

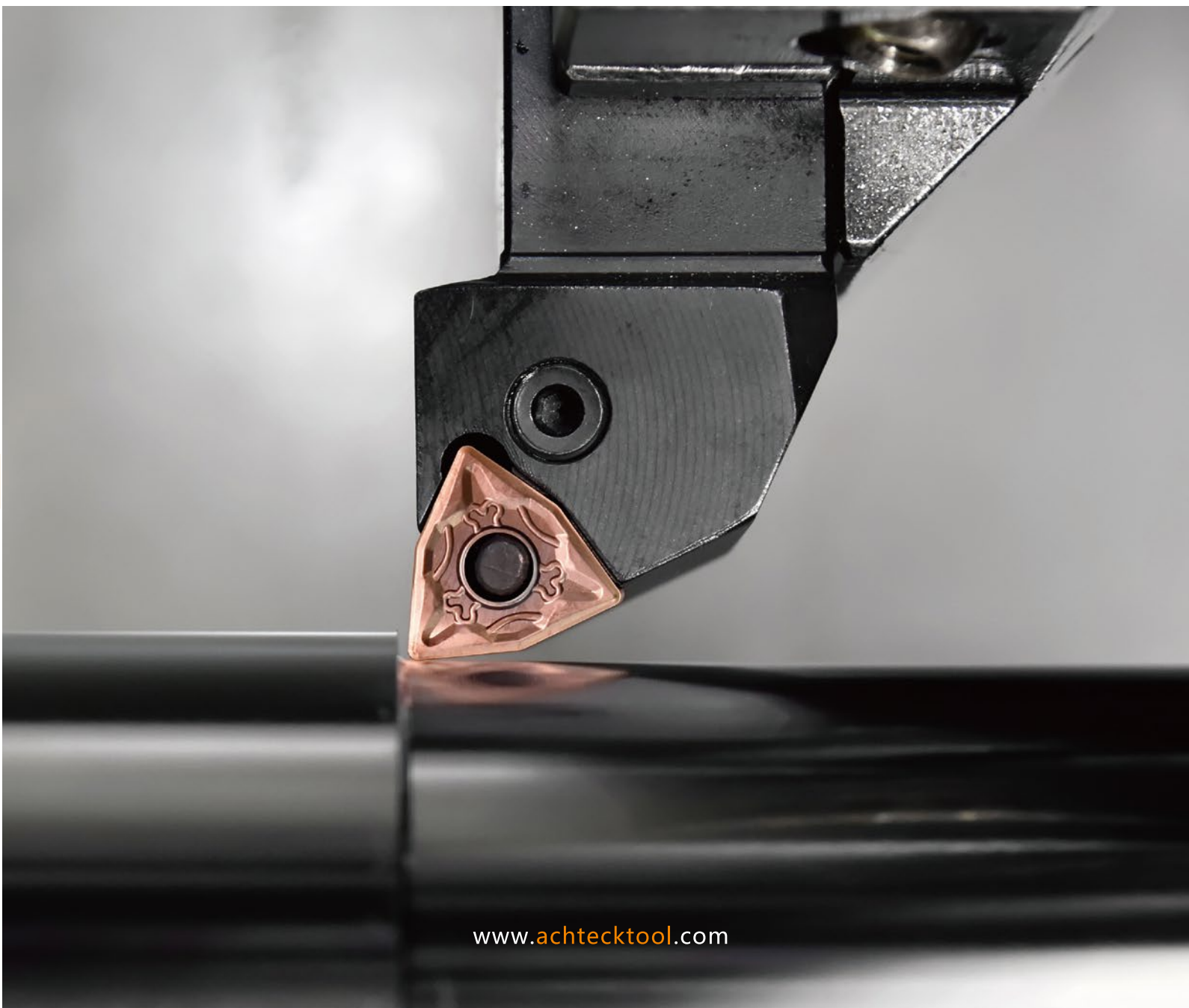
ACHTECK

NEW
PRODUCT!

