

Rich Mill series – Multi Functional Shouldering Milling Tool

RM3P



3-corner using shouldering tool

- Perfect perpendicular shouldering operation multi milling tool
- High rake chipbreaker for high speed and high feed
- Strong clamping force for better machinability



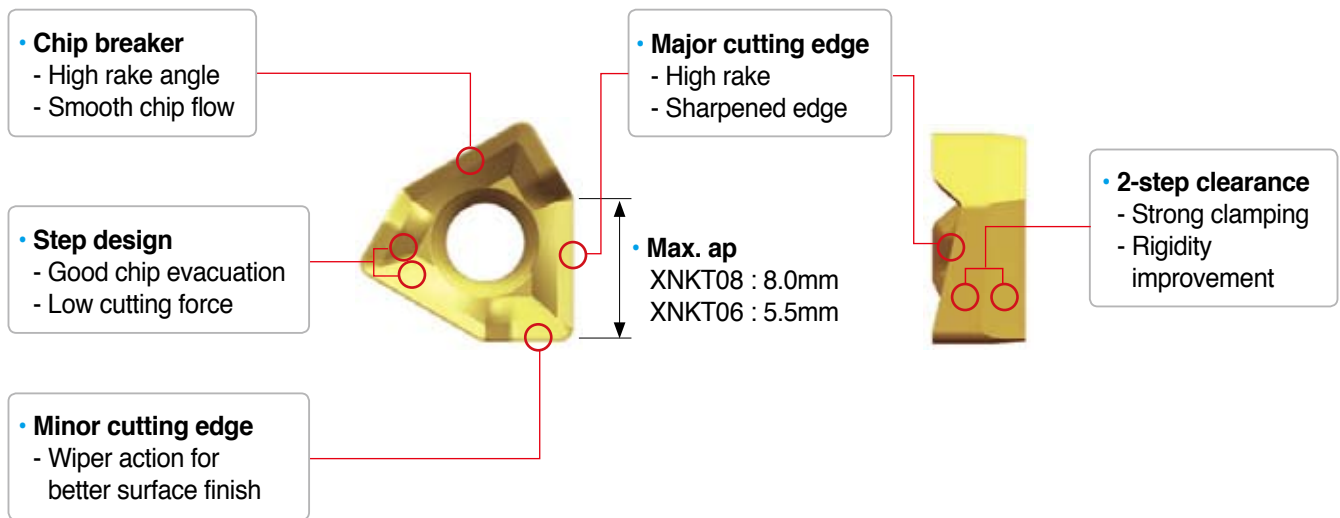
RM3P







Features

- **High Quality** - True 90 °shouldering operation
- **High Productivity** - Strong thick insert and 3-face clamping ensure stable operation even tough condition.
- **High Economics** - Long tool life due to optimized manufacturing process

