIDE WHICH AFFORDS A COMBINATION OF GOOD IMPACT AND WEAR RESISTANCE.
MP91M	ALUMINIUM OXIDE COATED INSERT HAVING A HIGH TRANSVERSE RUPTURE STRENGTH WHICH MAKES IT IDEALLY SUITED FOR MILLING AND PARTING OPERATIONS IN THE FULL RANGE OF STEELS. FIRST CHOICE FOR COATED MILLING OVER BROAD RANGE OF SPEEDS.
PFZ	COMPLEX COATED INSERT WHICH IS DESIGNED FOR MILLING OPERATIONS IN THE FULL RANGE OF STEELS, ALL STAINLESS STEELS, NICKEL BASED ALLOY AND TITANIUM. OUTSTANDING GENERAL PURPOSE MILLING GRADE WHICH PERFORMS WELL IN FINISHING THROUGH TO ROUGHING.

UNCOATED INSERTS

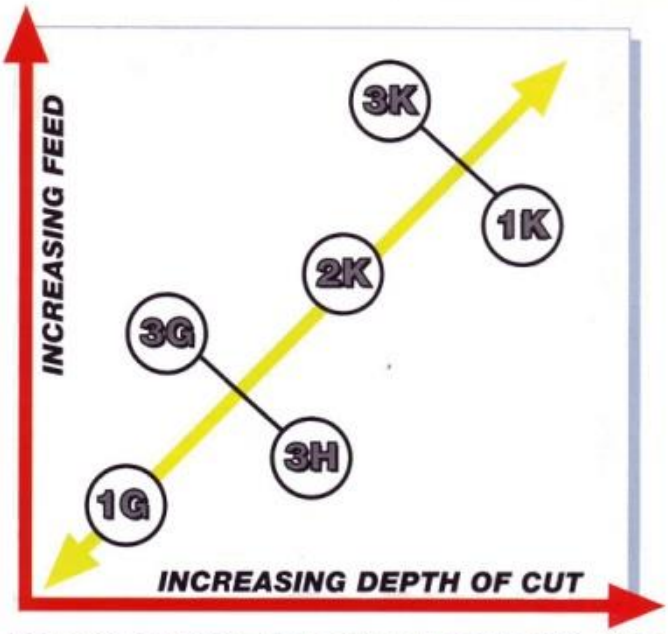
HU6	FINISHING TO LIGHT TURNING OF CAST IRON, ALUMINIUM, COPPER, BRASS, BRONZE AND SOME EXOTIC ALLOYS. VERY HARD GRADE WHICH IS NOT SUITED TO INTERRUPTED CUTS. EXCELLENT ABRASION RESISTANCE, LOW RESISTANCE TO CRATERING AND THERMAL SHOCK.
HCA	RECOMMENDED FOR TURNING AND MILLING CAST IRON, STAINLESS STEEL, TITANIUM, HIGH TEMPERATURE ALLOYS AND ALL NON FERROUS MATERIALS. HCA CAN BE USED FOR FINISH MACHINING THROUGH TO MEDIUM ROUGHING WITH GOOD ABRASION RESISTANCE AND MEDIUM TOUGHNESS.
H–21	THIS GRADE WAS DEVELOPED FOR TURNING, BORING AND PLANING OF CAST IRONS, STAINLESS STEELS, HIGH TEMPERATURE ALLOYS AND NON FERROUS MATERIALS. FIRST CHOICE FOR UNCOATED TURNING BECAUSE OF ITS EXCELLENT WEAR AND HIGH TOUGHNESS.
H–17	MILLING GRADE FOR MACHINING A VARIETY OF CAST IRONS AT MEDIUM SPEEDS. THIS MICROGRAIN GRADE CAN BE USED FOR LIGHT TO HEAVY ROUGHING AND IS IDEALLY SUITED TO THE LESS STABLE MACHINES. GOOD RESISTANCE TO THERMAL SHOCK. TOUGHER THAN HCA.
SF30	PREMIUM MILLING GRADE FOR MACHINING A WIDE RANGE OF CARBON STEELS, ALLOY STEELS, TOOL STEELS AND STAINLESS STEELS. EXCELLENT RESISTANCE TO THERMAL CRACKING AND HAVING A HIGH TRANSVERSE RUPTURE STRENGTH WILL WITHSTAND THE SEVERITY OF HEAVY MILLING.
S3X7	A GENERAL PURPOSE GRADE FOR A BROAD RANGE OF TURNING APPLICATIONS. PERFORMS WELL ON CARBON STEEL, ALLOY STEEL, CAST STEEL AND FORGED STEEL. EXCELLENT HIGH TEMPERATURE HARDNESS FOR MEDIUM TO HEAVY MACHINING, MEDIUM SHOCK RESISTANCE.
T-04	TOUGHEST OF THE STEEL GRADES. EXCELLENT GRADE FOR HEAVY TURNING OPERATIONS WHERE INTERRUPTED CUTS OCCUR OR WHERE EXTREMELY HEAVY FEED RATES ARE EMPLOYED. THIS TOUGH GRADE HAS EXCELLENT RESISTANCE TO SHOCK AND IMPACT FORCES.

CERMET INSERTS

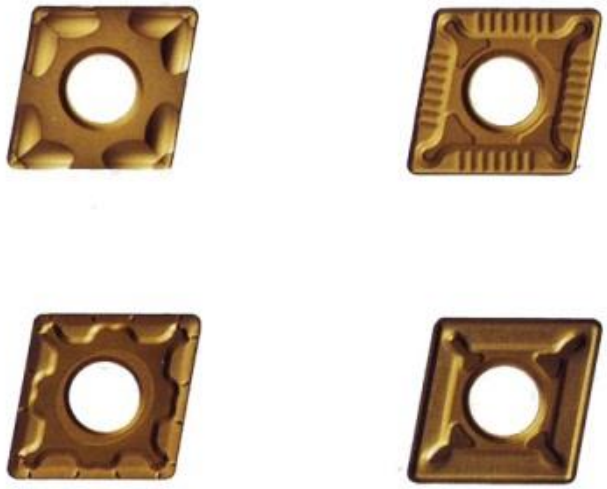
SD3	THIS FINISHING CERMET CAN BE USED FOR TURNING CARBON STEELS, ALLOY STEELS, TOOL STEELS, ALL STAINLESS STEELS AND CAST IRONS. THIS BROAD RANGE OF APPLICATIONS MUST BE MACHINED AT ELEVATED SPEEDS COMPARED WITH COATED CARBIDE.
SD5	A TOUGHER CERMET CONTAINING A HIGHER BINDER CONTENT AND A COARSER GRAIN SIZE WHICH IMPROVES TRANSVERSE RUPTURE STRENGTH, NECESSARY FOR MILLING AND INTERRUPTED CUTTING OPERATIONS. APPLICATION RANGE IS SAME AS SD3.



CHIPBREAKERS FOR NEGATIVE RAKE INSERTS



CHIPBREAKERS FOR POSITIVE RAKE INSERTS



MULTIPHASE GRADES

SAFETY PRECAUTIONS

WHEN USING CARBIDES & CERAMICS

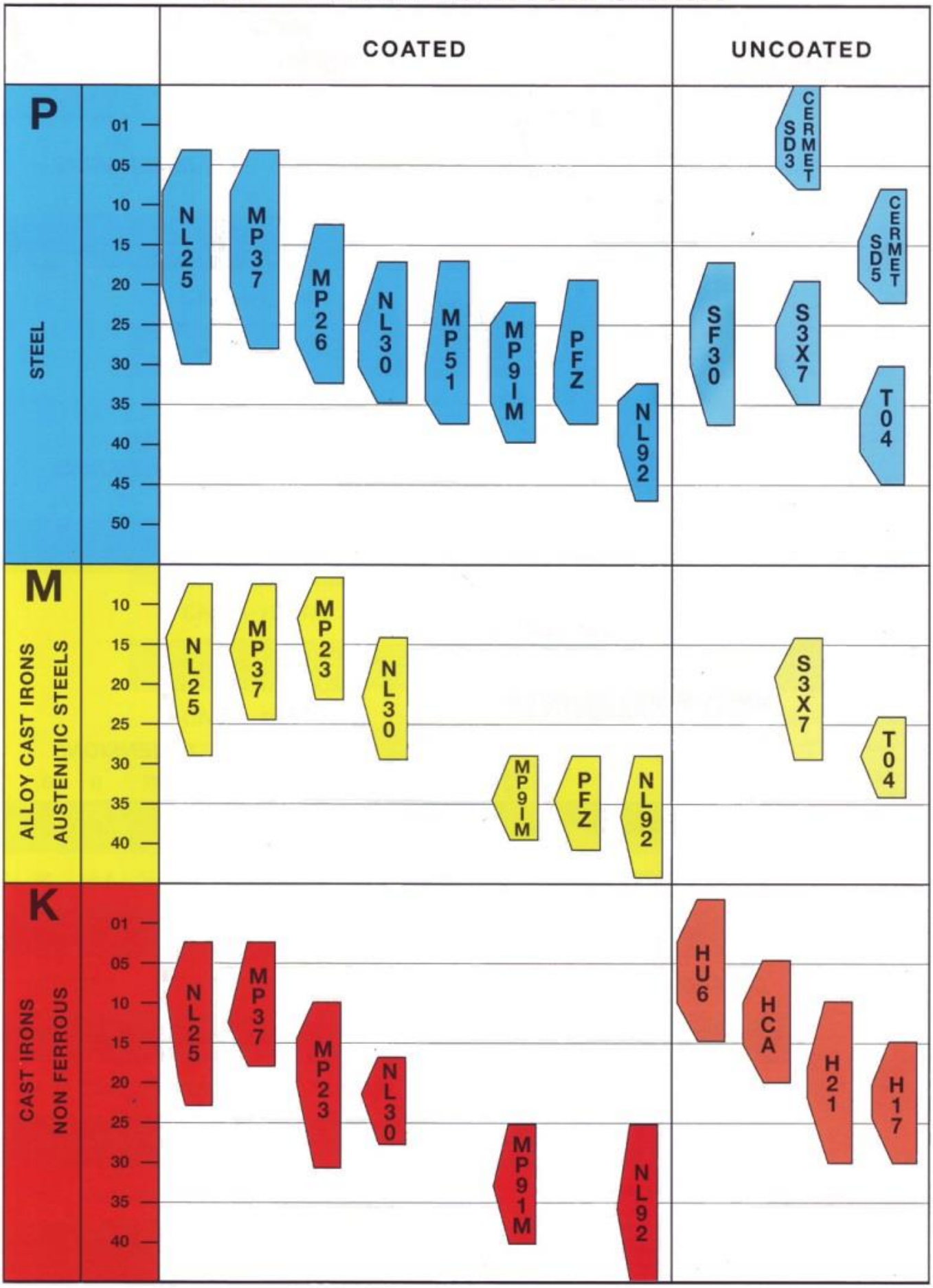
(1) Wear safety glasses with side shields
(2) Wear closed shoes with steel toe caps
(3) Wear protective clothing
(4) Keep protective enclosure on machine in place during machining.
(5) Make sure insert size and shape is adequate for the work being performed.
(6) Chip control is necessary to prevent a continuous chip
(7) Use correct size tooling with miniumum overhang
(8) Overloading of inserts may result in fracture with detached fragments travelling at high velocity.
(9) Chips are very hot and have sharp edges and should not be removed by hand
(10) Turn off machine whenever chips are removed or when cutting tools are changed
(11) A slug may be ejected at high speed during drilling

