ARNO TOOL-TIPP

ARNO® WERKZEUGE

WE LIVE QUALITY TOOLING

PRECISION-PRESSED WP1 WIPER GEOMETRY

CONSISTENTLY GOOD SURFACES FOR SMALL COMPONENTS

YOUR BENEFITS

WP1 WIPER Geometry

Ideal for swiss type machining applications

Twice the surface finish with the same feed rate

Same surface finish with double the feed rate

Higher productivity due to higher feed rates

Various insert types available:
CC..., DC...

ARNO TOOL-TIPP

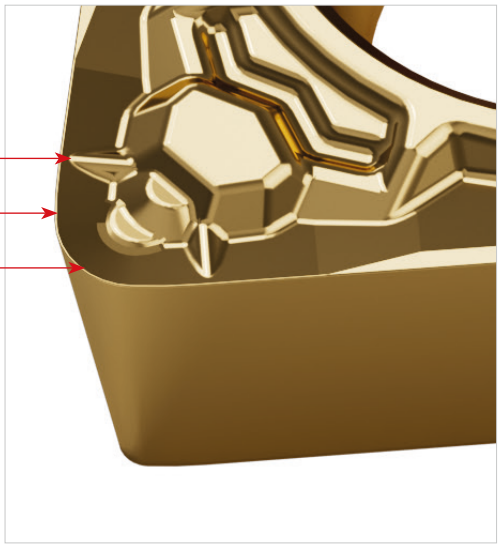
PRECISION-PRESSED WP1 WIPER GEOMETRY.

Ideal for swiss type machining applications and the machining of small components.

The strong advantages of a WIPER geometry combined with our latest grades make this insert one of the best of its kind.

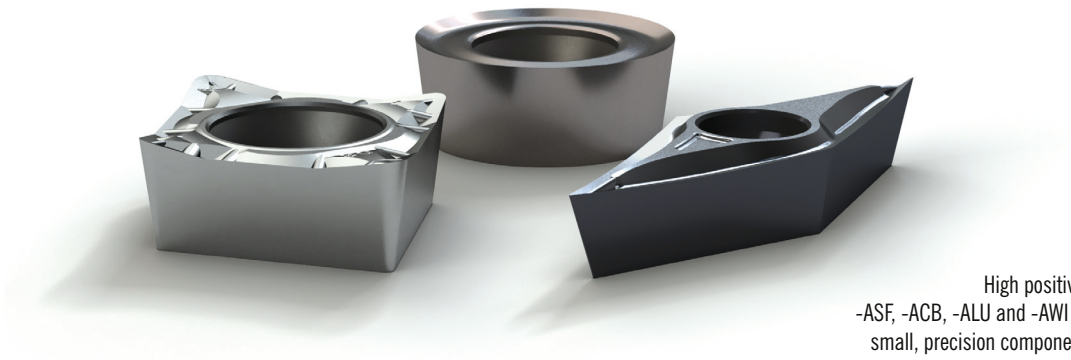
Properties:

- The leading geometry enables small infeeds.
- The WIPER cutting edge offers consistently good surfaces.
- The cutting edge ensures good cutting availability.



The perfect complement - High positive indexable inserts.

For the high-precision machining of demanding materials and small, precision components, ARNO offers the world's largest variety of high positive indexable inserts. In addition to the standard variants, the programme also includes finely graded intermediate sizes and rounded cutting edges - always peripherally ground.



High positive indexable inserts in the geometries -ASF, -ACB, -ALU and -AWI are ideal for long-chipping materials, small, precision components and the highest surface qualities.

CHIP PROBLEMS ELIMINATED!

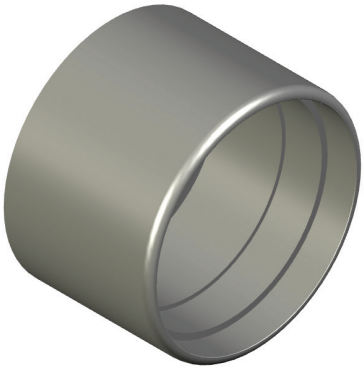
WP1 Geometry – Longitudinal turning | Bushing

WP1 Geometry in a practical test

Result	Component

Material: 20MnCr5 (1.7147)
Tool: Special holder
Indexable insert: DCMX 11T308EN-WP1
Grade: AP2615

