

A.N.S.I. Insert Identification System

Shape

A – Parallelogram 85 degrees
 B – Parallelogram 82 degrees
 C – Diamond 80 degrees
 D – Diamond 55 degrees
 E – Diamond 75 degrees
 H – Hexagon
 K – Parallelogram 55 degrees
 L – Rectangle
 M – Diamond 86 degrees
 O – Octagon
 P – Pentagon
 R – Round
 S – Square
 T – Triangle
 V – Diamond 35 degrees

Tolerance

Cutting Point	Thickness
A +/- .0002	+/- .001
B +/- .0002	+/- .005
C +/- .0005	+/- .001
D +/- .0005	+/- .005
E +/- .001	+/- .001
G +/- .001	+/- .005
M +/- .002 to +/- .005	+/- .005
U +/- .005 to +/- .012	+/- .005

R = Blank with grind stock on all surfaces
 S = Blank with grind stock on periphery, ground top and bottom only

* Exact tolerance determined by size of insert

Size

Regular Polygons and Diamonds

Number of 1/8ths of an inch in I.C. when I.C. is 1/4 inch and over

For I.C. of less than 1/4 inch, the number of 1/32nds inch in I.C.

Rectangles and Parallelograms use two digits to size:

1st Digit – Number of 1/8ths inch in width
 2nd Digit – Number of 1/4 inch in length

Radius or Chamfer

0 – Sharp corner
 1 – 1/64 Inch Radius
 2 – 1/32 Inch Radius
 3 – 3/64 Inch Radius
 4 – 1/16 Inch Radius
 6 – 3/32 Inch Radius
 8 – 1/8 Inch Radius
 A – Square insert 45 degrees

TNGA-432T

Clearance

N – 0 degrees
 A – 3 degrees
 B – 5 degrees
 C – 7 degrees
 P – 11 degrees
 D – 15 degrees
 E – 20 degrees
 F – 25 degrees
 G – 30 degrees

Type

A – With hole
 B – With hole and countersink
 C – With hole and countersinks
 D – Smaller than 1/4inch I.C. with hole
 E – Smaller than 1/4inch I.C.
 F – Chip grooves on top rake surfaces, without hole
 G – Chip groves on top rake surfaces, with hole
 H – With hole, one countersink, and chip grooves on one top rake surface
 J – With hole, two countersinks, and chip grooves on top rake surfaces
 M – With hole and chip grooves on one top rake surface
 P – With hole and 10 degrees positive chipbreaker on both sides
 S – With hole and 20 degrees chipbreaker on one side
 N – Without hole

Thickness

Regular Polygons and Diamonds

Number of 1/16ths of an inch in thickness for I.C. of 1/4 inch and over

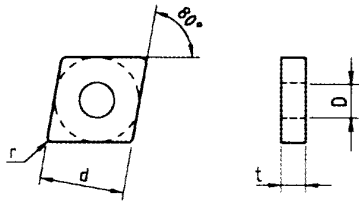
For less than 1/4 inch I.C., the number of 1/32nds inch in I.C.

Rectangles and Parallelograms use with dimension in place of I.C.

Edge preparation or chipbreaker style

CNGA ceramic

80 degree diamond negative rake inserts

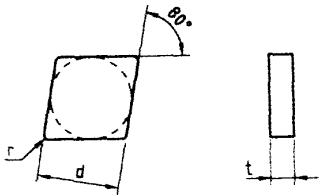


+ = in-stock standard ^ = non-stock standard

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE				
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-C (COATED)	CC-513	CC-514	CC-5143	CC-515	CC-5477
CNGA 120404 CNGA 120408 CNGA 120412 CNGA 120416	CNGA 431 432 433 434	1/2	3/16	1/64 1/32 3/64 1/16	.203	+ ^ + ^	+ + ^ +	+ + ^ +	^	\ \ / in-stock or non-stock standard				^ + ^ ^
CNGA 160404 CNGA 160408 CNGA 160412 CNGA 160416	CNGA 541 542 543 544	5/8	1/4	1/64 1/32 3/64 1/16	.250	^ ^ + ^	^ + ^ ^	^ ^ ^ ^	^	\ \ / in-stock or non-stock standard				^ ^ ^ ^
CNGA 190604 CNGA 190608 CNGA 190612 CNGA 190616	CNGA 641 642 643 644	3/4	1/4	1/64 1/32 3/64 1/16	.312	^ + + +	+ + + +	^ ^ ^ ^	^	\ \ / in-stock or non-stock standard				^ ^ ^ ^

CNG ceramic

80 degree diamond negative rake inserts

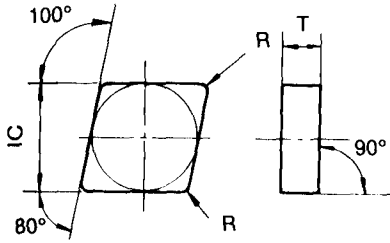


+ = in-stock standard ^ = non-stock standard

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE				
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-C (COATED)	CC-513	CC-514	CC-5143	CC-515	CC-5477
CNGN 120404 CNGN 120408 CNGN 120412 CNGN 120416	CNG 431 432 433 434	1/2	3/16	1/64 1/32 3/64 1/16	—	^ + + +	+ + + +	^ ^ + ^	^	\ \ / in-stock or non-stock standard				^ ^ ^ ^
CNGN 120704 CNGN 120708 CNGN 120712 CNGN 120716	CNG 451 452 453 454	1/2	5/16	1/64 1/32 3/64 1/16	—	^ ^ + ^	^ ^ + ^	^ ^ ^ ^	^	\ \ / in-stock or non-stock standard				^ ^ ^ ^
CNGN 160604 CNGN 160608 CNGN 160612 CNGN 160616	CNG 541 542 543 544	5/8	1/4	1/64 1/32 3/64 1/16	—	^ ^ + ^	^ ^ + ^	^ ^ ^ ^	^	\ \ / in-stock or non-stock standard				^ ^ ^ ^

CNG ceramic

80 degree diamond negative rake inserts



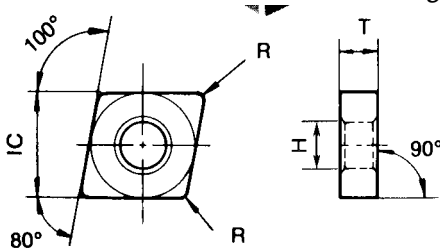
+ = in-stock standard

^ = non-stock standard

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE							
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-C (COATED)	CC-513	CC-514	CC-5143	CC-515	CC-5477			
CNGN 190604	CNG 641	3/4	1/4	1/64	—	^	+	^	^	\ \ /	in-stock or non-stock standard			^			
CNGN 190608				1/32		+	^	+	^					^	^		
CNGN 190612				3/64		^	^	+	^					^	^	^	
CNGN 190616				1/16		+	^	^	^					^	^	^	
CNGN 190704	CNG 651	3/4	5/16	1/64	—	^	^	^	^	\ \ /	in-stock or non-stock standard			^			
CNGN 190708				1/32		^	^	^	^					^	^	^	
CNGN 190712				3/64		^	^	^	^					^	^	^	^
CNGN 190716				1/16		^	^	^	^					^	^	^	^