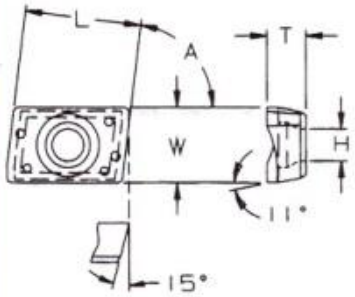
WHEN GRINDING CARBIDES

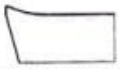
(1) Use adequate ventilation
(2) Use suction equipment to maintain low dust levels
(3) Wet grind where possible
(4) Minimize prolonged skin contact
(5) Wash hands thoroughly after handling

Think First

ISO CLASSIFICATION CHART



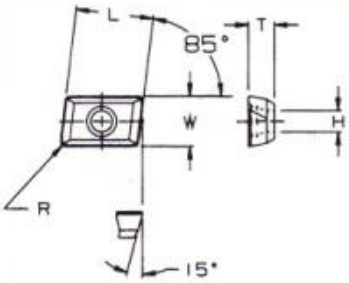


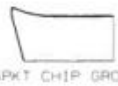


APKT-3M

83° PARALLELOGRAM
MILLING INSERT

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS W	L	T	H	A
APKT-1003PDRB-3M																•	•	6.68	10.39	3.48	2.84	83°

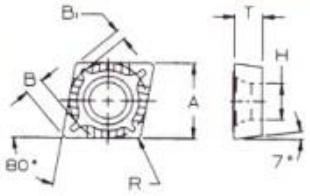




APKT-2C

85° PARALLELOGRAM
MILLING INSERT

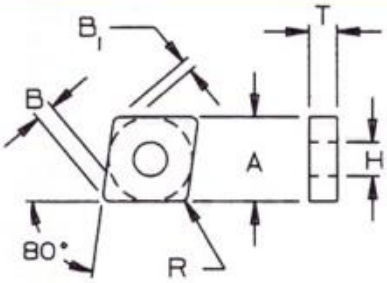
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS W	L	T	H	R
APKT-160408A-2C							•									•	•	9.53	16.33	4.76	4.39	.80



CCMT-3G

80° DIAMOND
7° POSITIVE RAKE
HONED - CHIP GROOVE ONE SIDE

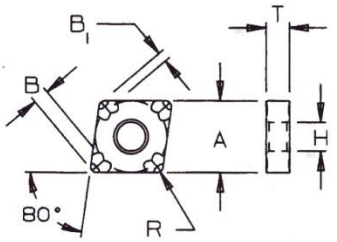
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	B_1	H
CCMT-060202-3G											•	•	•					6.35	2.38	.20	1.65	.91	2.80
CCMT-060204-3G									•	•	•	•	•	•				6.35	2.38	.40	1.54	.85	2.80
CCMT-060208-3G																		6.35	2.38	.80	1.32	.73	2.80
CCMT-09T302-3G											•	•						9.52	3.97	.20	2.53	1.39	4.40
CCMT-09T304-3G									•		•	•	•					9.52	3.97	.40	2.43	1.33	4.40
CCMT-09T308-3G											•	•						9.52	3.97	.80	2.20	1.21	4.40
CCMT-09T312-3G																		9.52	3.97	1.20	1.98	1.09	4.40
CCMT-120404-3G												•						12.70	4.76	.40	3.31	1.82	5.50
CCMT-120408-3G											•	•	•					12.70	4.76	.80	3.09	1.70	5.50
CCMT-120412-3G																		12.70	4.76	1.20	2.87	1.57	5.50



CNMA

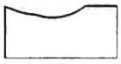
80° DIAMOND
NEGATIVE RAKE
UTILITY - GROUND TOP & BOTTOM ONLY

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	B_1	H
CNMA-110408																		11.79	4.76	.80	2.83	1.56	5.16
CNMA-120404			•								•							12.70	4.76	.40	3.31	1.82	5.16
CNMA-120408			•								•							12.70	4.76	.80	3.09	1.70	5.16
CNMA-120412											•							12.70	4.76	1.20	2.87	1.57	5.16
CNMA-120416																		12.70	4.76	1.60	2.65	1.45	5.16
CNMA-160612																		15.88	6.35	1.20	3.75	2.06	6.35
CNMA-160632																		15.88	6.35	3.20	2.65	1.45	6.35
CNMA-190612																		19.05	6.35	1.20	4.63	2.54	7.92
CNMA-190616																		19.05	6.35	1.60	4.41	2.42	7.92
CNMA-190632																		19.05	6.35	3.20	3.53	1.94	7.92



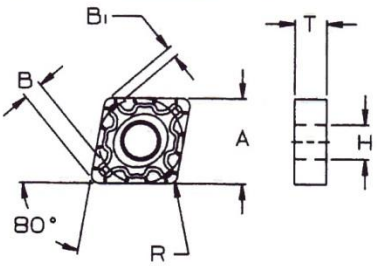
CNMG-2B

80° DIAMOND
NEGATIVE RAKE - 15° EFFECTIVE POSITIVE
HONED - CHIP GROOVE BOTH SIDES



2B CHIP GROOVE

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	B_1	H
CNMG-120404-2B	•										•	•						12.70	4.76	.40	3.31	1.82	5.16
CNMG-120408-2B	•										•	•						12.70	4.76	.80	3.09	1.70	5.16
CNMG-120412-2B																		12.70	4.76	1.20	2.87	1.57	5.16
CNMG-160608-2B																		15.88	6.35	.80	3.97	2.18	6.35
CNMG-160612-2B																		15.88	6.35	1.20	3.75	2.06	6.35
CNMG-190608-2B																		19.05	6.35	.80	4.85	2.67	7.92
CNMG-190612-2B																		19.05	6.35	1.20	4.63	2.54	7.92
CNMG-190616-2B																		19.05	6.35	1.60	4.41	2.42	7.92

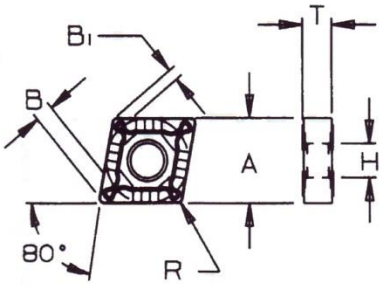


CNMG-2N

80° DIAMOND
NEGATIVE RAKE - 5° EFFECTIVE POSITIVE
HONED - CHIP GROOVE BOTH SIDES

2N CHIP GROOVE

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	B_1	H
CNMG-120404-2N										•				•				12.70	4.76	.40	3.31	1.82	5.16
CNMG-120408-2N										•				•				12.70	4.76	.80	3.09	1.70	5.16
CNMG-120412-2N																		12.70	4.76	1.20	2.87	1.57	5.16
CNMG-160612-2N																		15.88	6.35	1.20	3.75	2.06	6.35
CNMG-160616-2N																		15.88	6.35	1.60	3.53	1.94	6.35
CNMG-190612-2N																		19.05	6.35	1.20	4.63	2.54	7.92
CNMG-190616-2N																		19.05	6.35	1.60	4.41	2.42	7.92

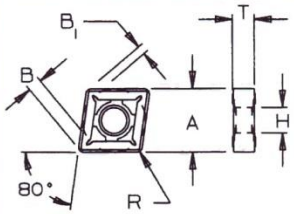


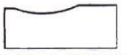
3G CHIP GROOVE

CNMG-3G

80° DIAMOND
NEGATIVE RAKE - 5° EFFECTIVE POSITIVE
HONED - CHIP GROOVE BOTH SIDES

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	B_1	H
CNMG-120404-3G								•	•		•	•	•					12.70	4.76	.40	3.31	1.82	5.16
CNMG-120408-3G								•	•	•	•	•	•	•				12.70	4.76	.80	3.09	1.70	5.16
CNMG-120412-3G												•						12.70	4.76	1.20	2.87	1.57	5.16
CNMG-120416-3G																		12.70	4.76	1.60	2.65	1.45	5.16
CNMG-160608-3G																		15.88	6.35	.80	3.97	2.18	6.35
CNMG-190608-3G																		19.05	6.35	.80	4.85	2.67	7.92
CNMG-190612-3G												•						19.05	6.35	1.20	4.63	2.54	7.92