	Competitor	ARNO Werkzeuge
D	5.0315 in	5.0315 in
VC	1312 ft/min	1312 ft/min
FN	0.0138 in/rev	0.0138 in/rev
AP	0.0157 in	0.0079 in
Machining	Longitudinal turning	Longitudinal turning
Cooling	Emulsion	Emulsion



Competitor components	155 pieces
ARNO components	250 pieces

Your benefits:

- Chip problem eliminated - safe process
- Optimum price-performance ratio
- Tool life increased by 60%

ARNO TOOL-TIPP

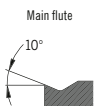
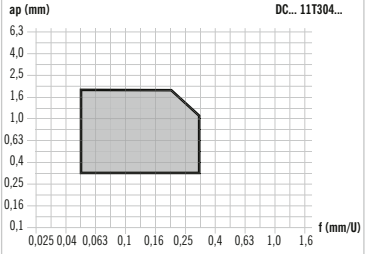
GRADE DESCRIPTION

HC – CARBIDE COATED

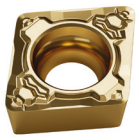
Grade	Coating colour	Properties	Material group	Scope of application
			P M K N S H	WEAR RESISTANCE 5 10 15 20 25 30 35 40 45 TOUGHNESS
AP2615 CVD		• Improved crater wear resistance • Aligned crystals in the top layer • Fine-grained non-stick layer with very high hardness	●	
AP2625 CVD		• Maximum reliability • Reduced adhesion due to special coating treatment • Improved adhesion between substrate and coating	●	
AM2620 CVD		• Very good for high cutting speeds in full cuts • Improved fracture toughness • Increased notch wear resistance	●	
AM2630 CVD		• Excellent wear resistance • Very good in all machining conditions • Long tool life due to very good process stability	●	

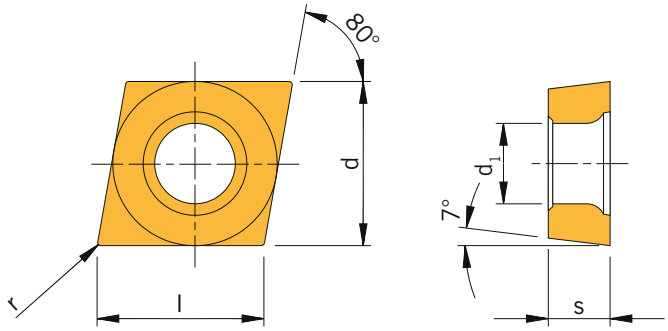
GEOMETRY DESCRIPTION

POSITIVE FINISHING TO MEDIUM MACHINING

Geometry	Properties	Material group	View/Cut	Basis cutting data diagram
		P M K N S H		
-WP1 WIPER  	• WIPER geometry for finishing steel and VA • Very high surface finishes at normal feed rates • Normal surface finishes at high feed rates	● ○		

CCMX





Designation ANSI ISO	r INCH mm	f_n INCH mm	a_p INCH mm	HC/EDP.-No AP2615	 AP2625	HC/EDP.-No AM2620	 AM2630
CCMX 32.51AN-WP1 CCMX 09T304EN-WP1	0.016 0.4	0.002 - 0.0138 0.05 - 0.35	0.012 - 0.07 0.3 - 1.8	125683	125684	125687	125688
CCMX 32.52AN-WP1 CCMX 09T308EN-WP1	0.032 0.8	0.002 - 0.0138 0.05 - 0.35	0.012 - 0.07 0.3 - 1.8	125686	125685	125690	125689

HC = Carbide coated

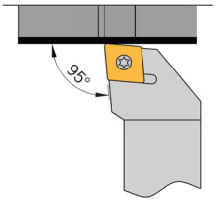
P	●	●		
M			●	●
K				
N				
S				
H				

● Main application
○ Secondary application

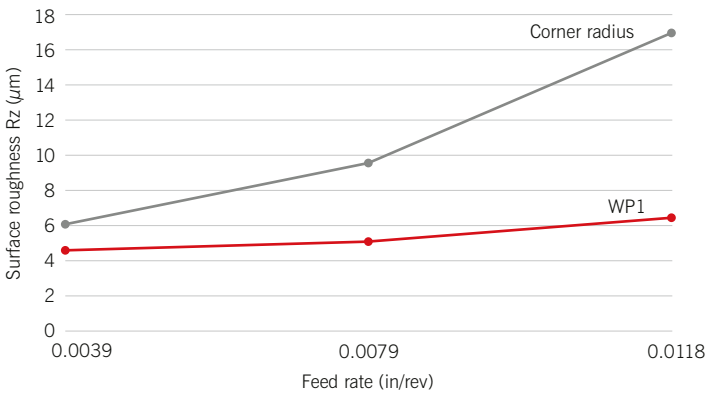
Maximum feed rate for WP1

Designation	Maximum feed rate
CCMX 09T304EN-WP1	0.0138 in/rev
CCMX 09T308EN-WP1	0.0138 in/rev

