



ACHTECK
澳克泰工具

// 2024.12

Shoulder Milling Cutter ——AO Series

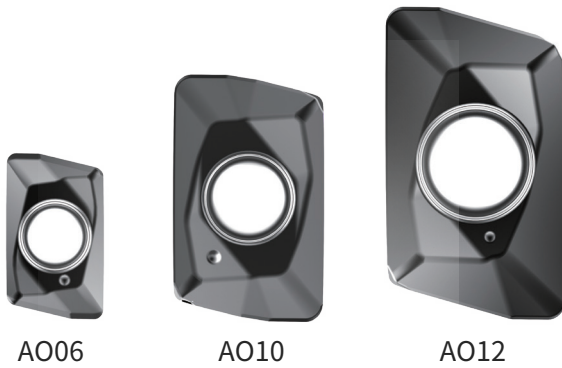


NO.098

www.achtecktool.com

Features of AO inserts

AO series shoulder milling cutter with two cutting edge was launched by ACHTECK. Spiral side cutting edge design can achieve lower cutting force and smooth cut. Pressing and ground precision inserts are suitable for all kinds of cutting conditions. Inserts with own designed substrate and coating can meet different requirements on machining various materials, significant advantage in S and M material group.

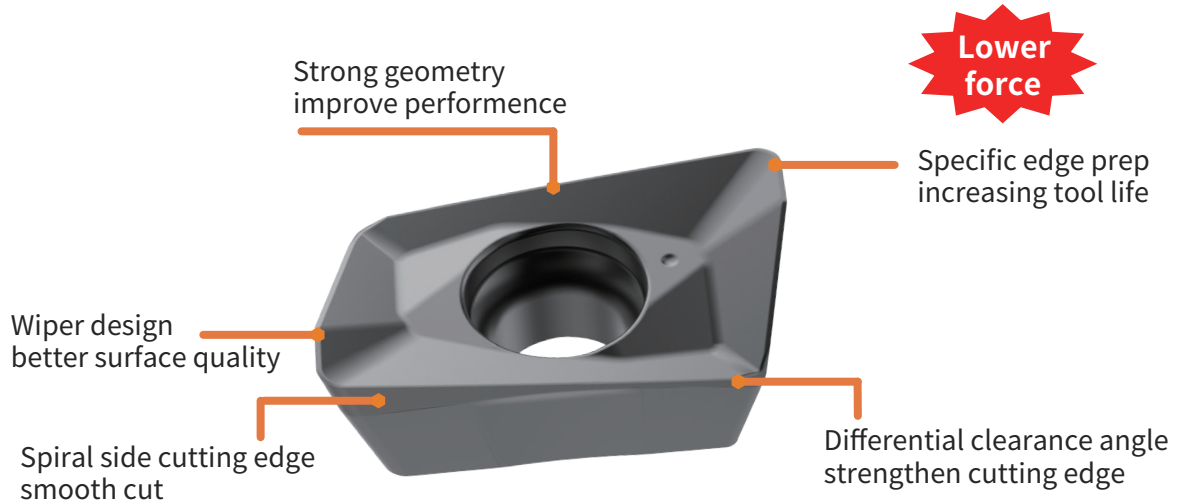


AO06

AO10

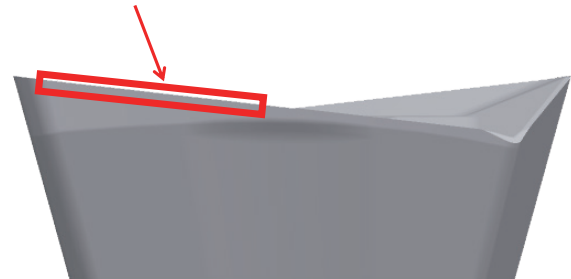
AO12

- Approaching angle: accurate 90°, to achieve precise square machining.
- Spiral side cutting edge design, offers lower cutting force, smooth cut and better universal.
- Wiper design provides better surface quality.
- Full range of grades for the 3 dimensions-06, 10, 12.
- Porcupine cutter with AO inserts achieves high efficiency and improves MRR. Max. D.O.C: 85mm.
- Variety interface style of the cutter can meet your different application needs. Arbor/cylindrical/weldon/screw cutter.



