

INDEXABLE MILLING

MULTI FUNCTIONAL MILLING

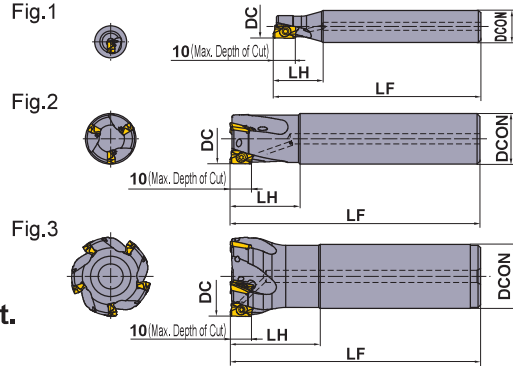


APX3000

- P
Steel
- M
Stainless Steel
- K
Cast Iron
- N
Non-ferrous Metal
- S
Heat Resistant Alloy
- H
Hardened Steel



- High accuracy, high quality vertical wall.
- Low cutting force insert.
- With through air & coolant holes.



SHANK TYPE

Right hand tool holder only.

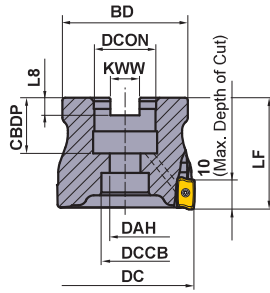
Type	Order Number	Stock	Number of Teeth	Dimensions(mm)				RMPX*2	Max. Allowable Revolution (min ⁻¹)	Type(Fig.)	*1			Inserts
				DC	DCON	LF	LH				Clamp Screw	Wrench	Anti-seize Lubricant	
Standard	APX3000R121SA16SA	●	1	12	16	85	25	6.0°	10500	1	TPS25	TIP07F	MK1KS	
	APX3000R141SA16SA	●	1	14	16	85	25	6.0°	9000	1	TPS25	TIP07F	MK1KS	
	APX3000R162SA16SA	●	2	16	16	85	25	11.3°	20900	2	TPS25	TIP07F	MK1KS	
	APX3000R182SA16SA	●	2	18	16	85	25	8.6°	19600	3	TPS25	TIP07F	MK1KS	
	APX3000R202SA20SA	●	2	20	20	100	30	6.9°	18500	2	TPS25	TIP07F	MK1KS	
	APX3000R203SA20SA	●	3	20	20	100	30	6.9°	18500	2	TPS25	TIP07F	MK1KS	
	APX3000R223SA20SA	●	3	22	20	115	30	5.7°	17600	3	TPS25-1	TIP07F	MK1KS	
	APX3000R252SA25SA	●	2	25	25	115	35	4.6°	16400	2	TPS25-1	TIP07F	MK1KS	
	APX3000R253SA25SA	●	3	25	25	115	35	4.6°	16400	2	TPS25-1	TIP07F	MK1KS	
	APX3000R254SA25SA	●	4	25	25	115	35	4.6°	16400	2	TPS25-1	TIP07F	MK1KS	
	APX3000R284SA25SA	●	4	28	25	115	35	3.8°	15500	3	TPS25-1	TIP07F	MK1KS	
	APX3000R304SA32SA	●	4	30	32	125	45	3.4°	14900	2	TPS25-1	TIP07F	MK1KS	
	APX3000R323SA32SA	●	3	32	32	125	45	3.1°	14400	2	TPS25-1	TIP07F	MK1KS	
	APX3000R324SA32SA	●	4	32	32	125	45	3.1°	14400	2	TPS25-1	TIP07F	MK1KS	
	APX3000R325SA32SA	●	5	32	32	125	45	3.1°	14400	2	TPS25-1	TIP07F	MK1KS	
	APX3000R403SA32SA	●	3	40	32	125	45	2.2°	12800	3	TPS25-1	TIP07F	MK1KS	
	APX3000R405SA32SA	●	5	40	32	125	45	2.2°	12800	3	TPS25-1	TIP07F	MK1KS	
APX3000R406SA32SA	●	6	40	32	125	45	2.2°	12800	3	TPS25-1	TIP07F	MK1KS		
APX3000R507SA32SA	●	7	50	32	125	45	1.7°	11300	3	TPS25-1	TIP07F	MK1KS	AOMT	
APX3000R638SA32SA	●	8	63	32	125	45	1.3°	10000	3	TPS25-1	TIP07F	MK1KS	1236○○ PEER-○	
Long	APX3000R182SA16LA	●	2	18	16	120	25	8.6°	19600	3	TPS25	TIP07F	MK1KS	
	APX3000R202SA20LA	●	2	20	20	150	60	6.9°	18500	2	TPS25	TIP07F	MK1KS	
	APX3000R222SA20LA	●	2	22	20	150	30	5.7°	17600	3	TPS25-1	TIP07F	MK1KS	
	APX3000R252SA25LA	●	2	25	25	170	70	4.6°	16400	2	TPS25-1	TIP07F	MK1KS	
	APX3000R253SA25LA	●	3	25	25	170	70	4.6°	16400	2	TPS25-1	TIP07F	MK1KS	
	APX3000R282SA25LA	●	2	28	25	170	35	3.8°	15500	3	TPS25-1	TIP07F	MK1KS	
	APX3000R283SA25LA	●	3	28	25	170	35	3.8°	15500	3	TPS25-1	TIP07F	MK1KS	
	APX3000R322SA32LA	●	2	32	32	190	90	3.1°	14400	2	TPS25-1	TIP07F	MK1KS	
	APX3000R323SA32LA	●	3	32	32	190	90	3.1°	14400	2	TPS25-1	TIP07F	MK1KS	
	APX3000R352SA32LA	●	2	35	32	190	45	2.7°	13700	3	TPS25-1	TIP07F	MK1KS	
	APX3000R353SA32LA	●	3	35	32	190	45	2.7°	13700	3	TPS25-1	TIP07F	MK1KS	
Extra Long	APX3000R182SA16ELA	●	2	18	16	180	25	8.6°	19600	3	TPS25	TIP07F	MK1KS	
	APX3000R202SA20ELA	●	2	20	20	200	70	6.9°	18500	2	TPS25	TIP07F	MK1KS	
	APX3000R222SA20ELA	●	2	22	20	200	30	5.7°	17600	3	TPS25-1	TIP07F	MK1KS	
	APX3000R252SA25ELA	●	2	25	25	220	80	4.6°	16400	2	TPS25-1	TIP07F	MK1KS	
	APX3000R253SA25ELA	●	3	25	25	220	80	4.6°	16400	2	TPS25-1	TIP07F	MK1KS	
	APX3000R282SA25ELA	●	2	28	25	220	35	3.8°	15500	3	TPS25-1	TIP07F	MK1KS	
	APX3000R283SA25ELA	●	3	28	25	220	35	3.8°	15500	3	TPS25-1	TIP07F	MK1KS	
	APX3000R322SA32ELA	●	2	32	32	260	100	3.1°	14400	2	TPS25-1	TIP07F	MK1KS	
	APX3000R323SA32ELA	●	3	32	32	260	100	3.1°	14400	2	TPS25-1	TIP07F	MK1KS	
	APX3000R352SA32ELA	●	2	35	32	260	45	2.7°	13700	3	TPS25-1	TIP07F	MK1KS	
	APX3000R353SA32ELA	●	3	35	32	260	45	2.7°	13700	3	TPS25-1	TIP07F	MK1KS	

(Note 1) When using inserts with corner radius RE≥2.4, machining of the holder is required as shown page L049.

(Note 2) The maximum allowable revolutions are set to ensure tool and insert stability.

(Note 3) When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.

*1 Clamp Torque (N · m) : TPS25=1.0, TPS25-1=1.0 *2 RMPX : Max. Ramping Angle



Right hand tool holder only.

