

RM 3



Multi Functional Shoulder Milling Tool for Higher Productivity

- **High Quality**
True perpendicular shouldering operation
- **Excellent Productivity**
Strong thick insert and 3-face clamping for stable milling even in the toughest conditions
- **Great Value for Money**
Long tool life achieves reduced tool costs due to optimized manufacturing process



Multi Functional Shouldering Tool RM3

In this industry, requirements such as reducing manufacturing cost and improving quality are constantly in demand. This means cutting tools for mold making would have to achieve both factors. Tools must achieve high productivity and quality in a variety of applications, notably in the mold making industry, in various applications: shouldering, facing, slotting, plunging, etc. If cutting tools should have to be replaced with every application, both productivity and cost efficiency would get worse. This led KORLOY to develop the RM3. A tool specifically engineered for true perpendicular shouldering, with multi-functional capabilities.



Insert



Cutter

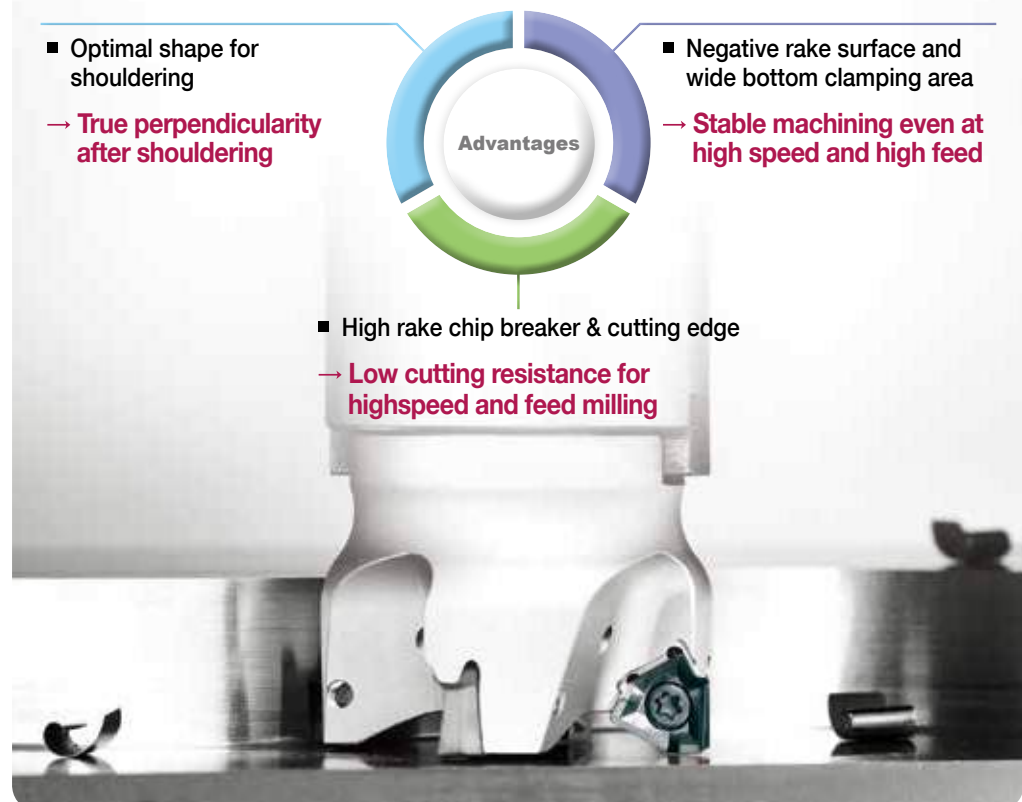


Shank

To use a single tool for various applications requires not only sharp cutting action but high rigidity and stable clamping. Poor cutting performance leads to excessive noise and burrs, and deteriorates both the perpendicularity and the surface finish. Low rigidity and unstable clamping cause vibration during operations leading to insert chipping or breakage, which shortens the tool life.

The RM3 solves all these problems and delivers higher machining stability and excellent results in quality. This 3 corner insert shouldering tool exhibits a proprietary insert design with high rake angle chip breakers & cutting edges for sharp cutting action and low cutting resistance. It additionally features a holder rigidity 2 times stronger than the existing tools, which allows a stable machining even in the toughest cutting conditions. There were lots of actual test reports that the RM3 significantly improved our customers' cycle time thanks to its high rigidity and clamping system in operations such as shouldering, ramping, facing, slotting and plunging. Even in high feed milling applications, the RM3 showed no sign of tool failure.