AP301M

New Turning PVD coated grade for stainless steels

“Exceptional machining performance , minimized build-up edge
and better surface finish”



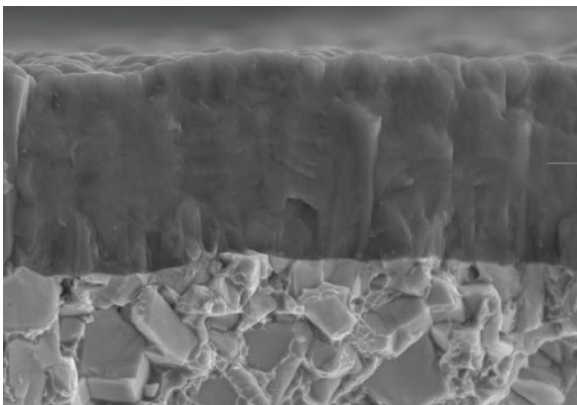
Achteck is launching a new turning PVD grade-the AP301M which provides excellent machining performance on stainless steels. This grade has sub-micron carbide substrate with Nano-layered PVD coating. Hardness, toughness and oxidation resistance are enhanced for higher cutting speed machining. Besides, with post surface treatment after coating, AP301M can provide better surface finish on the work piece.

The new grade is defined as a longer tool life and less build-up edge effect at higher cutting speed on stainless steels. Performance reliability has been enhanced and machining cost is remarkably reduced.

AP301M can be used for continuous cutting and interrupted cutting in stainless steel machining.

◆ AP301M Grade Futures

Kind of coating:PVD
ISO range:M15-M35



Nano layered PVD coating enhanced hardness and oxidation resistance

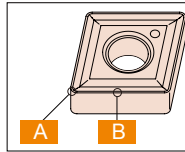
Submicron carbide substrate combined medium hardness and toughness

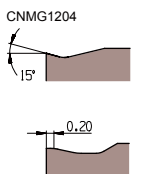
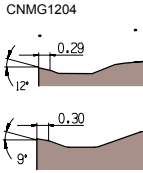
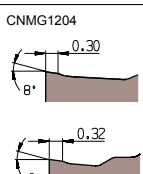
<SEM micro structure>

- ◆ Submicron carbide substrate based on Nano layered PVD coating
- ◆ Excellent wear resistance and chipping resistance.
- ◆ Very good smooth surface finish provides minimized build-up edge and longer tool life at higher cutting speed
- ◆ Enhanced machining performance reliability
- ◆ Can be used in continuous cut and interrupted cut
- ◆ For turning on stainless steel

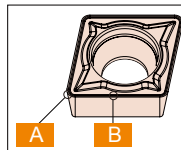
♦ Chip breaker Featrues

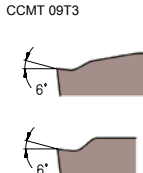
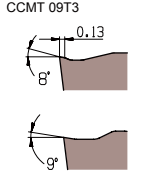
Negative insert



Chip breaker name	Edge preparation		Feature
MB2		CNMG1204 	- For finishing - Good chip breaking at lower feed and small depth of cut
MC3		CNMG1204 	- For medium - Stable for stainless steel
MC4		CNMG1204 	- For roughing - Low cutting force in roughing due to positive rake angle - Reliable performance in roughing