KAPR : 0°
 GAMP : +7°—+21° T : +15°—+27°
 GAMF : +15°—+27° I : +7°—+21°

Cutter Diameter DC	Set Bolt	Geometry
φ32, φ40	HSC08030H	
φ50, φ63	10030H	
φ80	12035H	
φ100	16040H	

ARBOR TYPE

Order Number	Stock R	Number of Teeth	Dimensions(mm)										WT*3 (kg)	RMPX*2	Max. Allowable Revolution (min ⁻¹)	*1			
			DC	LF	DCON	CBDP	DAH	BD	KWW	L8	DCCB	Clamp Screw				Wrench	Anti-seize Lubricant	Inserts	
APX3000-032A05RA	●	5	32	40	16	18	9	30	8.4	5.6	14	0.2	3.1°	14400	TPS25-1	TIP07F	MK1KS	AOMT 1236 PEER	
APX3000-040A06RA	●	6	40	40	16	18	9	34	8.4	5.6	14	0.3	2.2°	12800	TPS25-1	TIP07F	MK1KS		
APX3000-050A07RA	●	7	50	40	22	20	11	45	10.4	6.3	17	0.4	1.7°	11300	TPS25-1	TIP07F	MK1KS	AOGT 1236 PEFR-GM	
APX3000-063A08RA	●	8	63	40	22	20	11	55	10.4	6.3	17	0.7	1.3°	10000	TPS25-1	TIP07F	MK1KS		
APX3000R08009CA	●	9	80	50	25.4	26	13	70	9.5	6	20	1.3	1.0°	8800	TPS25-1	TIP07F	MK1KS		
APX3000R10011DA	●	11	100	63	31.75	32	17	80	12.7	8	26	2.2	0.8°	7800	TPS25-1	TIP07F	MK1KS		

(Note 1) When using inserts with corner radius RE≥2.4, machining of the holder is required as shown page L049.

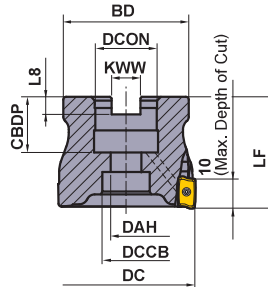
(Note 2) The maximum allowable revolutions are set to ensure tool and insert stability.

(Note 3) When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.

*1 Clamp Torque (N · m) : TPS25-1=1.0

*2 RMPX : Max. Ramping Angle

*3 WT : Tool Weight



Right hand tool holder only.

For metric arbor

The cutter bore diameter DCON is indicated in millimetre.

KAPR : 0°
 GAMP : +7°—+21° T : +15°—+27°
 GAMF : +15°—+27° I : +7°—+21°

Cutter Diameter DC	Set Bolt	Geometry
φ32, φ40	HSC08030H	
φ50, φ63	10030H	
φ80	12035H	
φ100	16040H	

ARBOR TYPE

Order Number	Stock R	Number of Teeth	Dimensions(mm)										WT*3 (kg)	RMPX*2	Max. Allowable Revolution (min ⁻¹)	*1			
			DC	LF	DCON	CBDP	DAH	BD	KWW	L8	DCCB	Clamp Screw				Wrench	Anti-seize Lubricant	Inserts	
APX3000-032A05RA	●	5	32	40	16	18	9	30	8.4	5.6	14	0.2	3.1°	14400	TPS25-1	TIP07F	MK1KS	AOMT 1236 PEER	
APX3000-040A06RA	●	6	40	40	16	18	9	34	8.4	5.6	14	0.3	2.2°	12800	TPS25-1	TIP07F	MK1KS		
APX3000-050A07RA	●	7	50	40	22	20	11	45	10.4	6.3	17	0.4	1.7°	11300	TPS25-1	TIP07F	MK1KS	AOGT 1236 PEFR-GM	
APX3000-063A08RA	●	8	63	40	22	20	11	55	10.4	6.3	17	0.7	1.3°	10000	TPS25-1	TIP07F	MK1KS		
APX3000-080A09RA	●	9	80	50	27	23	13	70	12.4	7	20	1.3	1.0°	8800	TPS25-1	TIP07F	MK1KS		
APX3000-100A11RA	●	11	100	63	32	26	17	80	14.4	8	26	2.2	0.8°	7800	TPS25-1	TIP07F	MK1KS		

(Note 1) When using inserts with corner radius RE≥2.4, machining of the holder is required as shown page L049.

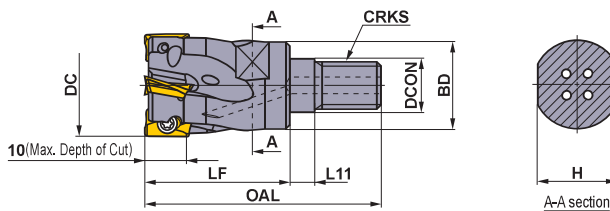
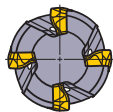
(Note 2) The maximum allowable revolutions are set to ensure tool and insert stability.

(Note 3) When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.

*1 Clamp Torque (N · m) : TPS25-1=1.0 *2 RMPX : Max. Ramping Angle

*3 WT : Tool Weight

INDEXABLE MILLING



● With through air & coolant holes.

SCREW-IN TYPE

Right hand tool holder only.

Order Number	Stock	Number of Teeth	Dimensions(mm)								*2 WT (kg)	*1 Clamp Screw	Wrench	Anti-seize Lubricant	Inserts
			DC	DCON	BD	OAL	LF	L11	H	CRKS					
APX3000R162M08A30	●	2	16	8.5	13	48	30	6	10	M8	0.1	TPS25	TIP07F	MK1KS	AOMT 1236 PEER AOGT 1236 PEFR-GM
APX3000R182M08A30	●	2	18	8.5	13	48	30	6	10	M8	0.1	TPS25	TIP07F	MK1KS	
APX3000R203M10A30	●	3	20	10.5	18	49	30	6	14	M10	0.1	TPS25	TIP07F	MK1KS	
APX3000R223M10A30	●	3	22	10.5	18	49	30	6	14	M10	0.1	TPS25-1	TIP07F	MK1KS	
APX3000R254M12A35	●	4	25	12.5	21	57	35	6	19	M12	0.2	TPS25-1	TIP07F	MK1KS	
APX3000R284M12A35	●	4	28	12.5	21	57	35	6	19	M12	0.2	TPS25-1	TIP07F	MK1KS	
APX3000R304M16A40	●	4	30	17	29	63	40	6	24	M16	0.3	TPS25-1	TIP07F	MK1KS	
APX3000R325M16A40	●	5	32	17	29	63	40	6	24	M16	0.3	TPS25-1	TIP07F	MK1KS	
APX3000R355M16A40	●	5	35	17	29	63	40	6	24	M16	0.3	TPS25-1	TIP07F	MK1KS	
APX3000R406M16A40	●	6	40	17	29	63	40	6	24	M16	0.3	TPS25-1	TIP07F	MK1KS	

(Note 1) When using inserts with corner radius $RE \geq 2.4$, machining of the holder is required as shown page L049.

(Note 2) For screw-in type arbors, refer to page L145—L146.