Accurate 90° approaching angle and large positive inclination angle

Smooth cut, reduce cutting force and risk of vibration

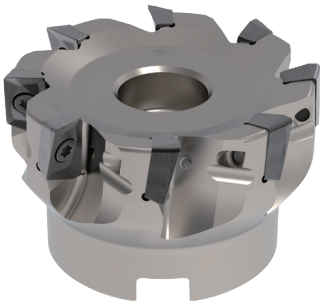



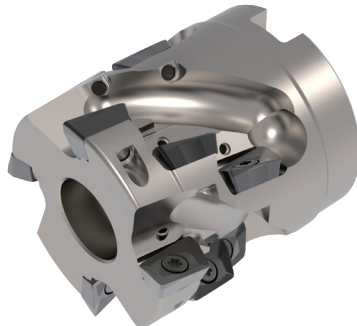

Spiral side cutting edge design

• Cutter body introduction of AO series

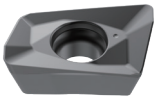

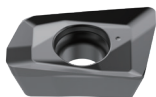


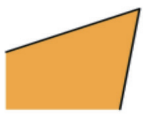
AO06 Cutter specification	
	
	
Diameter range	ø10-ø25mm
Corner radius	R0.4/0.8mm
Max. DOC	5mm
Interface of body	cylindrical
ISO	P M K S

AO10 Cutter specification	
	
	
Diameter range	ø16-ø40mm
Corner radius	R0.8/1.6/3.1mm
Max. DOC	9mm
Interface of body	Cylindrical/weldon/arbor
ISO	P M K S H

AO12 Cutter specification	
	
	
Diameter range	ø20-ø80mm
Corner radius	R0.4/0.8/1.2/1.6/2.0/2.4/3.1/4.0mm
Max. DOC	11mm
Interface of body	Cylindrical/weldon/arbor/screw on
ISO	P M K N S H

APE90-AO12 Porcupine cutter specification	
	
	
Diameter range	ø25-ø80mm
Corner radius	R0.4/0.8/1.2/1.6/2.0/2.4/3.1/4.0mm
Max. DOC	85mm
Interface of body	Cylindrical/arbor
ISO	P M K N S H

◆ Geometries

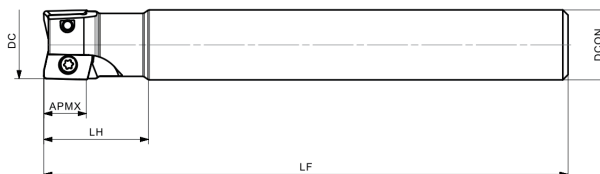
Insert	Geometry	Cutting edge	Application range
	MM4		<ul style="list-style-type: none"> • For medium cutting conditions • 1st choice for general machining
	MM3		<ul style="list-style-type: none"> • For good cutting conditions, finishing • Low cutting force, can be used for low-power machines
	FM2		<ul style="list-style-type: none"> • Sharp geometry • Low cutting force • Used for aluminum machining

◆ Grades

Grade	Coating type	ISO Material Group					
		P	M	K	N	S	H
AP251U	PVD	●	◐	◐			
AP351M	PVD	◐	●			◐	
AP403M	PVD	◐	●			◐	
AP251K	PVD			●			
AP403S	PVD		◐			●	
AP151H	PVD			◐			●
AW100K	Uncoating				●		

Note: ●1st choice ◐2nd

◆ **ASM90-AO06**

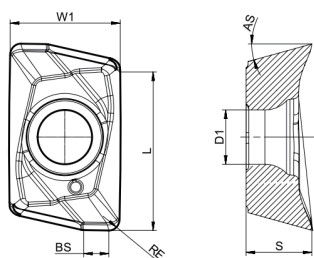


Product code	DC	DCON	LF	LH	APMX	Coolant	Weight (kg)	Z	Insert
ASM90-010-Z02-C10R-AO06-L060-C	10	10	60	20	5		0.1	2	AOMT 0602..
ASM90-010-Z02-C10R-AO06-L100-C	10	10	100	35	5		0.1	2	
ASM90-012-Z03-C12R-AO06-L070-C	12	12	70	20	5		0.1	3	
ASM90-012-Z03-C12R-AO06-L120-C	12	12	120	35	5		0.1	3	
ASM90-014-Z03-C16R-AO06-L100-C	14	14	100	35	5		0.1	3	
ASM90-016-Z04-C16R-AO06-L090-C	16	16	90	35	5		0.1	4	
ASM90-016-Z03-C16R-AO06-L150-C	16	16	150	35	5		0.2	3	
ASM90-020-Z05-C20R-AO06-L100-C	20	20	100	35	5		0.2	5	
ASM90-020-Z04-C20R-AO06-L150-C	20	20	150	35	5		0.3	4	
ASM90-025-Z05-C25R-AO06-L100-C	25	25	100	35	5		0.3	5	

Note: with internal coolant
 without internal coolant

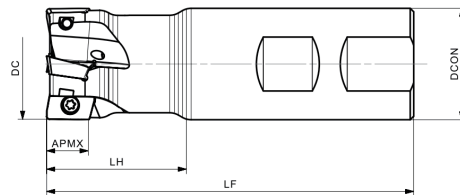
Dimension(mm)	Accessory		
Dia. Range	Screw	Wrench	Torque
Ø10-Ø25	SP01803655	FT-TP05	0.3Nm