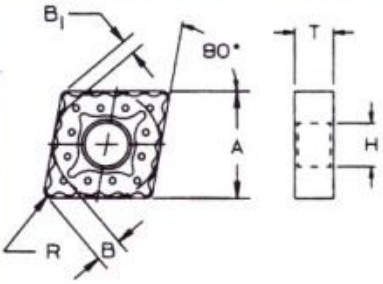


4T CHIP GROOVE

CNMG-4T

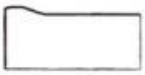
80° DIAMOND
NEGATIVE RAKE
HONED - CHIP GROOVE BOTH SIDES

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	B_1	H
CNMG-120404-4T																		12.70	4.76	.40	3.31	1.82	5.16
CNMG-120408-4T		•						•		•	•	•	•	•				12.70	4.76	.80	3.09	1.70	5.16
CNMG-120412-4T										•	•	•	•					12.70	4.76	1.20	2.87	1.57	5.16
CNMG-120416-4T											•							12.70	4.76	1.60	2.65	1.45	5.16
CNMG-160608-4T												•						15.88	6.35	.80	3.97	2.18	6.35
CNMG-160612-4T																		15.88	6.35	1.20	3.75	2.06	6.35
CNMG-190608-4T																		19.05	6.35	.80	4.85	2.67	7.92
CNMG-190612-4T																		19.05	6.35	1.20	4.63	2.54	7.92
CNMG-190616-4T																		19.05	6.35	1.60	4.41	2.42	7.92



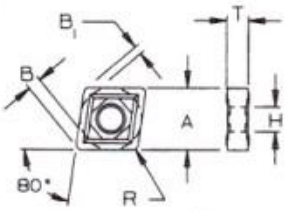
CNMG-5V

80° DIAMOND
NEGATIVE RAKE
HONED - CHIP GROOVE BOTH SIDES



5V CHIP GROOVE

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	B_1	H
CNMG-120408-5V											•							12.70	4.76	.80	3.09	1.70	5.16
CNMG-120412-5V											•							12.70	4.76	1.20	2.87	1.57	5.16
CNMG-160612-5V																		15.88	6.35	1.20	3.75	2.06	6.35
CNMG-160616-5V																		15.88	6.35	1.60	3.53	1.94	6.35
CNMG-190612-5V																		19.05	6.35	1.20	4.63	2.54	7.92
CNMG-190616-5V																		19.05	6.35	1.60	4.41	2.42	7.92
CNMG-250924-5V																		25.40	9.53	2.40	5.73	3.15	9.12

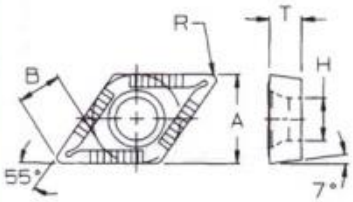


CNMP-3D

80° DIAMOND
NEGATIVE RAKE
HONED - POSITIVE CHIP GROOVE BOTH SIDES

3D CHIP GROOVE

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	B_1	H
CNMP-120402-3D																		12.70	4.76	.20	3.42	1.88	5.16
CNMP-120404-3D										•	•	•						12.70	4.76	.40	3.31	1.82	5.16
CNMP-120408-3D										•	•	•						12.70	4.76	.80	3.09	1.70	5.16
CNMP-120412-3D																		12.70	4.76	1.20	2.87	1.57	5.16
CNMP-120416-3D																		12.70	4.76	1.60	2.65	1.45	5.16
CNMP-160608-3D																		15.88	6.35	.80	3.97	2.18	6.35
CNMP-160612-3D																		15.88	6.35	1.20	3.75	2.06	6.35
CNMP-190608-3D																		19.05	6.35	.80	4.85	2.67	7.92
CNMP-190612-3D																		19.05	6.35	1.20	4.63	2.54	7.92

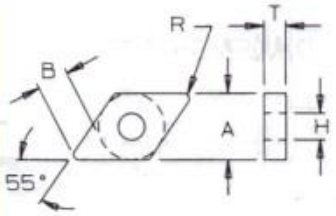


DCMT-3G

55° DIAMOND
7° POSITIVE RAKE
HONED - CHIP GROOVE ONE SIDE

3G CHIP GROOVE

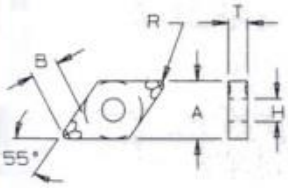
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
DCMT-070202-3G																		6.35	2.38	.20	3.46	2.79
DCMT-070204-3G											•	•						6.35	2.38	.40	3.24	2.79
DCMT-070208-3G																		6.35	2.38	.80	2.78	2.79
DCMT-11T302-3G																		9.52	3.97	.20	5.31	4.39
DCMT-11T304-3G										•	•	•						9.52	3.97	.40	5.09	4.39
DCMT-11T308-3G											•	•						9.52	3.97	.80	4.63	4.39



DNMA

55° DIAMOND
NEGATIVE RAKE
UTILITY - GROUND TOP & BOTTOM ONLY

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
DNMA-150408										•								12.70	4.76	.80	6.48	5.16
DNMA-150608				•							•							12.70	6.35	.80	6.48	5.16

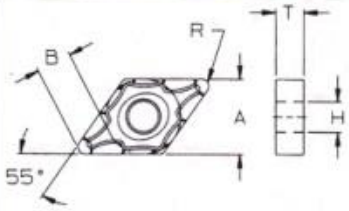


DNMG-2B

55° DIAMOND
NEGATIVE RAKE - 15° EFFECTIVE POSITIVE
HONED - CHIP GROOVE BOTH SIDES

2B CHIP GROOVE

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
DNMG-150404-2B	•											•						12.70	4.76	.40	6.94	5.16
DNMG-150408-2B	•											•						12.70	4.76	.80	6.48	5.16
DNMG-150604-2B																		12.70	6.35	.40	6.94	5.16
DNMG-150608-2B																		12.70	6.35	.80	6.48	5.16

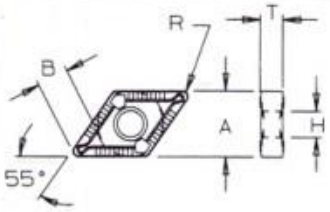


DNMG-2N

55° DIAMOND
NEGATIVE RAKE - 5° EFFECTIVE POSITIVE
HONED - CHIP GROOVE BOTH SIDES

2N CHIP GROOVE

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	A IC	DIMENSIONS T	R	B	H
DNMG-150404-2N																		12.70	4.76	.40	6.94	5.16
DNMG-150408-2N																		12.70	4.76	.80	6.48	5.16
DNMG-150412-2N																		12.70	4.76	1.20	6.01	5.16

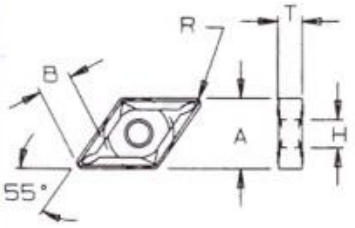


DNMG-3G

55° DIAMOND
NEGATIVE RAKE - 5° EFFECTIVE POSITIVE
HONED - CHIP GROOVE BOTH SIDES

3G CHIP GROOVE

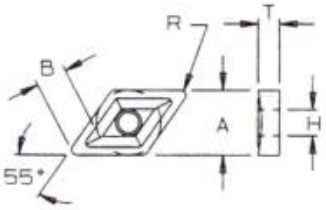
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	A IC	DIMENSIONS T	R	B	H
DNMG-150404-3G												•						12.70	4.76	.40	6.94	5.16
DNMG-150408-3G												•						12.70	4.76	.80	6.48	5.16
DNMG-150412-3G																		12.70	4.76	1.20	6.01	5.16
DNMG-150604-3G												•						12.70	6.35	.40	6.94	5.16
DNMG-150608-3G											•	•						12.70	6.35	.80	6.48	5.16
DNMG-150612-3G												•						12.70	6.35	1.20	6.01	5.16
DNMG-190608-3G																		15.88	6.35	.80	8.33	6.35
DNMG-190612-3G																		15.88	6.35	1.20	7.86	6.35



DNMG-4T

55° DIAMOND
NEGATIVE RAKE
HONED - CHIP GROOVE BOTH SIDES

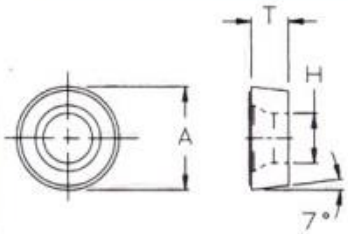
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
DNMG-150404-4T										•								12.70	4.76	.40	6.94	5.16
DNMG-150408-4T											•							12.70	4.76	.80	6.48	5.16
DNMG-150412-4T																		12.70	4.76	1.20	6.01	5.16
DNMG-150604-4T											•							12.70	6.35	.40	6.94	5.16
DNMG-150608-4T										•		•						12.70	6.35	.80	6.48	5.16
DNMG-150612-4T											•							12.70	6.35	1.20	6.01	5.16
DNMG-190608-4T																		15.88	6.35	.80	8.33	6.35
DNMG-190612-4T																		15.88	6.35	1.20	7.86	6.35



