

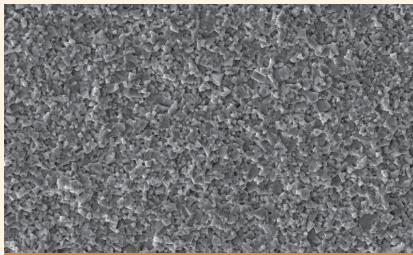
**NEW  
PRODUCT!**

# Swiss Tool Inserts

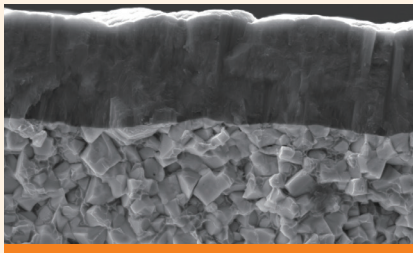
High precision and sharp ground inserts



## • Features



AP301M Alloy structure



AP301M coating

- Long tool life
  - The most suitable substrate grain structure is used to improve the thermal conductivity for longer tool life.
- High stability
  - Unified grain substrate can achieve good impact resistance for rough machining. Even if chipping happened, it could still maintain excellent stability.
- Wear resistance
  - Nano deposition technology is adopted to form excellent smooth surface with improved oxidation resistance & wear resistance, reaching ultra long tool life.

## • Application range and cutting conditions

### Application range

Application range	Steel carbon steel / Alloy steel					Stainless steel				
Cutting field	Finishing		↔		roughing	Finishing		↔		roughing
ISO classification	P01	P10	P20	P30	P40	M01	M10	M20	M30	M40
Coated		<b>AP301M</b>						<b>AP301M</b>		

## • Recommended cutting parameters

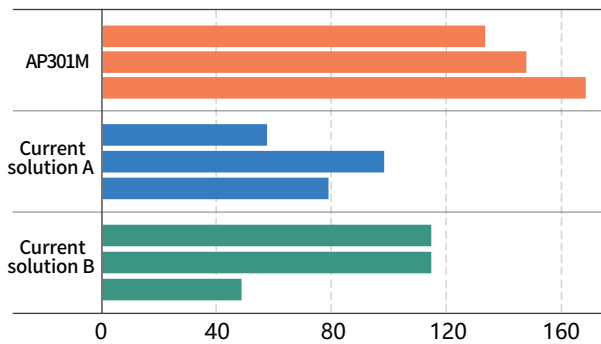
Workpiece material	Hardness	Cutting speed (m/min)
Carbon steel	HB ≦ 180	200
Alloy steel	HB ≦ 180	150
Austenitic stainless steel	HB ≦ 200	120
Duplex stainless steel	HB ≦ 200	100

## ● Cutting performance

Compared with other companies

Continuous cut, alloy steel (40CrNiMo)

Tool life of AP301M is very stable



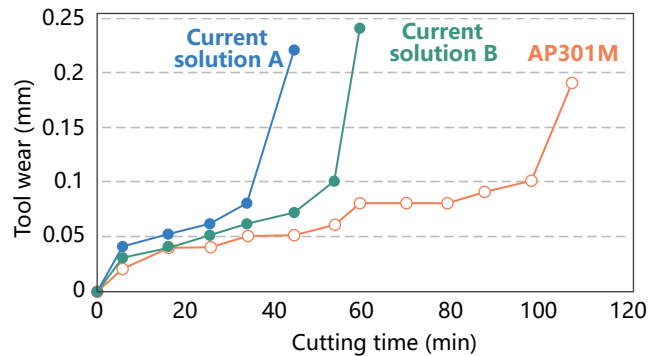
Cutting conditions

Insert	DCET 11T304FR-M AP301M
Cutting speed	150m/min
Feed	0.08mm/min
ap	0.8mm
Coolant type	Emulsion

Wear resistance

Continuous cut, stainless steel (SUS304L)

AP301M shows excellent wear resistance

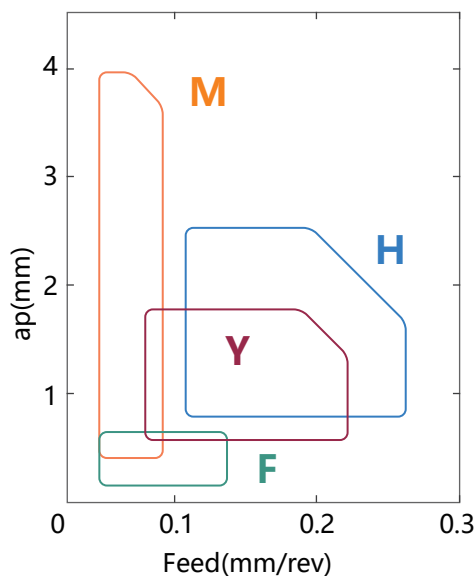


Cutting conditions

Insert	DCET 11T304FR-M AP301M
Cutting speed	120m/min
Feed	0.05mm/min
ap	0.8mm
Coolant type	Emulsion