*1 Clamp Torque (N · m) : TPS25=1.0, TPS25-1=1.0

*2 WT : Tool Weight

INSERTS

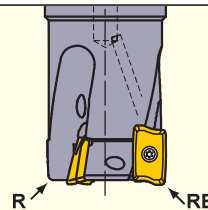
Work Material	P	Steel	●	●	●	●	●	●	●	●	●	●	●	●	Cutting Conditions (Guide) : ● : Stable Cutting ● : General Cutting ✖ : Unstable Cutting			
	M	Stainless Steel	●	●	●	●	●	●	●	●	●	●	●	●				
Honing :	K	Cast Iron	●	●	●	●	●	●	●	●	●	●	●	●	E : Round F : Sharp			
	N	Non-ferrous Metal	●	●	●	●	●	●	●	●	●	●	●	●				
	S	Heat-resistant Alloy, Titanium Alloy	●	●	●	●	●	●	●	●	●	●	●	●				
H	Hardened Steel	●	●	●	●	●	●	●	●	●	●	●	●	●				
Shape	Order Number	Class	Honing	Coated						Carbide	Dimensions (mm)					Geometry		
				MC5020	MP6120	MP6130	MP7130	MP9120	MP9130	VP15TF	VP20RT	TF15	L	W1	S		BS	RE*
General M Breaker	AOMT123602PEER-M	M	E	●	●	●	●	●	●	●	●	●	12	6.6	3.6	1.8	0.2	
	AOMT123604PEER-M	M	E	●	●	●	●	●	●	●	●	●	12	6.6	3.6	1.6	0.4	
	AOMT123608PEER-M	M	E	●	●	●	●	●	●	●	●	●	12	6.6	3.6	1.2	0.8	
	AOMT123610PEER-M	M	E	●	●	●	●	●	●	●	●	●	12	6.6	3.6	1.0	1.0	
	AOMT123612PEER-M	M	E	●	●	●	●	●	●	●	●	●	12	6.6	3.6	0.8	1.2	
	AOMT123616PEER-M	M	E	●	●	●	●	●	●	●	●	●	12	6.6	3.6	0.4	1.6	
	AOMT123620PEER-M	M	E	●	●	●	●	●	●	●	●	●	12	6.6	3.6	0.4	2.0	
	AOMT123624PEER-M	M	E	●	●	●	●	●	●	●	●	●	12	6.6	3.6	0.4	2.4	
	AOMT123630PEER-M	M	E	●	●	●	●	●	●	●	●	●	12	6.6	3.6	0.4	3.0	
AOMT123632PEER-M	M	E	●	●	●	●	●	●	●	●	●	12	6.6	3.6	0.4	3.2		
Strong Cutting Edge Type H Breaker	AOMT123604PEER-H	M	E	●	●	●	●	●	●	●	●	●	12	6.6	3.6	1.6	0.4	
	AOMT123608PEER-H	M	E	●	●	●	●	●	●	●	●	●	12	6.6	3.6	1.2	0.8	
	AOMT123616PEER-H	M	E	●	●	●	●	●	●	●	●	●	12	6.6	3.6	0.4	1.6	
For Machining of Aluminium Alloys GM Breaker	AOGT123602PEFR-GM	G	F							●	●	●	12	6.6	3.6	1.8	0.2	
	AOGT123604PEFR-GM	G	F							●	●	●	12	6.6	3.6	1.6	0.4	
	AOGT123608PEFR-GM	G	F							●	●	●	12	6.6	3.6	1.2	0.8	

* Nose R is different from the workpiece of R shape depending on the axial rake angle of the body. Consult us for more details.



NOTE ON USE OF INSERTS WITH LARGE CORNER RADII

When using inserts with corner radius $RE \geq R2.4$, please machine the holder with a radius form as shown on the right.



RE (mm)	R (mm)
2.4	1.9
3.0	2.5
3.2	2.7

R : Holder end radius
RE : Insert corner radius

INDEXABLE MILLING

RECOMMENDED CUTTING CONDITIONS

CUTTING SPEED

Work Material	Hardness	Insert				Cutting Width ae (mm)				
		Grade		Breaker	≤0.25DC	0.25—0.5DC	0.5—0.75DC	DC (Slot)		
		1st Recommendation	2nd Recommendation							
Cutting Speed vc (m/min)										
P	Mild Steel	≤180HB	MP6120	VP15TF	M	H	230(180—270)	220(170—260)	180(140—210)	180(140—210)
			MP6130	VP20RT	M	H	200(150—240)	190(140—230)	150(110—180)	150(110—180)
	Carbon Steel Alloy Steel	180—350HB	MP6120	VP15TF	M	H	180(140—210)	170(130—200)	140(110—160)	140(110—160)
			MP6130	VP20RT	M	H	150(110—180)	140(100—170)	110(80—130)	110(80—130)
M	Stainless Steel	≤270HB	MP7130	VP20RT	M	H	180(140—210)	170(130—200)	140(110—160)	140(110—160)
K	Gray Cast Iron	≤350MPa	MC5020	VP15TF	H	H	250(200—300)	240(190—290)	210(160—260)	140(110—160)
	Ductile, Cast Iron	≤800MPa	MC5020	VP15TF	H	H	130(100—150)	120(90—140)	100(80—120)	100(80—120)
N	Aluminium Alloy	—	TF15		GM		500(200—1000)	500(200—1000)	500(200—1000)	500(200—1000)
S	Titanium Alloy	≤350HB	MP9120	VP15TF	M	H	50(40—70)			50(40—70)
			MP9130	VP20RT	M	H	40(30—60)			40(30—60)
	Heat-resistant Alloy	—	MP9120	VP15TF	M	H	40(30—60)			40(30—60)
			MP9130	VP20RT	M	H	30(20—40)			30(20—40)
H	Hardened Steel	40—55HRC	VP15TF		H		90(70—100)	85(60—100)	70(50—80)	70(50—80)

DEPTH OF CUT AND FEED

Work Material	Hardness	Cutting Width ae (mm)	Cutter Diameter (mm)								
			ø12—ø16		ø18—ø25		ø28—ø100				
			Depth of Cut ap (mm)	Feed per Tooth fz (mm/t.)	Depth of Cut ap (mm)	Feed per Tooth fz (mm/t.)	Depth of Cut ap (mm)	Feed per Tooth fz (mm/t.)			
P	Mild Steel Carbon Steel Alloy Steel	≤180HB	≤0.25DC	≤4	0.15	≤5	0.25	≤5	0.20		
				4—7	0.10	5—7	0.20	5—7	0.15		
						7—8.5	0.15	7—8.5	0.10		
			0.25—0.5DC	≤2	0.15	≤3	0.25	≤3	0.20		
				2—5	0.10	3—5.5	0.20	3—5.5	0.15		
						5.5—8	0.15	5.5—8	0.10		
		0.5—0.75DC	≤4	0.10	≤4	0.15	≤3	0.10			
					4—10	0.10	3—7	0.07			
		DC (Slot)	≤3	0.10	≤4	0.10	≤3	0.10			
					4—7	0.07	3—5	0.07			
		M	Stainless Steel	≤270HB	≤0.25DC	≤4	0.15	≤5	0.20	≤5	0.20
						4—7	0.10	5—7	0.15	5—7	0.15
						7—8.5	0.10	7—8.5	0.10		
0.25—0.5DC	≤2				0.15	≤3	0.20	≤3	0.20		
	2—5				0.10	3—5.5	0.15	3—5.5	0.15		
						5.5—8	0.10	5.5—8	0.10		
0.5—0.75DC	≤4			0.10	≤4	0.10	≤3	0.10			
					4—10	0.07	3—7	0.07			
DC (Slot)	≤3			0.10	≤4	0.10	≤3	0.10			
					4—7	0.07	3—5	0.07			
K	Gray Cast Iron			Tensile Strength ≤350MPa	≤0.25DC	≤4	0.15	≤5	0.25	≤5	0.20
						4—7	0.10	5—7	0.20	5—7	0.15
						7—8.5	0.15	7—8.5	0.10		
		0.25—0.5DC	≤2		0.15	≤3	0.25	≤3	0.20		
			2—5		0.10	3—5.5	0.20	3—5.5	0.15		
						5.5—8	0.15	5.5—8	0.10		
		0.5—0.75DC	≤4	0.10	≤4	0.15	≤3	0.10			
					4—10	0.10	3—7	0.07			
		DC (Slot)	≤3	0.10	≤4	0.10	≤3	0.10			
					4—7	0.07	3—5	0.07			
			Ductile, Cast Iron	Tensile Strength ≤800MPa	≤0.25DC	≤4	0.10	≤5	0.20	≤5	0.20
						4—7	0.07	5—7	0.15	5—7	0.15
						7—8.5	0.10	7—8.5	0.10		
0.25—0.5DC	≤2				0.10	≤3	0.20	≤3	0.20		
	2—5				0.07	3—5.5	0.15	3—5.5	0.15		
						5.5—8	0.10	5.5—8	0.10		
0.5—0.75DC	≤4			0.07	≤4	0.10	≤3	0.10			
					4—10	0.07	3—7	0.07			
DC (Slot)	≤3			0.07	≤4	0.10	≤3	0.10			
					4—7	0.07	3—5	0.07			

