ARNO TOOL-TIP

ARNO®
WERKZEUGE

NEW INDEXABLE INSERTS GRADES AP2615 / AP2625

INNOVATIONS

ENGINEERED TO RESIST CRATER WEAR AND FRACTURES IN STEEL MACHINING APPLICATIONS

These new CVD coated grades are engineered for superior resistance to crater wear in any P material group application. The highly ordered structure of the Aluminum Oxide layer results in a smoother (0.04 μm) surface which greatly reduces friction and heat at the cut zone.

There are 6 chip breakers to choose from for roughing, medium machining, and finishing operations on negative and positive insert styles.

- AP2615 is a wear resistant grade for stable continuous conditions at higher cutting speeds.
- AP2625 is a tougher, more versatile grade designed to resist fractures in less stable and interrupted cutting conditions.

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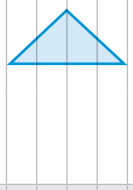
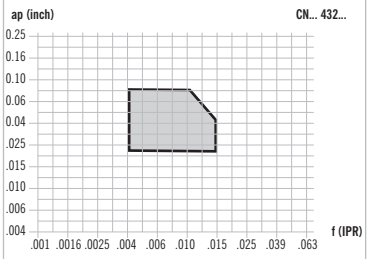
DESCRIPTION OF GRADES

HC - SOLID CARBIDE COATED

Grade	Coating color	Properties	Material group	Scope of application
			P M K N S H	Wear resistance ↔ Toughness 5 10 15 20 25 30 35 40 45
AP2615 CVD		• Improved crater wear resistance • Aligned crystals in the top layer • Fine-grained non-stick layer with very high hardness	●	 ●
AP2625 CVD		• Maximum reliability • Reduced adhesion due to special coating treatment • Improved adhesion between substrate and coating	●	●

PREFERRED GEOMETRY

NEGATIVE FOR FINISHING

Geometry	Properties	Material group	View/Cut	Chip fragment chart
		P M K N S H		
-NS1  	• Versatile geometry • Suited for mild Steel, Alloyed Steel as well as Stainless Steels and PH Stainless • Problem solver for stringy chips	● ● ●	Main cutting edge 	

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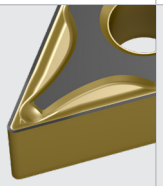
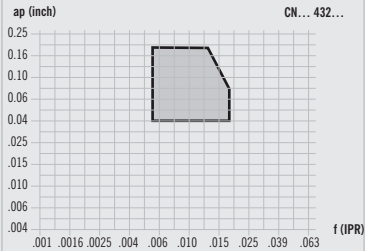
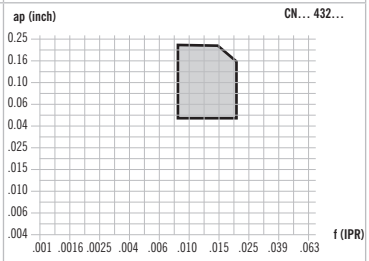
PREFERRED GEOMETRY

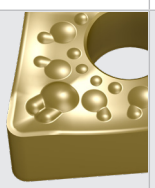
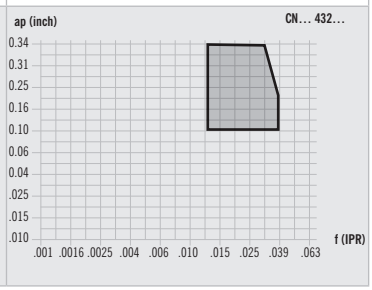
NEGATIVE FOR FINISH TO MEDIUM MACHINING

Geometry	Properties	Material group	View/Cut	Basic cutting data diagram
-NM2 	• Effective chip control in lighter depths of cut • Positive edge with neutral land for stability • Very well suited for medium machining of steel	P ● M ● K N S H	Main cutting edge  dimensions in mm	

NEGATIVE FOR MEDIUM TO ROUGH MACHINING

Geometry	Properties	Material group	View/Cut	Basic cutting data diagram
-NMG1 	• Versatile medium machining geometry • Effective in a wide range of alloys with many grade options • Excellent chip control in many applications	P ● M ● K ● N S ● H	Main cutting edge  dimensions in mm	

NEGATIVE FOR ROUGH MACHINING

Geometry	Properties	Material group	View/Cut	Chip Fragmentation Chart
-NR1 	• For roughing at aggressive feed rates and depths of cut - single sided insert • Chip breaker nodes limit chip contact in gullet, reducing friction and cratering • Strong, reinforced edge makes this geometry effective in unstable and interrupted conditions	P ● M ● K N S H	Main cutting edge  dimensions in mm	