CNMA ceramic

80 degree diamond negative rake inserts



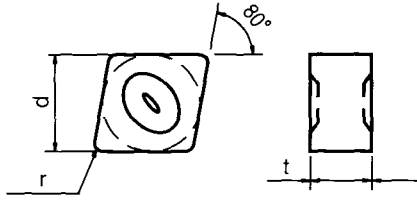
+ = in-stock standard

^ = non-stock standard

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE									
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-C (COATED)	CC-513	CC-514	CC-5143	CC-515	CC-5477					
CNMA 120408	CNMA 432	1/2	3/16	1/32	.203					\ \ /	in-stock or non-stock standard			^					
CNMA 120412				3/64										^	^	^	^	^	^
CNMA 120416				1/16										^	^	^	^	^	^
CNMA 160616	CNMA 544	5/8	1/4	1/16	.250					\ \ /	in-stock or non-stock standard			^					

CNGX ceramic

80 degree diamond, dimpled negative rake inserts

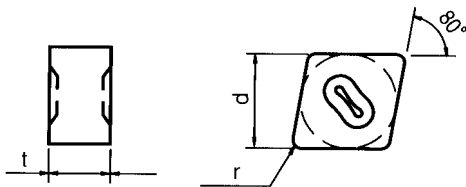


+ = in-stock standard ^ = non-stock standard

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE				
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-C (COATED)	CC-513	CC-514	CC-5143	CC-515	CC-5477
CNGX 120708 CNGX 120712 CNGX 120716	CNGX 452 453 454	1/2	5/16	1/32 3/64 1/16	—	^	^	^	^	\\//	in-stock or non-stock standard	^	^	^
CNGX 160708 CNGX 160712 CNGX 160716	CNGX 552 553 554	5/8	5/16	1/32 3/64 1/16	—					\\//	in-stock or non-stock standard	^	^	^

CNVX ceramic

80 degree diamond, dimpled negative rake inserts

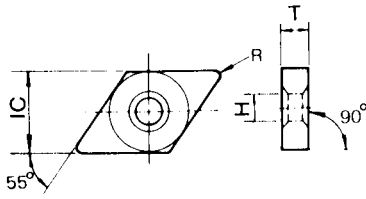


+ = in-stock standard ^ = non-stock standard

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE				
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-C (COATED)	CC-513	CC-514	CC-5143	CC-515	CC-5477
CNVX 150404 CNVX 150408 CNVX 150412	CNVX 452 453 454	1/2	5/16	1/32 3/64 1/16	—	^	^	^	^	\\//	in-stock or non-stock standard	^	^	^
CNVX 160608 CNVX 160612 CNVX 160616	CNVX 552 553 554	5/8	5/16	1/32 3/64 1/16	—					\\//	in-stock or non-stock standard	^	^	^

DNGA ceramic

55 degree diamond negative rake inserts

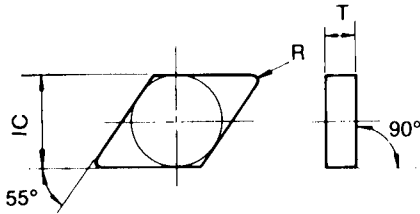


+ = in-stock standard ^ = non-stock standard

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE				
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-C (COATED)	CC-513	CC-514	CC-543	CC-515	CC-5477
DNGA 150404	DNGA 431	1/2	3/16	1/64	.203	+	+	^	^	\\/ in-stock or ^ non-stock ^ standard ^ ^				
DNGA 150408				1/32		^	+	+						
DNGA 150412				3/64		+	+	^	+					
DNGA 150416				1/16		+	+	+	^					
DNGA 190604	DNGA 541	5/8	1/4	1/64	.250	^	^	^	^	\\/ in-stock or ^ non-stock ^ standard ^ ^				
DNGA 190608				1/32		^	+	^	^					
DNGA 190612				3/64		+	+	^	^					
DNGA 190616				1/16		^	^	^	^					

DNG ceramic

55 degree diamond negative rake inserts

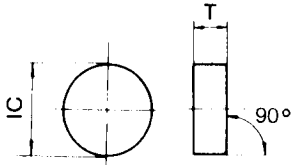


+ = in-stock standard ^ = non-stock standard

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE				
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-C (COATED)	CC-513	CC-514	CC-5143	CC-515	CC-5477
DNGN 150404	DNG 431	1/2	3/16	1/64	—	^	+	^	^	\\/ in-stock or ^ non-stock ^ standard ^ ^				
DNGN 150408				1/32		+	^	+	^					
DNGN 150412				3/64		^	^	+	^					
DNGN 150416				1/16		+	^	^	^					
DNGN 190604	DNG 541	5/8	1/4	1/64	—	^	^	^	^	\\/ in-stock or ^ non-stock ^ standard ^ ^				
DNGN 190608				1/32		^	^	^	^					
DNGN 190612				3/64		^	^	^	^					
DNGN 190616				1/16		^	^	^	^					

RNG ceramic

round negative rake inserts

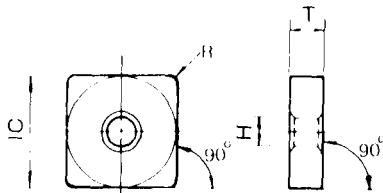


+ = in-stock standard ^ = non-stock standard

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE				
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-C (COATED)	CC-513	CC-514	CC-5143	CC-515	CC-5477
RNGN 090300	RNG 32	3/8	1/8	—	—	^	^	+	^					
RNGN 090400	RNG 33	3/8	3/16	—	—	^	+	^	^					
RNGN 120400	RNG 43	1/2	3/16	—	—	^	^	+	^	\ / in-stock or non-stock standard			^	
RNGN 120700	RNG 45	1/2	5/16	—	—	+	^	+	^				+	
RNGN 190600	RNG 64	3/4	1/4	—	—	^	^	+	^					
RNGN 250700	RNG 86	1	3/8	—	—	^	^	+	^					

