



# GOLD • RHINO



## INSERT STYLE

### VNGX-ML

- 35 degree included angle
- .312" IC
- Double-sided
- Peripheral Ground

## CORNER RADII

- .004" (0.1mm)
- .008" (0.2mm)
- .016" (0.4mm)

## GRADES

- K10 - Uncoated Carbide
- TT5080 - Submicron Carbide,  
PVD-TiAlN + TiN

**NEW  
PRODUCT  
ANNOUNCEMENT  
2017**


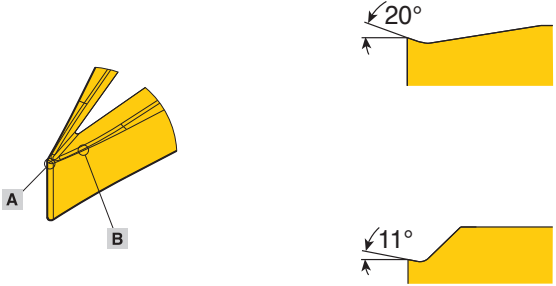
## A New VNGX Type ML Insert Line Launched for Gold • Rhino!

*Ingersoll is pleased to introduce the latest addition to the Gold Rhino product line, 35 degree included angle, VNGX inserts with a high positive, ML chip breaker.*

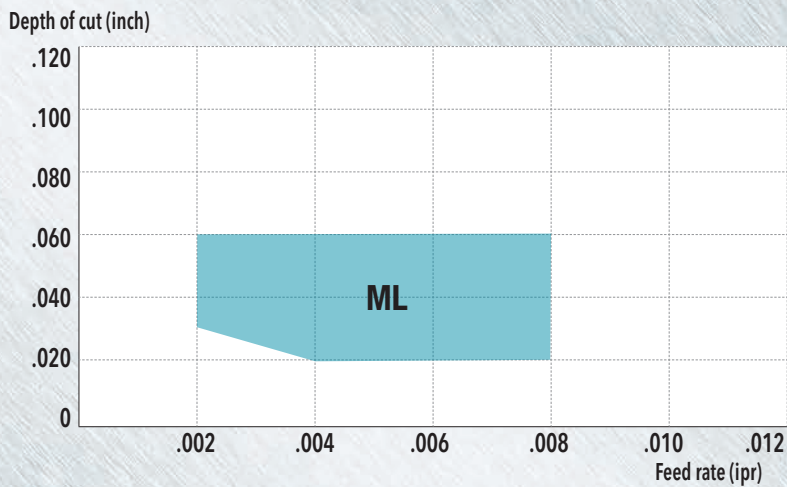
*These double-sided, "G" tolerance inserts feature a corner radius as small as .004" (0.1mm) and are peripheral ground to provide a sharper cutting edge that reduces cutting force and minimizes built-up-edge. The result is longer, more consistent tool life and excellent surface finish, particularly in stainless steels, high temp alloys and non-ferrous materials.*

*The VNGX-ML inserts join the existing Gold Rhino CNGG-ML (80 degree) and DNGX-ML (55 degree) inserts in forming a complete, economical solution for machining these gummy-like materials.*

## EDGE GEOMETRY OF THE ML CHIP BREAKER

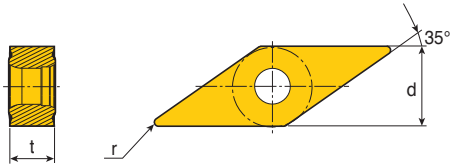
Chip breaker	Edge geometry
 <p data-bbox="326 684 399 709">VNGX ML</p>	

## CHIP BREAKER RANGE



- Insert : VNGX 2.531 (130404) ML
- Cutting speed (V) : 130 sfm
- Material : Inconel 718 (HB340~360)

## VNGX Negative 35° rhombic inserts



Size	Dimension (inch)		
	d	t	r
2.530	.312	.187	.004
2.530.5	.312	.187	.008
2.531	.312	.187	.016

Insert	Designation	Feed (ipr)	ap (inch)	PVD coated	Uncoated
				TT5080	K10
	<b>2.530(130401) ML</b>	.001 - .004	.004 - .040	●	●
	<b>VNGX 2.530.5(130402) ML</b>	.002 - .006	.008 - .050	●	●
	<b>2.531(130404) ML</b>	.002 - .008	.020 - .060	●	●

● : Standard items

## RECOMMENDED CUTTING SPEEDS (SFM)

ISO	Material	Condition	Tensile strength (N/mm <sup>2</sup> )	Hardness HB	Material No.	Cutting speed Vc(sfm)		
						PVD coated	Uncoated	
						TT5080	K10	
P	Non-alloy steel, cast steel, free cutting steel	< 0.25%C	Annealed	420	125	1		
		>= 0.25%C	Annealed	650	190	2		
		< 0.55%C	Quenched and tempered	850	250	3		
		>= 0.55%C	Annealed	750	220	4		
			Quenched and tempered	1000	300	5		
	Low alloy steel and cast steel (less than 5% of alloying elements)	Annealed		600	200	6		
				930	275	7		
		Quenched and tempered		1000	300	8		
				1200	350	9		
	High alloy steel, cast steel and tool steel	Annealed		680	200	10		
		Quenched and tempered		1100	325	11		
M	Stainless steel and cast steel	Ferritic / martensitic		680	200	12	520-1280	
		Martensitic		820	240	13	520-920	
		Austenitic		600	180	14	330-820	
K	Gray cast iron (GG)	Ferritic			160	15	360-590	
		Pearlitic			250	16	310-460	
	Cast iron nodular (GGG)	Ferritic			180	17	310-440	
		Pearlitic			260	18	290-410	
	Malleable cast iron	Ferritic			130	19	360-460	
		Pearlitic			230	20	290-410	
N	Aluminum - wrought alloy	Not cureable			60	21	650-3300	
		Cured			100	22	650-3300	
	Aluminum-cast, alloyed	<=12% Si	Not cureable			75	23	160-1300
			Cured			90	24	160-1640
		>12% Si	High temp.			130	25	130-1150
	Copper alloys	>1% Pb	Free cutting			110	26	160-1640
			Brass			90	27	160-1640
			Electrolytic copper			100	28	100-980
	Non-metallic		Duroplastics, fiber plastics				29	160-980
			Hard rubber				30	160-500
S	High temp. alloys	Fe based	Annealed			200	31	160-590
			Cured			280	32	130-520
		Ni or Co based	Annealed			250	33	150-330
			Cured			350	34	115-290
	Titanium, Ti alloys		Cast			320	35	100-260
				Rm 400			36	360-650
			Alpha+beta alloys cured	Rm 1050			37	160-330
H	Hardened steel	Hardened				55HRC	38	
		Hardened				60HRC	39	
	Chilled cast iron	Cast			400	40		
	Cast iron nodular	Hardened			55HRC	41		

■ Steel   
 ■ Stainless steel   
 ■ Cast iron   
 ■ Nonferrous   
 ■ High temp. alloys   
 ■ Hardened steel