

**NEW  
PRODUCT!**

# Deep-hole Drilling Insert — AP301U(N)



Achteck is launching general-purpose deep-hole drilling inserts with a high productivity for many industries: energy, construction machinery, injection molding, aviation, shipbuilding, national defense, etc. Good hole straightness in long workpieces and high surface finish. Existing geometries and grades cover good machinability of steel, stainless steel and super-alloy, etc.

### ◆ Application and features


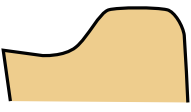

- The inserts can be mounted in the same type of drill body's for deep-hole drilling
- AP301U(N) is the first choice for drilling steel and stainless steel
- All geometries with good chip-breaking effect
- Increased efficiency due to high feed rate
- Resulting in low cost per hole

### ◆ Grade and application

Grade	Coating	Workpiece Material					
		P	M	K	S	N	H
AP301U(N)	PVD	●	◐		○		

- Marked: 1<sup>st</sup> Choice   ◐ Marked: 2<sup>nd</sup> Choice   ○ Marked: Supplementary application
- ISO P : (P15-P35) General-purpose PVD coating with excellent wear-resistance and toughness
- ISO M : (M15-M35) ISO-M General-purpose grade for ISO-M applications, PVD coating with excellent toughness and resistance to built-up edges
- ISO S : (S15-S35) PVD coating with excellent wear resistance and toughness, good resistance to built-up edges

### ◆ Chip breaker features

Chip breaker name	Edge Preparation	Application
DH		<ul style="list-style-type: none"> <li>• General;</li> <li>• With high cutting speed and feed;</li> <li>• Good cutting control in most materials;</li> </ul>
DL		<ul style="list-style-type: none"> <li>• For materials with long chips (such as low carbon alloy steel and duplex stainless steel);</li> <li>• Obtain a safe production process in cutting materials where chip jamming easily could occur</li> </ul>
LH		<ul style="list-style-type: none"> <li>• With open geometry;</li> <li>• Suitable for high cutting speed and feed;</li> </ul>

### Case stories

Work piece: Non-magnetic drill collar

Material: P350 non-magnetic stainless steel

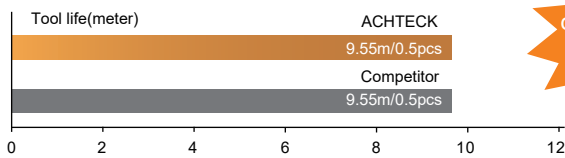
Hardness: HRC36

**Insert: APHT 09T308P-DL AP301U(N)**

Machining type: Inner hole length 9550mm / branch

Cutting parameter: Spindle speed 50 rpm, rotating rod 320 rpm,  
drill pipe feed 30mm / min

Cutting method: Emulsion M1012A



cost reduction  
**40%**

Work piece: Military product (confidential)

Material: 34CrNi3Mo1V

Hardness: HRC38

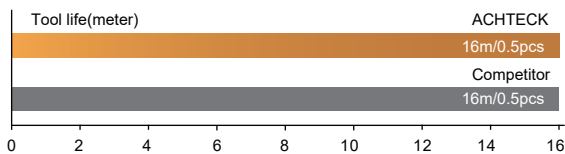
**Insert: EPMT 050308I-DH AP301U(N)/EPMT 050308C-DH AP301U(N)**