MILLING

Work Material	Hardness	Cutting Width ae (mm)	Cutter Diameter (mm)					
			ø12-ø16		ø18-ø25		ø28-ø100	
			Depth of Cut ap (mm)	Feed per Tooth fz (mm/t.)	Depth of Cut ap (mm)	Feed per Tooth fz (mm/t.)	Depth of Cut ap (mm)	Feed per Tooth fz (mm/t.)
N Aluminium Alloy	-	≤0.25DC	≤4	0.15	≤4	0.25	≤4	0.20
			4-7	0.10	4-7	0.15	4-7	0.10
		0.25-0.5DC	≤4	0.15	≤4	0.20	≤4	0.20
			4-7	0.10	4-7	0.10	4-7	0.10
S Titanium Alloy	≤350HB	≤0.25DC	≤4	0.15	≤4	0.15	≤4	0.10
			4-7	0.10	4-7	0.10	4-7	0.07
		0.25-0.5DC	≤3	0.05	≤3	0.05	≤3	0.05
			4-7	0.10	4-7	0.10	4-7	0.10
Heat-resistant Alloy	-	0.5-0.75DC	≤2	0.10	≤2	0.05	≤2	0.05
			DC (Slot)	≤1	0.05	DC (Slot)	≤1	0.05
H Hardened Steel	40-55HRC	≤0.25DC	≤4	0.10	≤5	0.15	≤5	0.15
			4-7	0.07	5-7	0.10	5-7	0.10
		0.25-0.5DC	≤2	0.10	≤3	0.15	≤3	0.15
			2-5	0.07	3-5.5	0.10	3-5.5	0.10
		0.5-0.75DC	≤4	0.07	≤4	0.07	≤3	0.07
			DC (Slot)	≤3	0.07	DC (Slot)	≤3	0.07

(Note 1) These cutting conditions are a guide to the standard shank type and the arbor type.
Please make adjustments according to the machining conditions.

(Note 2) Vibration is liable to occur in certain cases. Please reduce the depth of cut and / or reduce cutting conditions in the following cases.

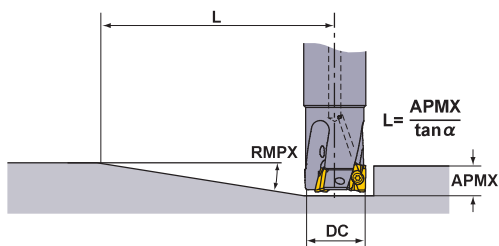
- When using the long shank type and extra long shank type.
- When using long tool overhang with the standard or arbor type.
- When the application has poor clamping rigidity or when using a low rigidity machine.

(Note 3) In case of coarse and fine pitch cutters, the coarse pitch type is recommended to prevent vibration.

(Note 4) For heavy interrupted and unstable cutting, the H breaker is first recommendation.

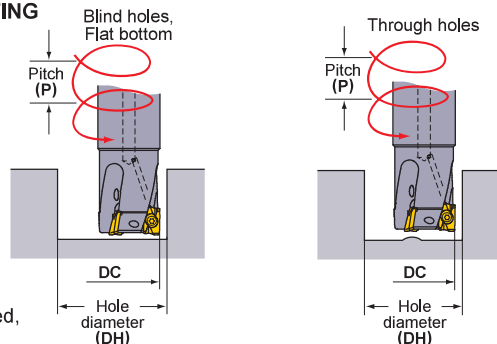
RAMPING/HELICAL CUTTING

RAMPING



Refer to the table below for cutting conditions. For feed per tooth and cutting speed, follow the cutting conditions for slot milling.

HELICAL CUTTING



Cutting Edge Diameter DC(mm)	Ramping		Helical Cutting (Blind Hole, Flat Bottom)				Helical Cutting (Through Hole)	
	Maximum Ramping Angle RMPX	Minimum Distance*1 L(mm)	Maximum Hole Diameter*2 DH max.(mm)	Maximum Pitch P max.(mm)	Minimum Hole Diameter DH min.(mm)	Maximum Pitch P max.(mm)	Minimum Hole Diameter DH min.(mm)	Maximum Pitch P max.(mm)
12	6.0°	95	22	2.5	20.5	2	14	0.5
14	6.0°	95	26	2.5	24.5	2	18	1
16	11.3°	50	30	9	28	7	21	2
18	8.6°	66	34	5	32	4.5	25	2
20	6.9°	83	38	5	36	4.5	29	2
22	5.7°	100	42	5	40	4.5	33	2
25	4.6°	124	48	6	46	5	39	3
28	3.8°	151	54	4.5	52	4	45	2
30	3.4°	168	58	4.5	56	4	49	2
32	3.1°	185	62	4.5	60	4	53	2
35	2.7°	212	68	4	66	3.5	59	2
40	2.2°	260	78	4	76	3.5	69	2
50	1.7°	337	98	2	96	2	89	2
63	1.3°	441	124	2	122	2	115	2
80	1.0°	573	158	2	156	2	149	2
100	0.8°	716	198	1	196	1	189	1

(Note) When machining highly ductile materials with ramping angles above, chips could be continuous.

In this case, decrease the ramping angle or feed per tooth.

*1 $L (=10 / \tan \alpha)$. Cutters' moving distance until depth of cut reaches 10mm at a maximum ramping angle.

*2 In case corner radius of 0.8mm. Other than that, find with the below formula.

$\{(cutting\ edge\ diameter\ DC) - (corner\ radius) - 0.2\} \times 2$

INDEXABLE MILLING

MULTI FUNCTIONAL MILLING



APX4000

- P
Steel
- M
Stainless Steel
- K
Cast Iron
- N
- S
Heat Resistant Alloy
- H
Hardened Steel



- High accuracy, high quality vertical wall.
- Low cutting force insert.
- With through air & coolant holes.

Fig.1

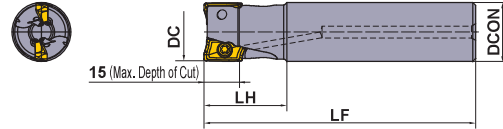
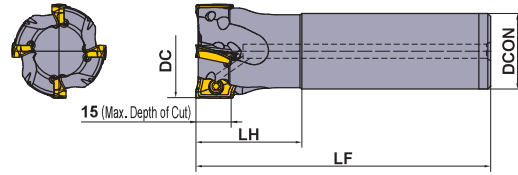


Fig.2



SHANK TYPE

Right hand tool holder only.