Features of insert

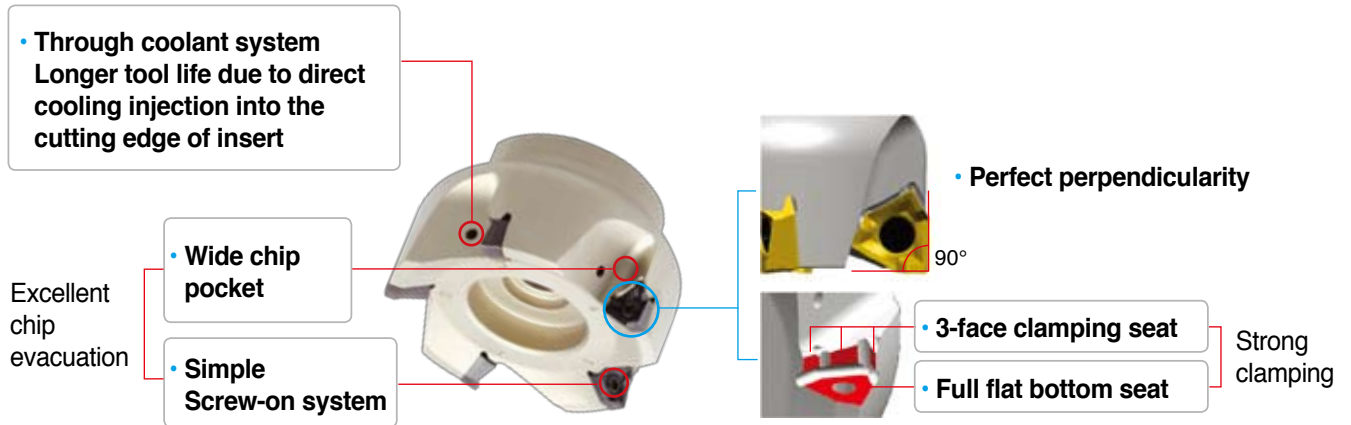


Features of chip breakers

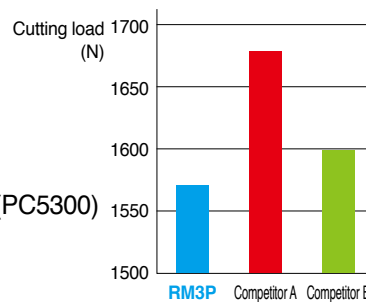
Chip breaker	Insert	Cutting edge	Applications	Features
MM			General	<ul style="list-style-type: none"> • General shouldering operation • 1st recommendation
ML			Light	<ul style="list-style-type: none"> • ML : Milling Light • Sharp cutting edge for hard-to-cut material • Low cutting force



Features of cutter

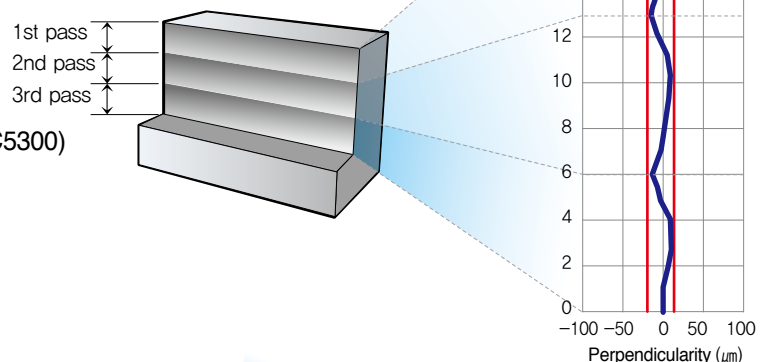


- **Workpiece** SCM440 (200HB)
- **Cutting conditions** $vc(m/min) = 250$
 $fz(mm/t) = 0.1$
 $ap(mm) = 3.0$
dry
- **Tool** Insert XNKT080508PNSR-MM (PC5300)
Cutter RM3PCM4063HR-M
- **Machine** Vertical M/C



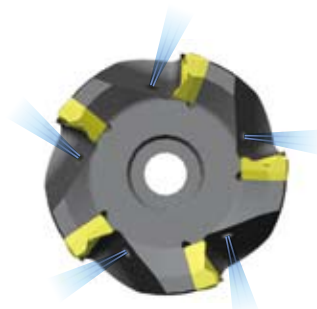
Cutting edge	Features
<p>$\alpha^\circ = 8^\circ$ $\beta^\circ = 5^\circ$</p>	<p>True positive clearance due to high rake angle → Excellent machineability</p>

- **Workpiece** SCM440 (200HB)
- **Cutting conditions** $vc(m/min) = 200$
 $fz(mm/t) = 0.1$
 $ap(mm) = 7.0 \times 3$ pass
 $ae(mm) = 10.0$
dry
- **Tool** Insert XNKT080508PNSR-MM (PC5300)
Cutter RM3PCM4063HR-M
- **Machine** Vertical M/C

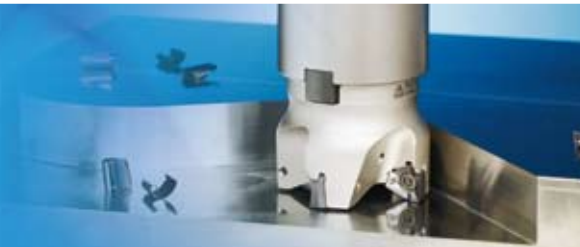


Through coolant system

- Exclusive through coolant bolt required.
- Effective coolant distribution directly to cutting edge
- Coolant supporting arbor required.