SNGA ceramic

square negative rake inserts

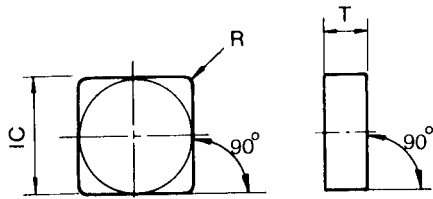


+ = in-stock standard ^ = non-stock standard

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE				
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-C (COATED)	CC-513	CC-514	CC-5143	CC-515	CC-5477
SNGA 090304	SNGA 321	3/8	1/8	1/64	.150	^	^	^	^	\ / in-stock or non-stock standard			^	
SNGA 090308	322			1/32		^	^	^	^		^			
SNGA 090312	323			3/64		^	^	^	^		^			
SNGA 090316	324			1/16		^	^	^	^		^			
SNGA 120404	SNGA 431	1/2	3/16	1/64	.203	^	^			\ / in-stock or non-stock standard			^	
SNGA 120408	432			1/32		^	^	^	^		^			
SNGA 120412	433			3/64		+	+	^	^		^			
SNGA 120416	434			1/16		+	^	+	+		+			
SNGA 190604	SNGA 641	3/4	1/4	1/64	.312	^	^	^	^	\ / in-stock or non-stock standard			^	
SNGA 190608	642			1/32		^	^	^	^		^			
SNGA 190612	643			3/64		^	+	^	^		^			
SNGA 190616	644			1/16		+	^	+	+		+			

SNG ceramic

square negative rake inserts

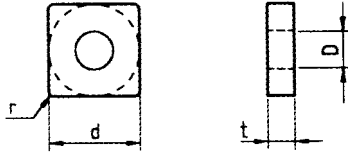


+ = in-stock standard ^ = non-stock standard

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE				
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-C (COATED)	CC-513	CC-514	CC-5143	CC-515	CC-5477
SNGN 060304 SNGN 060308 SNGN 060312 SNGN 060316	SNG 221 222 223 224	1/4	1/8	1/64	—	^	^	^	^	\ \ /				
	1/32			^		^	^	^	in-stock or					
	3/64			^		^	^	^	non-stock					
	1/16			^		^	^	^	standard					
SNGN 090304 SNGN 090308 SNGN 090312 SNGN 090316	SNG 321 322 323 324	3/8	1/8	1/64	—	^	^	^	^	\ \ /				
	1/32			+		^	+	^	in-stock or					
	3/64			^		^	^	^	non-stock					
	1/16			^		^	^	^	standard					
SNGN 090304 SNGN 090308 SNGN 090312 SNGN 090316	SNG 331 332 333 334	3/8	3/16	1/64	—	^	^	^	^	\ \ /				
	1/32			+		^	+	^	in-stock or					
	3/64			^		^	^	^	non-stock					
	1/16			^		^	^	^	standard					
SNGN 120404 SNGN 120408 SNGN 120412 SNGN 120416 SNGN 120424 SNGN 120432	SNG 431 432 433 434 436 438	1/2	3/16	1/64	—	^	^	^	^	\ \ /				
	1/32			^		^	+	^	in-stock or					
	3/64			^		^	+	^	non-stock					
	1/16			+		^	+	^	standard					
	3/32			^		^	+	^						
	1/8			+		^	+	^						
SNGN 120704 SNGN 120708 SNGN 120712 SNGN 120716	SNG 451 452 453 454	1/2	5/16	1/64	—	^	^	^	^	\ \ /				
	1/32			+		^	^	^	in-stock or					
	3/64			^		^	^	^	non-stock					
	1/16			+		^	^	^	standard					
SNGN 150604 SNGN 150608 SNGN 150612 SNGN 150616	SNG 541 542 543 544	5/8	1/4	1/64	—	^	^	^	^	\ \ /				
	1/32			^		^	^	^	in-stock or					
	3/64			^		^	^	^	non-stock					
	1/16			^		^	^	^	standard					
SNGN 190404 SNGN 190408 SNGN 190412 SNGN 190416	SNG 631 632 633 634	3/4	3/16	1/64	—	^	^	^	^	\ \ /				
	1/32			^		^	^	^	in-stock or					
	3/64			^		^	^	^	non-stock					
	1/16			+		^	+	^	standard					
SNGN 190604 SNGN 190608 SNGN 190612 SNGN 190616	SNG 641 642 643 644	3/4	1/4	1/64	—	^	^	^	^	\ \ /				
	1/32			^		^	^	^	in-stock or					
	3/64			^		^	+	^	non-stock					
	1/16			^		^	+	^	standard					

SNMA ceramic

square negative rake inserts



+ = in-stock standard ^ = non-stock standard

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE				
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-C (COATED)	CC-513	CC-514	CC-5143	CC-515	CC-5477
SNMA 120708 SNMA 120712	SNMA 433 434	1/2	3/16	3/64 1/16	—					\\/ in-stock or non-stock standard				^ ^
SNMA 150616	SNMA 544	5/8	1/4	1/16	—					\\/ in-stock or non-stock standard				^

SNGX ceramic

square, dimpled negative rake inserts

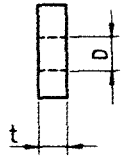
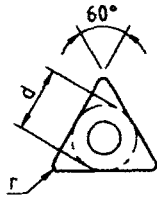


+ = in-stock standard ^ = non-stock standard

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE				
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-C (COATED)	CC-513	CC-514	CC-5143	CC-515	CC-5477
SNGX 120708 SNGX 120712 SNGX 120716	SNGX 452 453 454	1/2	5/16	1/32 3/64 1/16	—				^ ^ ^ ^	\\/ in-stock or non-stock standard				^ ^ ^
SNGX 150708 SNGX 150712 SNGX 150716	SNGX 552 553 554	5/8	5/16	1/32 3/64 1/16	—				^ ^ ^ ^ ^ ^	\\/ in-stock or non-stock standard				^ ^ ^

TNGA ceramic

triangle negative rake inserts



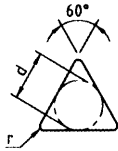
+ = in-stock standard

^ = non-stock standard

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE				
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-C (COATED)	CC-513	CC-514	CC-5143	CC-515	CC-5477
TNGA 160304 TNGA 160308 TNGA 160312 TNGA 160316	TNGA 321 322 323 324	3/8	1/8	1/64 1/32 3/64 1/16	.150	^ ^ ^ ^ + ^ + ^ ^ ^ ^ ^	^ ^ ^ ^	^ ^ ^ ^	^ ^ ^ ^	\\/ in-stock or non-stock standard	^ ^ ^ ^	^ ^ ^ ^	^ ^ ^ ^	^ ^ ^ ^
TNGA 160404 TNGA 160408 TNGA 160412 TNGA 160416	TNGA 331 332 333 334	3/8	3/16	1/64 1/32 3/64 1/16	.150	^ ^ + ^ ^ ^ + ^ ^ ^ + ^	^ ^ ^ ^	^ ^ ^ ^	^ ^ ^ ^	\\/ in-stock or non-stock standard	^ ^ ^ ^	^ ^ ^ ^	^ ^ ^ ^	^ ^ ^ ^
TNGA 220404 TNGA 220408 TNGA 220412 TNGA 220416	TNGA 431 432 433 434	1/2	3/16	1/64 1/32 3/64 1/16	.203	^ + ^ ^ + + + + + ^ + ^	^ ^ ^ ^	^ ^ ^ ^	^ ^ ^ ^	\\/ in-stock or non-stock standard	^ ^ ^ ^	^ ^ ^ ^	^ ^ ^ ^	^ ^ ^ ^
TNGA 270604 TNGA 270608 TNGA 270612 TNGA 270616	TNGA 541 542 543 544	5/8	1/4	1/64 1/32 3/64 1/16	.250	^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^	^ ^ ^ ^	^ ^ ^ ^	^ ^ ^ ^	\\/ in-stock or non-stock standard	^ ^ ^ ^	^ ^ ^ ^	^ ^ ^ ^	^ ^ ^ ^