Setting angle for WP1



Machined surface roughness



Material:	1.7027 (Internal boring)
WIPER Insert:	CCMX 09T308EN-WP1
Cutting conditions:	Vc = 328 ft/min
	ap = 0.0197 in
	Wet machining

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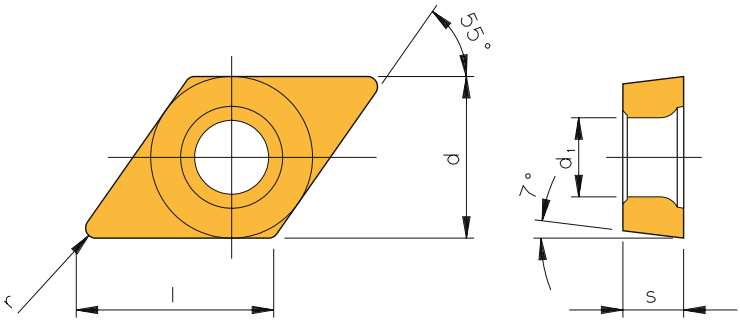
DCMX



Designation ANSI ISO	r INCH mm	f_n INCH mm	a_p INCH mm	HC/EDP.-No		HC/EDP.-No	
				AP2615	AP2625	AM2620	AM2630
DCMX 32.51AN-WP1 DCMX 11T304EN-WP1	0.016 0.4	0.002 - 0.0098 0.05 - 0.25	0.012 - 0.07 0.3 - 1.8	125675	125676	125677	125678
DCMX 32.52AN-WP1 DCMX 11T308EN-WP1	0.032 0.8	0.002 - 0.0138 0.05 - 0.35	0.012 - 0.07 0.3 - 1.8	125681	125682	125680	125679

HC = Carbide coated

P	●	●		
M			●	●
K				
N				
S				
H				

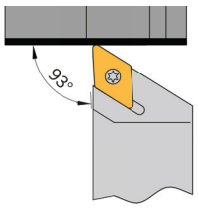
● Main application

○ Secondary application

Maximum feed rate for WP1

Designation	Maximum feed rate
DCMX 11T304EN-WP1	0.0098 in/rev
DCMX 11T308EN-WP1	0.0138 in/rev