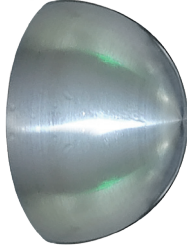
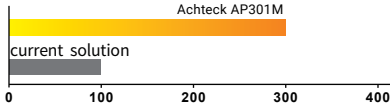
## ● Chipbreaker


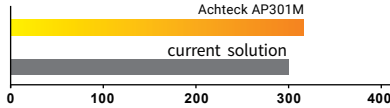
Ground chipbreaker

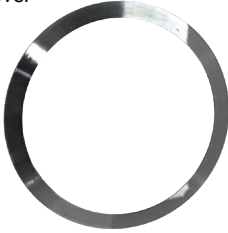
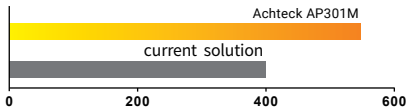


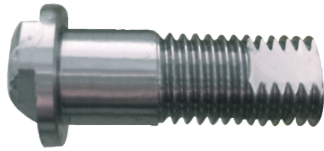
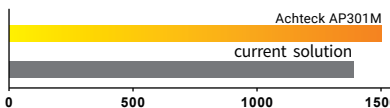
Geometry	Chipbreaker	Features	Chipbreaker profile
F		<ul style="list-style-type: none"> <li>Low cutting force and controllable cutting</li> <li>Used in finishing</li> </ul>	
M		<ul style="list-style-type: none"> <li>Suitable for low and medium feed rate, stable cutting</li> <li>Large rake angle design prevents work hardening</li> </ul>	
Y		<ul style="list-style-type: none"> <li>Low cutting force and light cutting</li> <li>Good chip evacuation. Wider application range for a large</li> </ul>	
H		<ul style="list-style-type: none"> <li>High edge strength, designed for rough machining</li> <li>Suitable for Semi finishing to rough machining</li> </ul>	

## ◆ Case Study


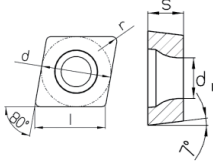

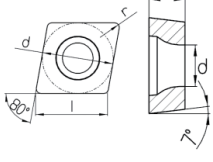
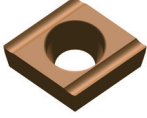
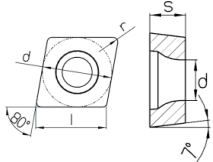
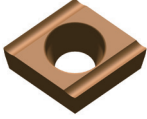
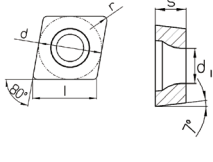
Insert	TNGG 160402R-F AP301M
Workpiece name	Roller 
Workpiece materials	SUS304
Cutting speed	188m/min
Feed	0.06mm/rev
ap	0.1mm
Coolant type	Emulsion
Result	 <p>AP301M had stable machining performance and achieved 200% longer tool life.</p>

Insert	DCET 11T301FR-M AP301M
Workpiece name	Long shaft 
Workpiece materials	SUS304
Cutting speed	24m/min
Feed	0.04mm/rev
ap	0.75mm
Coolant type	Oil
Result	 <p>AP301M had stable machining performance and achieved longer tool life.</p>

Insert	TNGG 160404R-F AP301M
Workpiece name	Watch cover 
Workpiece materials	SUS304
Cutting speed	200m/min
Feed	0.015mm/rev
ap	0.2mm
Coolant type	Oil
Result	 <p>AP301M had stable machining performance and achieved 30% longer tool life.</p>

Insert	DCET 11T302FR-M AP301M
Workpiece name	Valve rod 
Workpiece materials	SUS316L
Cutting speed	131m/min
Feed	0.05mm/rev
ap	2.5mm
Coolant type	Oil
Result	 <p>AP301 had stable tool life and excellent chip evacuation.</p>


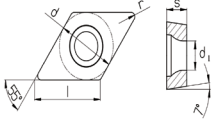

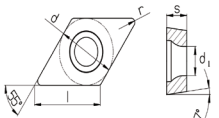
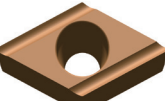
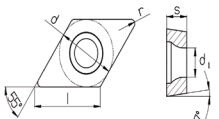
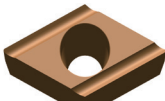
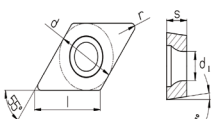
## ● Inserts