TNG ceramic

triangle negative rake inserts

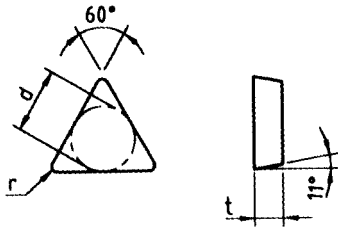


+ = in-stock standard ^ = non-stock standard

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE				
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-C (COATED)	CC-513	CC-514	CC-5143	CC-515	CC-5477
TNGN 110304 TNGN 110308 TNGN 110312 TNGN 110316	TNG 221 222 223 224	1/4	1/8	1/64 1/32 3/64 1/16	—	^ ^ ^ ^ ^ + ^ ^ ^ ^ ^ ^	^ ^ ^ ^	^	\\/ in-stock or non-stock standard	^ ^ ^ ^				
TNGN 160304 TNGN 160308 TNGN 160312 TNGN 160316	TNG 321 322 323 324	3/8	1/8	1/64 1/32 3/64 1/16	—	^ ^ ^ ^ ^ + ^ ^ ^ ^ ^ ^	^ ^ ^ ^	^	\\/ in-stock or non-stock standard	^ ^ ^ ^				
TNGN 160404 TNGN 160408 TNGN 160412 TNGN 160416	TNG 331 332 333 334	3/8	3/16	1/64 1/32 3/64 1/16	—	^ + ^ ^ ^ ^ + ^ + ^ ^ ^	^ ^ ^ +	^	\\/ in-stock or non-stock standard	^ ^ ^ ^				
TNGN 220404 TNGN 220408 TNGN 220412 TNGN 220416	TNG 431 432 433 434	1/2	3/16	1/64 1/32 3/64 1/16	—	^ ^ ^ ^ + ^ + ^ + ^ + ^	^ ^ ^ ^	^	\\/ in-stock or non-stock standard	^ ^ ^ ^				
TNGN 270604 TNGN 270608 TNGN 270612 TNGN 270616	TNG 541 542 543 544	5/8	1/4	1/64 1/32 3/64 1/16	—	^ ^ ^ ^ ^ + ^ + ^ ^ + ^	^ ^ ^ ^	^	\\/ in-stock or non-stock standard	^ ^ ^ ^				

TPG ceramic

triangle positive rake inserts

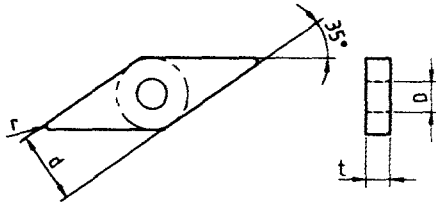


+ = in-stock standard ^ = non-stock standard

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE				
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-C (COATED)	CC-513	CC-514	CC-5143	CC-515	CC-5477
TPGN 110304	TPG 221	1/4	1/8	1/64	—	+	^	^	^	\\/ in-stock or ^ non-stock ^ standard ^ ^				
TPGN 110308				1/32		^	^	+	^					
TPGN 110312				3/64		^	^	^	^					
TPGN 110316				1/16		^	^	^	^					
TPGN 160304	TPG 321	3/8	1/8	1/64	—	^	+	+	^	\\/ in-stock or ^ non-stock ^ standard ^ ^				
TPGN 160308				1/32		+	^	^	^					
TPGN 160312				3/64		^	^	^	^					
TPGN 160316				1/16		^	^	^	^					
TPGN 220404	TPG 431	1/2	3/16	1/64	—	^	+	^	^	\\/ in-stock or ^ non-stock ^ standard ^ ^				
TPGN 220408				1/32		+	+	^	^					
TPGN 220412				3/64		^	+	^	^					
TPGN 220416				1/16		^	+	^	^					

VNGA ceramic

35 degree diamond negative rake inserts

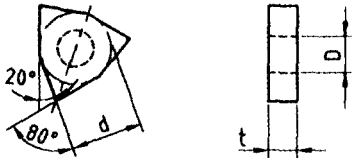


+ = in-stock standard ^ = non-stock standard

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE				
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-C (COATED)	CC-513	CC-514	CC-5143	CC-515	CC-5477
VNGA 160404	VNGA 331	3/8	3/16	1/64	.150	^	+	+	^	\ \ / in-stock or ^ non-stock ^ standard ^ ^				
VNGA 160408				1/32		^	+	+						
VNGA 160412				3/64		^	^	^						
VNGA 160416				1/16		^	+	^						
VNGA 220404	VNGA 431	1/2	3/16	1/64	.203	^	^	^	^	\ \ / in-stock or ^ non-stock ^ standard ^ ^				
VNGA 220408				1/32		^	^	^						
VNGA 220412				3/64		+	^	^	^					
VNGA 220416				1/16		+	^	^	^					

WNGA ceramic

trigon negative rake inserts

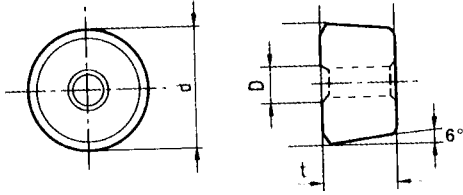


+ = in-stock standard ^ = non-stock standard

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				BLACK / WHITE				SILICON NITRIDE				
		IC	T	R	H	CC-10	CC-20	CC-30	CC-30-C (COATED)	CC-513	CC-514	CC-5143	CC-515	CC-5477
WNGA 080404	WNGA 431	1/2	3/16	1/64	.203	^	^	^	^	\ \ / in-stock or ^ non-stock ^ standard ^				
WNGA 080408				1/32		^	^	^						
WNGA 080412				3/64		^								

CDH / RCMA ceramic

round positive rake button insert

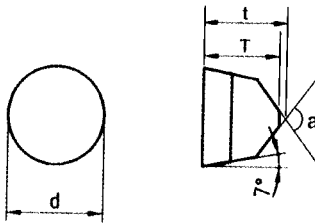


+ = in-stock standard ^ = non-stock standard

ISO DESIGNATION	INSERT STYLE	DIMENSIONS			BLACK / WHITE				SILICON NITRIDE
		IC	T	H	CC-10	CC-20	CC-30	CC-30-C (COATED)	Contact Romay regarding availability
RCMA 41	CDH 22	1/2	1/4	.125	^	^	^		
RCMA 63		3/8	3/16	.125	^	^	^		
RCMA 66		3/8	3/8	.250	+	+	^		
RCMA 68		3/8	1/2	.250	^	^	^		
RCMA 88	CDH 42	1	1/2	.266	+	+	^		
RCMA 812		1	3/4	.266	^	^	^		
RCMA 106		515	1-1/4	3/8	.390	^	^	^	
RCMA 1012		53	1-1/4	3/4	.390	^	^	^	