Type	Order Number	Stock R	Number of Teeth	Dimensions(mm)				RMPX ^{*2}	Max. Allowable Revolution (min ⁻¹)	Type (Fig.)	*1 Clamp Screw	Wrench	Anti-seize Lubricant	Inserts
				DC	DCON	LF	LH							
Standard	APX4000R252SA25SA	●	2	25	25	115	35	11°	18900	1	TPS4	TIP15W	MK1KS	AOMT 1848○○ PEER-○○
	APX4000R322SA32SA	●	2	32	32	125	45	7°	16300	1	TPS4	TIP15W	MK1KS	
	APX4000R323SA32SA	●	3	32	32	125	45	7°	16300	1	TPS4	TIP15W	MK1KS	
	APX4000R403SA32SA	●	3	40	32	125	45	6°	14200	2	TPS43	TIP15W	MK1KS	
	APX4000R404SA32SA	●	4	40	32	125	45	6°	14200	2	TPS43	TIP15W	MK1KS	
	APX4000R504SA32SA	●	4	50	32	125	45	4°	12400	2	TPS43	TIP15W	MK1KS	
	APX4000R505SA32SA	●	5	50	32	125	45	4°	12400	2	TPS43	TIP15W	MK1KS	
	APX4000R634SA32SA	●	4	63	32	125	45	3°	10800	2	TPS43	TIP15W	MK1KS	
	APX4000R636SA32SA	●	6	63	32	125	45	3°	10800	2	TPS43	TIP15W	MK1KS	
Long	APX4000R252SA25LA	●	2	25	25	170	35	11°	18900	1	TPS4	TIP15W	MK1KS	
	APX4000R282SA25LA	●	2	28	25	170	35	9°	17700	2	TPS4	TIP15W	MK1KS	
	APX4000R322SA32LA	●	2	32	32	190	45	7°	16300	1	TPS4	TIP15W	MK1KS	
	APX4000R323SA32LA	●	3	32	32	190	45	7°	16300	1	TPS4	TIP15W	MK1KS	
	APX4000R352SA32LA	●	2	35	32	190	45	6°	15400	2	TPS4	TIP15W	MK1KS	
	APX4000R353SA32LA	●	3	35	32	190	45	6°	15400	2	TPS4	TIP15W	MK1KS	
	APX4000R402SA32LA	●	2	40	32	190	45	6°	14200	2	TPS43	TIP15W	MK1KS	
	APX4000R403SA32LA	●	3	40	32	190	45	6°	14200	2	TPS43	TIP15W	MK1KS	
	APX4000R404SA32LA	●	4	40	32	190	45	6°	14200	2	TPS43	TIP15W	MK1KS	
Extra Long	APX4000R252SA25ELA	●	2	25	25	220	80	11°	18900	1	TPS4	TIP15W	MK1KS	
	APX4000R282SA25ELA	●	2	28	25	220	35	9°	17700	2	TPS4	TIP15W	MK1KS	
	APX4000R322SA32ELA	●	2	32	32	260	100	7°	16300	1	TPS4	TIP15W	MK1KS	
	APX4000R323SA32ELA	●	3	32	32	260	100	7°	16300	1	TPS4	TIP15W	MK1KS	
	APX4000R352SA32ELA	●	2	35	32	260	45	6°	15400	2	TPS4	TIP15W	MK1KS	
	APX4000R353SA32ELA	●	3	35	32	260	45	6°	15400	2	TPS4	TIP15W	MK1KS	
	APX4000R402SA32ELA	●	2	40	32	260	45	6°	14200	2	TPS43	TIP15W	MK1KS	
	APX4000R403SA32ELA	●	3	40	32	260	45	6°	14200	2	TPS43	TIP15W	MK1KS	
	APX4000R404SA32ELA	●	4	40	32	260	45	6°	14200	2	TPS43	TIP15W	MK1KS	

(Note 1) When using inserts with corner radius $RE \geq 3.2$, machining of the holder is required as shown page L055.

(Note 2) The maximum allowable revolutions are set to ensure tool and insert stability.

(Note 3) When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.

*1 Clamp Torque (N · m) : TPS4=3.5, TPS43=3.5

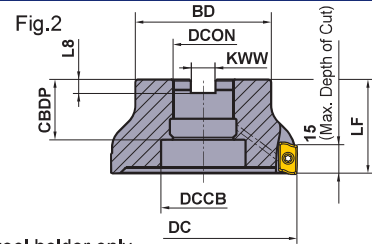
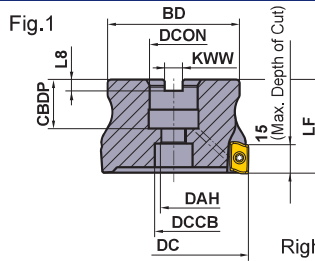
*2 RMPX : Max. Ramping Angle

● : Inventory maintained in Japan.



KAPR : 0°
GAMP : +15°—+22° T : +21°—+28°
GAMF : +21°—+28° I : +15°—+22°

ARBOR TYPE



Right hand tool holder only.

Cutter Diameter DC	Set Bolt	Geometry
φ40	HSC08030H	①
φ50, φ63	10030H	
φ80	12035H	②
φ100	16040H	
φ125	MBA20040H	②
φ160	24045H	

Order Number	Stock	Number of Teeth	Dimensions(mm)									WT *3	RMPX *2	Max. Allowable Revolution (min ⁻¹)	Type(Fig.)	*1			
			DC	LF	DCON	CBBDP	DAH	BD	KWW	L8	DCCB					Clamp Screw	Wrench	Anti-seize Lubricant	Insert
APX4000-040A04RA	●	4	40	40	16	18	9	34	8.4	5.6	14	0.2	6°	14200	1	TPS43	TIP15W	MK1KS	AOMT 1848 PEER
APX4000-050A05RA	●	5	50	40	22	20	11	45	10.4	6.3	17	0.3	4°	12400	1	TPS43	TIP15W	MK1KS	
APX4000-063A06RA	●	6	63	40	22	20	11	50	10.4	6.3	17	0.5	3°	10800	1	TPS43	TIP15W	MK1KS	
APX4000R08007CA	●	7	80	50	25.4	26	13	70	9.5	6	20	1.2	2°	9300	1	TPS43	TIP15W	MK1KS	
APX4000R10008DA	●	8	100	63	31.75	32	17	80	12.7	8	26	2.1	1.5°	8100	1	TPS43	TIP15W	MK1KS	
APX4000R12509EA	●	9	125	63	38.1	40	—	100	15.9	10	56	3.3	1°	7100	2	TPS43	TIP15W	MK1KS	
APX4000R16010FA	●	10	160	63	50.8	40	—	100	19.1	11	72	4.8	1°	6100	2	TPS43	TIP15W	MK1KS	

(Note 1) When using inserts with corner radius RE≥3.2, machining of the holder is required as shown page L055.

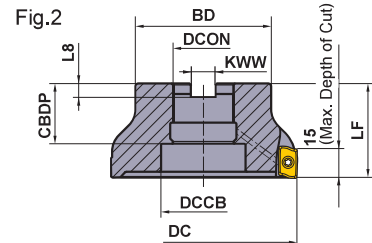
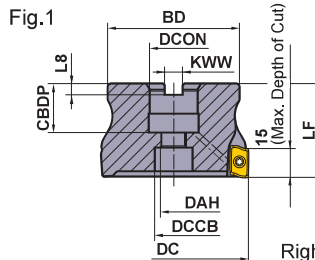
(Note 2) The maximum allowable revolutions are set to ensure tool and insert stability.

(Note 3) When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.

*1 Clamp Torque (N · m) : TPS43=3.5

*2 RMPX : Max. Ramping Angle

*3 WT : Tool Weight



Right hand tool holder only.

Cutter Diameter DC	Set Bolt	Geometry
φ40	HSC08030H	①
φ50, φ63	10030H	
φ80	12035H	②
φ100	16040H	
φ125	MBA20040H	②
φ160	20040H	

For metric arbor

The cutter bore diameter DCON is indicated in millimetre.

KAPR : 0°
GAMP : +15°—+22° T : +21°—+28°
GAMF : +21°—+28° I : +15°—+22°

ARBOR TYPE

Order Number	Stock	Number of Teeth	Dimensions(mm)									WT *3	RMPX *2	Max. Allowable Revolution (min ⁻¹)	Type(Fig.)	*1			
			DC	LF	DCON	CBBDP	DAH	BD	KWW	L8	DCCB					Clamp Screw	Wrench	Anti-seize Lubricant	Insert
APX4000-040A04RA	●	4	40	40	16	18	9	34	8.4	5.6	14	0.2	6°	14200	1	TPS43	TIP15W	MK1KS	AOMT 1848 PEER
APX4000-050A05RA	●	5	50	40	22	20	11	45	10.4	6.3	17	0.3	4°	12400	1	TPS43	TIP15W	MK1KS	
APX4000-063A06RA	●	6	63	40	22	20	11	50	10.4	6.3	17	0.5	3°	10800	1	TPS43	TIP15W	MK1KS	
APX4000-080A07RA	●	7	80	50	27	23	13	60	12.4	7	20	1.2	2°	9300	1	TPS43	TIP15W	MK1KS	
APX4000-100A08RA	●	8	100	50	32	26	17	70	14.4	8	27	2.1	1.5°	8100	1	TPS43	TIP15W	MK1KS	
APX4000-125A09RA	●	9	125	63	40	40	—	90	16.4	9	56	3.3	1°	7100	2	TPS43	TIP15W	MK1KS	
APX4000-160A10RA	●	10	160	63	40	40	—	100	16.4	9	72	4.8	1°	6100	2	TPS43	TIP15W	MK1KS	

(Note 1) When using inserts with corner radius RE≥3.2, machining of the holder is required as shown page L055.