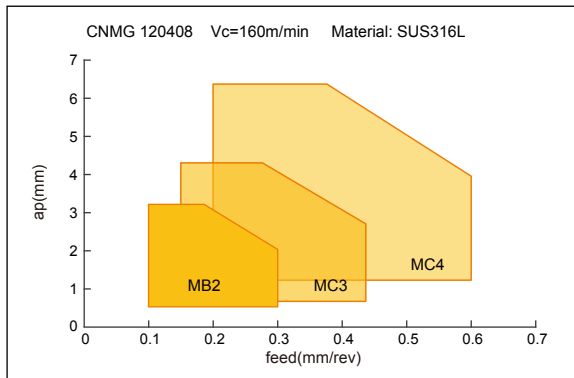
Positive insert



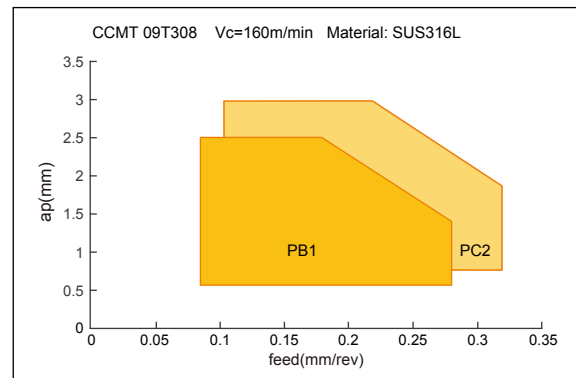
Chip breaker name	Edge preparation		Feature
PB1		CCMT 09T3 	- For finishing - Good chip controlling at lot feed and small depth of cut
PC2		CCMT 09T3 	- Wide range application - For semi finishing to medium turning - First choice chip breaker for positive insert

◆ Chip breaker diagram

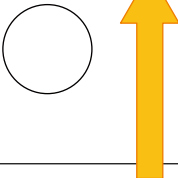
Negative insert



Positive insert



◆ Select the best insert for machining on stainless steel in AP301M

Cutting conditions	Machining areas	Select of Insert	
		Negative insert	Positive insert
 Stable machining	Finishing	MB2 	PB1 
 General machining	Medium	MC3 	PC2 
 Unstable machining	Roughing	MC4 	

Recommended cutting speed by materials

Material		Cutting speed (m/min)		
		Feed(min)	Feed(medium)	Feed(max)
Austenitic+Ferritic stainless steel	300 series	180	140	110
Martensitic stainless steel	400 series	300	210	150
Precipitation-hardening stainless steel	PH	160	130	70

Remark) The recommended cutting speed always refer to general conditons. These cutting speed should be adjusted according to the practical machine rigidity, tools, work piece clamping and coolants.(The feed rate refer corner radius)

Case stories

Component description: Annular

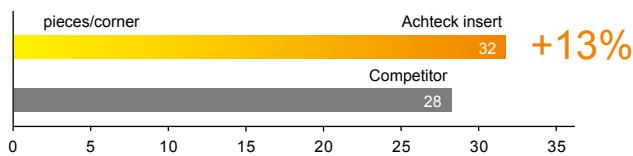
Material: 304 stainless steel

Insert: WNMG 080408E-MC3 AP301M

Competitor: WNMG 080408, PVD coated grade

Cutting Parameters: V=200m/min, f=0.26mm/rev,
ap=1.0mm, wet cutting

External turning, Continuous cut



Component description: Cylinder

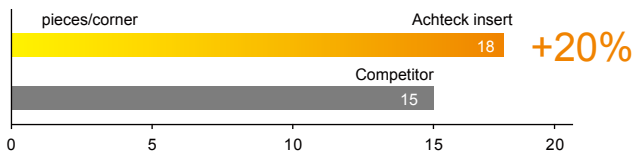
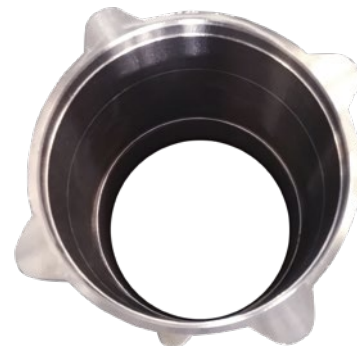
Material: 304 stainless steel

Insert: CNMG 120408E-MC3 AP301M

Competitor: CNMG 120408, PVD coated grade

Cutting Parameters: V=85~110m/min, f=0.15~0.2mm/rev,
ap=1.0~2.0mm, wet cutting

Internal turning, Continuous cut



Component description: Head

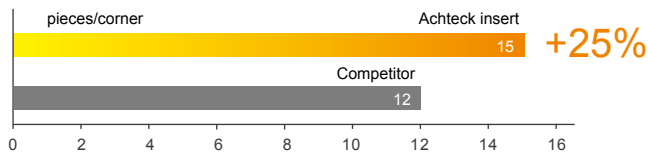
Material: 316 stainless steel

Insert: WNMG 080408E-MC3 AP301M

Competitor: WNMG 080408, PVD coated grade

Cutting Parameters: $V=75\text{m/min}$, $f=0.15\text{mm/rev}$,
 $a_p=0.8\text{mm}$, wet cutting