Machining type: Inner hole length 1600mm / branch

Cutting diameter: 26mm

Cutting parameter: Rotating rod speed 900 rpm, Drill pipe box feed 100mm / min

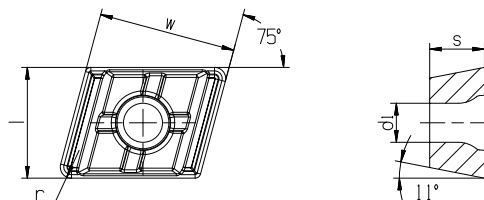
Cutting method: Sulfurized oil



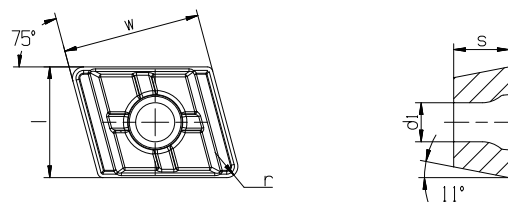
cost reduction  
**30%**

### ● Insert stock item

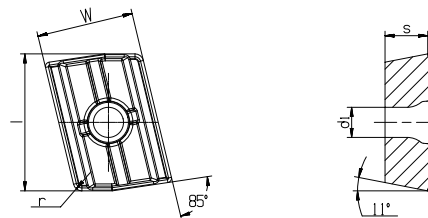
-DH geometry



Center insert	Designation	l	w	s	r	d1	Competitor's designation	Stock
	EPMT 050308C-DH AP301U(N)	5.56	8.00	3.18	0.8	2.5	800-050308M-C-G 1025	●
	EPMT 06T308C-DH AP301U(N)	6.35	9.87	3.97	0.8	2.8	800-06T308M-C-G 1025	●
	EPMT 08T308C-DH AP301U(N)	7.94	9.87	3.97	0.8	2.8	800-08T308M-C-G 1025	●
	EPMT 10T308C-DH AP301U(N)	9.53	9.87	3.97	0.8	2.8	800-10T308M-C-G 1025	●
	EPMT 12T308C-DH AP301U(N)	12.70	9.87	3.97	0.8	2.8	800-12T308M-C-G 1025	●

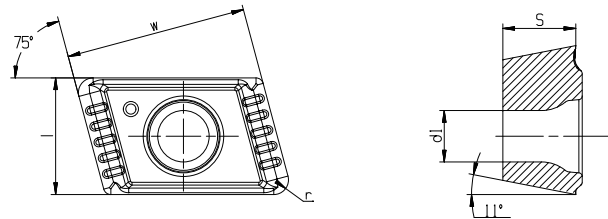


Intermediate insert	Designation	l	w	s	r	d1	Competitor's designation	Stock
	EPMT 050308I-DH AP301U(N)	5.56	8.00	3.18	0.8	2.5	800-050308M-I-G 1025	●
	EPMT 06T308I-DH AP301U(N)	6.35	9.87	3.97	0.8	2.8	800-06T308M-I-G 1025	●
	EPMT 08T308I-DH AP301U(N)	7.94	9.87	3.97	0.8	2.8	800-08T308M-I-G 1025	●
	EPMT 12T308I-DH AP301U(N)	12.70	9.87	3.97	0.8	2.8	800-12T308M-I-G 1025	●

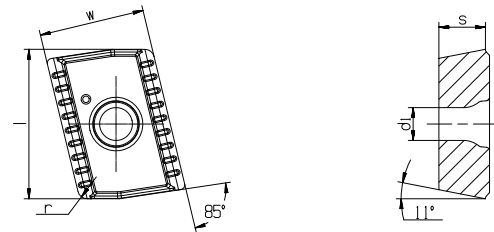


Periphery insert	Designation	l	w	s	r	d1	Competitor's designation	Stock
	APHT 060308P-DH AP301U(N)	6.50	8.00	3.18	0.8	2.5	800-060308H-P-G 1025	●
	APHT 08T308P-DH AP301U(N)	8.50	9.00	3.97	0.8	2.8	800-08T308H-P-G 1025	●
	APHT 09T308P-DH AP301U(N)	9.66	9.00	3.97	0.8	2.8	800-09T308H-P-G 1025	●
	APHT 11T308P-DH AP301U(N)	12.75	9.00	3.97	0.8	2.8	800-11T308H-P-G 1025	●