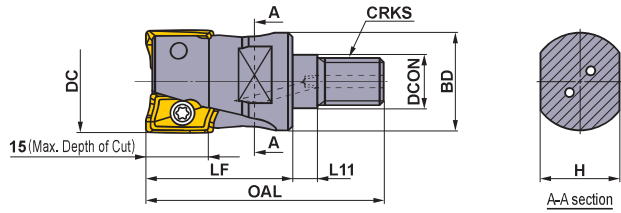
(Note 2) The maximum allowable revolutions are set to ensure tool and insert stability.

(Note 3) When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.

*1 Clamp Torque (N · m) : TPS43=3.5 *2 RMPX : Max. Ramping Angle

*3 WT : Tool Weight

INDEXABLE MILLING



● With through air & coolant holes.

SCREW-IN TYPE

Right hand tool holder only.

Order Number	Stock R	Number of Teeth	Dimensions(mm)								*2 WT (kg)	*1 Clamp Screw	Wrench	Anti-seize Lubricant	Insert
			DC	DCON	BD	OAL	LF	L11	H	CRKS					
APX4000R252M12A35	●	2	25	12.5	23.5	57	35	6	19	M12	0.2	TPS4	TIP15W	MK1KS	AOMT 1848 PEER
APX4000R282M12A35	●	2	28	12.5	23.5	57	35	6	19	M12	0.2	TPS4	TIP15W	MK1KS	
APX4000R322M16A40	●	2	32	17	28.5	63	40	6	24	M16	0.3	TPS4	TIP15W	MK1KS	
APX4000R323M16A40	●	3	32	17	28.5	63	40	6	24	M16	0.3	TPS4	TIP15W	MK1KS	
APX4000R352M16A40	●	2	35	17	28.5	63	40	6	24	M16	0.3	TPS4	TIP15W	MK1KS	
APX4000R353M16A40	●	3	35	17	28.5	63	40	6	24	M16	0.3	TPS4	TIP15W	MK1KS	
APX4000R403M16A40	●	3	40	17	28.5	63	40	6	24	M16	0.3	TPS43	TIP15W	MK1KS	
APX4000R404M16A40	●	4	40	17	28.5	63	40	6	24	M16	0.3	TPS43	TIP15W	MK1KS	


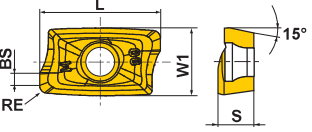

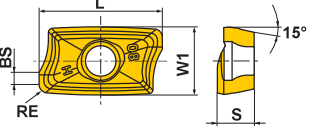
(Note 1) When using inserts with corner radius $RE \geq 3.2$, machining of the holder is required as shown page L055.

(Note 2) For screw-in type arbors, refer to page L145—L146.

*1 Clamp Torque (N · m) : TPS4=3.5, TPS43=3.5

*2 WT : Tool Weight

INSERTS

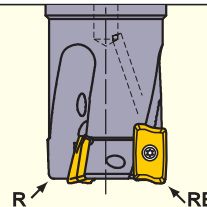
Work Material	P Steel		M Stainless Steel		K Cast Iron		S Heat-resistant Alloy, Titanium Alloy		H Hardened Steel		Cutting Conditions (Guide):										Honing:	Geometry
											● : Stable Cutting ● : General Cutting ✖ : Unstable Cutting E : Round											
Shape	Order Number	Class	Honing	Coated						Dimensions (mm)					Geometry							
				MC5020	MP6120	MP6130	MP7130	MP9120	MP9130	VP15TF	VP20RT	L	W1	S		BS	RE*					
General M Breaker 	AOMT184804PEER-M	M	E	●	●	●	●	●	●	●	18	9	4.8	1.8	0.4							
	AOMT184808PEER-M	M	E	●	●	●	●	●	●	●	18	9	4.8	1.4	0.8							
	AOMT184810PEER-M	M	E	●	●	●	●	●	●	●	18	9	4.8	1.0	1.0							
	AOMT184812PEER-M	M	E	●	●	●	●	●	●	●	18	9	4.8	0.8	1.2							
	AOMT184816PEER-M	M	E	●	●	●	●	●	●	●	18	9	4.8	0.4	1.6							
	AOMT184820PEER-M	M	E	●	●	●	●	●	●	●	18	9	4.8	0.4	2.0							
Strong Cutting Edge Type H Breaker 	AOMT184804PEER-H	M	E	●	●	●	●	●	●	●	18	9	4.8	1.8	0.4							
	AOMT184808PEER-H	M	E	●	●	●	●	●	●	●	18	9	4.8	1.4	0.8							
	AOMT184816PEER-H	M	E	●	●	●	●	●	●	●	18	9	4.8	0.4	1.6							
	AOMT184832PEER-H	M	E	●	●	●	●	●	●	●	18	9	4.8	0.4	3.2							
	AOMT184840PEER-H	M	E	●	●	●	●	●	●	●	18	9	4.8	0.4	4.0							
	AOMT184850PEER-H	M	E	●	●	●	●	●	●	●	18	9	4.8	—	5.0							
AOMT184864PEER-H	M	E	●	●	●	●	●	●	●	18	9	4.8	—	6.35								

* Nose R is different from the workpiece of R shape depending on the axial rake angle of the body. Consult us for more details.



NOTE ON USE OF INSERTS WITH LARGE CORNER RADII

When using inserts with corner radius $RE \geq R3.2$, please machine the holder with a radius form as shown on the right.



RE (mm)	R (mm)
3.2	2.0
4.0	2.5
5.0	3.5
6.35	5.0

R : Holder end radius
RE : Insert corner radius

INDEXABLE MILLING

RECOMMENDED CUTTING CONDITIONS

CUTTING SPEED

Work Material	Hardness	Insert				Cutting Width a_e (mm)			
		Grade		Breaker		$\leq 0.25DC$	0.25—0.5DC	0.5—0.75DC	DC (Slot)
		1st Recommendation	2nd Recommendation						
P Mild Steel	$\leq 180HB$	MP6120	VP15TF	M	H	230(180—270)	220(170—260)	180(140—210)	180(140—210)
		MP6130	VP20RT	M	H	200(150—240)	190(140—230)	150(110—180)	150(110—180)
	180—350HB	MP6120	VP15TF	M	H	180(140—210)	170(130—200)	140(110—160)	140(110—160)
		MP6130	VP20RT	M	H	150(110—180)	140(100—170)	110(80—130)	110(80—130)
M Stainless Steel	$\leq 270HB$	MP7130	VP20RT	M	H	180(140—210)	170(130—200)	140(110—160)	140(110—160)
K Gray Cast Iron	$\leq 350MPa$	MC5020	VP15TF	H	H	250(200—300)	240(190—290)	210(160—260)	140(110—160)
	$\leq 800MPa$	MC5020	VP15TF	H	H	130(100—150)	120(90—140)	100(80—120)	100(80—120)
S Titanium Alloy	$\leq 350HB$	MP9120	VP15TF	H	M	50(40—70)			50(40—70)
		MP9130	VP20RT	H	M	40(30—60)			40(30—60)
	—	MP9120	VP15TF	H	M	40(30—60)			40(30—60)
		MP9130	VP20RT	H	M	30(20—40)			30(20—40)
H Hardened Steel	40—55HRC	VP15TF		H	H	90(70—100)	85(60—100)	70(50—80)	70(50—80)