Application	Insert Left handed insert in the picture	Product code	Recommended parameters		Dimension (mm)					Grade	Shape
			Feed (mm/rev)	Cutting depth (mm)	d (mm)	l (mm)	s (mm)	d <sub>1</sub> (mm)	r (mm)	PVD coating	
										AP301M	
Finishing machining		CCET 0301003FR-F	0.01-0.05	0.1-0.3	3.5	3.55	1.40	2.0	<0.03	●	
		0301003FL-F	0.01-0.05	0.1-0.3	3.5	3.55	1.40	2.0	<0.03	●	
		0301005FR-F	0.01-0.05	0.1-0.3	3.5	3.55	1.40	2.0	<0.05	●	
		0301005FL-F	0.01-0.05	0.1-0.3	3.5	3.55	1.40	2.0	<0.05	●	
		030101FR-F	0.01-0.05	0.1-0.3	3.5	3.55	1.40	2.0	<0.1	●	
		030101FL-F	0.01-0.05	0.1-0.3	3.5	3.55	1.40	2.0	<0.1	●	
		030102FR-F	0.01-0.05	0.1-0.3	3.5	3.55	1.40	2.0	<0.2	●	
		030102FL-F	0.01-0.05	0.1-0.3	3.5	3.55	1.40	2.0	<0.2	●	
		030104FR-F	0.01-0.05	0.1-0.3	3.5	3.55	1.40	2.0	<0.4	●	
		030104FL-F	0.01-0.05	0.1-0.3	3.5	3.55	1.40	2.0	<0.4	●	
		CCET 0401003FR-F	0.01-0.06	0.1-0.4	4.3	4.37	1.80	2.3	<0.03	●	
		0401003FL-F	0.01-0.06	0.1-0.4	4.3	4.37	1.80	2.3	<0.03	●	
		0401005FR-F	0.01-0.06	0.1-0.4	4.3	4.37	1.80	2.3	<0.05	●	
		0401005FL-F	0.01-0.06	0.1-0.4	4.3	4.37	1.80	2.3	<0.05	●	
		040101FR-F	0.01-0.06	0.1-0.4	4.3	4.37	1.80	2.3	<0.1	●	
		040101FL-F	0.01-0.06	0.1-0.4	4.3	4.37	1.80	2.3	<0.1	●	
		040102FR-F	0.01-0.06	0.1-0.4	4.3	4.37	1.80	2.3	<0.2	●	
		040102FL-F	0.01-0.06	0.1-0.4	4.3	4.37	1.80	2.3	<0.2	●	
040104FR-F	0.01-0.06	0.1-0.4	4.3	4.37	1.80	2.3	<0.4	●			
040104FL-F	0.01-0.06	0.1-0.4	4.3	4.37	1.80	2.3	<0.4	●			
Low feed rate		CCET 0602003FR-M	0.02-0.10	0.5-2.5	6.35	6.45	2.38	2.8	<0.03	●	
		0602003FL-M	0.02-0.10	0.5-2.5	6.35	6.45	2.38	2.8	<0.03	●	
		0602005FR-M	0.02-0.10	0.5-2.5	6.35	6.45	2.38	2.8	<0.05	●	
		0602005FL-M	0.02-0.10	0.5-2.5	6.35	6.45	2.38	2.8	<0.05	●	
		060201FR-M	0.02-0.10	0.5-2.5	6.35	6.45	2.38	2.8	<0.1	●	
		060201FL-M	0.02-0.10	0.5-2.5	6.35	6.45	2.38	2.8	<0.1	●	
		060202FR-M	0.02-0.10	0.5-2.5	6.35	6.45	2.38	2.8	<0.2	●	
		060202FL-M	0.02-0.10	0.5-2.5	6.35	6.45	2.38	2.8	<0.2	●	
		060204FR-M	0.01-0.10	0.5-2.5	6.35	6.45	2.38	2.8	<0.4	●	
		060204FL-M	0.01-0.10	0.5-2.5	6.35	6.45	2.38	2.8	<0.4	●	
		CCET 09T3003FR-M	0.02-0.10	0.5-4.0	9.525	9.67	3.97	4.4	<0.03	●	
		09T3003FL-M	0.02-0.10	0.5-4.0	9.525	9.67	3.97	4.4	<0.03	●	
		09T3005FR-M	0.02-0.10	0.5-4.0	9.525	9.67	3.97	4.4	<0.05	●	
		09T3005FL-M	0.02-0.10	0.5-4.0	9.525	9.67	3.97	4.4	<0.05	●	
		09T301FR-M	0.02-0.10	0.5-4.0	9.525	9.67	3.97	4.4	<0.1	●	
		09T301FL-M	0.02-0.10	0.5-4.0	9.525	9.67	3.97	4.4	<0.1	●	
		09T302FR-M	0.02-0.10	0.5-4.0	9.525	9.67	3.97	4.4	<0.2	●	
		09T302FL-M	0.02-0.10	0.5-4.0	9.525	9.67	3.97	4.4	<0.2	●	
		09T304FR-M	0.02-0.10	0.5-4.0	9.525	9.67	3.97	4.4	<0.4	●	
		09T304FL-M	0.02-0.10	0.5-4.0	9.525	9.67	3.97	4.4	<0.4	●	