RM3P



Application guideline for grade

Workpiece		P		M	K
		Carbon steel	Alloy steel	Stainless steel	Cast iron
Chip breaker	First choice	MM	MM	ML	ML
	Second choice	ML	ML	-	MM
Grade	High speed machining	PC3600	PC3600	PC5300	PC6510
	General machining	PC5400	PC5300	PC5400	PC5300
	Interrupted machining	PC5400	PC5400	PC5400	PC5400

Recommended cutting condition

• RM3P 3000 type

Workpiece	Grade	Cutting conditions				Available inserts	Cutting conditions			
		vc (m/min)	fz (mm/t)	max ap(mm)	vc (m/min)		fz (mm/t)	max ap(mm)	Available inserts	
P steel	PC3600	160~270	0.25~0.05	5.5	XNKT060405 PNSR-MM	160~270	0.2~0.05	5.5	XNKT060405 PNER-ML	
	PC5300	150~240	0.25~0.05	5.5		150~240	0.25~0.05	5.5		
	PC5400	130~210	0.25~0.05	5.5		130~210	0.25~0.05	5.5		
M Stainless steel	PC5300	90~150	0.2~0.05	5.5		90~150	0.1~0.05	5.5		
	PC5400	70~120	0.2~0.05	5.5		70~120	0.1~0.05	5.5		
K Cast iron	PC6510	140~230	0.3~0.08	5.5		140~230	0.25~0.08	5.5		
	PC5300	120~200	0.3~0.08	5.5		120~200	0.25~0.08	5.5		

- Maximum cutting condition : vc = 350m/min, fz = 0.5mm/t according to cutting environment

• RM3P 4000 type

Workpiece	Grade	Cutting conditions				Available inserts	Cutting conditions			
		vc (m/min)	fz (mm/t)	max ap(mm)	vc (m/min)		fz (mm/t)	max ap(mm)	Available inserts	
P steel	PC3600	160~270	0.3~0.05	8.0	XNKT080508 PNSR-MM	160~270	0.25~0.05	8.0	XNKT080508 PNER-ML	
	PC5300	150~240	0.3~0.05	8.0		150~240	0.25~0.05	8.0		
	PC5400	130~210	0.3~0.05	8.0		130~210	0.25~0.05	8.0		
M Stainless steel	PC5300	90~150	0.25~0.05	8.0		90~150	0.2~0.05	8.0		
	PC5400	70~120	0.25~0.05	8.0		70~120	0.2~0.05	8.0		
K Cast iron	PC6510	140~230	0.35~0.08	8.0		140~230	0.3~0.08	8.0		
	PC5300	120~200	0.35~0.08	8.0		120~200	0.3~0.08	8.0		

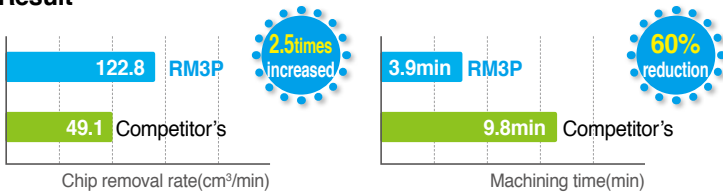
- Maximum cutting condition : vc = 350m/min, fz = 0.7mm/t according to cutting environment

Cutting performance

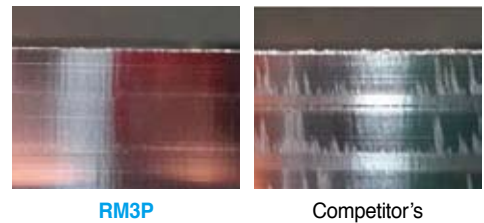
P Carbon steel (SM45C, HB200)

- **Cutting conditions** Competitor's $vc(m/min) = 270$, $fz(mm/t) = 0.2$, $ap(mm) = 6.0 \times 4$ pass, $ae(mm) = 5.0$
RM3P $vc(m/min) = 270$, $fz(mm/t) = 1.0$, $ap(mm) = 3.0 \times 8$ pass, $ae(mm) = 5.0$
- **Application area** Shouldering
- **Tools** Insert XNKT080508PNSR-MM (PC5300)
Cutter RM3PCM4063HR-M

