

**NEW**  
**PRODUCT!**

# APE90-LN09

Porcupine Milling cutter



◆ Porcupine Milling cutter Naming System

A<sub>1</sub> PE<sub>2</sub> 90<sub>3</sub> - 050<sub>4</sub> - Z04<sub>5</sub> - A<sub>6</sub> 22<sub>7</sub> R<sub>8</sub> - LN09<sub>9</sub> - L48<sub>10</sub> - F<sub>11</sub> - C<sub>12</sub>

1-Achteck

2 - Machining type	
PE	Porcupine Milling
SM	Shoulder Milling
PM	Profiling Milling
HM	High Feed Milling
DM	Side and Face Milling

3-Approach Angle (Kr)	
Figure	Angle
90	90°
88	88°
60	60°
45	45°

4-Cutter Diameter	
025	25mm
063	63mm
080	80mm
.	.
250	250mm

5-Number of Tooth	
Z02	2 Teeth
Z04	4 Teeth
Z05	5 Teeth
.	.
Z30	30 Teeth

6-Connection Type	
A	Arbor
W	Weldon shank
C	Cylinder Shank
N	With Chamfering Weldon shank
M	Screw Modular

7-Connection Part Size	
22	Connection Part Diameter 22mm

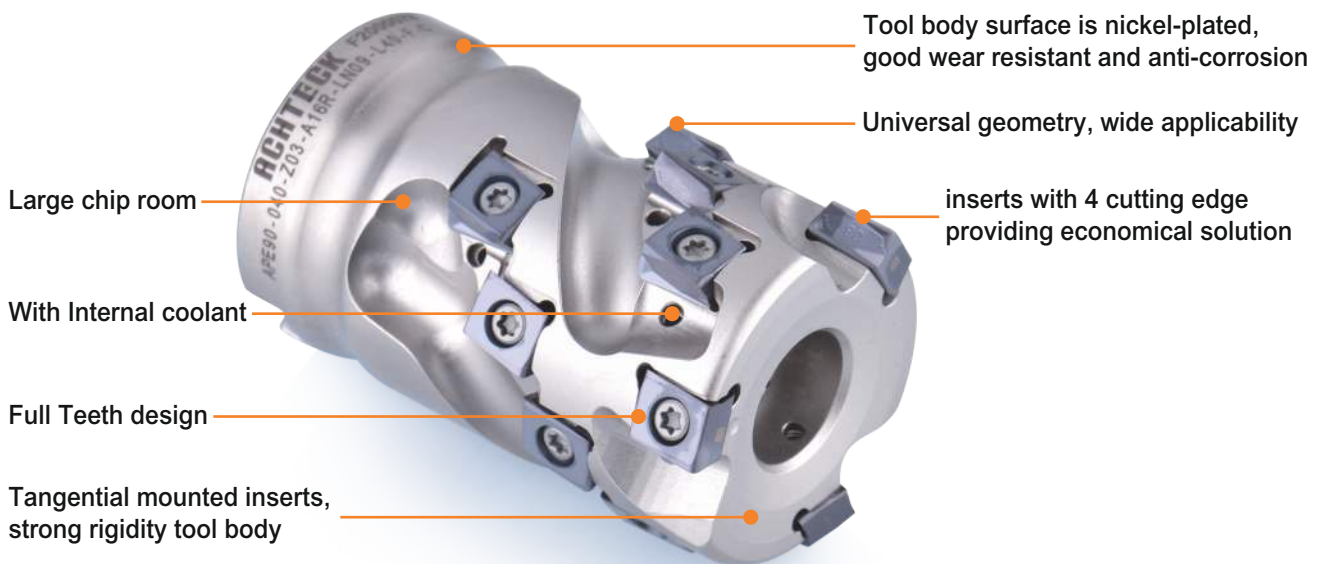
8-Hand of Tool	
R	Right hand
L	left hand

9-Inserts information	
LN09	LN09 series inserts

10-Max. working cutting edge length	
L30	30MM
L48	48MM
L56	56MM

11-Cutter Type	
F	Full Teeth
H	Half Teeth

12-Others	
-C	With internal coolant
Default	Without internal coolant

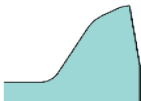


● **APE90-LN09 Porcupine Milling cutter**

- Full teeth porcupine milling cutter with 90°approaching angle
- With tangential mounted double-side total 4 cutting edge LN09 inserts, to provide high efficiency and economical solution
- For swarf machining and face milling machining application
- Accurate coolant holes provided for each mounted inserts
- Multiple connection types
  - Weldon shank type diameter: φ25-40mm
  - Arbor type diameter: φ40-50mm
  - Screw Modular type diameter: φ25-32mm
- Max. Cutting depth
  - Weldon shank type: apmax=48mm
  - Arbor type: apmax=48mm
  - Screw Modular type: apmax=32mm
- Inserts corner radius
  - R0.4/0.8/1.2/1.6/2.0



● **Chipbreaker features**

chipbreaker	cutting edge shape	application accassion
<b>MR2</b>		<ul style="list-style-type: none"> <li>● 35° rake angle</li> <li>● can used for most of materials</li> <li>● For medium machining conditions</li> </ul>