● Stocked

○ Non-stocked

## Inserts

Application	Insert Left handed insert in the picture	Product code	Recommended parameters		Dimension (mm)					Grade	Shape
			Feed (mm/rev)	Cutting depth (mm)	d (mm)	l (mm)	s (mm)	d <sub>1</sub> (mm)	r (mm)	PVD coating	
										AP301M	
Finishing machining		DCET 0702003FR-F	0.02-0.18	0.1-0.4	6.35	7.75	2.38	2.8	<0.03	●	
		0702003FL-F	0.02-0.18	0.1-0.4	6.35	7.75	2.38	2.8	<0.03	●	
		0702005FR-F	0.02-0.18	0.1-0.4	6.35	7.75	2.38	2.8	<0.05	●	
		0702005FL-F	0.02-0.18	0.1-0.4	6.35	7.75	2.38	2.8	<0.05	●	
		070201FR-F	0.02-0.18	0.1-0.4	6.35	7.75	2.38	2.8	<0.1	●	
		070201FL-F	0.02-0.18	0.1-0.4	6.35	7.75	2.38	2.8	<0.1	●	
		070202FR-F	0.02-0.18	0.1-0.4	6.35	7.75	2.38	2.8	<0.2	●	
		070202FL-F	0.02-0.18	0.1-0.4	6.35	7.75	2.38	2.8	<0.2	●	
		070204FR-F	0.02-0.18	0.1-0.4	6.35	7.75	2.38	2.8	<0.4	●	
	070204FL-F	0.02-0.18	0.1-0.4	6.35	7.75	2.38	2.8	<0.4	●		
		DCET 11T3003FR-F	0.02-0.20	0.1-0.4	9.525	11.63	3.97	4.4	<0.03	●	
		11T3003FL-F	0.02-0.20	0.1-0.4	9.525	11.63	3.97	4.4	<0.03	●	
		11T3005FR-F	0.02-0.20	0.1-0.4	9.525	11.63	3.97	4.4	<0.05	●	
		11T3005FL-F	0.02-0.20	0.1-0.4	9.525	11.63	3.97	4.4	<0.05	●	
		11T301FR-F	0.02-0.20	0.1-0.4	9.525	11.63	3.97	4.4	<0.1	●	
		11T301FL-F	0.02-0.20	0.1-0.4	9.525	11.63	3.97	4.4	<0.1	●	
		11T302FR-F	0.02-0.20	0.1-0.4	9.525	11.63	3.97	4.4	<0.2	●	
		11T302FL-F	0.02-0.20	0.1-0.4	9.525	11.63	3.97	4.4	<0.2	●	
11T304FR-F		0.02-0.20	0.1-0.4	9.525	11.63	3.97	4.4	<0.4	●		
11T304FL-F	0.02-0.20	0.1-0.4	9.525	11.63	3.97	4.4	<0.4	●			
Low feed rate		DCET 0702003FR-M	0.01-0.08	0.5-2.8	6.35	7.75	2.38	2.8	<0.03	●	
		0702003FL-M	0.01-0.08	0.5-2.8	6.35	7.75	2.38	2.8	<0.03	●	
		0702005FR-M	0.01-0.08	0.5-2.8	6.35	7.75	2.38	2.8	<0.05	●	
		0702005FL-M	0.01-0.08	0.5-2.8	6.35	7.75	2.38	2.8	<0.05	●	
		070201FR-M	0.01-0.08	0.5-2.8	6.35	7.75	2.38	2.8	<0.1	●	
		070201FL-M	0.01-0.08	0.5-2.8	6.35	7.75	2.38	2.8	<0.1	●	
		070202FR-M	0.01-0.08	0.5-2.8	6.35	7.75	2.38	2.8	<0.2	●	
		070202FL-M	0.01-0.08	0.5-2.8	6.35	7.75	2.38	2.8	<0.2	●	
		070204FR-M	0.01-0.08	0.5-2.8	6.35	7.75	2.38	2.8	<0.4	●	
	070204FL-M	0.01-0.08	0.5-2.8	6.35	7.75	2.38	2.8	<0.4	●		
		DCET 11T3003FR-M	0.02-0.10	0.5-4.0	9.525	11.63	3.97	4.4	<0.03	●	
		11T3003FL-M	0.02-0.10	0.5-4.0	9.525	11.63	3.97	4.4	<0.03	●	
		11T3005FR-M	0.02-0.10	0.5-4.0	9.525	11.63	3.97	4.4	<0.05	●	
		11T3005FL-M	0.02-0.10	0.5-4.0	9.525	11.63	3.97	4.4	<0.05	●	
		11T301FR-M	0.02-0.10	0.5-4.0	9.525	11.63	3.97	4.4	<0.1	●	
		11T301FL-M	0.02-0.10	0.5-4.0	9.525	11.63	3.97	4.4	<0.1	●	
		11T302FR-M	0.02-0.10	0.5-4.0	9.525	11.63	3.97	4.4	<0.2	●	
		11T302FL-M	0.02-0.10	0.5-4.0	9.525	11.63	3.97	4.4	<0.2	●	
11T304FR-M		0.02-0.10	0.5-4.0	9.525	11.63	3.97	4.4	<0.4	●		
11T304FL-M	0.02-0.10	0.5-4.0	9.525	11.63	3.97	4.4	<0.4	●			