External turning, Continuous cut



Component description: Union Joint

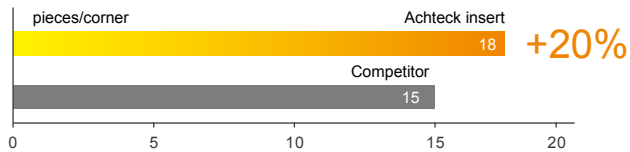
Material: 316 stainless steel

Insert: WNMG 080408E-MC3 AP301M

Competitor: WNMG 080408, PVD coated grade

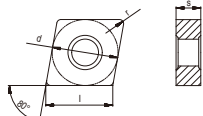
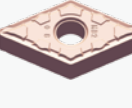
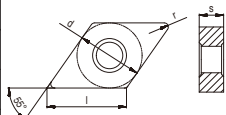
Cutting Parameters: $V=100\text{m/min}$, $f=0.15\text{mm/rev}$,
 $a_p=0.5\text{mm}$, wet cutting

External turning, Interrupted cut

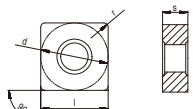
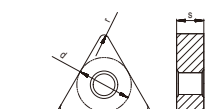
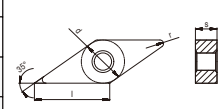


Stock items

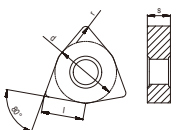
Negative insert

Insert	Item designation	Recommended cutting parameters		Dimension(mm)				Grade (PVD)	Geometry
		Feed (mm/rev)	ap (mm)	d	l	s	r	AP301M	
	CNMG 120404E-MB2	0.05-0.15	0.26-3.2	9.52	9.67	4.76	0.4	●	
	120408E-MB2	0.10-0.30	0.52-3.2	9.52	9.67	4.76	0.8	●	
	CNMG 120404E-MC3	0.08-0.22	0.32-4.3	12.7	12.9	4.76	0.4	●	
	120408E-MC3	0.15-0.44	0.64-4.3	12.7	12.9	4.76	0.8	●	
	120412E-MC3	0.23-0.66	0.96-4.3	12.7	12.9	4.76	1.2	●	
	120416E-MC3	0.30-0.88	1.28-4.3	12.7	12.9	4.76	1.6	●	
	160608E-MC3	0.15-0.44	0.64-5.3	15.87	16.1	6.35	0.8	●	
	160612E-MC3	0.23-0.66	0.96-5.3	15.87	16.1	6.35	1.2	●	
	160616E-MC3	0.30-0.88	1.28-5.3	15.87	16.1	6.35	1.6	●	
	190608E-MC3	0.15-0.44	0.64-6.4	19.05	19.3	6.35	0.8	●	
	190612E-MC3	0.23-0.66	0.96-6.4	19.05	19.3	6.35	1.2	●	
	CNMG 120408E-MC4	0.20-0.60	1.2-6.4	12.70	12.9	4.76	0.8	●	
	120412E-MC4	0.30-0.90	1.8-6.4	12.70	12.9	4.76	1.2	●	
	160612E-MC4	0.30-0.90	1.8-8.1	15.87	16.1	6.35	1.2	●	
	190612E-MC4	0.30-0.90	1.8-9.7	19.05	19.3	6.35	1.2	●	
	190616E-MC4	0.40-1.20	2.4-9.7	19.05	19.3	6.35	1.6	●	
	DNMG 150404E-MB2	0.05-0.15	0.26-2.9	12.7	15.5	4.76	0.4	●	
	150408E-MB2	0.10-0.30	0.52-2.9	12.7	15.5	4.76	0.8	●	
	150604E-MB2	0.05-0.15	0.26-2.9	12.7	15.5	6.35	0.4	●	
	150608E-MB2	0.10-0.30	0.52-2.9	12.7	15.5	6.35	0.8	●	
	DNMG 150404E-MC3	0.08-0.22	0.32-3.9	12.7	15.5	4.76	0.4	●	
	150408E-MC3	0.15-0.44	0.64-3.9	12.7	15.5	4.76	0.8	●	
	150412E-MC3	0.23-0.66	0.96-3.9	12.7	15.5	4.76	1.2	●	
	150604E-MC3	0.08-0.22	0.32-3.9	12.7	15.5	6.35	0.4	●	
	150608E-MC3	0.15-0.44	0.64-3.9	12.7	15.5	6.35	0.8	●	
	150612E-MC3	0.23-0.66	0.96-3.9	12.7	15.5	6.35	1.2	●	
	DNMG 150408E-MC4	0.20-0.60	1.2-5.4	12.7	15.5	4.76	0.8	●	
	150412E-MC4	0.30-0.90	1.8-5.4	12.7	15.5	4.76	1.2	●	
	150608E-MC4	0.20-0.60	1.2-5.4	12.7	15.5	6.35	0.8	●	
	150612E-MC4	0.30-0.90	1.8-5.4	12.7	15.5	6.35	1.2	●	