### -DL geometry

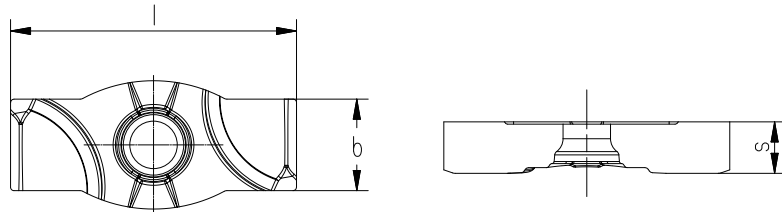


Intermediate insert	Designation	l	w	s	r	d1	Competitor's designation	Stock
	EPMT 050308I-DL AP301U(N)	5.56	8.00	3.18	0.8	2.5	800-050308M-I-L 1025	●
	EPMT 06T308I-DL AP301U(N)	6.35	9.87	3.97	0.8	2.8	800-06T308M-I-L 1025	●
	EPMT 08T308I-DL AP301U(N)	7.94	9.87	3.97	0.8	2.8	800-08T308M-I-L 1025	●
	EPMT 12T308I-DL AP301U(N)	12.70	9.87	3.97	0.8	2.8	800-12T308M-I-L 1025	●



Periphery insert	Designation	l	w	s	r	d1	Competitor's designation	Stock
	APHT 060308P-DL AP301U(N)	6.50	8.00	3.18	0.8	2.5	800-060308H-P-L 1025	●
	APHT 08T308P-DL AP301U(N)	8.50	9.00	3.97	0.8	2.8	800-08T308H-P-L 1025	●
	APHT 09T308P-DL AP301U(N)	9.66	9.00	3.97	0.8	2.8	800-09T308H-P-L 1025	●
	APHT 11T308P-DL AP301U(N)	12.75	9.00	3.97	0.8	2.8	800-11T308H-P-L 1025	●

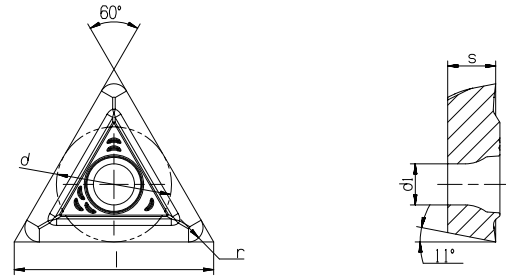
### -Guide pad

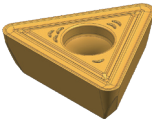


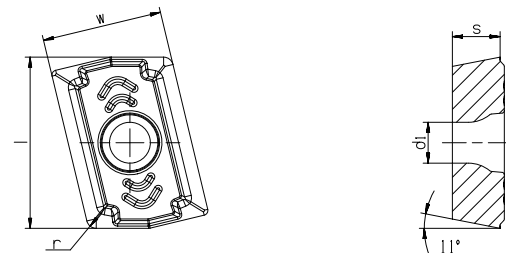
Guide pad	Designation	b	l	s	Competitor's designation	Stock
	GPAD-06A AC301K	6	18	3.0	800-06A PM1	●
	GPAD-07A AC301K	6.9	20	3.5	800-07A PM1	●
	GPAD-08A AC301K	8	25	4.5	800-08A PM1	●
	GPAD-10A AC301K	10	30	4.5	800-10A PM1	●
	GPAD-12A AC301K	12	35	5.5	800-12A PM1	●

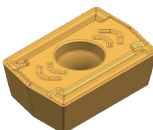
● Represent for standard stock

-DH geometry

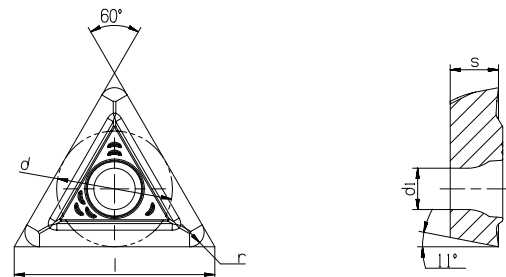


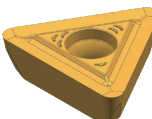
Centerand and intermediate insert	Designation	l	w	s	r	d1	Competitor's designation	Stock
	TPMT 16T312R-DH AP301U(N)	16.5	9.525	3.97	1.2	3.4	TPMT 16T308TR-23 1025	●
	TPMT 220612R-DH AP301U(N)	22.0	12.7	6.35	1.2	4.4	TPMT 220612TR-23 1025	●