● Stocked

○ Non-stocked


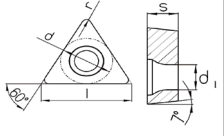

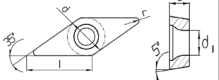
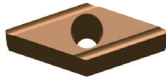
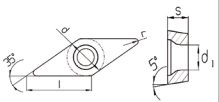

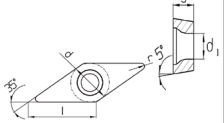

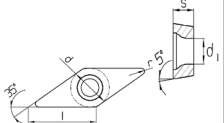
## Inserts

Application	Insert Left handed insert in the picture	Product code	Recommended parameters		Dimension (mm)					Grade	Shape
			Feed (mm/rev)	Cutting depth (mm)	d (mm)	l (mm)	s (mm)	d <sub>1</sub> (mm)	r (mm)	PVD coating <b>AP301M</b>	
Finishing machining		TBET 0601003FR-F	0.03-0.08	0.1-0.5	3.97	6.88	1.59	2.3	<0.03	●	
		0601003FL-F	0.03-0.08	0.1-0.5	3.97	6.88	1.59	2.3	<0.03	●	
		0601005FR-F	0.03-0.08	0.1-0.5	3.97	6.88	1.59	2.3	<0.05	●	
		0601005FL-F	0.03-0.08	0.1-0.5	3.97	6.88	1.59	2.3	<0.05	●	
		060101FR-F	0.03-0.08	0.1-0.5	3.97	6.88	1.59	2.3	<0.1	●	
		060101FL-F	0.03-0.08	0.1-0.5	3.97	6.88	1.59	2.3	<0.1	●	
		060102FR-F	0.03-0.08	0.1-0.5	3.97	6.88	1.59	2.3	<0.2	●	
		060102FL-F	0.03-0.08	0.1-0.5	3.97	6.88	1.59	2.3	<0.2	●	
		060104FR-F	0.03-0.08	0.1-0.5	3.97	6.88	1.59	2.3	<0.4	●	
	060104FL-F	0.03-0.08	0.1-0.5	3.97	6.88	1.59	2.3	<0.4	●		
		TPEH 080201FR-F	0.01-0.10	0.1-0.8	4.76	8.24	2.38	2.3	<0.1	●	
		080201FL-F	0.01-0.10	0.1-0.8	4.76	8.24	2.38	2.3	<0.1	●	
		080202FR-F	0.01-0.10	0.1-0.8	4.76	8.24	2.38	2.3	<0.2	●	
		080202FL-F	0.01-0.10	0.1-0.8	4.76	8.24	2.38	2.3	<0.2	●	
		080204FR-F	0.01-0.10	0.1-0.8	4.76	8.24	2.38	2.3	<0.4	●	
		080204FL-F	0.01-0.10	0.1-0.8	4.76	8.24	2.38	2.3	<0.4	●	
		TPEH 090201FR-F	0.01-0.10	0.1-0.8	5.56	9.63	2.38	3.0	<0.1	●	
		090201FL-F	0.01-0.10	0.1-0.8	5.56	9.63	2.38	3.0	<0.1	●	
090202FR-F		0.01-0.10	0.1-0.8	5.56	9.63	2.38	3.0	<0.2	●		
090202FL-F		0.01-0.10	0.1-0.8	5.56	9.63	2.38	3.0	<0.2	●		
090204FR-F		0.01-0.10	0.1-0.8	5.56	9.63	2.38	3.0	<0.4	●		
090204FL-F		0.01-0.10	0.1-0.8	5.56	9.63	2.38	3.0	<0.4	●		
	TPEH 110302FR-F	0.01-0.12	0.2-0.8	6.35	11.00	3.18	3.3	<0.2	●		
	110302FL-F	0.01-0.12	0.2-0.8	6.35	11.00	3.18	3.3	<0.2	●		
	110304FR-F	0.01-0.12	0.2-0.8	6.35	11.00	3.18	3.3	<0.4	●		
	110304FL-F	0.01-0.12	0.2-0.8	6.35	11.00	3.18	3.3	<0.4	●		
	110308FR-F	0.01-0.12	0.2-0.8	6.35	11.00	3.18	3.3	0.8	●		
Low feed rate		TCET 0802003FR-M	0.01-0.08	0.5-2.5	4.76	8.24	2.38	2.3	<0.03	●	
		0802003FL-M	0.01-0.08	0.5-2.5	4.76	8.24	2.38	2.3	<0.03	●	
		080201FR-M	0.01-0.08	0.5-2.5	4.76	8.24	2.38	2.3	<0.1	●	
		080201FL-M	0.01-0.08	0.5-2.5	4.76	8.24	2.38	2.3	<0.1	●	
		080202FR-M	0.01-0.08	0.5-2.5	4.76	8.24	2.38	2.3	<0.2	●	
		080202FL-M	0.01-0.08	0.5-2.5	4.76	8.24	2.38	2.3	<0.2	●	
		080204FR-M	0.01-0.08	0.5-2.5	4.76	8.24	2.38	2.3	<0.4	●	
Finishing machining		TCET 110201FR-F	0.01-0.10	0.1-0.8	6.35	11.00	2.38	2.8	<0.1	●	
		110201FL-F	0.01-0.10	0.1-0.8	6.35	11.00	2.38	2.8	<0.1	●	
		110202FR-F	0.01-0.10	0.1-0.8	6.35	11.00	2.38	2.8	<0.2	●	
		110202FL-F	0.01-0.10	0.1-0.8	6.35	11.00	2.38	2.8	<0.2	●	
		110204FR-F	0.01-0.10	0.1-0.8	6.35	11.00	2.38	2.8	<0.4	●	
		110204FL-F	0.01-0.10	0.1-0.8	6.35	11.00	2.38	2.8	<0.4	●	
		110208FR-F	0.01-0.10	0.1-0.8	6.35	11.00	2.38	2.8	0.8	●	
		110208FL-F	0.01-0.10	0.1-0.8	6.35	11.00	2.38	2.8	0.8	●	