RCGX ceramic

round positive rake V-bottom inserts

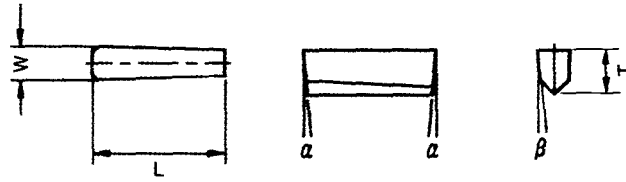


+ = in-stock standard ^ = non-stock standard

ISO DESIGNATION	INSERT STYLE	DIMENSIONS			BLACK / WHITE				SILICON NITRIDE
		IC	T	ANGLE	CC-10	CC-20	CC-30	CC-30-C (COATED)	Contact Romay regarding availability
RCGX 060400	RCGX 102	1/4	3/16	120 degrees	^	^	^		
RCGX 060600		1/4	1/4	120 degrees	^	^	^		
RCGX 060700		1/4	5/16	120 degrees	^	^	^		
RCGX 090700	RCGX 103	3/8	.313	120 degrees	+	+	+		
RCGX 120700		1/2	.313	120 degrees	+	+	+		
RCGX 151000		5/8	.394	120 degrees	^	^	^		
RCGX 191000	RCGX 106	3/4	.394	120 degrees	+	+	+		
RCGX 251200		1	.473	140 degrees	^	^	^		

SEGR ceramic

single-ended grooving insert with 90 degree V-bottom

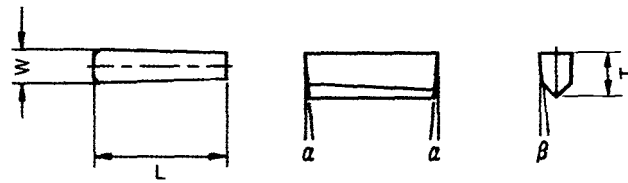


+ = in-stock standard ^ = non-stock standard

INSERT STYLE	DIMENSIONS			BLACK / WHITE		SILICON NITRIDE
	L	W	T	CC-10	CC-20	Contact Romay regarding availability
SEGR 1	.472	.157	.197	^	^	
SEGR 2	.591	.157	.197			
SEGR 3	1	.157	.197	^		
SEGR 4	.5	.187	.187			
SEGR 5	.472	.197	.197	^	^	
SEGR 6	.591	.197	.296		^	
SEGR 7	1	.197	.296		^	
SEGR 8	.750	.219	.250			
SEGR 9	.591	.236	.296	^	^	
SEGR 10	1	.236	.296			
SEGR 11	.591	.250	.296	^		
SEGR 12	.750	.250	.296			
SEGR 13	1	.250	.296	^	^	
<i>continued next page</i>						

SEGR ceramic

single-ended grooving insert with 90 degree V-bottom



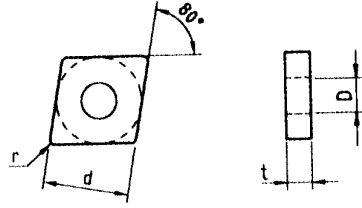
+ = in-stock standard ^ = non-stock standard

INSERT STYLE <i>continued from last page</i>	DIMENSIONS			BLACK / WHITE		SILICON NITRIDE
	L	W	T	CC-10	CC-20	<i>Contact Romay regarding availability</i>
SEGR 14	.591	.275	.296			
SEGR 15	.750	.281	.250			
SEGR 16	1	.313	.337			
SEGR 17	.591	.315	.296	^		
SEGR 18	1	.343	.337			
SEGR 19	1	.375	.337			
SEGR 20	.591	.394	.296			
SEGR 21	1	.552	.296	^		

CNMG cermet

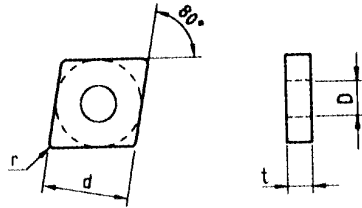
+ = in-stock standard

^ = non-stock standard



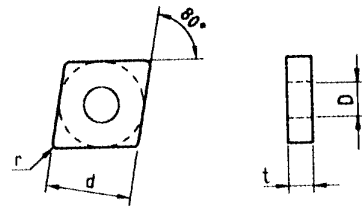
'F' Chipbreaker:

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(t) T	(r) R	(D) H	CC-42	CC-44	CC-43
CNMG 120404-F CNMG 120408-F CNMG 120412-F	CNMG 431-F 432-F 433-F	1/2	3/16	1/64 1/32 3/64	.203	+ ^	^ +	



'Y' Chipbreaker:

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(t) T	(r) R	(D) H	CC-42	CC-44	CC-43
CNMG 120404-Y CNMG 120408-Y CNMG 120412-Y	CNMG 431-Y 432-Y 433-Y	1/2	3/16	1/64 1/32 3/64	.203	^ ^	+ ^	



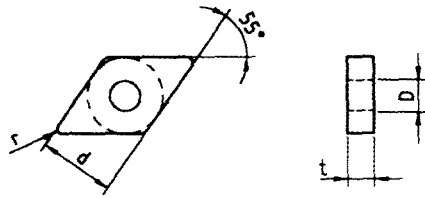
'G' Chipbreaker:

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(t) T	(r) R	(D) H	CC-42	CC-44	CC-43
CNMG 120404-G CNMG 120408-G CNMG 120412-G	CNMG 431-G 432-G 433-G	1/2	3/16	1/64 1/32 3/64	.203	^ ^	^ +	

DNMG cermet

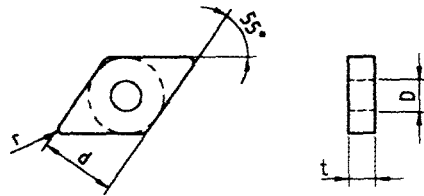
+ = in-stock standard

^ = non-stock standard



'F' Chipbreaker:

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(t) T	(r) R	(D) H	CC-42	CC-44	CC-43
DNMG 150404-F DNMG 150408-F DNMG 150412-F	DNMG 431-F 432-F 433-F	1/2	3/16	1/64 1/32 3/64	.203	+ ^	^ ^	



'Y' Chipbreaker:

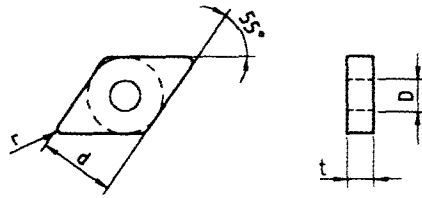
ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(t) T	(r) R	(D) H	CC-42	CC-44	CC-43
DNMG 150404-Y DNMG 150408-Y DNMG 150412-Y	DNMG 431-Y 432-Y 433-Y	1/2	3/16	1/64 1/32 3/64	.203	^ ^	^ ^	