DEPTH OF CUT AND FEED

Work Material	Hardness	Cutting Width a_e (mm)	Depth of Cut a_p (mm)	Feed per Tooth f_z (mm/t.)		
				Cutter Diameter (mm)		
				$\phi 25-\phi 40$	$\phi 50-\phi 80$	$\phi 100-\phi 160$
P Mild Steel Carbon Steel Alloy Steel	$\leq 180HB$	$\leq 0.5DC$	≤ 5	0.30	0.30	0.25
			5—7.5	0.25	0.25	0.20
			7.5—10	0.20	0.20	0.15
			10—12.5	0.15	0.15	0.10
			12.5—15	0.10	0.10	0.07
			15—20	0.07	0.07	0.05
	180—350HB	0.5—0.75DC	≤ 5	0.20	0.20	0.15
			5—10	0.15	0.15	0.10
			10—15	0.10	0.10	0.07
		DC (Slot)	≤ 5	0.15	0.15	0.15
			5—7.5	0.10	0.10	0.10
			7.5—10	0.07	0.07	0.07
M Stainless Steel	$\leq 270HB$	$\leq 0.5DC$	≤ 5	0.30	0.25	0.25
			5—7.5	0.25	0.20	0.20
			7.5—10	0.20	0.15	0.15
			10—12.5	0.15	0.10	0.10
			12.5—15	0.10	0.07	0.07
			15—20	0.07	0.05	0.05
	0.5—0.75DC	≤ 5	0.20	0.15	0.15	
		5—10	0.15	0.10	0.10	
		10—15	0.10	0.07	0.07	
		DC (Slot)	≤ 5	0.15	0.15	0.15
			5—7.5	0.10	0.10	0.10
			7.5—10	0.07	0.07	0.07
K Gray Cast Iron	Tensile Strength $\leq 350MPa$	$\leq 0.5DC$	≤ 5	0.30	0.30	0.25
			5—7.5	0.25	0.25	0.20
			7.5—10	0.20	0.20	0.15
			10—12.5	0.15	0.15	0.10
			12.5—15	0.10	0.10	0.07
			15—20	0.07	0.05	0.05
	0.5—0.75DC	≤ 5	0.20	0.20	0.15	
		5—10	0.15	0.15	0.10	
		10—15	0.10	0.10	0.07	
		DC (Slot)	≤ 5	0.15	0.15	0.15
			5—7.5	0.10	0.10	0.10
			7.5—10	0.07	0.07	0.07
Ductile, Cast Iron	Tensile Strength $\leq 800MPa$	$\leq 0.5DC$	≤ 5	0.25	0.25	0.25
			5—7.5	0.20	0.20	0.20
			7.5—10	0.15	0.15	0.15
			10—12.5	0.10	0.10	0.10
			12.5—15	0.07	0.07	0.07
			15—20	0.05	0.05	0.05
	0.5—0.75DC	≤ 5	0.20	0.20	0.15	
		5—10	0.15	0.15	0.10	
		10—15	0.10	0.10	0.07	
		DC (Slot)	≤ 5	0.15	0.15	0.15
			5—7.5	0.10	0.10	0.10
			7.5—10	0.07	0.07	0.07

MILLING

Work Material	Hardness	Cutting Width ae (mm)	Depth of Cut ap (mm)	Feed per Tooth fz (mm/t.)		
				Cutter Diameter (mm)		
				ø25—ø40	ø50—ø80	ø100—ø160
S Titanium Alloy	≤350HB	≤0.25DC	≤5	0.15	0.10	0.10
			5—7.5	0.10	0.05	0.05
			7.5—10	0.05	—	—
		DC (Slot)	≤5	0.05	0.05	0.05
		Heat-resistant Alloy	—	≤0.25DC	≤2	0.10
DC (Slot)	≤1			0.05	0.05	0.05
H Hardened Steel	40—55HRC	≤0.25DC	≤5	0.15	0.15	0.15
			5—7.5	0.10	0.10	0.10
			7.5—10	0.07	0.07	0.07
		0.25—0.5DC	≤5	0.10	0.10	0.10
			5—7.5	0.07	0.07	0.07
		0.5—0.75DC	≤5	0.07	0.07	0.07
		DC (Slot)	≤5	0.07	0.07	0.07

(Note 1) These cutting conditions are a guide to the standard shank type and the arbor type.

Please make adjustments according to the machining conditions.

(Note 2) Vibration is liable to occur in certain cases. Please reduce the depth of cut and / or reduce cutting conditions in the following cases.

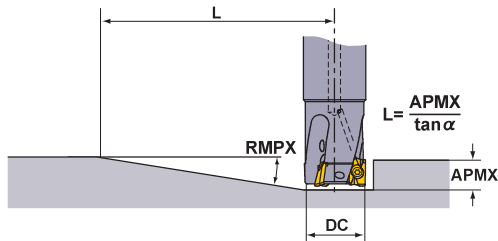
- When using the long shank type and extra long shank type.
- When using long tool overhang with the standard or arbor type.
- When the application has poor clamping rigidity or when using a low rigidity machine.

(Note 3) In case of coarse and fine pitch cutters, the coarse pitch type is recommended to prevent vibration.

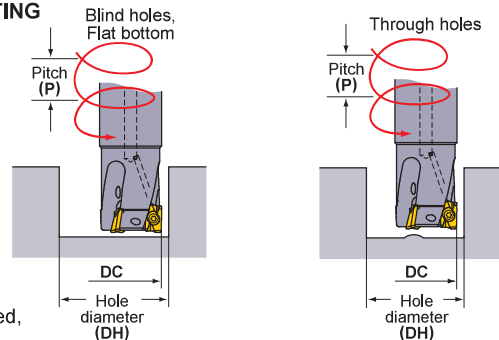
(Note 4) For heavy interrupted and unstable cutting, the H breaker is first recommendation.

RAMPING/HELICAL CUTTING

RAMPING



HELICAL CUTTING



Refer to the table below for cutting conditions. For feed per tooth and cutting speed, follow the cutting conditions for slot milling.

Cutting Edge Diameter DC (mm)	Ramping		Helical Cutting (Blind Hole, Flat Bottom)				Helical Cutting (Through Hole)	
	Maximum Ramping Angle RMPX	Minimum Distance *1 L (mm)	Maximum Hole Diameter *2 DH max. (mm)	Maximum Pitch P max. (mm)	Minimum Hole Diameter DH min. (mm)	Maximum Pitch P max. (mm)	Minimum Hole Diameter DH min. (mm)	Maximum Pitch P max. (mm)
25	11°	85	48	14	45	12	32	4
28	9°	105	54	12	51	11	38	4
32	7°	135	62	11	59	10	46	5
35	6°	158	68	10	65	9	52	5
40	6°	158	78	12	75	11	62	7
50	4°	238	98	10	95	9	82	7
63	3°	318	124	10	121	9	108	7
80	2°	477	158	8	155	8	142	6
100	1.5°	636	198	8	195	7	182	6
125	1°	954	248	6	245	6	232	5
160	1°	954	318	8	315	8	302	7

(Note) When machining highly ductile materials with ramping angles above, chips could be continuous.

In this case, decrease the ramping angle or feed per tooth.

*1 $L (=15 / \tan \alpha)$. Cutters' moving distance until depth of cut reaches 15mm at a maximum ramping angle.

*2 In case corner radius of 0.8mm. Other than that, find with the below formula.

$$\{(\text{cutting edge diameter DC}) - (\text{corner radius}) - 0.2\} \times 2$$

INDEXABLE MILLING

DEEP SHOULDER MILLING



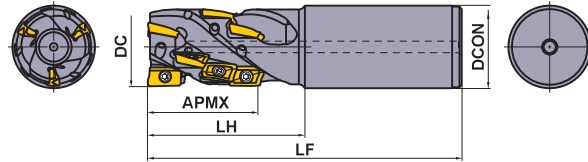
APX4000

P	M	K	N	S	H
Steel	Stainless Steel	Cast Iron		Heat Resistant Alloy	

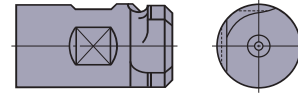


- High accuracy, high quality vertical wall.
- Low cutting force insert.
- With through air & coolant holes.