DNMP-3D

55° DIAMOND
NEGATIVE RAKE
HONED - POSITIVE CHIP GROOVE ONE SIDE

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
DNMP-150402-3D																		12.70	4.76	.20	7.16	5.16
DNMP-150404-3D																		12.70	4.76	.40	6.94	5.16
DNMP-150408-3D																		12.70	4.76	.80	6.48	5.16
DNMP-150604-3D																		12.70	6.35	.40	6.94	5.16
DNMP-150608-3D																		12.70	6.35	.80	6.48	5.16
DNMP-190612-3D																		15.88	6.35	1.20	7.86	6.35

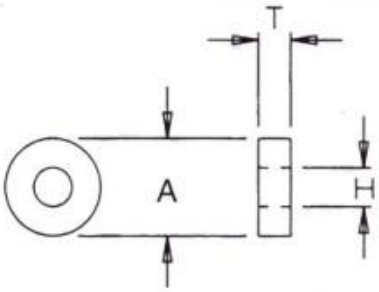


RCMT-3G

ROUND
7° POSITIVE RAKE
HONED - CHIP GROOVE ONE SIDE

3G CHIP GROOVE

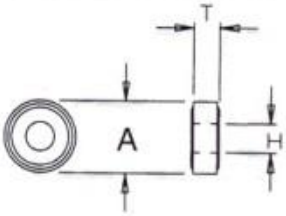
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	H
RCMT-10T3MO-3G											•	•	•					10.00	3.97	4.39
RCMT-1204MO-3G												•						12.00	4.76	4.39
RCMT-2006MO-3G												•						20.00	6.35	6.50



RNMA

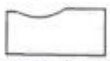
ROUND
NEGATIVE RAKE
UTILITY - GROUND TOP & BOTTOM ONLY

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	H
RNMA-090300						•												9.53	3.18	3.81
RNMA-120400																		12.70	4.76	5.16
RNMA-190600																		19.05	6.35	7.92
RNMA-250900																		25.40	9.53	9.12



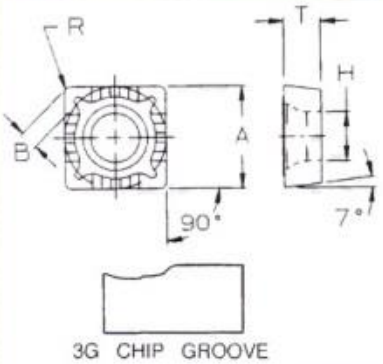
RNMG-3S

ROUND
NEGATIVE RAKE
HONED - CHIP GROOVE BOTH SIDES



3S CHIP GROOVE

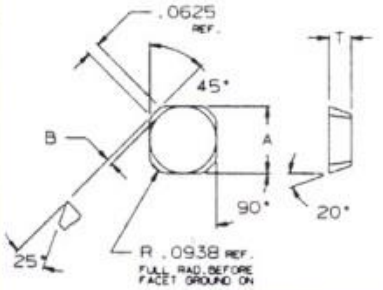
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	H
RNMG-090300-3S																		9.53	3.18	3.81
RNMG-120400-3S												•						12.70	4.76	5.16
RNMG-150600-3S																		15.88	6.35	6.35
RNMG-190600-3S																		19.05	6.35	7.92
RNMG-250900-3S																		25.40	9.53	9.12



SCMT-3G

SQUARE
7° POSITIVE RAKE
HONED - CHIP GROOVE ONE SIDE

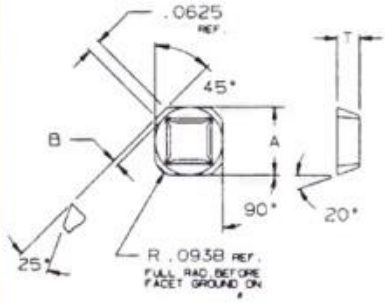
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
SCMT-09T304-3G												•						9.53	3.97	.40	1.81	4.39
SCMT-09T308-3G																		9.53	3.97	.80	1.64	4.39
SCMT-120404-3G												•						12.70	4.76	.40	2.47	5.51
SCMT-120408-3G												•						12.70	4.76	.80	2.30	5.51
SCMT-120412-3G																		12.70	4.76	1.20	2.14	5.51



SEKN

SQUARE
POSITIVE RAKE - 45° CORNER FACET
PRECISION - GROUND ALL OVER

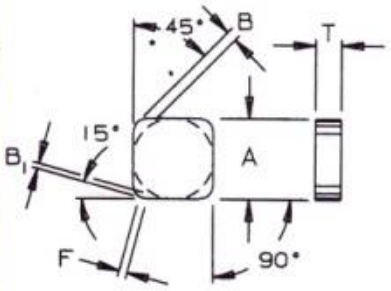
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	B
SEKN-1203AF4B							•									•	•	12.70	3.18	1.51
SEKN-1204AF4B																		12.70	4.76	1.51
SEKN-1504AF4B																		15.88	4.76	2.16



SEKR

SQUARE
POSITIVE RAKE - 45° CORNER FACET
PRECISION - GROUND ALL OVER.

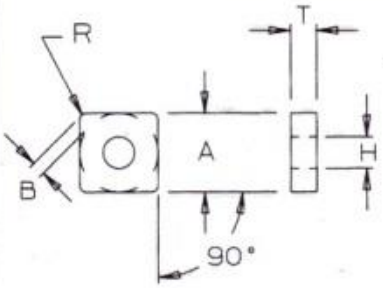
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	B
SEKR-1203AF4B							•									•		12.70	3.18	1.51
SEKR-1204AF4B																•		12.70	4.76	1.51
SEKR-1504AF4B																		15.88	4.76	2.16



SNKN

SQUARE
NEGATIVE RAKE - DOUBLE FACETED CORNERS
PRECISION - GROUND ALL OVER

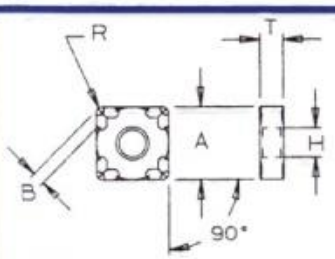
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	A IC	T	F	B	B_1
																		DIMENSIONS				
SNKN-1204WN4							•									•	•	12.70	4.76	1.40	1.63	.80

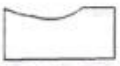


SNMA

SQUARE
NEGATIVE RAKE
UTILITY - GROUND TOP & BOTTOM ONLY

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	A IC	T	R	B	H
																		DIMENSIONS				
SNMA-090308																		9.53	3.18	.80	1.64	3.81
SNMA-120404										•								12.70	4.76	.40	2.47	5.16
SNMA-120408				•						•	•							12.70	4.76	.80	2.30	5.16
SNMA-120412											•							12.70	4.76	1.20	2.14	5.16
SNMA-120416																		12.70	4.76	1.60	1.97	5.16
SNMA-150612																		15.88	6.35	1.20	2.79	6.35
SNMA-190612																		19.05	6.35	1.20	3.45	7.92
SNMA-190616																		19.05	6.35	1.60	3.29	7.92
SNMA-190632																		19.05	6.35	3.20	2.63	7.92



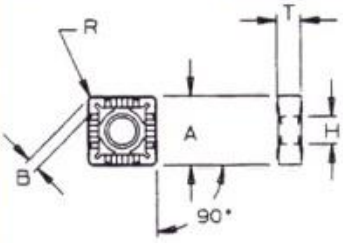


2B CHIP GROOVE

SNMG-2B

SQUARE
NEGATIVE RAKE - 15° EFFECTIVE POSITIVE
HONED - CHIP GROOVE BOTH SIDES

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
SNMG-090308-2B																		9.53	3.18	.80	1.64	3.81
SNMG-120404-2B																		12.70	4.76	.40	2.47	5.16
SNMG-120408-2B																		12.70	4.76	.80	2.30	5.16
SNMG-120412-2B																		12.70	4.76	1.20	2.14	5.16
SNMG-150608-2B																		15.88	6.35	.80	2.96	6.35
SNMG-150612-2B																		15.88	6.35	1.20	2.79	6.35
SNMG-190612-2B																		19.05	6.35	1.20	3.45	7.92

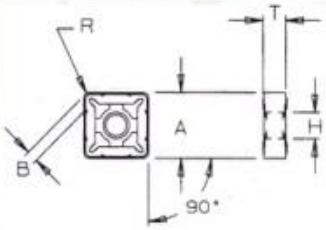


3G CHIP GROOVE

SNMG-3G

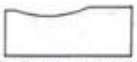
SQUARE
NEGATIVE RAKE - 5° EFFECTIVE POSITIVE
HONED - CHIP GROOVE BOTH SIDES

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
SNMG-090308-3G																		9.53	3.18	.80	1.64	3.81
SNMG-120404-3G											•							12.70	4.76	.40	2.47	5.16
SNMG-120408-3G								•			•	•						12.70	4.76	.80	2.30	5.16
SNMG-120412-3G												•						12.70	4.76	1.20	2.14	5.16
SNMG-120416-3G																		12.70	4.76	1.60	1.97	5.16
SNMG-150608-3G																		15.88	6.35	.80	2.96	6.35
SNMG-150612-3G																		15.88	6.35	1.20	2.79	6.35
SNMG-190612-3G													•					19.05	6.35	1.20	3.45	7.92
SNMG-190616-3G																		19.05	6.35	1.60	3.29	7.92