DNMG 150604-Y DNMG 150608-Y DNMG 150612-Y	DNMG 441-Y 442-Y 443-Y	1/2	1/4	1/64 1/32 3/64	.203	^ ^	^ ^	
---	---	-----	-----	----------------------	------	--------	--------	--

DNMG cermet

+ = in-stock standard

^ = non-stock standard



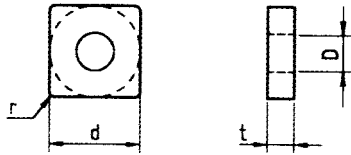
'G' Chipbreaker:

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(l) T	(r) R	(D) H	CC-42	CC-44	CC-43
DNMG 150404-G DNMG 150408-G DNMG 150412-G	DNMG 431-G 432-G 433-G	1/2	3/16	1/64 1/32 3/64	.203	^ +	^ ^	
DNMG 150604-G DNMG 150608-G DNMG 150612-G	DNMG 441-G 442-G 443-G	1/2	1/4	1/64 1/32 3/64	.203	^ ^	^ ^	

SNMG cermet

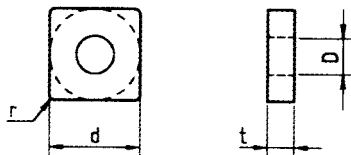
+ = in-stock standard

^ = non-stock standard



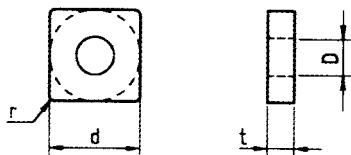
'F' Chipbreaker:

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(t) T	(r) R	(D) H	CC-42	CC-44	CC-43
SNMG 120404-F SNMG 120408-F SNMG 120412-F	SNMG 431-F 432-F 433-F	1/2	3/16	1/64 1/32 3/64	.203	^ ^	^ ^	



'Y' Chipbreaker:

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(t) T	(r) R	(D) H	CC-42	CC-44	CC-43
SNMG 120404-Y SNMG 120408-Y SNMG 120412-Y	SNMG 431-Y 432-Y 433-Y	1/2	3/16	1/64 1/32 3/64	.203	^	^	



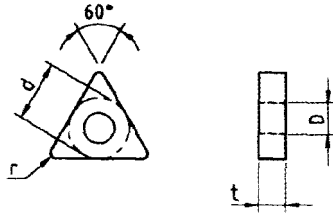
'G' Chipbreaker:

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(t) T	(r) R	(D) H	CC-42	CC-44	CC-43
SNMG 120404-G SNMG 120408-G SNMG 120412-G	SNMG 431-G 432-G 433-G	1/2	3/16	1/64 1/32 3/64	.203	^ +	^ +	

TNMG cermet

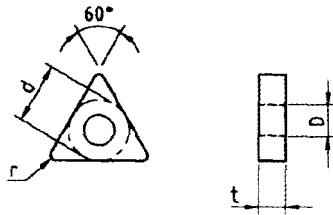
+ = in-stock standard

^ = non-stock standard



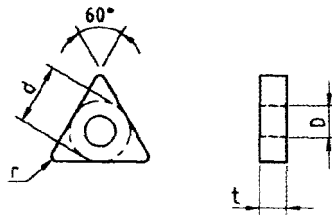
'F' Chipbreaker:

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(t) T	(r) R	(D) H	CC-42	CC-44	CC-43
TNMG 160404-F TNMG 160408-F TNMG 160412-F	TNMG 331-F 332-F 333-F	3/8	3/16	1/64 1/32 3/64	.150		^ ^	



'Y' Chipbreaker:

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(t) T	(r) R	(D) H	CC-42	CC-44	CC-43
TNMG 160404-Y TNMG 160408-Y TNMG 160412-Y	TNMG 331-Y 332-Y 333-Y	3/8	3/16	1/64 1/32 3/64	.150	^ ^ ^	^ ^ ^	



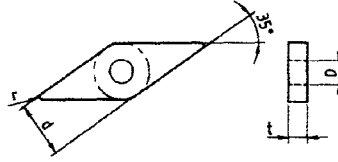
'G' Chipbreaker:

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(t) T	(r) R	(D) H	CC-42	CC-44	CC-43
TNMG 160404-G TNMG 160408-G TNMG 160412-G	TNMG 331-G 332-G 333-G	3/8	3/16	1/64 1/32 3/64	.150	^ +	^ +	

VNMG cermet

+ = in-stock standard

^ = non-stock standard



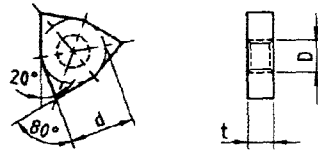
'G' Chipbreaker:

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		IC	T	R	H	CC-42	CC-44	CC-43
VNMG 160404-F VNMG 160408-F	VNMG 331-G 332-G	3/8	3/16	1/64 1/32	.150	^ ^	^ ^	

WNMG cermet

+ = in-stock standard

^ = non-stock standard



'Y' Chipbreaker:

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		IC	T	R	H	CC-42	CC-44	CC-43
WNMG 080404-Y WNMG 080408-Y WNMG 080412-Y	WNMG 431-Y 432-Y 433-Y	1/2	3/16	1/64 1/32 3/64	.203	^ ^	^ ^	



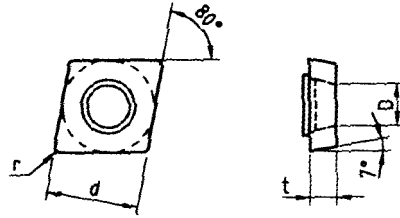
'G' Chipbreaker:

ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		IC	T	R	H	CC-42	CC-44	CC-43
WNMG 080404-G WNMG 080408-G WNMG 080412-G	WNMG 431-G 432-G 433-G	1/2	3/16	1/64 1/32 3/64	.203	^	^	

CCMT cermet

+ = in-stock standard

^ = non-stock standard

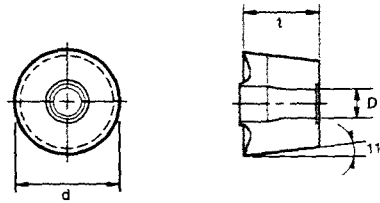


ISO DESIGNATION	DIMENSIONS				GRADES		
	(d)	(t)	(r)	(D)	CC-42	CC-44	CC-43
	IC	T	R	H			
CCMT 09T304 CCMT 09T308	3/8	5/32	1/64 1/32	.173	^	^	