LONG CUTTING EDGE



*1 Combination Shank



SHANK TYPE

Right hand tool holder only.

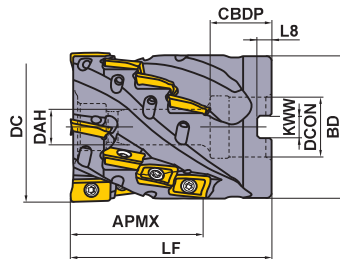
Order Number	Stock	Number of Flutes	Total	Dimensions(mm)					*2	Wrench	Insert
				DC	DCON	LF	LH	APMX			
APX4KR4008SA42S056A	●	2	8	40	42	160	80	56	TPS43	TIP15W	AOMT1848 ○ ○ PEER ○ ○
APX4KR4012SA42S056A	●	3	12	40	42	160	80	56	TPS43	TIP15W	
*1 APX4KR5012WA508S056A	●	3	12	50	50.8	160	80	56	TPS43	TIP15W	
*1 APX4KR5018WA508M084A	●	3	18	50	50.8	190	110	84	TPS43	TIP15W	

(Note 1) When using inserts with corner radius $RE \geq 3.2$, machining of the holder is required as shown on page L055.

(Note 2) Only corner radius RE 0.4mm and 0.8mm can be used for the peripheral cutting edges except the bottom cutting edge (the end cutting edge).

(Note 3) When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.

*2 Clamp Torque (N · m) : TPS43=3.5



Right hand tool holder only.

Cutter Diameter DC	Set Bolt	Geometry
φ50	HSC10050	
φ63	12070	

SHELL TYPE

Right hand tool holder only.

Order Number	Stock	Number of Flutes	Total	Dimensions(mm)										*2	Wrench	Anti-seize Lubricant	Insert
				DC	LF	DCON	CBDP	DAH	BD	KWW	L8	APMX					
APX4K-050A09A042RA	●	3	9	50	65	22	22	11	48	10.4	6.3	42	TPS43	TIP15W	MK1KS	AOMT1848	
APX4KR06316CA056A	●	4	16	63	85	25.4	26	13	60.7	9.5	6	56	TPS43	TIP15W	MK1KS	○ ○ PEER ○ ○	

*2 Clamp Torque (N · m) : TPS43=3.5

For metric arbor

The cutter bore diameter DCON is indicated in millimetre.

Order Number	Stock	Number of Flutes	Total	Dimensions(mm)										*2	Wrench	Anti-seize Lubricant	Insert
				DC	LF	DCON	CBDP	DAH	BD	KWW	L8	APMX					
APX4K-050A09A042RA	●	3	9	50	65	22	22	11	48	10.4	6.3	42	TPS43	TIP15W	MK1KS	AOMT1848	
APX4K-063A16A056RA	●	4	16	63	85	27	28	13	60.7	12.4	7	56	TPS43	TIP15W	MK1KS	○ ○ PEER ○ ○	

(Note 1) When using inserts with corner radius $RE \geq 3.2$, machining of the holder is required as shown on page L055.

(Note 2) Only corner radius RE 0.4mm and 0.8mm can be used for the peripheral cutting edges except the bottom cutting edge (the end cutting edge).

(Note 3) When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.

(Note 4) In case of internal coolant supply, please use a face mill arbor with through coolant channels. Regular center-thru or side-thru arbors can't be used.

*2 Clamp Torque (N · m) : TPS43=3.5

● : Inventory maintained in Japan.

RECOMMENDED CUTTING CONDITIONS

CUTTING SPEED

Work Material	Hardness	Insert				Cutting Width a_e (mm)			
		Grade		Breaker		$\leq 0.15DC$	0.15—0.3DC	DC (Slot)	
		1st Recommendation	2nd Recommendation						
Cutting Speed v_c (m/min)									
P	Mild Steel	$\leq 180HB$	MP6120	VP15TF	M	H	200(160—250)	160(120—200)	140(120—160)
			MP6130	VP20RT	M	H	170(130—220)	130(90—170)	110(90—130)
	Carbon Steel Alloy Steel	180—350HB	MP6120	VP15TF	M	H	160(120—200)	120(100—140)	100(80—120)
			MP6130	VP20RT	M	H	130(90—170)	90(70—110)	70(50—90)
M	Stainless Steel	$\leq 270HB$	MP7130	VP15TF	M	H	160(120—200)	120(100—140)	100(80—120)
K	Gray Cast Iron	$\leq 350MPa$	MC5020	VP15TF	H	H	230(180—280)	190(140—240)	190(140—240)
	Ductile, Cast Iron	$\leq 800MPa$	MC5020	VP15TF	H	H	190(140—220)	170(120—220)	170(120—220)
S	Titanium Alloy	$\leq 350HB$	MP9120	VP15TF	H	M	50(40—70)		50(40—70)
			MP9130	VP20RT	H	M	40(30—60)		40(30—60)
	Heat-resistant Alloy	—	MP9120	VP15TF	H	M	40(30—60)		40(30—60)
			MP9130	VP20RT	H	M	30(20—40)		30(20—40)

DEPTH OF CUT AND FEED

Work Material	Hardness	Cutting Width a_e (mm)	Depth of Cut a_p (mm)	Feed per Tooth f_z (mm/t.)			
				Cutter Diameter (mm)			
				$\phi 40$ Length of cut 56mm $\phi 50$ Length of cut 42mm	$\phi 50$ Length of cut 56mm $\phi 63$ Length of cut 56mm	$\phi 50$ Length of cut 84mm	
P	Mild Steel	$\leq 0.3DC$	≤ 20	0.25	0.25	0.20	
				0.20	0.20	0.15	
				0.10	0.10	0.10	
		DC (Slot)	20—50	≤ 20	0.20	0.20	0.15
				0.15	0.15	0.10	
				0.10	0.10	0.10	
	Carbon Steel Alloy Steel	$\leq 0.3DC$	≤ 20	0.25	0.25	0.20	
				0.20	0.20	0.15	
				0.10	0.10	0.10	
		DC (Slot)	20—50	≤ 20	0.15	0.15	0.10
				0.10	0.10	0.10	
				0.07	0.07	0.07	
M	Stainless Steel	$\leq 0.3DC$	≤ 20	0.25	0.25	0.20	
				0.20	0.20	0.15	
				0.10	0.10	0.10	
		DC (Slot)	≤ 10	0.10	0.10	0.07	
				0.07	0.07	0.07	
				0.05	0.05	0.05	
K	Gray Cast Iron	$\leq 0.15DC$	≤ 10	0.30	0.30	0.25	
				0.25	0.25	0.20	
				0.15	0.15	0.15	
		0.15—0.3DC	10—50	≤ 10	0.25	0.25	0.20
				0.20	0.20	0.15	
				0.10	0.10	0.10	
DC (Slot)	≤ 10	0.25	0.25	0.20			
		0.20	0.20	0.15			
		0.15	0.15	0.10			
	Ductile, Cast Iron	$\leq 0.15DC$	≤ 20	0.25	0.25	0.20	
				0.20	0.20	0.15	
				0.10	0.10	0.10	
		0.15—0.3DC	20—50	≤ 20	0.20	0.20	0.15
				0.15	0.15	0.10	
				0.10	0.10	0.10	
DC (Slot)	≤ 10	0.15	0.15	0.10			
		0.10	0.10	0.10			
		0.07	0.07	0.07			
S	Titanium Alloy	$\leq 0.15DC$	≤ 20	0.10	0.10	0.10	
			20—50	0.10	0.10	0.10	
	Heat-resistant Alloy	—	$\leq 0.15DC$	≤ 50	0.08	0.08	0.08
			$\leq 0.15DC$	≤ 10	0.07	0.07	0.07
	Heat-resistant Alloy	—	DC (Slot)	≤ 20	0.05	0.05	0.05
			DC (Slot)	≤ 20	0.05	0.05	0.05

(Note) The above cutting conditions are determined based on high rigidity machine and workpiece, where no vibration occurred. Please adjust processing conditions if the vibration is generated.