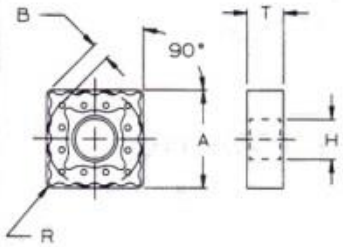
SNMG-4T

SQUARE
NEGATIVE RAKE
HONED - CHIP GROOVE BOTH SIDES



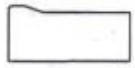
4T CHIP GROOVE

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
SNMG-120404-4T																		12.70	4.76	.40	2.47	5.16
SNMG-120408-4T											•	•						12.70	4.76	.80	2.30	5.16
SNMG-120412-4T											•							12.70	4.76	1.20	2.14	5.16
SNMG-120416-4T																		12.70	4.76	1.60	1.97	5.16
SNMG-150608-4T																		15.88	6.35	.80	2.96	6.35
SNMG-150612-4T											•							15.88	6.35	1.20	2.79	6.35
SNMG-190612-4T																		19.05	6.35	1.20	3.45	7.92
SNMG-190616-4T											•	•						19.05	6.35	1.60	3.29	7.92
SNMG-250924-4T																		25.40	9.53	2.40	4.27	9.12



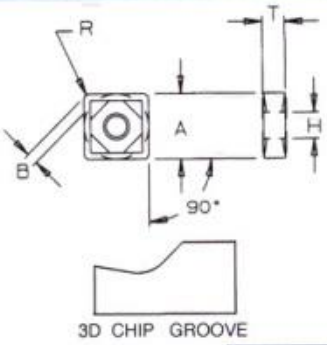
SNMG-5V

SQUARE
NEGATIVE RAKE
HONED - CHIP GROOVE BOTH SIDES



5V CHIP GROOVE

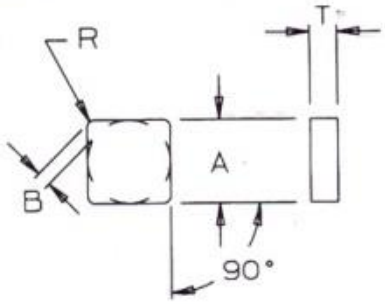
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
SNMG-120408-5V																		12.70	4.76	.80	2.30	5.16
SNMG-120412-5V																		12.70	4.76	1.20	2.14	5.16
SNMG-150612-5V																		15.88	6.35	1.20	2.79	6.35
SNMG-150616-5V																		15.88	6.35	1.60	2.63	6.35
SNMG-190612-5V																		19.05	6.35	1.20	3.45	7.92
SNMG-190616-5V																		19.05	6.35	1.60	3.29	7.92
SNMG-250924-5V													•					25.40	9.53	2.40	4.27	9.12



SNMP-3D

SQUARE
NEGATIVE RAKE
HONED - POSITIVE CHIP GROOVE BOTH SIDES

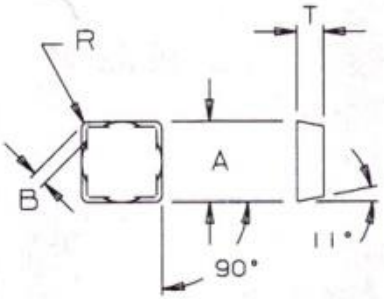
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
SNMP-120408-3D												•						12.70	4.76	.80	2.30	5.16
SNMP-150612-3D																		15.88	6.35	1.20	2.79	6.35



SNUN

SQUARE
NEGATIVE RAKE
UTILITY - GROUND TOP & BOTTOM ONLY

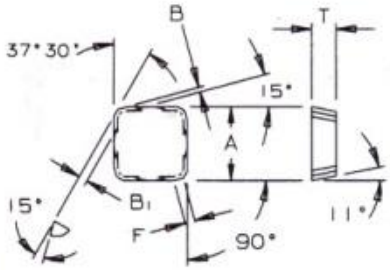
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B
SNUN-120308																		12.70	3.18	.80	2.30
SNUN-120408A							•								•			12.70	4.76	.80	2.30
SNUN-120408B							•									•		12.70	4.76	.80	2.30
SNUN-120408C							•											12.70	4.76	.80	2.30
SNUN-120412A							•								•			12.70	4.76	1.20	2.14
SNUN-120412B							•									•		12.70	4.76	1.20	2.14
SNUN-120412C							•											12.70	4.76	1.20	2.14
SNUN-120416A																		12.70	4.76	1.60	1.97
SNUN-120416B																		12.70	4.76	1.60	1.97
SNUN-120416C																		12.70	4.76	1.60	1.97
SNUN-190412A																		19.05	4.76	1.20	3.45
SNUN-190412B							•											19.05	4.76	1.20	3.45
SNUN-190416A																		19.05	4.76	1.60	3.29
SNUN-190416B																		19.05	4.76	1.60	3.29



SPGN

SQUARE
11° POSITIVE RAKE
PRECISION - GROUND ALL OVER

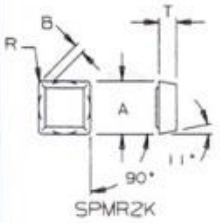
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B
SPGN-120308																		12.70	3.18	.80	2.30
SPGN-120408																		12.70	4.76	.80	2.30
SPGN-120412																		12.70	4.76	1.20	2.14
SPGN-190412																•		19.05	4.76	1.20	3.45



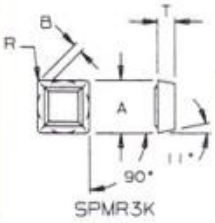
SPKN

SQUARE
POSITIVE RAKE - 15° FACET WITH SECONDARY FACET
PRECISION - GROUND ALL OVER

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	F	B	B_1
SPKN-1203HD4L						•												12.70	3.18	1.40	.89	1.75
SPKN-1203HD4R						•												12.70	3.18	1.40	.89	1.75
SPKN-1203HD4LT																		12.70	3.18	1.40	.89	1.75
SPKN-1203HD4RT							•									•	•	12.70	3.18	1.40	.89	1.75
SPKN-1504HD4RT																•		15.88	4.76	1.40	1.24	2.12



SPMR2K

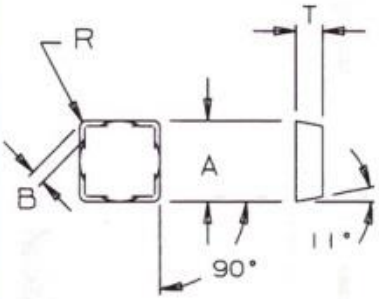


SPMR3K

SPMR -2K & 3K

SQUARE
11° POSITIVE RAKE
HONED - CHIP GROOVE ONE SIDE

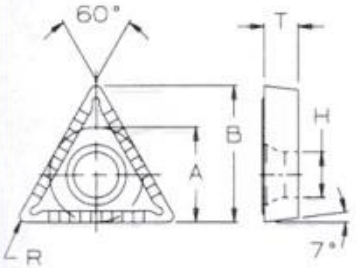
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B
SPMR-090304-3K												•						9.53	3.18	.40	1.81
SPMR-120304-3K												•						12.70	3.18	.40	2.47
SPMR-120308-2K									•		•	•	•					12.70	3.18	.80	2.30



SPUN

SQUARE
11° POSITIVE RAKE
UTILITY - GROUND TOP & BOTTOM ONLY

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B
SPUN-090308						•												9.53	3.18	.80	1.64
SPUN-120304				•														12.70	3.18	.40	2.47
SPUN-120308A							•				•				•	•	•	12.70	3.18	.80	2.30
SPUN-120308B							•									•		12.70	3.18	.80	2.30
SPUN-120308C							•											12.70	3.18	.80	2.30
SPUN-120312A							•								•			12.70	3.18	1.20	2.14
SPUN-120312B							•									•		12.70	3.18	1.20	2.14
SPUN-120312C							•											12.70	3.18	1.20	2.14
SPUN-190412B																		19.05	4.76	1.20	3.45

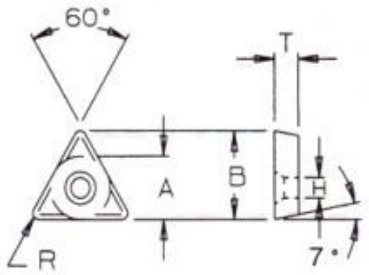


3G CHIP GROOVE

TCMT-3G

TRIANGLE
7° POSITIVE RAKE
HONED - CHIP GROOVE ONE SIDE

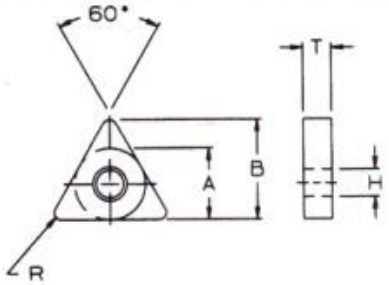
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
TCMT-090204-3G										•		•		•				5.56	2.38	.40	7.94	2.50
TCMT-110202-3G											•	•						6.35	2.38	.20	9.32	2.80
TCMT-110204-3G								•	•	•	•	•	•	•				6.35	2.38	.40	9.13	2.80
TCMT-110208-3G											•	•						6.35	2.38	.80	8.73	2.80
TCMT-16T302-3G									•		•	•						9.53	3.97	.20	14.08	4.40
TCMT-16T304-3G								•	•	•	•	•	•	•				9.53	3.97	.40	13.89	4.40
TCMT-16T308-3G								•	•	•	•	•	•	•				9.53	3.97	.80	13.49	4.40