• Result



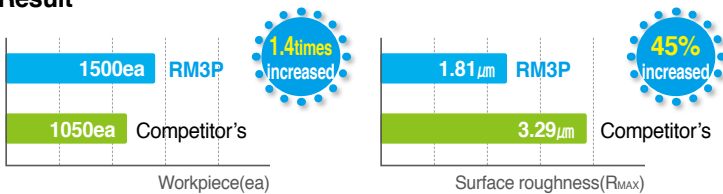
• Surface finish (shouldering, side face)



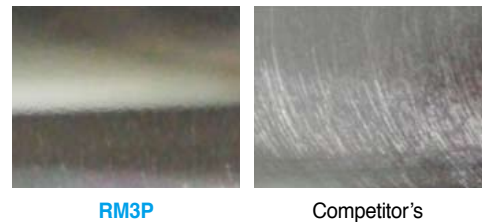
P Alloy steel (SCM440, HB200)

- **Cutting conditions** Competitor's $vc(m/min) = 250$, $fz(mm/t) = 0.125$, $ap(mm) =$ Finishing 0.5 / Roughing 7.0
RM3P $vc(m/min) = 250$, $fz(mm/t) = 0.125$, $ap(mm) =$ Finishing 0.5 / Roughing 7.0
- **Application area** Facing
- **Tools** Insert XNKT080508PNSR-MM (PC5300)
Cutter RM3PCM4063HR-M

• Result



• Surface roughness



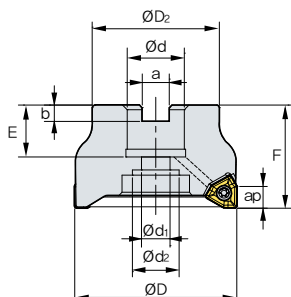
Available inserts

Designation	Cutter	Coated				Dimensions (mm)						Configuration
		PC3600	PC5300	PC5400	PC6510	ℓ	d	t	r	d ₁	a	
XNKT 060405PNSR-MM	3000 type	●	●	●	●	5.7	6.5	4.0	0.5	3.4	1.8	
060405PNER-ML	3000 type	●	●	●	●							
080508PNSR-MM	4000 type	●	●	●	●	8.2	10.0	5.5	0.8	4.5	2.9	
080508PNER-ML	4000 type	●	●	●	●							

RM3P



RM3PC4000



- AR : -5°
- RR : -8°~6°



(mm)

Designation		$\varnothing D$	$\varnothing D_2$	$\varnothing d$	$\varnothing d_1$	$\varnothing d_2$	a	b	E	F	ap		
RM3PCM	4040HR	3	40	35	16	9	14	8.4	5.6	19	40	8.0	0.19
	4040HR-M	4	40	35	16	9	14	8.4	5.6	19	40	8.0	0.19
	4050HR	4	50	42	22	11	18	10.4	6.3	20	40	8.0	0.28
	4050HR-M	5	50	42	22	11	18	10.4	6.3	20	40	8.0	0.29
	4063HR	5	63	49	22	11	18	10.4	6.3	20	40	8.0	0.54
	4063HR-M	6	63	49	22	11	18	10.4	6.3	20	40	8.0	0.53
RM3PC(M)	4080HR	5	80	57	25.4(27)	14	20	9.5(12.4)	6(7)	25(23)	50	8.0	1.08
	4080HR-M	7	80	57	25.4(27)	14	20	9.5(12.4)	6(7)	25(23)	50	8.0	1.06
	4100HR	6	100	67	31.75(32)	18	26	12.7(14.4)	8(8)	33(25)	63(50)	8.0	1.68
	4100HR-M	8	100	67	31.75(32)	18	26	12.7(14.4)	8(8)	33(25)	63(50)	8.0	1.67
	4125HR	8	125	90	38.1(40)	22	32	15.9(16.4)	9(10)	38(29)	63	8.0	3.45
	4125HR-M	10	125	90	38.1(40)	22	32	15.9(16.4)	9(10)	38(29)	63	8.0	3.45

Available inserts

Type	Designation	Coated			
		PC3600	PC5300	PC5400	PC6510
4000 type	XNKT080508PNSR-MM	●	●	●	●
	XNKT080508PNER-ML	●	●	●	●