Setting angle for WP1



RECOMMENDED CUTTING DATA

Material group	Structure of the material groups and identification letters			Brinell hardness HB	Tensile strength Rm (N/mm²)	Chipping group	Cutting speed V_c (m/min) HC			
							AP2615	AP2625	AM2620	AM2630
P	Unalloyed steel	C ≤ 0.25 %	annealed	125	428	P1	140 - 235 - 330	100 - 180 - 260	-	-
		C > = 0.25 ... > = 0.55 %	annealed	190	639	P2	140 - 235 - 330	100 - 180 - 260	-	-
		C > = 0.25 ... > = 0.55 %	hardened and tempered	210	708	P3	120 - 210 - 300	80 - 160 - 240	-	-
		C ≤ 0.55 %	annealed	190	639	P4	120 - 210 - 300	80 - 160 - 240	-	-
		C ≤ 0.55 %	hardened and tempered	300	1013	P5	120 - 210 - 300	80 - 160 - 240	-	-
		Machinig steel (short-clipping)	annealed	220	745	P6	120 - 210 - 300	80 - 160 - 240	-	-
	Low alloyed steel	annealed		175	591	P7	120 - 210 - 300	80 - 160 - 240	-	-
		hardened and tempered		300	1013	P8	110 - 195 - 280	80 - 145 - 210	-	-
		hardened and tempered		380	1282	P9	90 - 170 - 250	70 - 125 - 180	-	-
		hardened and tempered		430	1477	P10	90 - 170 - 250	70 - 125 - 180	-	-
	High alloyed steel and high alloyed tool steel	annealed		200	675	P11	110 - 195 - 280	80 - 145 - 210	-	-
		hardened		300	1013	P12	110 - 195 - 280	80 - 145 - 210	-	-
		hardened		400	1361	P13	90 - 170 - 250	70 - 125 - 180	-	-
	Stainless steel	ferretic / martensitic, annealed		200	675	P14	110 - 195 - 280	80 - 145 - 210	140 - 190 - 235	140 - 190 - 235
		martensitic, hardened and tempered		330	1114	P15	90 - 170 - 250	70 - 125 - 180	100 - 140 - 180	100 - 140 - 180
M	Stainless steel	austenitic, chilled		200	675	M1	-	-	120 - 165 - 210	120 - 165 - 210
		austenitic, precipitation-hardened (PH)		300	1013	M2	-	-	70 - 90 - 110	70 - 90 - 110
		austenitic-ferritic, Duplex		230	778	M3	-	-	70 - 90 - 110	70 - 90 - 110
K	Malleable cast iron	ferritic		200	675	K1	-	-	-	-
		pearlitic		260	867	K2	-	-	-	-
	Cast iron	low tensile strength		180	602	K3	-	-	-	-
		high tensile strength / austenitic		245	825	K4	-	-	-	-
	Cast iron with nodular graphite	ferritic		155	518	K5	-	-	-	-
		pearlitic		265	885	K6	-	-	-	-
	GGV (CGI)			200	675	K7	-	-	-	-
N	Aluminium alloys long chipping	not heat treatable		30	-	N1	-	-	-	-
		heat treatable, heat treated		100	343	N2	-	-	-	-
	Casted aluminium alloys	≤ 12 % Si, not heat treatable		75	260	N3	-	-	-	-
		≤ 12 % Si, heat treatable, heat treated		90	314	N4	-	-	-	-
		> 12 % Si, not heat treatable		130	447	N5	-	-	-	-
	Magnesium alloys	> 12 % Si, not heat treatable		70	250	N6	-	-	-	-
	Copper and copper alloys (Brass / Bronze)	Unalloyed, elektrolyte copper		100	343	N7	-	-	-	-
		Brass, Bronze		90	314	N8	-	-	-	-
		Cu-alloys, short-chipping		110	382	N9	-	-	-	-
		High-tensile, Ampco		300	1013	N10	-	-	-	-
	Non-ferrous materials	Lead alloys (without abrasive filling material)		-	-	N11	-	-	-	-
		Duroplastic (without abrasive filling material)		-	-	N12	-	-	-	-
		Plastic glas fibre reinforced GFRP		-	-	N13	-	-	-	-
		Plastic carbon fibre reinforced CFRP		-	-	N14	-	-	-	-
		Plastic aramid fibre reinforced AFRP		-	-	N15	-	-	-	-
		Graphite (tech.)		80 Shore	-	N16	-	-	-	-
S	High temperature resistant alloys	Fe-based	annealed	200	675	S1	-	-	-	-
		Fe-based	heat treated	280	943	S2	-	-	-	-
		Ni- or Co-alloyed	annealed	250	839	S3	-	-	-	-
		Ni- or Co-alloyed	heat treated	350	1177	S4	-	-	-	-
		Ni- or Co-alloyed	casting	320	1076	S5	-	-	-	-
	Titanium alloys	Pure titan		200	675	S6	-	-	-	-
		α- and β-alloys, heat treated		375	1262	S7	-	-	-	-
		β-alloys		410	1396	S8	-	-	-	-
	Wolfram alloys			300	1013	S9	-	-	-	-
	Molybdän alloys			300	1013	S10	-	-	-	-
H	Hardened steel	hardened		50 HRC	-	H1	-	-	-	-
		hardened		55 HRC	-	H2	-	-	-	-
		hardened		60 HRC	-	H3	-	-	-	-
	Hardened cast iron	hardened		55 HRC	-	H4	-	-	-	-

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

HC = Carbide coated

All dimensions in mm

ARNO®
WERKZEUGE

OUTSTANDING VERSATILE AND INNOVATIVE.

Turning and Swiss type machining, grooving, drilling or milling – whatever your requirements may be, it's worth your while to take a look at ARNO. We have a solution for almost every metalworking application. We have the right mix of experience, pioneering spirit and quality to ensure that you get the best out of your production with the right tool systems, tool management solutions and clever innovations.

For detailed information about our innovative systems, visit **www.arno.de**

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