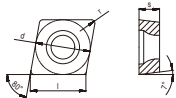
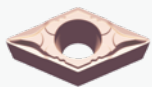
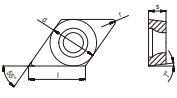
Remark: ● Represent for standard stock

Insert	Item designation	Recommended cutting parameters		Dimension(mm)				Grade (PVD)	Geometry
		Feed (mm/rev)	ap (mm)	d	l	s	r		
	SNMG 120404E-MB2	0.05-0.15	0.26-3.2	12.7	12.7	4.76	0.4	●	
	120408E-MB2	0.10-0.30	0.52-3.2	12.7	12.7	4.76	0.8	●	
	SNMG 120404E-MC3	0.08-0.22	0.32-4.2	12.7	12.7	4.76	0.4	●	
	120408E-MC3	0.15-0.44	0.64-4.2	12.7	12.7	4.76	0.8	●	
	120412E-MC3	0.23-0.66	0.96-4.2	12.7	12.7	4.76	1.2	●	
	SNMG 120408E-MC4	0.20-0.60	1.2-6.4	12.7	12.7	4.76	0.8	●	
	120412E-MC4	0.30-0.90	1.8-6.4	12.7	12.7	4.76	1.2	●	
	TNMG 160404E-MB2	0.05-0.15	0.26-3.1	9.52	16.5	4.76	0.4	●	
	160408E-MB2	0.10-0.30	0.52-3.1	9.52	16.5	4.76	0.8	●	
	TNMG 160404E-MC3	0.08-0.22	0.32-4.1	9.52	16.5	4.76	0.4	●	
	160408E-MC3	0.15-0.44	0.64-4.1	9.52	16.5	4.76	0.8	●	
	160412E-MC3	0.23-0.66	0.96-4.1	9.52	16.5	4.76	1.2	●	
	220408E-MC3	0.15-0.44	0.64-4.9	15.87	22	4.76	0.8	●	
	220412E-MC3	0.23-0.66	0.96-4.9	15.87	22	4.76	1.2	●	
	TNMG 160408E-MC4	0.20-0.60	1.2-5.8	9.52	16.5	4.76	0.8	●	
	160412E-MC4	0.30-0.90	1.8-5.8	9.52	16.5	4.76	1.2	●	
	VNMG 160404E-MB2	0.05-0.15	0.26-2.1	9.52	16.5	4.76	0.4	●	
	160408E-MB2	0.10-0.30	0.52-2.1	9.52	16.5	4.76	0.8	●	
	VNMG 160408E-MC3	0.15-0.44	0.64-3.3	9.52	16.5	4.76	0.8	●	
	160404E-MC3	0.08-0.22	0.32-3.3	9.52	16.5	4.76	0.4	●	