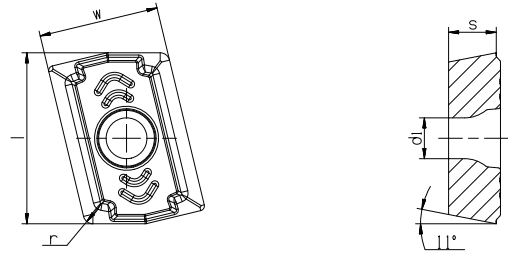


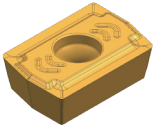
Periphery insert	Designation	l	w	s	r	d1	Competitor's designation	Stock
	APMT 13T308-DH AP301U(N)	14.6	10.0	3.97	0.8	3.4	R424.9-13T308-23 1025	●
	APMT 180608-DH AP301U(N)	20.6	11.5	6.35	0.8	4.4	R424.9-180608-23 1025	●

-LH geometry

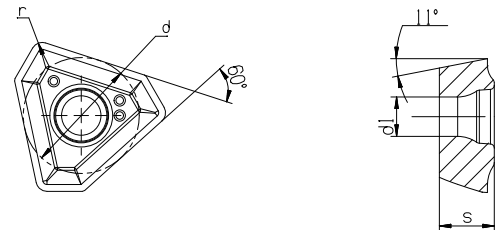


Centerand and intermediate insert	Designation	l	w	s	r	d1	Competitor's designation	Stock
	TPMT 16T312R-LH AP301U(N)	16.5	9.525	3.97	1.2	3.4	TPMT 16T308R-22 1025	●
	TPMT 220612R-LH AP301U(N)	22.0	12.7	6.35	1.2	4.4	TPMT 220612R-22 1025	●



Periphery insert	Designation	l	w	s	r	d1	Competitor's designation	Stock
	APMT 13T308-LH AP301U(N)	14.6	10.0	3.97	0.8	3.4	R424.9-13T308-22 1025	●
	APMT 180608-LH AP301U(N)	20.6	11.5	6.35	0.8	4.4	R424.9-180608-22 1025	●

### -TPMX series insert



Shape	Designation	s	d	r	d1	Competitor's designation	Stock
	TPMX 1403R-DH AP301U(N)	3.5	8.45	0.8	2.87	TPMX 1403RG TT9030	●
	TPMX 1704R-DH AP301U(N)	4.0	10.3	0.8	3.9	TPMX 1704RG TT9030	●
	TPMX 2405R-DH AP301U(N)	5.5	14.2	1.2	4.4	TPMX 2405RG TT9030	●
	TPMX 2405L-DH AP301U(N)	5.5	14.2	1.2	4.4	TPMX 2405LG TT9030	●
	TPMX 2807R-DH AP301U(N)	7.5	17.0	1.6	5.5	TPMX 2807RG TT9030	●