RPMT cermet

+ = in-stock standard

^ = non-stock standard

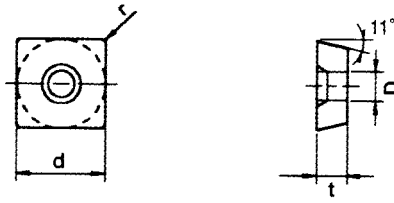


ISO DESIGNATION	DIMENSIONS				GRADES		
	(d)	(t)			CC-42	CC-44	CC-43
	IC	T					
RPMT 120300G RPMT 160400G	1/2	1/4				^	^

SPMW cermet

+ = in-stock standard

^ = non-stock standard

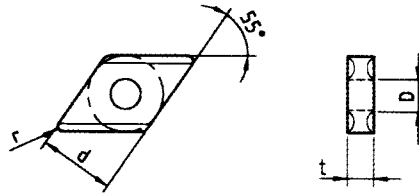


ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(t) T	(r) R	(D) H	CC-42	CC-44	CC-43
SPMW 090304 SPMW 090308	SPMW 321 322	3/8	1/4	1/64 1/32	.125		^	

DNGG cermet

+ = in-stock standard

^ = non-stock standard



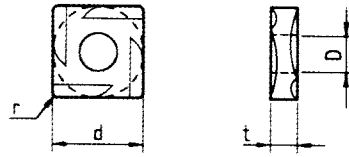
ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(t) T	(r) R	(D) H	CC-42	CC-44	CC-43
DNGG 150404R/L DNGG 150408R/L	DNGG 431R/L 432R/L	1/2	3/16	1/64 1/32	.203		^ ^	

DNGG 150604R/L DNGG 150608R/L	DNGG 441R/L 442R/L	1/2	1/4	1/64 1/32	.203		^ ^	
----------------------------------	-----------------------	-----	-----	--------------	------	--	--------	--

SNGG cermet

+ = in-stock standard

^ = non-stock standard

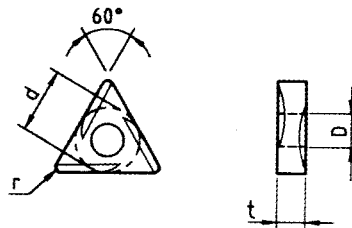


ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(t) T	(r) R	(D) H	CC-42	CC-44	CC-43
SNGG 120404R/L SNGG 120408R/L SNGG 120412R/L	SNGG 431R/L 432R/L 433R/L	1/2	3/16	1/64 1/32 3/64	.203		^	

TNGG cermet

+ = in-stock standard

^ = non-stock standard



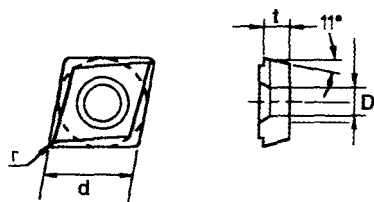
ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(t) T	(r) R	(D) H	CC-42	CC-44	CC-43
TNGG 160404R/L TNGG 160408R/L	TNGG 331R/L 332R/L	3/8	3/16	1/64 1/32	.150	^ ^	^ ^	

TNGG 220404R/L TNGG 220408R/L	TNGG 431R/L 432R/L	1/2	3/16	1/64 1/32	.203	^ ^	^ ^	
----------------------------------	-----------------------	-----	------	--------------	------	--------	--------	--

CPGT cermet

+ = in-stock standard

^ = non-stock standard

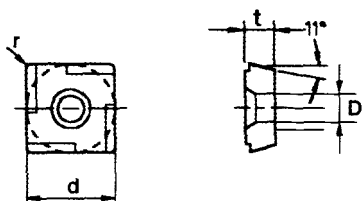


ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d)	(t)	(r)	(D)	CC-42	CC-44	CC-43
		IC	T	R	H			
CPGT 090304 CPGT 090308	CPGT 321 322	3/8	1/8	1/64 1/32	.150	^ ^	^ ^	

SPGT cermet

+ = in-stock standard

^ = non-stock standard

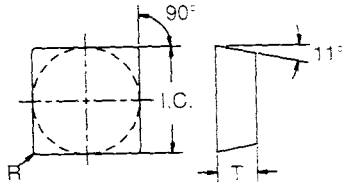


ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d)	(t)	(r)	(D)	CC-42	CC-44	CC-43
		IC	T	R	H			
SPGT 090304R/L SPGT 090308R/L	SPGT 321R/L 322R/L	3/8	1/8	1/64 1/32	.150	^ ^	^ ^	

SPG cermet

+ = in-stock standard

^ = non-stock standard

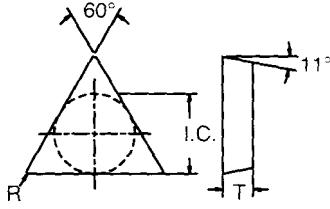


ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		IC	T	R	H	CC-42	CC-44	CC-43
SPGN 160304	SPG 321			1/64		^	^	
SPGN 160308	322			1/32		^	^	
SPGN 160312	323	3/8	1/8	3/64	—	^	^	
SPGN 160316	324			1/16		^	^	
SPGN 220404	SPG 431			1/64		^	^	
SPGN 220408	432			1/32		^	^	
SPGN 220412	433	1/2	3/16	3/64	—	^	^	
SPGN 220416	434			1/16		^	^	

TPG cermet

+ = in-stock standard

^ = non-stock standard

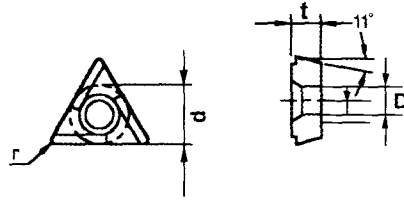


ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		IC	T	R	H	CC-42	CC-44	CC-43
TPGN 160304	TPG 321	3/8	1/8	1/64	—	+	^	
TPGN 160308				1/32		+	+	
TPGN 160312				3/64		^	^	
TPGN 160316				1/16		^	+	
TPGN 160404	TPG 331	3/8	3/16	1/64	—	^	^	
TPGN 160408				1/32		^	^	
TPGN 160412				3/64		^	^	
TPGN 160416				1/16		^	^	
TPGN 220404	TPG 431	1/2	3/16	1/64	—	^	^	
TPGN 220408				1/32		^	^	
TPGN 220412				3/64		^	^	
TPGN 220416				1/16		^	^	

TPGT cermet

+ = in-stock standard

^ = non-stock standard

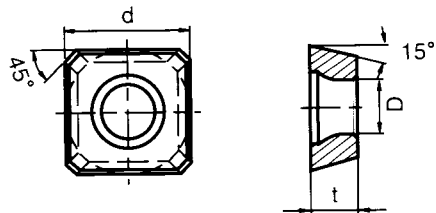


ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(t) T	(r) R	(D) H	CC-42	CC-44	CC-43
TPGT 110304R/L TPGT 110308R/L	TPGT 221R/L TPGT 222R/L	1/4	1/8	1/64 1/32	.138	^ ^	^ ^	
TPGT 160304R/L TPGT 160308R/L	TPGT 321R/L TPGT 322R/L	3/8	1/8	1/64 1/32	.177	^ ^	^ ^	