TCMW

TRIANGLE
7° POSITIVE RAKE
UTILITY - GROUND TOP & BOTTOM ONLY

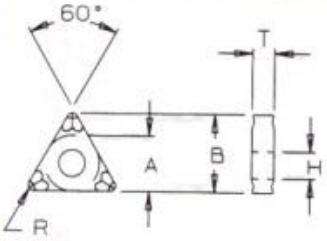
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
TCMW-110204				•														6.35	2.38	.40	9.13	2.80
TCMW-110208				•														6.35	2.38	.80	8.73	2.80



TNMA

TRIANGLE
NEGATIVE RAKE
UTILITY - GROUND TOP & BOTTOM ONLY

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
TNMA-160308																		9.53	3.18	.80	13.49	3.81
TNMA-160404																		9.53	4.76	.40	13.89	3.81
TNMA-160408				•						•	•							9.53	4.76	.80	13.49	3.81
TNMA-160412											•							9.53	4.76	1.20	13.10	3.81
TNMA-160416																		9.53	4.76	1.60	12.70	3.81
TNMA-220408											•							12.70	4.76	.80	18.26	5.16
TNMA-220412											•							12.70	4.76	1.20	17.86	5.16
TNMA-220416																		12.70	4.76	1.60	17.46	5.16
TNMA-220432																		12.70	4.76	3.20	15.87	5.16
TNMA-270612																		15.88	6.35	1.20	22.62	6.35
TNMA-270616																		15.88	6.35	1.60	22.22	6.35

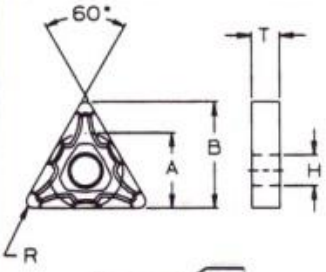


2B CHIP GROOVE

TNMG-2B

TRIANGLE
NEGATIVE RAKE - 15° EFFECTIVE POSITIVE
HONED - CHIP GROOVE BOTH SIDES

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
TNMG-110304-2B																		6.35	3.18	.40	9.13	2.26
TNMG-160304-2B																		9.53	3.18	.40	13.89	3.81
TNMG-160308-2B																		9.53	3.18	.80	13.49	3.81
TNMG-160404-2B	•									•	•	•						9.53	4.76	.40	13.89	3.81
TNMG-160408-2B	•										•	•						9.53	4.76	.80	13.49	3.81
TNMG-160412-2B																		9.53	4.76	1.20	13.10	3.81
TNMG-220404-2B												•						12.70	4.76	.40	18.65	5.16
TNMG-220408-2B	•											•						12.70	4.76	.80	18.26	5.16
TNMG-270608-2B																		15.88	6.35	.80	23.02	6.35

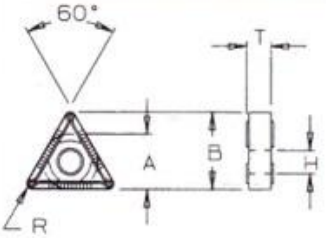


2N CHIP GROOVE

TNMG-2N

TRIANGLE
NEGATIVE RAKE - 5° EFFECTIVE POSITIVE
HONED - CHIP GROOVE BOTH SIDES

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
TNMG-160404-2N										•		•		•				9.53	4.76	.40	13.89	3.81
TNMG-160408-2N								•	•	•		•		•				9.53	4.76	.80	13.49	3.81
TNMG-160412-2N																		9.53	4.76	1.20	13.10	3.81
TNMG-220408-2N										•								12.70	4.76	.80	18.26	5.16
TNMG-220412-2N																		12.70	4.76	1.20	17.86	5.16
TNMG-270612-2N																		15.88	6.35	1.20	22.62	6.35
TNMG-270616-2N																		15.88	6.35	1.60	22.22	6.35

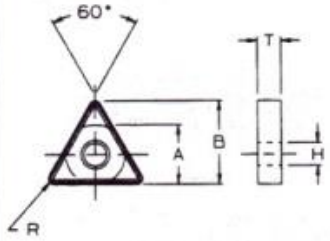


TNMG-3G

TRIANGLE
NEGATIVE RAKE - 5° EFFECTIVE POSITIVE
HONED - CHIP GROOVE BOTH SIDES

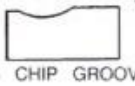
3G CHIP GROOVE

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
TNMG-110304-3G												•						6.35	3.18	.40	9.13	2.26
TNMG-110308-3G																		6.35	3.18	.80	8.73	2.26
TNMG-160304-3G												•						9.53	3.18	.40	13.89	3.81
TNMG-160308-3G												•						9.53	3.18	.80	13.49	3.81
TNMG-160404-3G								•	•	•	•	•	•	•				9.53	4.76	.40	13.89	3.81
TNMG-160408-3G								•	•	•	•	•	•	•				9.53	4.76	.80	13.49	3.81
TNMG-160412-3G												•						9.53	4.76	1.20	13.10	3.81
TNMG-220404-3G								•			•	•	•					12.70	4.76	.40	18.65	5.16
TNMG-220408-3G								•	•		•	•	•					12.70	4.76	.80	18.26	5.16
TNMG-220412-3G												•						12.70	4.76	1.20	17.86	5.16
TNMG-270608-3G																		15.88	6.35	.80	23.02	6.35
TNMG-270612-3G												•						15.88	6.35	1.20	22.62	6.35
TNMG-330924-3G																		19.05	9.53	2.40	26.19	7.92



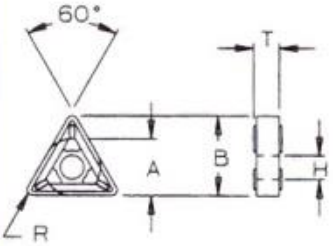
TNMG-3S

TRIANGLE
NEGATIVE RAKE
HONED - CHIP GROOVE BOTH SIDES



3S CHIP GROOVE

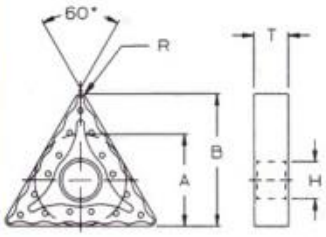
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
TNMG-160408-3S												•						9.53	4.76	.80	13.49	3.81
TNMG-220408-3S												•						12.70	4.76	.80	18.26	5.16
TNMG-270612-3S																		15.88	6.35	1.20	22.62	6.35

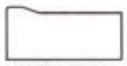


TNMG-4T

TRIANGLE
NEGATIVE RAKE
HONED - CHIP GROOVE BOTH SIDES

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
TNMG-160304-4T																		9.53	3.18	.40	13.89	3.81
TNMG-160308-4T																		9.53	3.18	.80	13.49	3.81
TNMG-160312-4T																		9.53	3.18	1.20	13.10	3.81
TNMG-160316-4T																		9.53	3.18	1.60	12.70	3.81
TNMG-160404-4T											•							9.53	4.76	.40	13.89	3.81
TNMG-160408-4T		•						•	•	•	•	•	•	•				9.53	4.76	.80	13.49	3.81
TNMG-160412-4T											•	•						9.53	4.76	1.20	13.10	3.81
TNMG-160416-4T																		9.53	4.76	1.60	12.70	3.81
TNMG-220404-4T																		12.70	4.76	.40	18.65	5.16
TNMG-220408-4T		•						•		•	•	•		•				12.70	4.76	.80	18.26	5.16
TNMG-220412-4T											•	•						12.70	4.76	1.20	17.86	5.16
TNMG-220416-4T																		12.70	4.76	1.60	17.46	5.16
TNMG-220432-4T																		12.70	4.76	3.20	15.87	5.16
TNMG-270608-4T																		15.88	6.35	.80	23.02	6.35
TNMG-270612-4T											•							15.88	6.35	1.20	22.62	6.35
TNMG-270616-4T																		15.88	6.35	1.60	22.22	6.35
TNMG-270632-4T																		15.88	6.35	3.20	20.64	6.35
TNMG-330924-4T												•						19.05	9.53	2.40	26.19	7.92



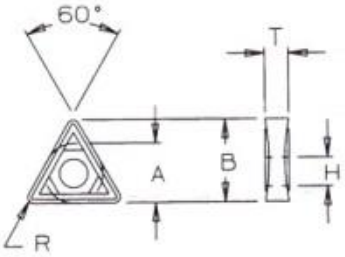


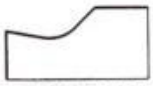
5V CHIP GROOVE

TNMG-5V

TRIANGLE
NEGATIVE RAKE
HONED - CHIP GROOVE BOTH SIDES

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
TNMG-160408-5V																		9.53	4.76	.80	13.49	3.81
TNMG-160412-5V											•		•					9.53	4.76	1.20	13.10	3.81
TNMG-220408-5V											•	•						12.70	4.76	.80	18.26	5.16
TNMG-220412-5V																		12.70	4.76	1.20	17.86	5.16
TNMG-270608-5V																		15.88	6.35	.80	23.02	6.35
TNMG-270612-5V																		15.88	6.35	1.20	22.62	6.35
TNMG-270616-5V																		15.88	6.35	1.60	22.22	6.35
TNMG-330924-5V																		19.05	9.53	2.40	26.19	7.92