● Stocked

○ Non-stocked

## ● Inserts


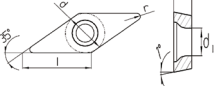

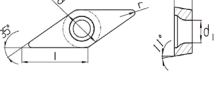

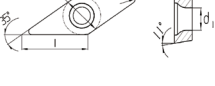

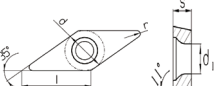

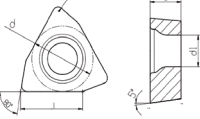

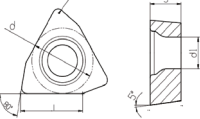
Application	Insert Left handed insert in the picture	Product code	Recommended parameters		Dimension (mm)					Grade	Shape		
			Feed (mm/rev)	ap (mm)	d (mm)	l (mm)	s (mm)	d <sub>1</sub> (mm)	r (mm)	PVD coating AP301M			
Low feed rate		TCET 1103003FR-M	0.02-0.10	0.5-4.0	6.35	11.00	3.18	2.8	<0.03	●			
		1103003FL-M	0.02-0.10	0.5-4.0	6.35	11.00	3.18	2.8	<0.03	●			
		110301FR-M	0.02-0.10	0.5-4.0	6.35	11.00	3.18	2.8	<0.1	●			
		110301FL-M	0.02-0.10	0.5-4.0	6.35	11.00	3.18	2.8	<0.1	●			
		110302FR-M	0.02-0.10	0.5-4.0	6.35	11.00	3.18	2.8	<0.2	●			
		110302FL-M	0.02-0.10	0.5-4.0	6.35	11.00	3.18	2.8	<0.2	●			
		110304FR-M	0.02-0.10	0.5-4.0	6.35	11.00	3.18	2.8	<0.4	●			
		110304FL-M	0.02-0.10	0.5-4.0	6.35	11.00	3.18	2.8	<0.4	●			
Finishing machining		VBET 1103003FR-F	0.01-0.18	0.1-0.3	6.35	11.07	3.18	2.8	<0.03	●			
		1103003FL-F	0.01-0.18	0.1-0.3	6.35	11.07	3.18	2.8	<0.03	●			
		1103005FR-F	0.01-0.18	0.1-0.3	6.35	11.07	3.18	2.8	<0.05	●			
		1103005FL-F	0.01-0.18	0.1-0.3	6.35	11.07	3.18	2.8	<0.05	●			
		110301FR-F	0.01-0.18	0.1-0.3	6.35	11.07	3.18	2.8	<0.1	●			
		110301FL-F	0.01-0.18	0.1-0.3	6.35	11.07	3.18	2.8	<0.1	●			
		110302FR-F	0.01-0.18	0.1-0.3	6.35	11.07	3.18	2.8	<0.2	●			
		110302FL-F	0.01-0.18	0.1-0.3	6.35	11.07	3.18	2.8	<0.2	●			
Low feed rate		VBET 1103005FR-M	0.01-0.06	0.2-2.0	6.35	11.07	3.18	2.8	<0.05	●			
		1103005FL-M	0.01-0.06	0.2-2.0	6.35	11.07	3.18	2.8	<0.05	●			
		110301FR-M	0.01-0.06	0.2-2.0	6.35	11.07	3.18	2.8	<0.1	●			
		110301FL-M	0.01-0.06	0.2-2.0	6.35	11.07	3.18	2.8	<0.1	●			
		110302FR-M	0.01-0.06	0.2-2.0	6.35	11.07	3.18	2.8	<0.2	●			
		110302FL-M	0.01-0.06	0.2-2.0	6.35	11.07	3.18	2.8	<0.2	●			
		110304FR-M	0.01-0.06	0.2-2.0	6.35	11.07	3.18	2.8	<0.4	●			
		110304FL-M	0.01-0.06	0.2-2.0	6.35	11.07	3.18	2.8	<0.4	●			
		VBET 1103003FR-Y	0.08-0.22	0.5-1.8	6.35	11.07	3.18	2.8	<0.03	●			
		1103003FL-Y	0.08-0.22	0.5-1.8	6.35	11.07	3.18	2.8	<0.03	●			
		1103005FR-Y	0.08-0.22	0.5-1.8	6.35	11.07	3.18	2.8	<0.05	●			
		1103005FL-Y	0.08-0.22	0.5-1.8	6.35	11.07	3.18	2.8	<0.05	●			
		110301FR-Y	0.08-0.22	0.5-1.8	6.35	11.07	3.18	2.8	<0.1	●			
		110301FL-Y	0.08-0.22	0.5-1.8	6.35	11.07	3.18	2.8	<0.1	●			
		110302FR-Y	0.08-0.22	0.5-1.8	6.35	11.07	3.18	2.8	<0.2	●			
		110302FL-Y	0.08-0.22	0.5-1.8	6.35	11.07	3.18	2.8	<0.2	●			
		110304FR-Y	0.08-0.22	0.5-1.8	6.35	11.07	3.18	2.8	<0.4	●			
		110304FL-Y	0.08-0.22	0.5-1.8	6.35	11.07	3.18	2.8	<0.4	●			
			VBET 160402FR-Y	0.1-0.25	0.8-2.0	9.525	16.6	4.76	4.4	<0.2		●	
			160402FL-Y	0.1-0.25	0.8-2.0	9.525	16.6	4.76	4.4	<0.2		●	
160404FR-Y	0.1-0.25		0.8-2.0	9.525	16.6	4.76	4.4	<0.4	●				
160404FL-Y	0.1-0.25		0.8-2.0	9.525	16.6	4.76	4.4	<0.4	●				
160408FR-Y	0.1-0.25		0.8-2.0	9.525	16.6	4.76	4.4	0.8	●				
160408FL-Y	0.1-0.25		0.8-2.0	9.525	16.6	4.76	4.4	0.8	●				