◆ **ASM90-AO06 Insert**

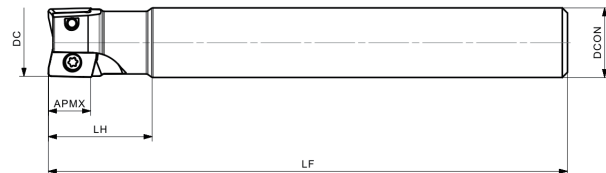


Insert	Product code	Dimensions (mm)						Recommended cutting condition							
		L	W1	S	RE	BS	D1	Good condition ● General condition ◐ Bad condition ◑							
								P		M		K		S	
								AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AP403S	
	AOMT 060204ER-MM3	5.8	4.1	2.4	0.4	0.9	2.0	●		●	●			●	
	AOMT 060208ER-MM3	5.8	4.1	2.4	0.8	0.5	2.0	●		●	●			●	

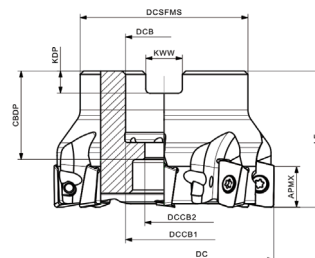
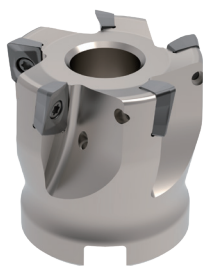
• **ASM90-AO10**



Product code	DC	DCON	LF	LH	APMX	Coolant	Weight (kg)	Z	Insert
ASM90-025-Z04-W25R-AO10-C	25	25	100	35	9		0.4	4	AOMT 10T3..
ASM90-032-Z05-W32R-AO10-C	32	32	110	35	9		0.6	5	



Product code	DC	DCON	LF	LH	APMX	Coolant	Weight (kg)	Z	Insert
ASM90-016-Z02-C16R-AO10-L130-C	16	16	130	26	9		0.2	2	AOMT 10T3..
ASM90-020-Z03-C20R-AO10-L150-C	20	20	150	30	9		0.4	3	

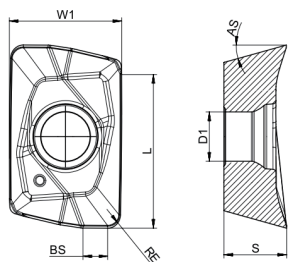


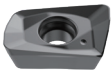
Product code	DC	DCSFMS	DCB	DCCB1	DCCB2	LF	CDBP	KDP	KWW	APMX	Coolant	Weight (kg)	Z	Insert
ASM90-040-Z05-A16R-AO10-C	40	35	16	14	9	40	24	5.8	8.4	9		0.2	5	AOMT 10T3..

Note: with internal coolant
 without internal coolant

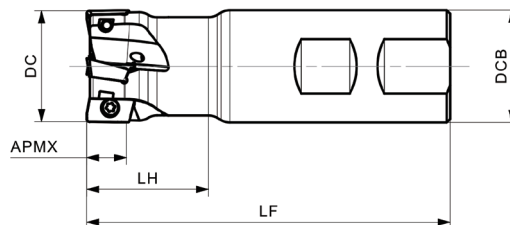
Dimension(mm)	Accessory		
Dia. Range	Screw	Wrench	Torque
Ø10-Ø25	SP02506450H	FT-TP08	1.2Nm

◆ **ASM90-AO10 Insert**

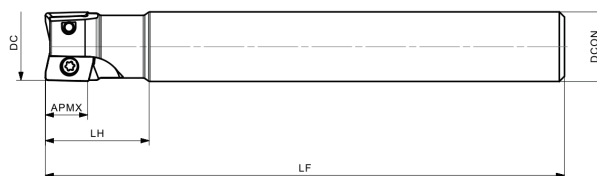


Insert	Product code	Dimensions (mm)						Recommended cutting condition								
		L	W1	S	RE	BS	D1	P		M		K		S		H
								AP251U	AP351U	AP351M	AP403M	AC301K	AP251K	AP403S	AP151H	
	AOMT 10T308ER-MM4	9.4	8.0	3.8	0.8	1.5	3.0	●		●					●	●
	AOMT 10T316ER-MM4	9.4	8.0	3.8	1.6	1.2	3.0				●				●	
	AOMT 10T331ER-MM4	9.4	8.0	3.8	3.1	-	3.0			●					●	