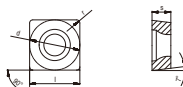
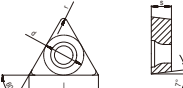
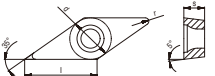
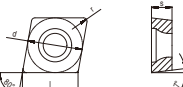
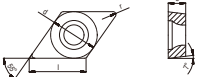
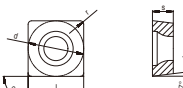
Remark: ● Represent for standard stock

Insert	Item designation	Recommended cutting parameters		Dimension(mm)				Grade (PVD)	Geometry
		Feed (mm/rev)	ap (mm)	d	l	s	r	AP301M	
	WNGM 080404E-MB2	0.05-0.15	0.26-2.2	12.7	8.7	4.76	0.4	●	
	080408E-MB2	0.10-0.30	0.52-2.2	12.7	8.7	4.76	0.8	●	
	WNGM 060408E-MC3	0.15-0.44	0.64-2.1	9.52	6.52	4.76	0.8	●	
	060412E-MC3	0.23-0.66	0.96-2.1	9.52	6.52	4.76	1.2	●	
	080404E-MC3	0.08-0.22	0.32-2.9	12.7	8.7	4.76	0.4	●	
	080408E-MC3	0.15-0.44	0.64-2.9	12.7	8.7	4.76	0.8	●	
	080412E-MC3	0.23-0.66	0.96-2.9	12.7	8.7	4.76	1.2	●	
	WNGM 080408E-MC4	0.20-0.60	1.2-4.3	12.7	8.7	4.76	0.8	●	
	080412E-MC4	0.30-0.90	1.8-4.3	12.7	8.7	4.76	1.2	●	

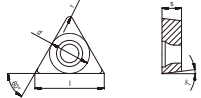
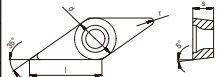
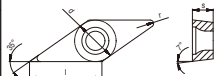
Positive insert

Insert	Item designation	Recommended cutting parameters		Dimension(mm)				Grade (PVD)	Geometry
		Feed (mm/rev)	ap (mm)	d	l	s	r	AP301M	
	CCMT 060202E-PB1	0.09-0.28	0.15-1.6	6.35	6.45	2.38	0.2	●	
	060204E-PB1	0.02-0.07	0.30-1.6	6.35	6.45	2.38	0.4	●	
	060208E-PB1	0.04-0.14	0.60-1.6	6.35	6.45	2.38	0.8	●	
	09T302E-PB1	0.09-0.28	0.15-1.6	9.52	9.67	3.97	0.2	●	
	09T304E-PB1	0.02-0.07	0.30-2.4	9.52	9.67	3.97	0.4	●	
	09T308E-PB1	0.04-0.14	0.60-2.4	9.52	9.67	3.97	0.8	●	
	DCMT 070202E-PB1	0.09-0.28	0.15-1.5	6.35	7.75	2.38	0.2	●	
	070204E-PB1	0.04-0.14	0.30-1.5	6.35	7.75	2.38	0.4	●	
	11T302E-PB1	0.09-0.28	0.15-2.3	9.52	11.63	3.97	0.2	●	
	11T304E-PB1	0.02-0.07	0.30-2.3	9.52	11.63	3.97	0.4	●	
	11T308E-PB1	0.04-0.14	0.60-2.3	9.52	11.63	3.97	0.8	●	