Available arbors

Designation	RM3PC	RM3PCM
RM3PCM4040HR-□□		BT□□-FMC16-□□
RM3PCM4050HR-□□		BT□□-FMC22-□□
RM3PCM4063HR-□□		
RM3PC(M)4080HR-□□	BT□□-FMA25.4-□□	BT□□-FMC27-□□
RM3PC(M)4100HR-□□	BT□□-FMA31.75-□□	BT□□-FMC32-□□
RM3PC(M)4125HR-□□	BT□□-FMA38.1-□□	BT□□-FMC40-□□

Parts

Type	Screw	Wrench
4000 type	FTNA0408	TW15S

RM3PS3000

- AR : -5°
- RR : -16°~9°

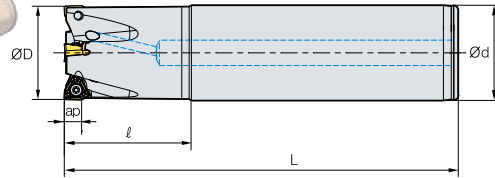
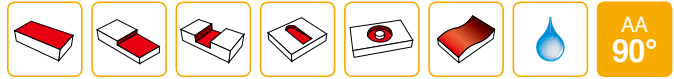


Fig. 1

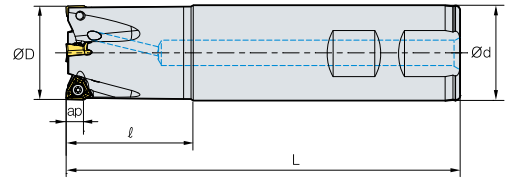


Fig. 2

(mm)

Designation		ØD	Ød	ℓ	L	ap		Fig.
RM3PS								
3020HR-2S20	2	20	20	35	100	5.5	0.21	2
3020HR-2L20	2	20	20	35	200	5.5	0.43	1
3021HR-2S20	2	21	20	30	100	5.5	0.21	2
3021HR-2L20	2	21	20	30	200	5.5	0.43	1
3025HR-2S20	2	25	20	35	115	5.5	0.27	2
3025HR-2L20	2	25	20	35	200	5.5	0.46	1
3025HR-3S25	3	25	25	40	115	5.5	0.36	2
3025HR-3L25	3	25	25	40	200	5.5	0.66	1
3026HR-2S20	2	26	20	35	115	5.5	0.29	2
3026HR-2L20	2	26	20	35	200	5.5	0.47	1
3026HR-3S20	3	26	20	35	115	5.5	0.28	2
3026HR-3L20	3	26	20	35	200	5.5	0.47	1
3026HR-2S25	2	26	25	35	115	5.5	0.37	2
3026HR-2L25	2	26	25	35	200	5.5	0.68	1
3026HR-3S25	3	26	25	35	115	5.5	0.37	2
3026HR-3L25	3	26	25	35	200	5.5	0.68	1
3032HR-3S25	3	32	25	42	125	5.5	0.48	2
3032HR-3L25	3	32	25	42	200	5.5	0.74	1
3032HR-4S25	4	32	25	42	125	5.5	0.48	2
3032HR-4L25	4	32	25	42	200	5.5	0.74	1
3032HR-4S32	4	32	32	42	125	5.5	0.68	2
3032HR-4L32	4	32	32	42	200	5.5	1.13	1
3033HR-3S25	3	33	25	42	125	5.5	0.49	2
3033HR-3L25	3	33	25	42	200	5.5	0.75	1
3033HR-4S25	4	33	25	42	125	5.5	0.49	2
3033HR-4L25	4	33	25	42	200	5.5	0.75	1
3033HR-4S32	4	33	32	42	125	5.5	0.70	2
3033HR-4L32	4	33	32	42	200	5.5	1.14	1
3040HR-4S32	4	40	32	45	130	5.5	0.83	2
3040HR-4L32	4	40	32	45	200	5.5	1.24	1
3040HR-5S32	5	40	32	45	130	5.5	0.83	2
3040HR-5L32	5	40	32	45	200	5.5	1.24	1

Available inserts

Type	Designation	Coated			
		PC3600	PC5300	PC5400	PC6510
3000 type	XNKTO60405PNSR-MM	●	●	●	●
	XNKTO60405PNER-ML	●	●	●	●

Parts

Type		
3000 type	FTNA0306	TW09S



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