◆ **ASM90-AO12**



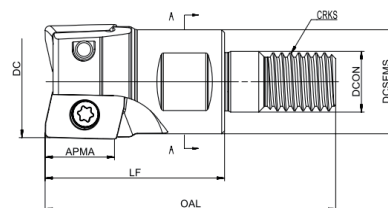
Product code	DC	DCON	LF	LH	APMX	Coolant	Weight (kg)	Z	Insert
ASM90-020-Z02-W20R-AO12-C	20	20	85	30	11		0.2	2	AO.T 1204..
ASM90-025-Z03-W20R-AO12-C	25	20	95	35	11		0.2	3	
ASM90-032-Z04-W32R-AO12-C	32	32	105	40	11		0.5	4	
ASM90-040-Z04-W32R-AO12-C	40	32	120	45	11		0.7	4	



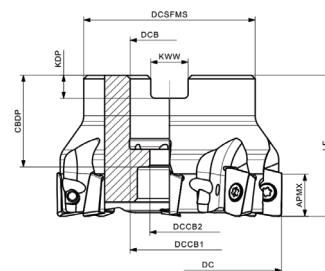
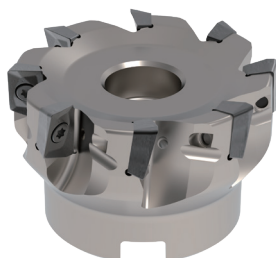
Product code	DC	DCON	LF	LH	APMX	Coolant	Weight (kg)	Z	Insert
ASM90-020-Z02-C20R-AO12-L150-C	20	20	150	28	11		0.3	2	AO.T 1204..
ASM90-025-Z03-C25R-AO12-L170-C	25	25	170	33	11		0.6	3	
ASM90-032-Z04-C32R-AO12-L250-C	32	32	250	35	11		1.4	4	

Note: with internal coolant
 without internal coolant

• **ASM90-AO12**



Product code	DC	DCSFMS	DCON	OAL	LF	CRKS	APMX	Coolant	Weight (kg)	Z	Insert
ASM90-020-Z02-M10R-AO12-C	20	23	10.5	51	31	M10	11		0.1	2	AO.T 1204..
ASM90-025-Z03-M12R-AO12-C	25	30	12.5	59	37	M12	11		0.1	3	
ASM90-032-Z04-M16R-AO12-C	32	30	17	72	48	M16	11		0.2	4	
ASM90-035-Z04-M16R-AO12-C	35	32	17	72	48	M16	11		0.3	4	



Product code	DC	DCSFMS	DCB	DCCB1	DCCB2	LF	CBDP	KDP	KWW	APMX	Coolant	Weight (kg)	Z	Insert
ASM90-040-Z04-A16R-AO12-C	40	35	16	14	9	40	24	5.8	8.4	11		0.2	4	AO.T 1204..
ASM90-050-Z05-A22R-AO12-C	50	42	22	18	11	40	26	6.5	10.4	11		0.3	5	
ASM90-050-Z07-A22R-AO12-C	50	42	22	18	11	40	26	6.5	10.4	11		0.3	7	
ASM90-063-Z06-A22R-AO12-C	63	48	22	18	11	40	26	6.5	10.4	11		0.5	6	
ASM90-063-Z08-A22R-AO12-C	63	48	22	18	11	40	26	6.5	10.4	11		0.5	8	
ASM90-080-Z07-A27R-AO12-C	80	62	27	20	14	50	29	7.2	12.4	11		1.2	7	
ASM90-080-Z10-A27R-AO12-C	80	62	27	20	14	50	29	7.2	12.4	11		1.1	10	

Remark: Regrind the tip of the cutter when inserts' radius over R2.4

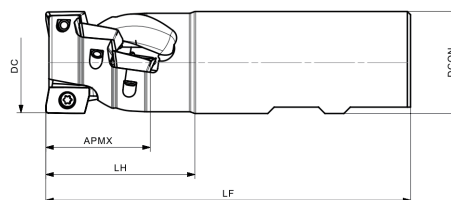
Regrind the tip of the cutter to R1.5 when the radius of the mounted inserts is R2.4

Regrind the tip of the cutter to R2.0 when the radius of the mounted inserts is R3.1

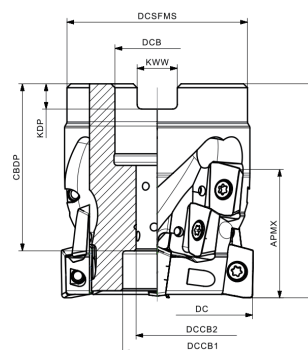
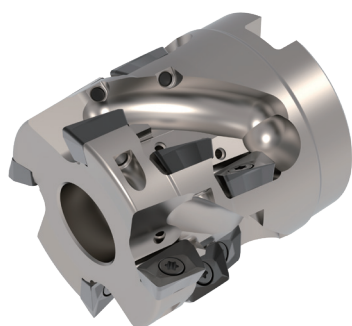
Regrind the tip of the cutter to R3.0 when the radius of the mounted inserts is R4.0