● **Grade application range**

Grade	Coating	Materials					
		P	M	K	S	N	H
AP301U	PVD	●	◐		○		
AP351U	PVD	●	◐		○		
AP401U	PVD		●		◐		
AC301P	CVD	●	◐	○			
AC301K	CVD			●			◐
AP351K	PVD			●			

● Marked : 1<sup>st</sup> Choice   ◐ Marked : 2<sup>nd</sup> Choice   ○ Marked : Supplementary application

• **Case study**

Workpiece name: Engine cylinder

Materials: HT250

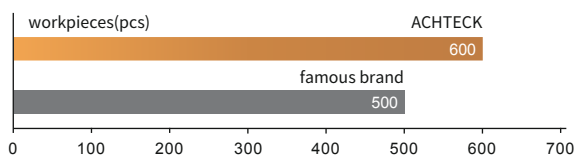
Inserts: LNHU 0904008ER-MR2 AP351K

Cutter: APE90-025-Z02-M16R-LN09-L24-F-C

Machining process name: Rough milling the BOSS

Cutting parameters:  $V_c=196\text{m/min}$ ,  $a_p=20\text{mm}$ ,  
 $a_e=3\text{mm}$ ,  $f_z=0.24$

Cutting types: with coolant



Tool life improved up to 20%



Workpiece name: linear slide block

Materials: 20CrMoTi

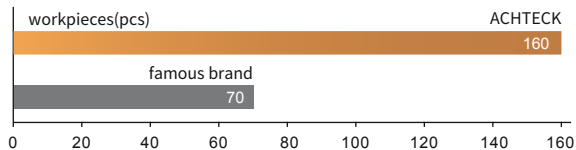
Inserts: LNHU 0904008ER-MR2 AP351U

Cutter: APE90-040-Z03-A16R-LN09-L40-F-C

Machining process name: Rough milling U shape slot

Cutting parameters:  $V_c=160\text{m/min}$ ,  $a_p=15\text{mm}$ ,  
 $a_e=40\text{mm}$ ,  $f_z=0.13$

Cutting types: with coolant

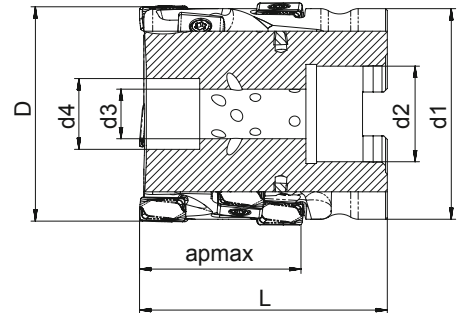


Tool life improved up to 128%



● Porcupine Milling Cutter stock types

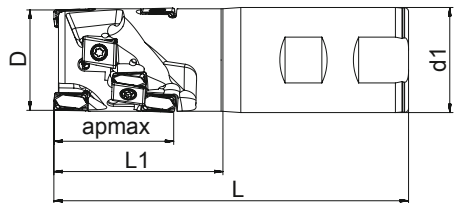
APE90-LN09-C Arbor type cutter



Designation	Dimension							Coolant	Screw type	Z	Segment	Total Inserts	Inserts
	D	d1	L	d2	d3	d4	apmax						
APE90-040-Z03-A16R-LN09-L32-F-C	40	38	55	16	9	15	32		SH080400	3	4	12	LNHU 0904
APE90-040-Z03-A16R-LN09-L40-F-C	40	38	65	16	9	15	40		SH080500	3	5	15	
APE90-050-Z04-A22R-LN09-L48-F-C	50	47.5	75	22	11	18	48		SH100550	4	6	24	

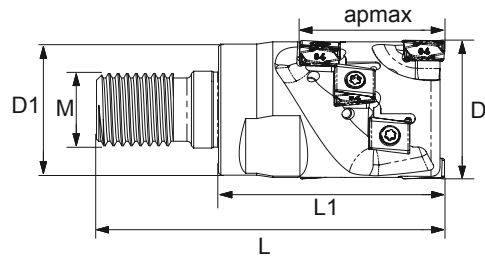
Screw type	Designation	Screw specification	Torque
	SH080400	M8*40	41N-m
	SH080500	M8*50	41N-m
	SH100550	M10*55	81N-m

APE90-LN09-C Weldon shank type



Designation	Dimension					Coolant	Z	Segment	Total Inserts	Inserts
	D	d1	L	L1	apmax					
APE90-025-Z02-W25R-LN09-L32-F-C	25	25	100	43	32		2	4	8	LNHU 0904
APE90-032-Z02-W32R-LN09-L32-F-C	32	32	105	44	32		2	4	8	
APE90-032-Z02-W32R-LN09-L40-F-C	32	32	110	50	40		2	5	10	
APE90-040-Z03-W40R-LN09-L40-F-C	40	40	125	55	40		3	5	15	
APE90-040-Z03-W40R-LN09-L48-F-C	40	40	130	59	48		3	6	18	