● Stocked

○ Non-stocked




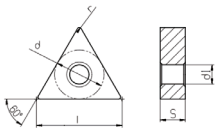

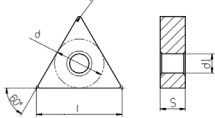
## Inserts

Application	Insert <small>Left handed insert in the picture</small>	Product code	Recommended parameters		Dimension (mm)					Grade	Shape	
			Feed (mm/rev)	ap (mm)	d (mm)	l (mm)	s (mm)	d <sub>1</sub> (mm)	r (mm)	PVD coating <b>AP301M</b>		
Finishing machining		VCET 1103005FR-F	0.01-0.18	0.1-0.3	6.35	11.07	3.18	3.18	<0.05	●		
		1103005FL-F	0.01-0.18	0.1-0.3	6.35	11.07	3.18	3.18	<0.05	●		
		110301FR-F	0.01-0.18	0.1-0.3	6.35	11.07	3.18	3.18	<0.1	●		
		110301FL-F	0.01-0.18	0.1-0.3	6.35	11.07	3.18	3.18	<0.1	●		
		110302FR-F	0.01-0.18	0.1-0.3	6.35	11.07	3.18	3.18	<0.2	●		
		110302FL-F	0.01-0.18	0.1-0.3	6.35	11.07	3.18	3.18	<0.2	●		
		110304FR-F	0.01-0.18	0.1-0.3	6.35	11.07	3.18	3.18	<0.4	●		
	110304FL-F	0.01-0.18	0.1-0.3	6.35	11.07	3.18	3.18	<0.4	●			
		VPET 080201FR-F	0.02-0.15	0.05-0.2	4.76	8.3	2.38	2.3	<0.1	●		
		080201FL-F	0.02-0.15	0.05-0.2	4.76	8.3	2.38	2.3	<0.1	●		
		080202FR-F	0.02-0.15	0.05-0.2	4.76	8.3	2.38	2.3	<0.2	●		
		080202FL-F	0.02-0.15	0.05-0.2	4.76	8.3	2.38	2.3	<0.2	●		
	Low feed rate		VPET 080201FR-M	0.01-0.06	0.2-1.5	4.76	8.3	2.38	2.3	<0.1	●	
			080201FL-M	0.01-0.06	0.2-1.5	4.76	8.3	2.38	2.3	<0.1	●	
080202FR-M			0.01-0.06	0.2-1.5	4.76	8.3	2.38	2.3	<0.2	●		
080202FL-M			0.01-0.06	0.2-1.5	4.76	8.3	2.38	2.3	<0.2	●		
		VPET 1103005FR-M	0.01-0.06	0.2-2.0	6.35	11.07	3.18	2.8	<0.05	●		
		1103005FL-M	0.01-0.06	0.2-2.0	6.35	11.07	3.18	2.8	<0.05	●		
		110301FR-M	0.01-0.06	0.2-2.0	6.35	11.07	3.18	2.8	<0.1	●		
		110301FL-M	0.01-0.06	0.2-2.0	6.35	11.07	3.18	2.8	<0.1	●		
		110302FR-M	0.01-0.06	0.2-2.0	6.35	11.07	3.18	2.8	<0.2	●		
		110302FL-M	0.01-0.06	0.2-2.0	6.35	11.07	3.18	2.8	<0.2	●		
		110304FL-M	0.01-0.06	0.2-2.0	6.35	11.07	3.18	2.8	<0.4	●		
		110304FL-M	0.01-0.06	0.2-2.0	6.35	11.07	3.18	2.8	<0.4	●		