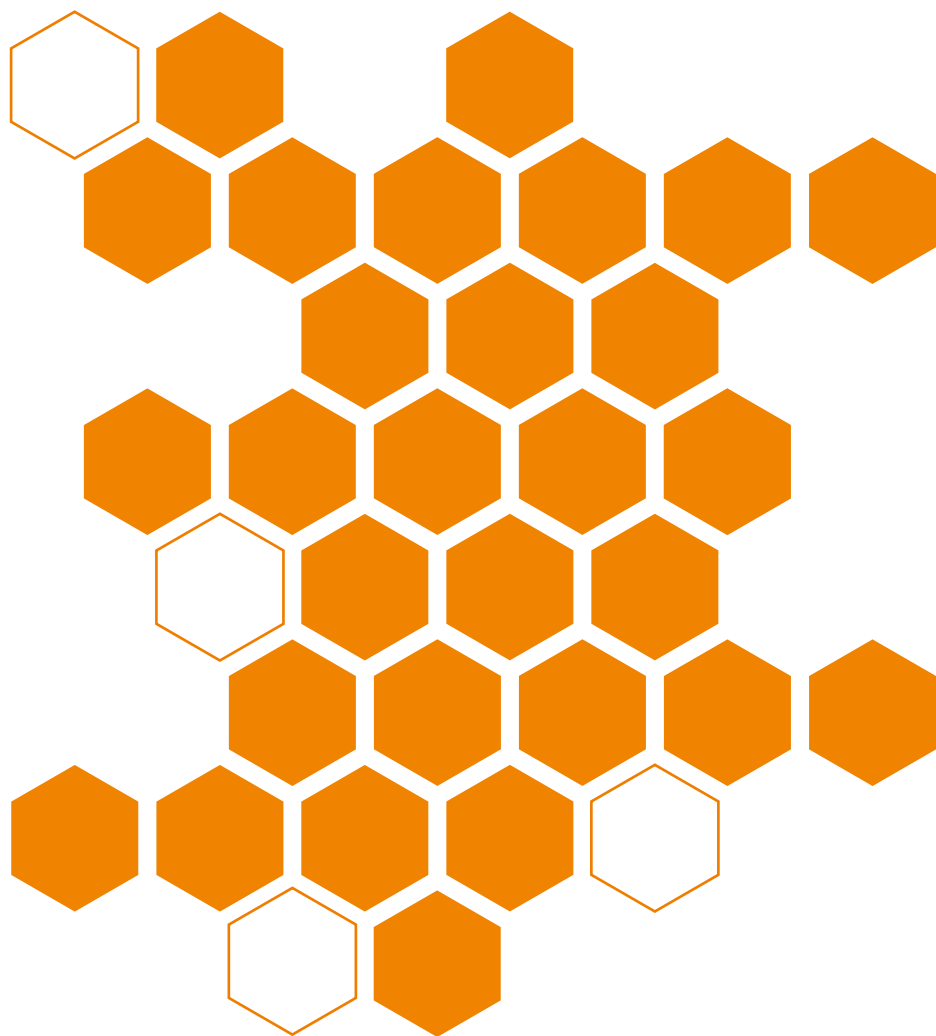
Remark: ● Represent for standard stock

Insert	Item designation	Recommended cutting parameters		Dimension(mm)				Grade (PVD)	Geometry
		Feed (mm/rev)	ap (mm)	d	l	s	r	AP301M	
	SCMT 09T304E-PB1	0.09-0.28	0.30-2.4	9.52	9.52	3.97	0.4	●	
	09T308E-PB1	0.04-0.14	0.60-2.4	9.52	9.52	3.97	0.8	●	
	TCMT 090204E-PB1	0.09-0.28	0.30-1.5	5.56	9	2.38	0.4	●	
	110202E-PB1	0.09-0.28	0.15-2.2	6.35	11	2.38	0.2	●	
	110204E-PB1	0.02-0.07	0.30-2.2	6.35	11	2.38	0.4	●	
	16T304E-PB1	0.09-0.28	0.30-3.3	9.52	16.5	3.97	0.4	●	
	16T308E-PB1	0.04-0.14	0.60-3.3	9.52	16.5	3.97	0.8	●	
	VBMT 160404E-PB1	0.09-0.28	0.15-2.1	9.52	16.6	4.76	0.4	●	
	160408E-PB1	0.60-2.1	0.60-2.1	9.52	16.6	4.76	0.8	●	
	110304E-PB1	0.30-2.1	0.30-2.1	6.35	11	3.18	0.4	●	
	110308E-PB1	0.60-2.1	0.60-2.1	6.35	11	3.18	0.8	●	
	CCMT 060204E-PC2	0.06-0.17	0.25-2.5	6.35	6.45	2.38	0.4	●	
	060208E-PC2	0.08-0.23	0.4-2.4	6.35	6.45	2.38	0.8	●	
	09T304E-PC2	0.08-0.23	0.25-3.0	9.52	9.67	3.97	0.4	●	
	09T308E-PC2	0.10-0.30	0.5-3.0	9.52	9.67	3.97	0.8	●	
	120404E-PC2	0.09-0.27	0.3-3.6	12.7	12.9	4.76	0.4	●	
	120408E-PC2	0.12-0.35	0.6-3.6	12.7	12.9	4.76	0.8	●	
	120412E-PC2	0.14-0.42	0.72-3.6	12.7	12.89	4.76	1.2	●	
	DCMT 070204E-PC2	0.06-0.17	0.2-2.3	6.35	7.75	2.38	0.4	●	
	070208E-PC2	0.08-0.23	0.4-2.3	6.35	7.75	2.38	0.8	●	
	11T304E-PC2	0.08-0.23	0.25-3.0	9.52	11.63	3.97	0.4	●	
	11T308E-PC2	0.10-0.30	0.5-3.0	9.52	11.63	3.97	0.8	●	
	11T312E-PC2	0.12-0.35	0.6-3.0	9.52	11.63	3.97	1.2	●	
	SCMT 09T304E-PC2	0.08-0.23	0.25-3.0	9.52	9.52	3.97	0.4	●	
	09T308E-PC2	0.10-0.30	0.5-3.0	9.52	9.52	3.97	0.8	●	
	120404E-PC2	0.09-0.27	0.3-3.6	12.7	12.7	4.76	0.4	●	
	120408E-PC2	0.12-0.35	0.6-3.6	12.7	12.7	4.76	0.8	●	
	120412E-PC2	0.14-0.42	0.72-3.6	12.7	12.7	4.76	1.2	●	