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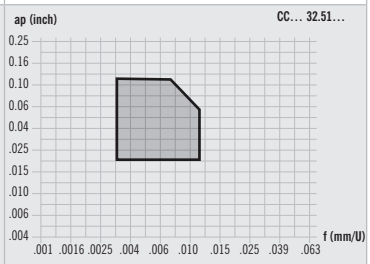
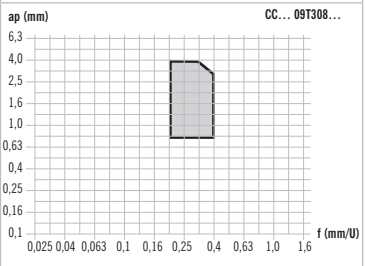
PREFERRED GEOMETRY

POSITIVE FOR FINISH TO MEDIUM MACHINING

Geometry	Properties	Material group	View/Cut	Chip fragmentation chart
-PM1 	• Positive edge exerts low cutting forces • Excellent chip control • Suited for machining Steel, Alloy Steel, Stainless Steels, and PH Stainless	P M K N S H ● ●	Main cutting edge 	

POSITIVE FOR MEDIUM TO ROUGH MACHINING

Geometry	Properties	Material group	View/Cut	Basic cutting data diagram
-AM 	• Our most aggressive positive geometry • Special nodes limit chip contact, reducing crater wear in aggressive applications • Mainly for Steel and Alloy Steel, problem solver in PH Stainless	P M K N S H ● ● ○ ○ ● ○	Main cutting edge 	

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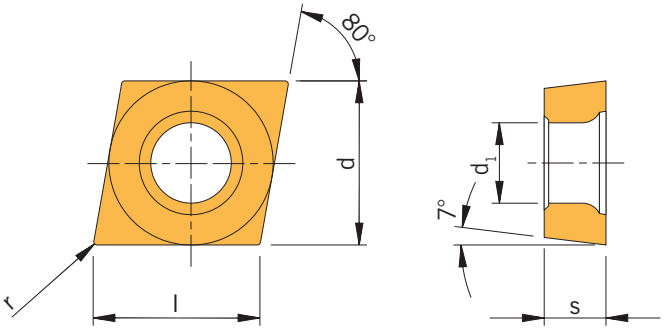
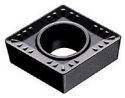
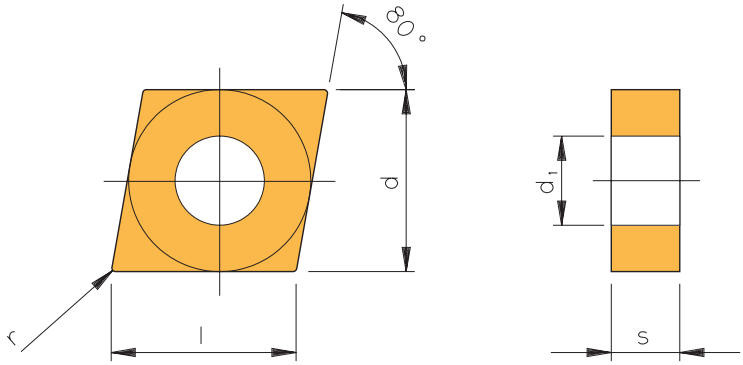
CCMT

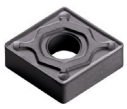


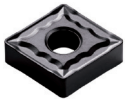


Designation ANSI ISO	r	f_n	a_p	HC AP2615	HC AP2625
CCMT 32.51AN-AM CCMT 09T304EN-AM	.016 0,4	.031 - .010 0,08 - 0,25	.016 - .118 0,40 - 3,0	◆	◆

CNMG







Designation ANSI ISO	r	f_n	a_p	HC AP2615	HC AP2625
CNMG 432AN-NM2 CNMG 120408EN-NM2	.032 0,8	.006 - .013 0,15 - 0,32	.031 - .118 0,8 - 3,0	◆	◆
CNMG 433AN-NM2 CNMG 120412EN-NM2	.047 1,2	.006 - .014 0,15 - 0,35	.031 - .140 0,8 - 3,5	◆	◆
CNMG 432AN-NMG1 CNMG 120408EN-NMG1	.032 0,8	.008 - .016 0,20 - 0,40	.031 - .236 0,8 - 6,0	◆	◆
CNMG 433AN-NMG1 CNMG 120412EN-NMG1	.047 1,2	.010 - .024 0,25 - 0,60	.040 - .236 1,0 - 6,0	◆	◆
CNMG 643AN-NMG1 CNMG 160612EN-NMG1	.047 1,2	.010 - .024 0,25 - 0,60	.047 - .314 1,2 - 8,0	◆	

CNMM

Designation ANSI ISO	r	f_n	a_p	HC AP2615	HC AP2625
CNMM 643AN-NR1 CNMM 160612EN-NR1	.047 1,2	.014 - .028 0,35 - 0,7	.047 - .354 1,2 - 9	◆	◆