Finishing machining			WBET 0601003FR-F	0.05-0.08	0.1-0.8	3.97	3.52	1.59	2.3	<0.03	●	
			0601003FL-F	0.05-0.08	0.1-0.8	3.97	3.52	1.59	2.3	<0.03	●	
	060101FR-F		0.05-0.08	0.1-0.8	3.97	3.52	1.59	2.3	<0.1	●		
	060101FL-F		0.05-0.08	0.1-0.8	3.97	3.52	1.59	2.3	<0.1	●		
	060102FR-F		0.05-0.08	0.1-0.8	3.97	3.52	1.59	2.3	<0.2	●		
	060102FL-F		0.05-0.08	0.1-0.8	3.97	3.52	1.59	2.3	<0.2	●		
	060104FR-F		0.05-0.08	0.1-0.8	3.97	3.52	1.59	2.3	<0.4	●		
	060104FL-F	0.05-0.08	0.1-0.8	3.97	3.52	1.59	2.3	<0.4	●			
		WBET 0802003FR-F	0.05-0.08	0.1-0.8	4.76	4.78	2.38	2.3	<0.03	●		
		0802003FL-F	0.05-0.08	0.1-0.8	4.76	4.78	2.38	2.3	<0.03	●		
		080201FR-F	0.05-0.08	0.1-0.8	4.76	4.78	2.38	2.3	<0.1	●		
		080201FL-F	0.05-0.08	0.1-0.8	4.76	4.78	2.38	2.3	<0.1	●		
		080202FR-F	0.05-0.08	0.1-0.8	4.76	4.78	2.38	2.3	<0.2	●		
		080202FL-F	0.05-0.08	0.1-0.8	4.76	4.78	2.38	2.3	<0.2	●		
080204FR-F		0.05-0.08	0.1-0.8	4.76	4.78	2.38	2.3	<0.4	●			
080204FL-F	0.05-0.08	0.1-0.8	4.76	4.78	2.38	2.3	<0.4	●				

● Stocked

○ Non-stocked

## ● Inserts

Application	Insert <small>Left handed insert in the picture</small>	Product code	Recommended parameters		Dimension (mm)					Grade	Shape
			Feed (mm/rev)	ap (mm)	d (mm)	l (mm)	s (mm)	d <sub>1</sub> (mm)	r (mm)	PVD coating	
										AP301M	
Finishing machining		TNGG 160402FR-F	0.08-0.20	0.5-2.3	9.525	16.5	4.76	3.81	0.2	●	
		160402FL-F	0.08-0.20	0.5-2.3	9.525	16.5	4.76	3.81	0.2	●	
		160404FR-F	0.08-0.20	0.5-2.3	9.525	16.5	4.76	3.81	0.4	●	
		160404FL-F	0.08-0.20	0.5-2.3	9.525	16.5	4.76	3.81	0.4	●	
Finishing machining		TNGG 160404R-H	0.22-0.38	1.2-3.8	9.525	16.5	4.76	3.81	0.4	●	
		160404L-H	0.22-0.38	1.2-3.8	9.525	16.5	4.76	3.81	0.4	●	
		160408R-H	0.22-0.38	1.2-3.8	9.525	16.5	4.76	3.81	0.8	●	
		160408L-H	0.22-0.38	1.2-3.8	9.525	16.5	4.76	3.81	0.8	●	

● Stocked

○ Non-stocked