Note: with internal coolant
 without internal coolant

• **APE90-AO12 Porcupine cutter**



Product code	DC	DCON	LF	LH	APMX	Coolant	Weight (kg)	Z	Row	Insert quantity	Insert
APE90-025-Z02-W25R-AO12-L32-F-C	25	25	115	38	32		0.3	2	3	6	AO.T 1204..
APE90-032-Z02-W32R-AO12-L32-F-C	32	32	115	45	32		0.6	2	3	6	
APE90-040-Z04-W40R-AO12-L53-F-C	40	40	140	67	53		1.0	4	5	20	

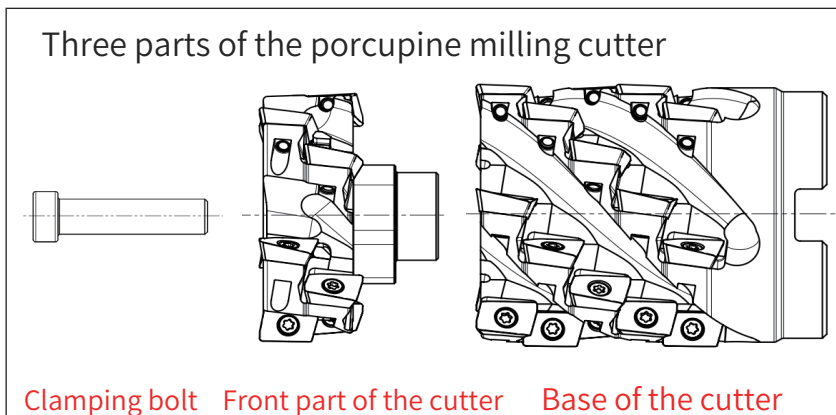
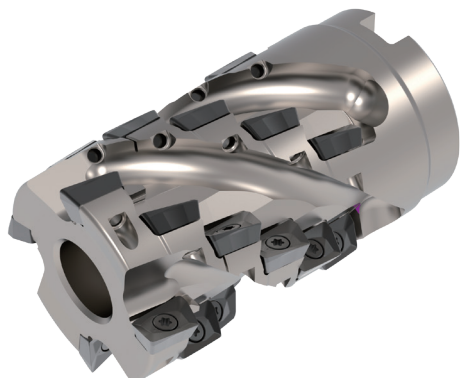


Product code	DC	DCSFMS	DCB	DCCB1	DCCB2	LF	CBDP	KDP	KWW	APMX	Coolant	Weight (kg)	Z	Row	Insert quantity	Clamping bolt	Insert
APE90-050-Z04-A22R-AO12-L32-F-C	50	46	22	18	11	55	43	6.5	10.4	32		0.4	4	3	12	SH100400	AO.T 1204..
APE90-063-Z05-A27R-AO12-L43-F-C	63	59	27	20	14	66	52	7.2	12.4	43		1.0	5	4	20	SH120500	
APE90-080-Z06-A32R-AO12-L64-F-C	80	76	32	26	18	88	69	8.2	14.4	64		2.2	6	6	36	SH160700	

Note: Clamping bolt included in packaging

Note: with internal coolant
 without internal coolant

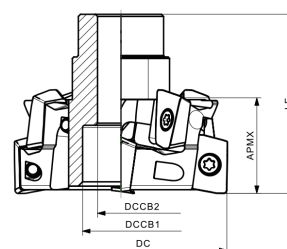
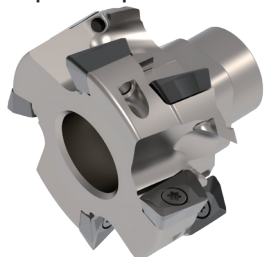
• APE90S-AO12 Porcupine milling cutter



Combination struction

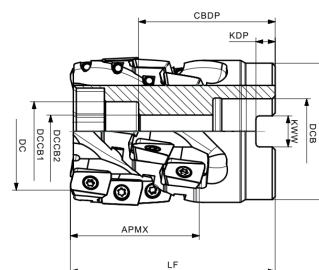
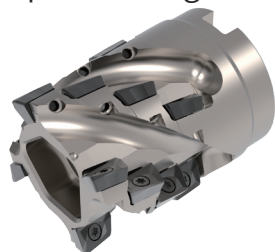
Front part of the cutter	Base of the cutter	Segmented porcupine milling cutter
APE90H-050-Z04-AO12-L21-F	APE90B-050-Z04-A22R-AO12-L43-F	APE90S-050-Z04-A22R-AO12-L64-F
APE90H-063-Z05-AO12-L21-F	APE90B-063-Z05-A27R-AO12-L53-F	APE90S-063-Z05-A27R-AO12-L74-F
APE90H-080-Z06-AO12-L21-F	APE90B-080-Z06-A32R-AO12-L64-F	APE90S-080-Z06-A32R-AO12-L85-F