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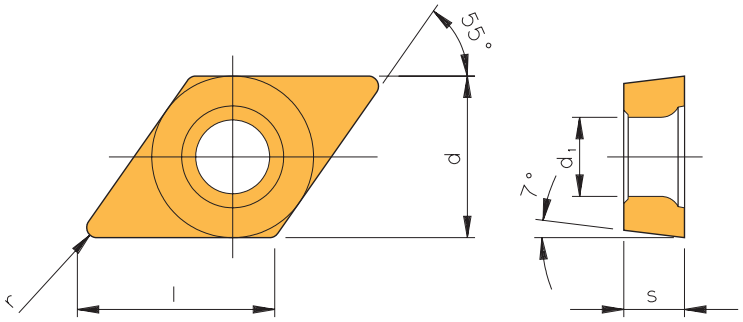
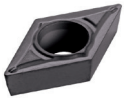
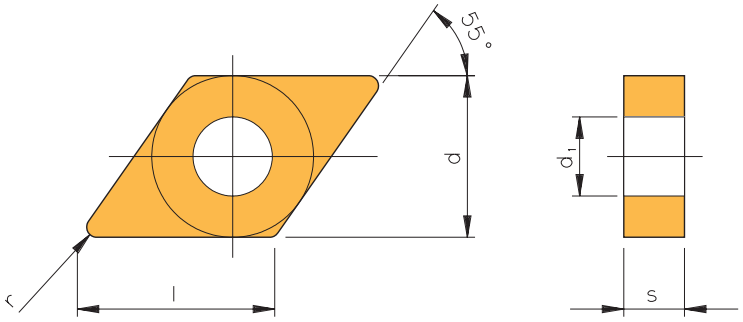
DCMT

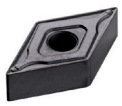


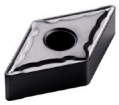


Designation ANSI / ISO	r	f_n	a_p	HC AP2615	HC AP2625
DCMT 32.51AN-AM DCMT 11T304EN-AM	**.016** 0,4	**.003 - .010** 0,08 - 0,25	**.016 - .118** 0,40 - 3,0	◆	◆
DCMT 32.51AM-PM1 DCMT 11T304EN-PM1	**.016** 0,4	**.003 - .010** 0,08 - 0,25	**.016 - .118** 0,40 - 3,0	◆	◆

DNMG







Designation ANSI / ISO	r	f_n	a_p	HC AP2615	HC AP2625
DNMG 442AN-NM2 DNMG 150608EN-NM2	**.032** 0,8	**.006 - .010** 0,15 - 0,25	**.031 - .118** 0,8 - 3,0	◆	◆
DNMG 442AN-NMG1 DNMG 150608EN-NMG1	**.032** 0,8	**.006 - .014** 0,15 - 0,35	**.031 - .200** 0,8 - 5,0	◆	◆
DNMG 443AN-NMG1 DNMG 150612EN-NMG1	**.047** 1,2	**.004 - .022** 0,20 - 0,55	**.039 - .200** 1,0 - 5,0	◆	◆
DNMG 332AN-NS1 DNMG 110408EN-NS1	**.032** 0,8	**.003 - .010** 0,08 - 0,25	**.016 - .118** 0,4 - 3,0		◆
DNMG 443AN-NS1 DNMG 150612EN-NS1	**.047** 1,2	**.008 - .022** 0,20 - 0,55	**.039 - .200** 1,0 - 5,0		◆

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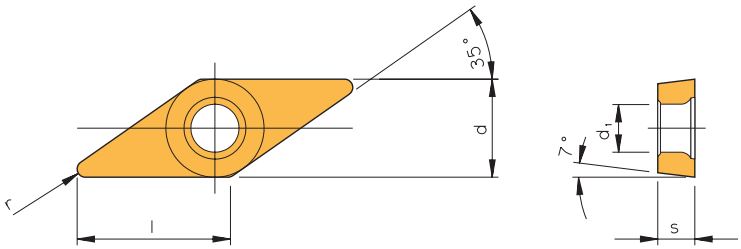
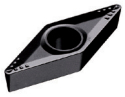
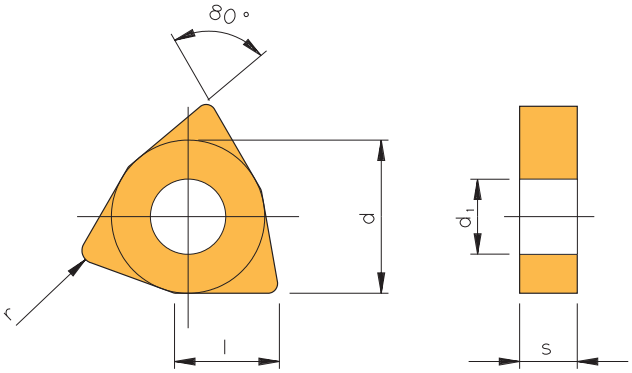
VCMT