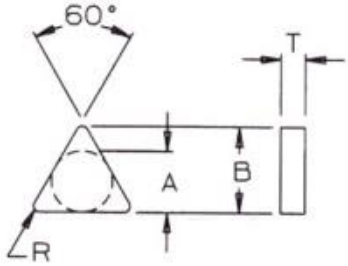


3D CHIP GROOVE

TNMP-3D

TRIANGLE
NEGATIVE RAKE
HONED - POSITIVE CHIP GROOVE BOTH SIDES

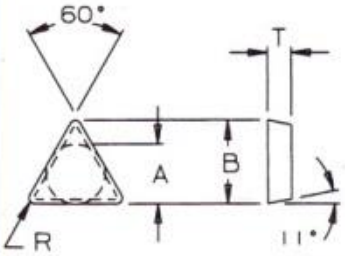
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
TNMP-160308-3D																		9.53	3.18	.80	13.49	3.81
TNMP-160404-3D										•	•	•						9.53	4.76	.40	13.89	3.81
TNMP-160408-3D										•	•	•						9.53	4.76	.80	13.49	3.81
TNMP-220408-3D											•							12.70	4.76	.80	18.26	5.16
TNMP-220432-3D																		12.70	4.76	3.20	15.87	5.16
TNMP-270608-3D																		15.88	6.35	.80	23.02	6.35



TNUN

TRIANGLE
NEGATIVE RAKE
UTILITY - GROUND TOP & BOTTOM ONLY

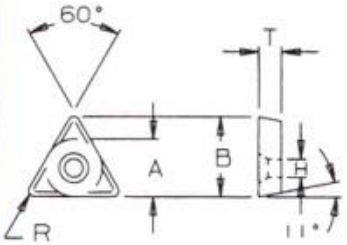
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B
TNUN-160308							•											9.53	3.18	.80	13.49
TNUN-160408																		9.53	4.76	.80	13.49
TNUN-220408																		12.70	4.76	.80	18.26



TPGN

TRIANGLE
11° POSITIVE RAKE
PRECISION - GROUND ALL OVER

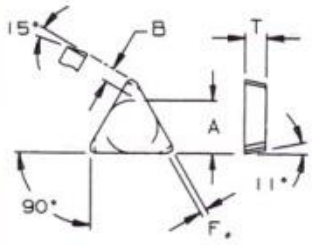
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B
TPGN-160312T		•																9.53	3.18	1.20	13.10
TPGN-220412T		•																12.70	4.76	1.20	17.86



TPGX

TRIANGLE
POSITIVE RAKE
PRECISION - GROUND ALL OVER

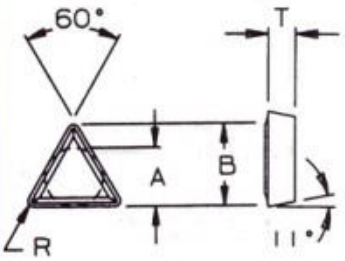
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
TPGX-160308				•														9.53	3.18	.80	13.49	3.18



TPKN

TRIANGLE
POSITIVE RAKE - DOUBLE FACETED CORNERS
PRECISION - GROUND ALL OVER

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	F	B
TPKN-1603RP3R-90				•		•												9.53	3.18	1.19	2.44
TPKN-1603RP3RT-90							•									•	•	9.53	3.18	1.19	2.44
TPKN-2204RD4R-90																		12.70	4.76	1.40	3.53
TPKN-2204RD4RT-90							•									•	•	12.70	4.76	1.40	3.53

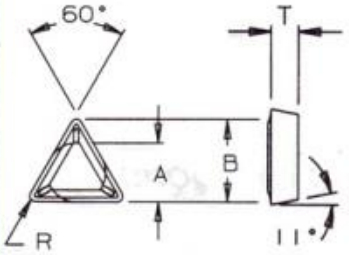


1G CHIP GROOVE

TPMR-1G

TRIANGLE
11° POSITIVE RAKE
HONED - CHIP GROOVE ONE SIDE

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B
TPMR-110304-1G											•	•						6.35	3.18	.40	9.13
TPMR-160304-1G											•	•	•					9.53	3.18	.40	13.89
TPMR-160308-1G											•	•						9.53	3.18	.80	13.49

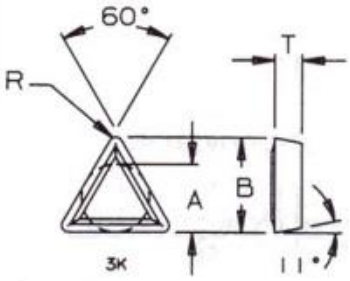


3H CHIP GROOVE

TPMR-3H

TRIANGLE
11° POSITIVE RAKE
HONED - CHIP GROOVE ONE SIDE

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B
TPMR-160304-3H								•	•	•	•	•	•	•				9.53	3.18	.40	13.89
TPMR-160308-3H								•	•	•	•	•	•	•				9.53	3.18	.80	13.49

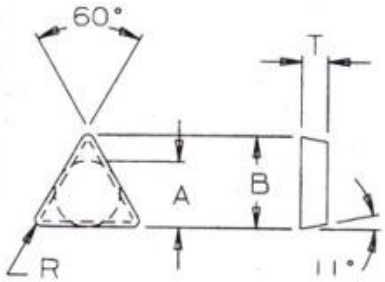


1K

TPMR-1K & 3K

TRIANGLE
11° POSITIVE RAKE
HONED - CHIP GROOVE ONE SIDE

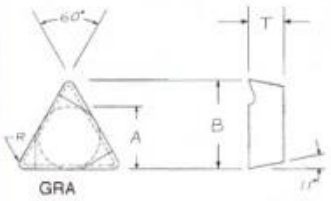
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B
TPMR-090204-3K																		5.56	2.38	.40	7.94
TPMR-110304-3K								•	•	•	•	•	•	•				6.35	3.18	.40	9.13
TPMR-110308-3K											•	•	•					6.35	3.18	.80	8.73
TPMR-160304-3K								•	•		•	•	•					9.53	3.18	.40	13.89
TPMR-160308-1K									•		•	•	•					9.53	3.18	.80	13.49
TPMR-160312-3K																		9.53	3.18	1.20	13.10
TPMR-220408-3K																		12.70	4.76	.80	18.26



TPUN

TRIANGLE
11° POSITIVE RAKE
UTILITY - GROUND TOP & BOTTOM ONLY

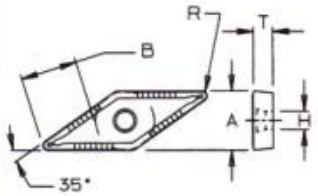
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B
TPUN-110204							•					•						6.35	2.38	.40	9.13
TPUN-110208							•					•						6.35	2.38	.80	8.73
TPUN-110304			•	•	•		•		•	•	•	•		•	•			6.35	3.18	.40	9.13
TPUN-110308				•	•		•				•	•						6.35	3.18	.80	8.73
TPUN-110308B							•											6.35	3.18	.80	8.73
TPUN-160304			•	•	•		•	•	•	•	•	•	•	•	•			9.53	3.18	.40	13.89
TPUN-160304B							•											9.53	3.18	.40	13.89
TPUN-160308			•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	9.53	3.18	.80	13.49
TPUN-160308B							•									•		9.53	3.18	.80	13.49
TPUN-160308C							•											9.53	3.18	.80	13.49
TPUN-160312				•		•	•					•						9.53	3.18	1.20	13.10
TPUN-160312B							•											9.53	3.18	1.20	13.10
TPUN-160312C							•											9.53	3.18	1.20	13.10
TPUN-220404							•					•						12.70	4.76	.40	18.65
TPUN-220408				•			•				•	•						12.70	4.76	.80	18.26
TPUN-220408B							•									•		12.70	4.76	.80	18.26
TPUN-220408C							•											12.70	4.76	.80	18.26
TPUN-220412							•											12.70	4.76	1.20	17.86
TPUN-220412B							•									•		12.70	4.76	1.20	17.86
TPUN-220412C							•											12.70	4.76	1.20	17.86



TPUN-GLA & GRA

TRIANGLE
11° POSITIVE RAKE - 20° EFFECTIVE POSITIVE
UTILITY - GROUND TOP & BOTTOM ONLY

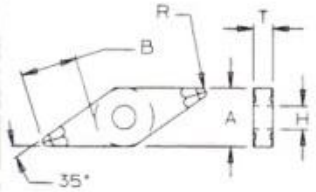
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B
TPUN-110304-GLA				•														6.35	3.18	.40	9.13
TPUN-110304-GRA				•														6.35	3.18	.40	9.13
TPUN-110308-GLA				•														6.35	3.18	.80	8.73
TPUN-110308-GRA				•														6.35	3.18	.80	8.73
TPUN-160304-GLA				•														9.53	3.18	.40	13.89
TPUN-160304-GRA				•														9.53	3.18	.40	13.89
TPUN-160308-GLA				•														9.53	3.18	.80	13.49
TPUN-160308-GRA				•														9.53	3.18	.80	13.49

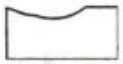


VBMT-3G

35° DIAMOND
5° POSITIVE RAKE
HONED - CHIP GROOVE ONE SIDE

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
VBMT-160402-3G																		9.53	4.76	.20	10.60	4.39
VBMT-160404-3G												•						9.53	4.76	.40	10.15	4.39
VBMT-160408-3G										•		•						9.53	4.76	.80	9.23	4.39
VBMT-160412-3G																		9.53	4.76	1.20	8.31	4.39



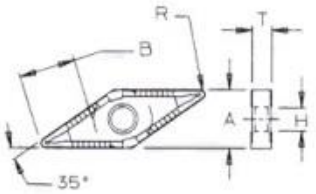


2B CHIP GROOVE

VNMG-2B

35° DIAMOND
NEGATIVE RAKE - 15° EFFECTIVE POSITIVE
HONED - CHIP GROOVE BOTH SIDES

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
VNMG-160404-2B	•											•						9.53	4.76	.40	10.15	3.81
VNMG-160408-2B	•											•						9.53	4.76	.80	9.23	3.81
VNMG-220404-2B																		12.70	4.76	.40	13.84	5.16
VNMG-220408-2B																		12.70	4.76	.80	12.92	5.16