Front part of porcupine milling cutter



Product code	DC	DCCB1	DCCB2	LF	APMX	Coolant	Weight(kg)	Z	Row	Insert quantity	Insert
APE90H-050-Z04-AO12-L21-F	25	18	11	64	24		0.2	2	2	6	AO.T 1204..
APE90H-063-Z05-AO12-L21-F	32	20	14	67	24		0.4	2	2	6	
APE90H-080-Z06-AO12-L21-F	32	26	18	77	32		0.6	2	2	8	

Base of porcupine milling cutter

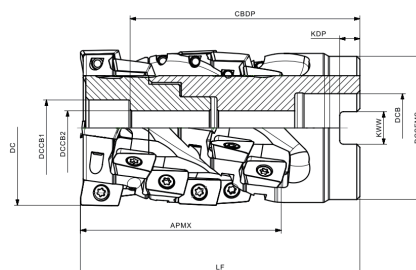
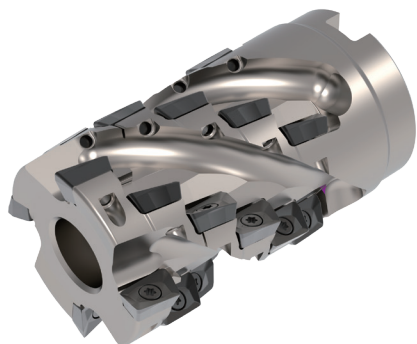


Product code	DC	DCSFMS	DCB	DCCB1	DCCB2	LF	CBDP	KDP	KWW	APMX	Coolant	Weight (kg)	Z	Row	Insert quantity	Insert
APE90B-050-Z04-A22R-AO12-L43-F	50	46	22	20	11	69	46	6.5	10.4	43		0.5	4	4	16	AO.T 1204..
APE90B-063-Z05-A27R-AO12-L53-F	63	59	27	22	14	79	56	7.2	12.4	53		1.1	5	5	25	
APE90B-080-Z06-A32R-AO12-L64-F	80	76	32	28	18	89	67.5	8.2	14.4	64		2.2	6	6	36	

Note: Buying front and basic part of porcupine milling cutter are without clamping bolt and wrench

Note: with internal coolant
 without internal coolant

● **APE90S-AO12 Segmented porcupine milling cutter**



Product code	DC	DCSFMS	DCB	DCCB1	DCCB2	LF	CDBP	KDP	KWW	APMX	Coolant	Weight (kg)	Z	Row	Insert quantity	Clamping bolt	Insert
APE90S-050-Z04-A22R-AO12-L64-F	50	46	22	18	11	90	74	6.5	10.4	64		0.7	4	6	24	SH100700	AO.T 1204..
APE90S-063-Z05-A27R-AO12-L74-F	63	59	27	20	14	100	84	7.2	12.4	74		1.4	5	7	35	SH120800	
APE90S-080-Z06-A32R-AO12-L85-F	80	76	32	26	18	110	92	8.2	14.4	85		2.8	6	8	48	SH160900	

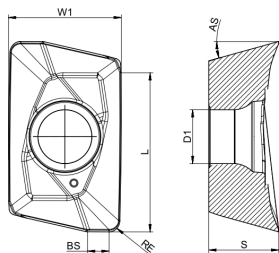
Note: with internal coolant
 without internal coolant

Dimension(mm)	Accessory		
Dia. Range	Screw	Wrench	Torque
Ø20-Ø80	SP035086 	DT-TP10 	3.5Nm

Note: Clamping bolt included in packaging


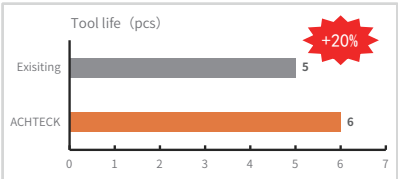
Diagram	Clamping bolt	Specification	Torque
	SH100400	M10 *40	81N-m
	SH120500	M12 *50	142N-m
	SH160700	M16 *70	350N-m
	SH100700	M10 *70	81N-m
	SH120800	M12 *80	142N-m
	SH160900	M16 *90	350N-m