Remark: ● Represent for standard stock

Insert	Item designation	Recommended cutting parameters		Dimension(mm)				Grade (PVD)	Geometry
		Feed (mm/rev)	ap (mm)	d	l	s	r	AP301M	
	TCMT 090204E-PC2	0.06-0.17	0.2-2.3	5.56	9	2.38	0.4	●	
	090208E-PC2	0.08-0.23	0.4-2.3	5.56	9	2.38	0.8	●	
	110204E-PC2	0.06-0.19	0.21-2.5	6.35	11	2.38	0.4	●	
	110208E-PC2	0.09-0.36	0.42-2.5	6.35	11	2.38	0.8	●	
	16T304E-PC2	0.08-0.23	0.25-3.0	9.52	16.5	3.97	0.4	●	
	16T308E-PC2	0.10-0.30	0.5-3.0	9.52	16.5	3.97	0.8	●	
	16T312E-PC2	0.12-0.35	0.72-3.0	9.52	16.5	3.97	1.2	●	
	TPMT 090204E-PC2	0.06-0.17	0.2-2.3	5.56	9	2.38	0.4	●	
	090208E-PC2	0.08-0.23	0.4-2.3	5.56	9	2.38	0.8	●	
	110304E-PC2	0.06-0.19	0.21-2.5	6.35	11	2.38	0.4	●	
	110308E-PC2	0.09-0.36	0.42-2.5	6.35	11	2.38	0.8	●	
	VBMT 110304E-PC2	0.07-0.2	0.23-2.3	6.35	11	3.18	0.4	●	
	110308E-PC2	0.09-0.27	0.42-2.3	6.35	11	3.18	0.8	●	
	160404E-PC2	0.07-0.20	0.23-2.7	9.52	16.6	4.76	0.4	●	
	160408E-PC2	0.09-0.27	0.42-2.7	9.52	16.6	4.76	0.8	●	
	160412E-PC2	0.12-0.36	0.55-2.7	9.52	16.6	4.76	1.2	●	
	VCMT 110304E-PC2	0.07-0.2	0.23-2.3	6.35	11	3.18	0.4	●	
	110308E-PC2	0.09-0.27	0.42-2.0	6.35	11	3.18	0.8	●	
	160404E-PC2	0.07-0.20	0.23-2.7	9.52	16.6	4.76	0.4	●	
	160408E-PC2	0.09-0.27	0.42-2.7	9.52	16.6	4.76	0.8	●	

Remark: ● Represent for standard stock



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