APE90-LN09-C APE90-LN09-C Screw Modular

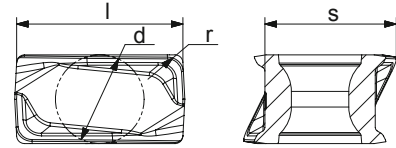


Designation	Dimension						Coolant	Z	Segment	Inserts qty.	Inserts
	D	D1	L	L1	M	apmax					
APE90-025-Z02-M12R-LN09-L24-F-C	25	23.4	64	40	12	24		2	3	6	LNHU 0904
APE90-032-Z02-M16R-LN09-L24-F-C	32	30	67	40	16	24		2	3	6	
APE90-032-Z02-M16R-LN09-L32-F-C	32	30	77	50	16	32		2	4	8	

Dimension	Cutter spare parts				
	Cutter size	screw	wrench	installation wrench	Torque
Φ25-Φ50		SP030083	DT-TP09	AFW-15/24	1.8Nm

● **Insert stock item**

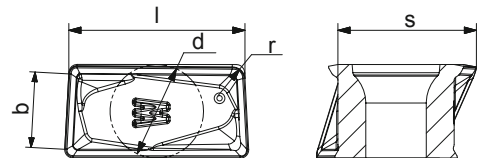
LNHU 09 Inserts stock models



Inserts	Designation	Dimension				Coating						Uncoated
		l	d	s	r	AP301U	AC301P	AP351U	AP401M	AC301K	AP351K	AW100K
	LNHU 090404ER-FM2	9	4.5	7.50	0.4							●
	LNHU 090404ER-MM3	9	4.5	7.50	0.4			●	●			
	LNHU 090404ER-MR2	9	4.5	7.50	0.4	●		●	●	●	●	
	LNHU 090408ER-MR2	9	4.5	7.45	0.8	●		●	●	●	●	
	LNHU 090412ER-MR2	9	4.5	7.40	1.2	●			●	●		
	LNHU 090416ER-MR2	9	4.5	7.35	1.6	●			●	●		
	LNHU 090420ER-MR2	9	4.5	7.31	2.0	●			●	●		

Remarked: ● represent for standard stock

LNHU 09 with wiper inserts



刀片	型号	尺寸					涂层						无涂层
		b	l	d	s	r	AP301U	AC301P	AP351U	AP401M	AC301K	AP351K	AW100K
	LNHU 090404ER-W	3.6	9.24	4.5	7.4	0.4	●				●		

Remarked: ● represent for standard stock

**Recommended cutting speed by materials**

ISO	Machined Materials		Achteck Milling Grades Application Ranges															Cutting depth and feed								
			AC301K	AP351K	AP301U	AP351U	AP401M	AW100K														MR2				
	Material classification	Tensile strength (N/mm <sup>2</sup> )	Hardness (HB)	1/10	1/5	1/1	1/10	1/5	1/1	1/10	1/5	1/1	1/10	1/5	1/1	1/10	1/5	1/1	Min	Max	Min	Max				
feed(mm/z)-according to different ae/Dc															MR2											
P	Non-alloyed steel			cutting speed(m/min)															Feed(mm/z)							
				1/10	1/5	1/1	1/10	1/5	1/1	1/10	1/5	1/1	1/10	1/5	1/1	1/10	1/5	1/1	1/10	1/5	1/1	Min	Max	Min	Max	
P	Non-alloyed steel			<600				450	340	290	230	205	170	450	340	290				0.10	-	0.18	0.10	-	0.20	
				<950				320	240	200	200	180	160	320	240	200				0.10	-	0.16	0.10	-	0.18	
				700-950				290	210	185	200	155	110	290	210	185				0.10	-	0.16	0.10	-	0.18	
				950-1200				280	210	200	180	130	90	280	210	200				0.10	-	0.14	0.10	-	0.16	
M	Alloyed steel			1200-1400															0.10	-	0.14	0.10	-	0.16		
				Duplex stainless steel	778				165	150	130	270	215	155	150	115	85			0.08	-	0.16	0.10	-	0.18	
				Austenitic stainless steel	675				270	185	90	260	180	90	185	140	105			0.08	-	0.14	0.10	-	0.14	
				Precipitation-hardening stainless steel	1013																0.08	-	0.14	0.10	-	0.14
K	Grey cast iron			700	480	310	140	390	280	130																
				880	450	295	140	350	250	120																
				800	336	220	100	270	200	100																
S	Fe based alloy			943																						
											45	40	30	50	40	30				0.07	-	0.12	0.08	-	0.12	
											45	40	30	45	38	30				0.07	-	0.12	0.08	-	0.12	
											45	40	30	45	38	30				0.07	-	0.12	0.08	-	0.12	
											100	70	45	100	75	30				0.07	-	0.12	0.08	-	0.12	
N	Aluminum			260																						
				Aluminum alloy	447																					
H	Hardened steel			-																						
				Chilled cast iron	-																					

\* 此表仅显示通用切削条件,实际选用应根据机床刚性、刀具、工件的条件和冷却液等因素来调整。