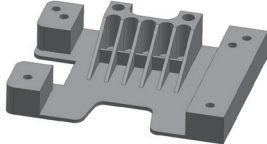
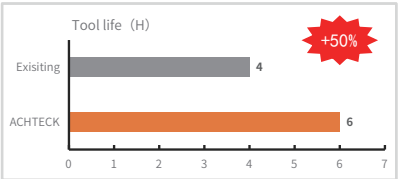
• ASM90/APE90/APE90S-AO12 Insert

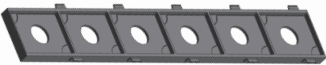
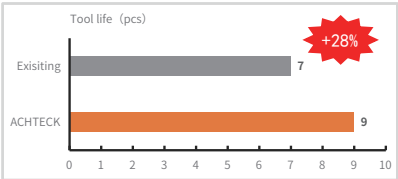



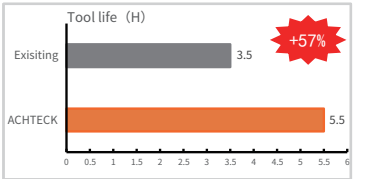
Insert	Product code	Dimensions (mm)							Recommended cutting condition							
		L	W1	S	RE	BS	D1	AS	Good condition ●		General condition ◐		Bad condition ◑			
									P	M	K	S	N			
									AP25IU	AP35IU	AP35IM	AP403M	AC301K	AP251K	AP403S	AW100K
	AOMT 120404ER-MM4	12.8	10	5	0.4	1.9	3.9	15.5°	●		●	●		●	●	
	AOMT 120408ER-MM4	12.8	10	5	0.8	1.5	3.9	15.5°	●		●	●		●	●	
	AOMT 120412ER-MM4	12.8	10	5	1.2	1.2	3.9	15.5°	●		●	●			●	
	AOMT 120416ER-MM4	12.8	10	5	1.6	1.2	3.9	15.5°			●	●			●	
	AOMT 120420ER-MM4	12.8	10	5	2.0	1.0	3.9	15.5°	●		●	●			●	
	AOMT 120424ER-MM4	12.8	10	5	2.4	0.9	3.9	15.5°	●		●	●			●	
	AOMT 120431ER-MM4	12.8	10	5	3.1	0.6	3.9	15.5°	●		●	●			●	
	AOMT 120440ER-MM4	12.8	10	5	4.0	0.8	3.9	15.5°			●	●			●	
NEW 	AOHT 120408ER-MM3	12.8	10	5	0.8	1.4	3.9	15.5°	●		●	●			●	
	AOHT 120404ER-MM3	12.8	10	5	0.4	1.9	3.9	15.5°	●		●	●			●	
	AOHT 120408ER-MM3	12.8	10	5	0.8	1.5	3.9	15.5°	●		●	●			●	
NEW 	AOHT 120408ER-FM2	12.8	10	5	0.8	1.5	3.9	15.5°								●

Success story

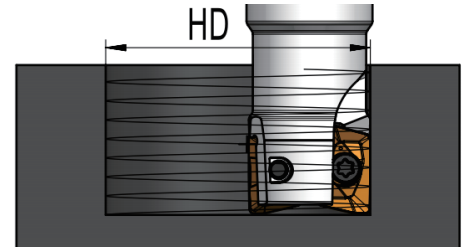
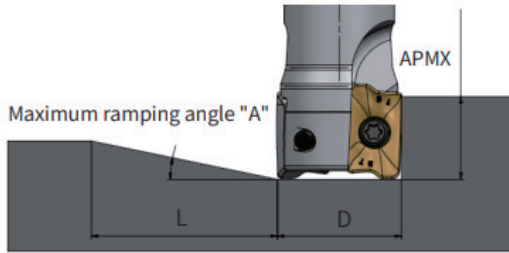
Insert	AOMT 060204ER-MM3 AP403S
Cutter	ASM90-012-Z03-C12R-L120-C
Workpiece	Subplate 
Machining	Rouging
Material	TC4
Vc	75m/min
ap	0.5mm
ae	5mm
fz	0.16mm/t
Coolant	Wet
Result	

Insert	AOMT 10T331ER-MM4 AP403S
Cutter	ASM90-020-Z03-C20R-AO10-C
Workpiece	Aircraft structural part 
Machining	Rouging
Material	TC21
Vc	35m/min
ap	1.0mm
ae	3mm
fz	0.16mm/t
Coolant	Wet
Result	