● Represent for standard stock

### Recommended cutting speed by materials(Dia 25.00-65.00mm)

Workpiece material		Brinell hardness (HB)	Grade			Cutting speed Vc m/min	Feed fn mm/r	
			Insert*)				Drilling Dia mm	
			P	I	C		25.00-43.00	43.01-65.00
P	Non-alloyed steel	C=0.05-0.10%	125	AP301U(N)		70-130	0.11-0.41	0.14-0.45
		C=0.10-0.25%	125		70-130	0.11-0.41	0.14-0.45	
		C=0.25-0.55%	150		70-130	0.11-0.41	0.14-0.45	
		C=0.55-0.80%	170		70-130	0.11-0.41	0.14-0.45	
	High carbon steel	Carbon tool steel	210	AP301U(N)		70-120	0.11-0.41	0.20-0.45
	Low-alloyed steel	Non-Hardened	180	AP301U(N)		55-110	0.11-0.41	0.20-0.45
		Tempered	275		70-120	0.11-0.41	0.20-0.45	
		Tempered	350		70-120	0.11-0.41	0.20-0.45	
	High-alloyed steel	Annealed	200	AP301U(N)		55-110	0.11-0.38	0.20-0.40
		Hardened tool steel	325		55-110	0.20-0.38	0.20-0.40	
	Cast steel	Non-alloyed steel	180	AP301U(N)		55-110	0.11-0.41	0.20-0.45
		Low-alloy (alloy<5%)	200		55-110	0.11-0.41	0.20-0.45	
M	Stainless steel	Non-Hardened/Ferritic/martensitic	200	AP301U(N)		40-110	0.11-0.41	0.20-0.45
		Austenitic	200		40-110	0.11-0.41	0.20-0.45	
		Austenitic, precipitation hardened (PH)	300		40-110	0.11-0.33	0.20-0.35	
		Austenitic/ferritic, duplex	230		40-80	0.11-0.33	0.20-0.35	
S	Heat-resistant alloys	Fe-based Annealed	200	AP301U(N)		10-55	0.09-0.30	0.20-0.33
		Fe-based Hardened	280		10-55	0.09-0.30	0.20-0.33	
		Ni or Co-based Annealed	250		10-55	0.09-0.30	0.20-0.33	
		Ni or Co-based Hardened	350		10-55	0.09-0.30	0.20-0.33	
		Ni or Co-based cast	320		10-55	0.09-0.30	0.20-0.33	
	Titanium alloys	Pure titanium	200	AP301U(N)		30-60	0.09-0.30	0.20-0.33
		α alloys	375		30-60	0.09-0.30	0.20-0.33	
		α and β alloys	375		30-60	0.09-0.30	0.20-0.33	
		β alloys	410		30-60	0.09-0.30	0.20-0.33	
K	Malleable cast iron	Ferritic	200	AP301U(N)		80-120	0.11-0.38	0.24-0.41
		Pearlitic	260		80-120	0.11-0.38	0.24-0.41	
	Grey cast iron	Low tensile strength	180	AP301U(N)		60-110	0.11-0.38	0.24-0.41
		High tensile strength	245		60-110	0.11-0.38	0.24-0.41	
	Cast iron with spheroidal graphite	Ferritic	160	AP301U(N)		50-110	0.11-0.38	0.24-0.41
		Pearlitic	250		50-110	0.11-0.38	0.24-0.41	
GGV (CGI)	GGV (CGI)	230						
H	Hardened steel	Hardened and tempered	43-47 HRC					
	Hardened cast iron		47- 60 HRC					
N	Aluminium wrought alloys	Cannot be hardened	30	AP301U(N)		65-150	0.09-0.33	0.20-0.33
		Hardenable, hardened	100		65-150	0.09-0.33	0.20-0.33	
	Cast aluminium alloys	≤ 12 % Si, cannot be hardened	75	AP301U(N)		65-150	0.09-0.33	0.20-0.33
		≤ 12 % Si hardened	90		65-150	0.09-0.33	0.20-0.33	
		> 12 % Si, cannot be hardened	130		65-150	0.09-0.33	0.20-0.33	
	Magnesium alloy		70					
	Copper and copper alloys	Non-alloyed, electrolytic copper	100	AP301U(N)		65-150	0.09-0.33	0.20-0.33
	(Bronze/Brass)	Brass, bronze, red brass	90	AP301U(N)		65-150	0.09-0.33	0.20-0.33
Cu-alloys, short-chipping		110	65-150		0.09-0.33	0.20-0.33		
High-strength Ampco		300	65-150		0.09-0.33	0.20-0.33		
O	Thermoplastics	Without abrasive fillers						
	Thermosetting plastics	Without abrasive fillers						
	Plastic, glass-fibre reinforced	GFRP						
	Plastic, carbon-fibre reinforced	CFRP						
	Plastic, aramid-fibre reinforced	AFRP						
	Graphite (technical)							

\*) Insert position-P, I, C

P=peripheral insert, I=intermediate insert, C=center insert





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