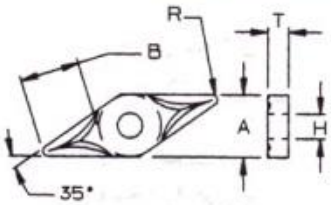


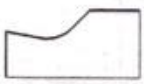
3G CHIP GROOVE

VNMG-3G

35° DIAMOND
NEGATIVE RAKE - 5° EFFECTIVE POSITIVE
HONED - CHIP GROOVE BOTH SIDES

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
VNMG-160404-3G												•						9.53	4.76	.40	10.15	3.81
VNMG-160408-3G												•						9.53	4.76	.80	9.23	3.81
VNMG-160412-3G																		9.53	4.76	1.20	8.31	3.81
VNMG-220404-3G																		12.70	4.76	.40	13.84	5.16
VNMG-220408-3G																		12.70	4.76	.80	12.92	5.16



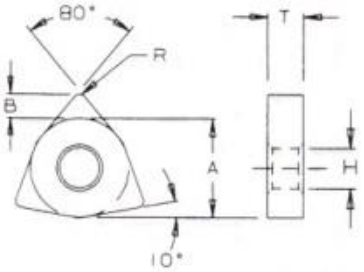


3D CHIP GROOVE

VNMP-3D

35° DIAMOND
NEGATIVE RAKE
HONED - POSITIVE CHIP GROOVE ONE SIDE

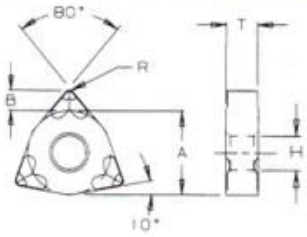
	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
VNMP-160402-3D																		9.53	4.76	.20	10.60	3.81
VNMP-160404-3D																		9.53	4.76	.40	10.15	3.81
VNMP-160408-3D																		9.53	4.76	.80	9.23	3.81

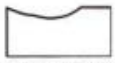


WNMA

80° TRIGON
NEGATIVE RAKE
UTILITY - GROUND TOP & BOTTOM ONLY

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	A IC	DIMENSIONS T	R	B	H
WNMA-080408																		12.70	4.76	.80	3.09	5.16



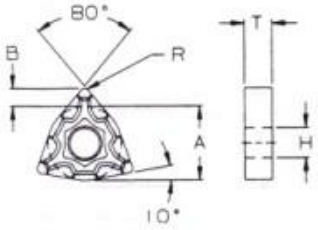


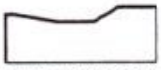
2B CHIP GROOVE

WNMG-2B

80° TRIGON
NEGATIVE RAKE - 15° EFFECTIVE POSITIVE
HONED - CHIP GROOVE BOTH SIDES

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	A IC	DIMENSIONS T	R	B	H
WNMG-080404-2B	•											•						12.70	4.76	.40	3.31	5.16
WNMG-080408-2B	•											•						12.70	4.76	.80	3.09	5.16
WNMG-080412-2B																		12.70	4.76	1.20	2.87	5.16



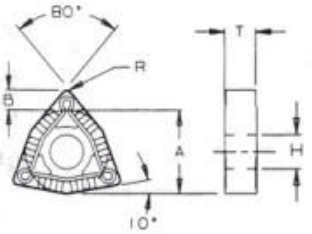


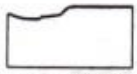
2N CHIP GROOVE

WNMG-2N

80° TRIGON
NEGATIVE RAKE - 5° EFFECTIVE POSITIVE
HONED - CHIP GROOVE BOTH SIDES

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	A IC	DIMENSIONS T	R	B	H
WNMG-080404-2N																		12.70	4.76	.40	3.31	5.16
WNMG-080408-2N																		12.70	4.76	.80	3.09	5.16
WNMG-080412-2N																		12.70	4.76	1.20	2.87	5.16



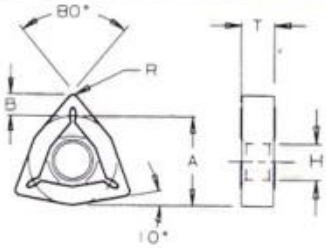


3G CHIP GROOVE

WNMG-3G

80° TRIGON
NEGATIVE RAKE - 5° EFFECTIVE POSITIVE
HONED - CHIP GROOVE BOTH SIDES

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
WNMG-06T304-3G																		9.53	3.97	.40	2.43	4.39
WNMG-06T308-3G																		9.53	3.97	.80	2.20	4.39
WNMG-060404-3G								•			•	•	•					9.53	4.76	.40	2.43	4.39
WNMG-060408-3G								•			•	•	•					9.53	4.76	.80	2.20	4.39
WNMG-080404-3G								•			•	•						12.70	4.76	.40	3.31	5.16
WNMG-080408-3G								•		•	•	•	•					12.70	4.76	.80	3.09	5.16
WNMG-080412-3G																		12.70	4.76	1.20	2.87	5.16



4T CHIP GROOVE

WNMG-4T

80° TRIGON
NEGATIVE RAKE
HONED - CHIP GROOVE BOTH SIDES

	SD3	SD5	HU6	HCA	H-21	H-17	SF30	S3X7	T-04	NL25	MP37	MP26	MP51	NL92	MP23	MP9IM	PFZ	DIMENSIONS A IC	T	R	B	H
WNMG-080404-4T																		12.70	4.76	.40	3.31	5.16
WNMG-080408-4T										•	•	•		•				12.70	4.76	.80	3.09	5.16
WNMG-080412-4T										•	•	•		•				12.70	4.76	1.20	2.87	5.16

ISO IDENTIFICATION KEY

T	N	M	G	16

INSERT SHAPE

A - PARALLELOGRAM	85°
B - PARALLELOGRAM	82°
C - DIAMOND	80°
D - DIAMOND	55°
E - DIAMOND	75°
H - HEXAGON	120°
K - PARALLELOGRAM	55°
L - RECTANGLE	90°
M - DIAMOND	85°
O - OCTAGON	135°
P - PENTAGON	108°
R - ROUND	360°
S - SQUARE	90°
T- TRIANGLE	60°
V - DIAMOND	35°
W - TRIGON	80°

CLEARANCE

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

ANGLE

CHIPBREAKERS AND FASTENING FEATURES

A		H	70° 90°	R	
B	70° 90°	J	70° 90°	T	40° 60°
C	70° 90°	M		U	40° 60°
F		N		W	40° 60°
G		Q	40° 60°	X	SPECIAL CONFIGURATION

TOLERANCE

s = THICKNESS d = INSCRIBED CIRCLE

	m	s	d
A	±.005	±.025	±.025
C	±.013	±.025	±.025
E	±.025	±.025	±.025
G	±.025	±.13	±.025
H	±.013	±.025	±.013
J	±.005	±.025	±.05/±.15
K	±.013	±.025	±.05/±.15
L	±.025	±.025	±.05/±.15
M	±.08/±.18	±.13	±.05/±.15
U	±.13/±.38	±.13	±.08/±.25

EDGE LENGTH

I.C.	C	D	S	T	V	W
5/32	03	04	03	06		02
3/16	04	05	04	08		S3
7/32	05	06	05	09		03
1/4	06	07	06	11	11	04
5/16	08	09	07	13		05
3/8	09	11	09	16	16	06
1/2	12	15	12	22	22	08
5/8	16	19	15	27		10
3/4	19	23	19	33		13
1	25	31	25	44		

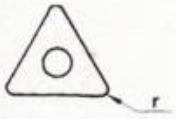
FOR INDEXABLE INSERTS

04	08	A	R	3G

THICKNESS

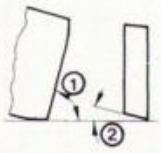
01	1/16
02	3/32
T2	7/64
03	1/8
T3	5/32
04	3/16
06	1/4
07	5/16
09	3/8

CORNER



02 r = 0,2
04 r = 0,4
08 r = 0,8
12 r = 1,2
16 r = 1,6
24 r = 2,4

R — 00 for inch diameter converted into mm. M 0 for metric diameter



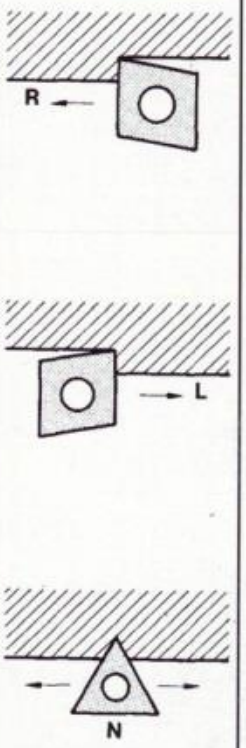
① Setting Angle χ_r
A = 45°
D = 60°
E = 75°
F = 85°
P = 90°
Z = other setting angle

② Clearance angle of secondary cutting edges
A = 3°
B = 5°
C = 7°
D = 15°
E = 20°
F = 25°
G = 30°
N = 0°
P = 11°
Z = other clearance angle

EDGE

A	.03 - .07 EDGE HONE
B	.08 - .12 EDGE HONE
C	.13 - .18 EDGE HONE
F	UP SHARP
J	POLISHED
K	DOUBLE CHAMFER
P	HONED DOUBLE CHAMFER
S	HONED CHAMFER
T	CHAMFER

HAND



CARMET SYMBOLS

1G	3G
1K	3H
2B	3K
2C	3M
2J	3S
2K	4M
2M	4T
2N	5V
3D	5X