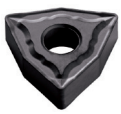




Designation ANSI / ISO	r	f_n	a_p	HC AP2615	HC AP2625
VCMT 331AN-AM VCMT 160404EN-AM	**.016** 0,4	**.003 - .008** 0,08 - 0,20	**.016 - .080** 0,4 - 2,0	◆	◆
VCMT 221AN-PM1 VCMT 110304EN-PM1	**.016** 0,4	**.003 - .008** 0,08 - 0,20	**.016 - .060** 0,4 - 1,5	◆	◆
VCMT 331AN-PM1 VCMT 160404EN-PM1	**.016** 0,4	**.003 - .008** 0,08 - 0,20	**.016 - .080** 0,4 - 2,0	◆	◆
VCMT 332AN-PM1 VCMT 160408EN-PM1	**.032** 0,8	**.005 - .012** 0,12 - 0,30	**.020 - .080** 0,5 - 2,0	◆	◆

WNMG





Designation ANSI / ISO	r	f_n	a_p	HC AP2615	HC AP2625
WNMG 431AN-NM2 WNMG 080404EN-NM2	**.016** 0,4	**.004 - .008** 0,10 - 0,20	**.020 - .118** 0,5 - 3,0	◆	◆
WNMG 432AN-NM2 WNMG 080408EN-NM2	**.032** 0,8	**.006 - .013** 0,15 - 0,32	**.032 - .118** 0,8 - 3,0	◆	◆
WNMG 432AN-NMG1 WNMG 080408EN-NMG1	**.032** 0,8	**.008 - .016** 0,20 - 0,40	**.032 - .236** 0,8 - 6,0	◆	◆
WNMG 433AN-NMG1 WNMG 080412EN-NMG1	**.047** 1,2	**.010 - .024** 0,25 - 0,60	**.039 - .236** 1,0 - 6,0	◆	◆

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ARNO® WERKZEUGE

RECOMMENDED CUTTING DATA

Werkstoff-gruppe	Structure of the material groups and identification letters			Brinell hardness HB	Tensilestrength Rm (N/mm²)	Chipping group	Cutting speed Vc (SFM) HC	
							AP2615	AP2625
P	Unalloyed steel	C ≤ 0.25 %	annealed	125	428	P1	460 - 771 - 1100	330 - 590 - 850
		C > = 0.25 ... > = 0.55 %	annealed	190	639	P2	460 - 771 - 1100	330 - 590 - 850
		C > = 0.25 ... > = 0.55 %	hardened and tempered	210	708	P3	395 - 690 - 984	260 - 525 - 790
		C ≤ 0.55 %	annealed	190	639	P4	395 - 690 - 984	260 - 525 - 790
		C ≤ 0.55 %	hardened and tempered	300	1013	P5	395 - 690 - 984	260 - 525 - 790
		Machinig steel (short-clipping)	annealed	220	745	P6	395 - 690 - 984	260 - 525 - 790
	Low alloyed steel	annealed		175	591	P7	395 - 690 - 984	260 - 525 - 790
		hardened and tempered		300	1013	P8	360 - 640 - 920	260 - 475 - 690
		hardened and tempered		380	1282	P9	295 - 560 - 820	230 - 410 - 590
		hardened and tempered		430	1477	P10	295 - 560 - 820	230 - 410 - 590
	High alloyed steel and high alloyed tool steel	annealed		200	675	P11	360 - 640 - 920	260 - 475 - 690
		hardened		300	1013	P12	360 - 640 - 920	260 - 475 - 690
		hardened		400	1361	P13	295 - 560 - 820	230 - 410 - 590
	Stainless steel	ferretic / martensitic, annealed		200	675	P14	360 - 640 - 920	260 - 475 - 690
		martensitic, hardened and tempered		330	1114	P15	295 - 560 - 820	230 - 410 - 590

The recommended cutting data are only approximate values. It may be necessary to adjust them to each individual machining application. HC = Solid carbide coated

ACHIEVE AN IMMEDIATE INCREASE IN TOOL LIFE

Innovate your turning process even further by utilizing the ARNO 3D HYBRID through coolant tool holders

- Increase tool life... 150% or more over conventional tool holders
- Additive manufacturing technology, outperforms the leading through coolant tool holders
- Targeted coolant to the insert rake face and flank
- No cross drilled ports mean higher flow and fewer clogs

ARNO 3D printed tool holders: Innovation inside and out

https://arnousa.com/solutions/through-coolant-iso-turn

Thru Cool ISO

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