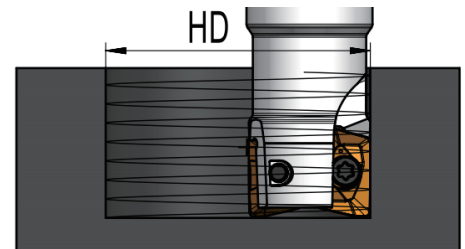
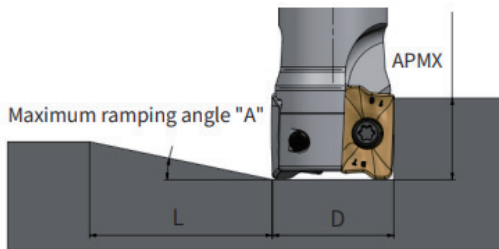
Insert	AOMT 120431ER-MM4 AP403S
Cutter	ASM90-032-Z04-W32R-AO12-C
Workpiece	Aircraft structural part 
Machining	Pocket milling
Material	TC4
Vc	40m/min
ap	3mm
ae	15mm
fz	0.08mm/t
Coolant	Wet
Result	

Insert	AOMT 120408ER-MM4 AP403S
Cutter	APE90-063-Z05-A27R-AO12-L43-C
Workpiece	Rockshaft 
Machining	Surrounding roughing
Material	TC18
Vc	25m/min
ap	40mm
ae	5mm
fz	0.2mm/t
Coolant	Wet
Result	

• AO Series technical information

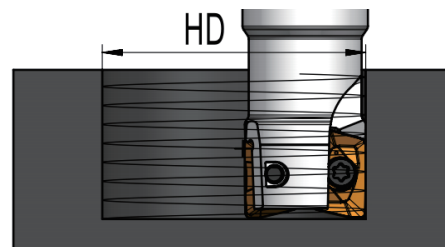
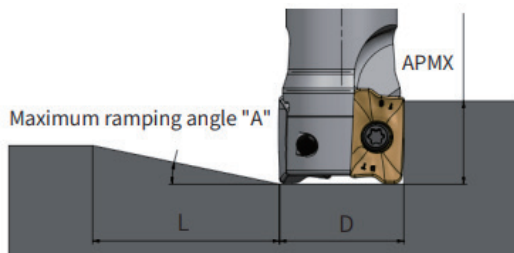


Product Series	Cutter diameter (D)	Ramping			Helical Interpolate milling		
		Max Ramping angle	Minimum length-L (mm)	APMX (mm)	Minimum hole diameter HDmin	Maximum hole diameter HDmax	Maximum pitch (per round)
AO06	10	3.8°	5.6	84.0	12.2	-	0.4
					-	20.0	1.8
	12	3.6°	5.6	89.6	16.2	-	0.7
					-	24.0	2.0
	14	2.9°	5.6	112.0	20.2	-	0.8
					-	28.0	1.9
	16	1.9°	5.6	168.0	24.2	-	0.7
					-	32.0	1.4
	20	1.4°	5.6	224.0	32.2	-	0.8
					-	40.0	1.3
	25	1.1°	5.6	294.0	42.2	-	0.9
					-	50.0	1.3



Product Series	Cutter diameter (D)	Ramping			Helical Interpolate milling		
		Max Ramping angle	Minimum length-L (mm)	APMX (mm)	Minimum hole diameter HDmin	Maximum hole diameter HDmax	Maximum pitch (per round)
AO10	16	5.0°	9.0	103.5	18.6	-	0.6
					-	32.0	3.7
	20	3.5°	9.0	148.5	26.6	-	1.1
					-	40.0	3.2
	25	1.9°	9.0	273.0	36.6	-	1.0
					-	50.0	2.2
	32	1.4°	9.0	378.0	50.6	-	1.2
					-	64.0	2.0
	40	1.0°	9.0	498.0	66.6	-	1.3
					-	80.0	1.9

AO Series technical information



Product Series	Cutter diameter (D)	Ramping			Helical Interpolate milling		
		Max Ramping angle	Minimum length-L (mm)	APMX (mm)	Minimum hole diameter HDmin	Maximum hole diameter HDmax	Maximum pitch (per round)
AO12	20	5.3	119.6	11	25	-	1.2
					-	40	4.9
	25	3.6	175.6	11	35	-	1.7
					-	50	4.2
	32	1.7	378.0	11	49	-	1.3
					-	64	2.5
	35	1.5	424.5	11	55	-	1.4
					-	70	2.4
	40	1.3	468.9	11	65	-	1.6
					-	80	2.5
	50	1.3	501.5	11	85	-	2.0
					-	100	2.9
	63	0.9	708.6	11	111	-	2.0
					-	126	2.6
	80	0.7	875.2	11	145	-	2.2
					-	160	2.7

ASM90-AO Series technical information

APE90/APE90S-AO12 notes for porcupine milling cutter installation:

1. APE90/APE90S-AO12 front part is compatible with All AO12 inserts.

2. APE90/APE90S-AO12 basic part is compatible with the inserts with radius under 1.2.