SDEW cermet

+ = in-stock standard

^ = non-stock standard

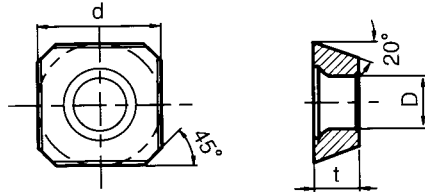


ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(t) T		(D) H	CC-42	CC-44	CC-43
SDEW 1204AZT	SDEW 43AZT	1/2	3/16		.205		^ ^	

SEHW cermet

+ = in-stock standard

^ = non-stock standard

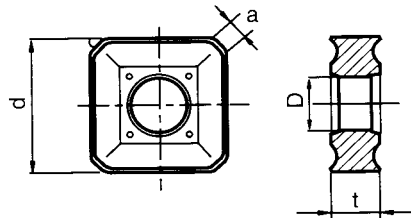


ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(t) T		(D) H	CC-42	CC-44	CC-43
SEHW 1204	SEHW 43	1/2	3/16		.217			^

SNK cermet

+ = in-stock standard

^ = non-stock standard

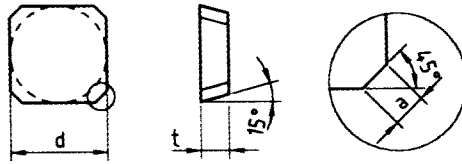


ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(t) T	(a) F	(D) H	CC-42	CC-44	CC-43
SNK 0903AEN	SNK 32AEN	3/8	1/8	.055	.150			^

SDCN cermet

+ = in-stock standard

^ = non-stock standard

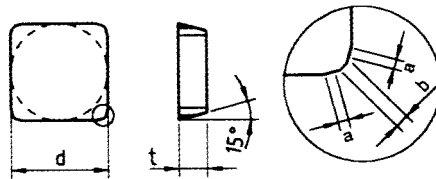


ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(t) T	(a) F		CC--42	CC--44	CC--43
SDCN 120EAETN SDCN 1504AETN	SDCN 42AETN SDCN 53AETN	1/2 5/8	1/8 3/16	.043 .043				^ ^

SDKN cermet

+ = in-stock standard

^ = non-stock standard

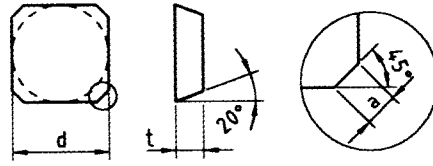


ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(t) T	(a) F1	(b) F2	CC--42	CC--44	CC--43
SDKN 1203AETN SDKN 1504AETN	SDKN 42AETN SDKN 53AETN	1/2 5/8	1/8 3/16	.020 .020	.055 .055			^ ^

SEKN cermet

+ = in-stock standard

^ = non-stock standard

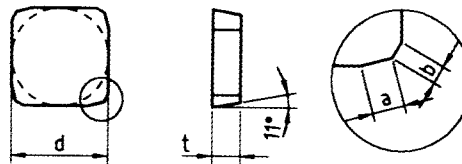


ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(t) T	(a) F		CC-42	CC-44	CC-43
SEKN 1203AFTN SEKN 1504AFTN	SEKN 42AFTN SEKN 53AFTN	1/2 5/8	1/8 3/16	.078 .078				^ ^

SPKN cermet

+ = in-stock standard

^ = non-stock standard

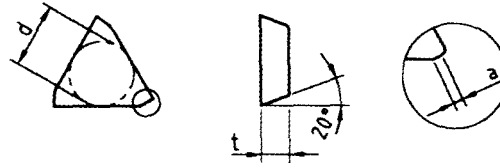


ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(t) T	(a) F1	(b) F2	CC-42	CC-44	CC-43
SPKN 1203EDR SPKN 1504EDR	SPKN 42EDR SPKN 53EDR	1/2 5/8	1/8 3/16	.055 .055	.039 .039			^ ^

TEKN cermet

+ = in-stock standard

^ = non-stock standard

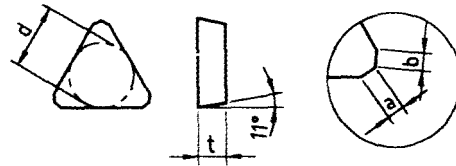


ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(t) T	(a) F		CC-42	CC-44	CC-43
TEKN 1603PETR TEKN 2204PETR	TEKN 32PETR TEKN 43PETR	3/8 1/2	1/8 3/16	.069 .069				^ ^

TPKN cermet

+ = in-stock standard

^ = non-stock standard



ISO DESIGNATION	INSERT STYLE	DIMENSIONS				GRADES		
		(d) IC	(t) T	(a) F1	(b) F2	CC-42	CC-44	CC-43
TPKN 1603PPR TPKN 2204PPR	TPKN 32PPR TPKN 43PPR	3/8 1/2	1/8 3/16	.027 .027	.055 .055			^ ^

THE **SC** COATING IS HERE...!

The results keep coming in...

the SC coating is, simply, the best coating on the market today. While it's enough for some customers to have it significantly increase their tool's life, others want to know why it works so well.

Two patented processes allow an extra hard, lubricious, pore-free, vacuum deposited coating at temperatures far below all known coating temperatures:

<u>Coating Process</u>	<u>Temperature</u>
CVD	1200°-1500° F
PVD	about 700° F
SC - PVD	below 200° F

Because of this ultra-low coating temperature, there is no change of material hardness or toughness and sharp edges can be coated easily.

With our patented Nano-Structure, we can deposit multiple layers of Boron and Boron Carbide for hardness, or Molybdenum Disulfide for lubricity, as well as several other elements for additional properties. All these layers add up to no more than 3 microns thick! The revolutionary technology behind these patents is why we see superior abrasion resistance and high lubricity.

Some hard data on **SC** :

Type of coating...	Nano-Structured, multi-layered, very low temp PVD
Thickness of coating...	1 – 3 microns
Hardness of coating...	3000 – 4500 Knoop
Coefficient of sliding friction...	less than 0.1

At minimal cost, you can significantly increase your customer's tool life AND significantly decrease his tooling costs! **Send us 2 – 3 of your insert today and we will coat them for free**, so you can see for yourself.

Yes, we can even put the SC coating over a coated tool!

Win back the business that you lost due to a competitor's lower price or superior performance.

Show your customer you're on the cutting edge of innovation / technology by introducing them to the SC coating!

Operation: Milling - Roughing

Material: Nodular Cast Iron

Insert:	3212796-T3-D2	3212796-T3-D2
	Carbide (a 'gold-coated' insert)	Carbide + SC Coating

Parts Machined:	2,100pcs	4,200pcs
------------------------	----------	----------

Results: Romay's SC coating increased the tool life of this carbide grade by 100% in rough milling of Nodular Cast Iron.