The RM3 also takes advantage of the true perpendicularity that largely improves surface finish. A variety of grades are prepared for machining applications in steel, cast iron, hard-to-cut materials and more. RM3 markets itself as a versatile leading milling tool that meets demanding performance and capacity requirements.

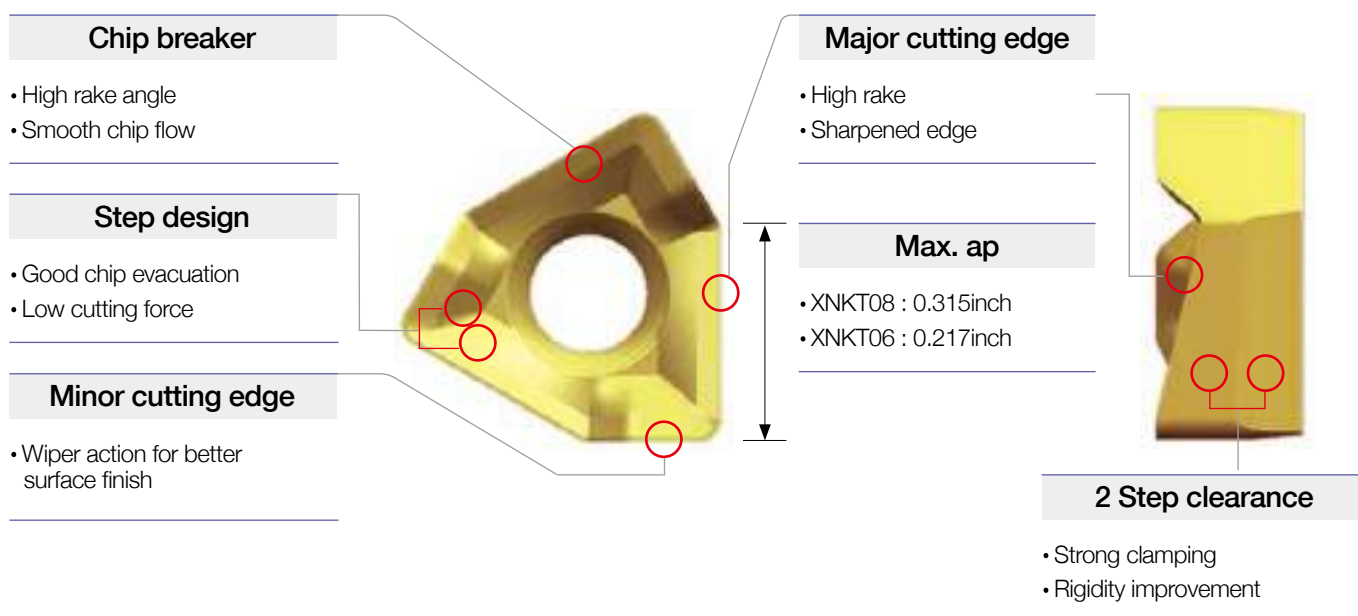


RM3







- **High Quality**
 - True 90° shouldering operation
- **Excellent Productivity**
 - Strong thick insert and 3-face clamping ensures stable machining even in tough cutting conditions
- **Great Value for Money**
 - Longer tool life due to optimized cutter and insert geometry



Insert Features



Chip Breaker Features

Chip breaker	Cutting edge	Applications	Features
<ul style="list-style-type: none"> • Chip breaker <p>MA</p> 		Aluminum	<ul style="list-style-type: none"> ■ MA : Milling Aluminum ■ Sharp cutting edge and buffed top face for an excellent chip flow and welding resistance in aluminum machining
<ul style="list-style-type: none"> • Chip breaker <p>ML</p> 		Light	<ul style="list-style-type: none"> ■ ML : Milling Light ■ Sharp cutting edge for hard-to-cut materials ■ Low cutting force
<ul style="list-style-type: none"> • Chip breaker <p>MM</p> 		General	<ul style="list-style-type: none"> ■ MM : General shouldering operations ■ 1st recommendation

RM3

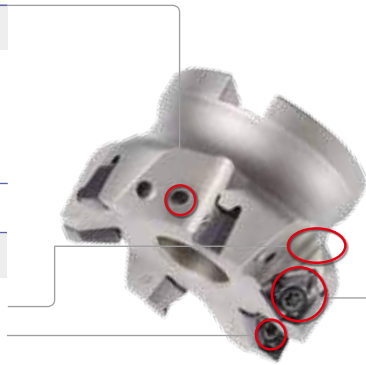
Cutter Features

Through coolant system

- Through coolant system providing a longer tool life due to direct cooling injection onto the cutting edge of the insert.

Excellent chip evacuation

- Wide chip pocket
- Simple Screw-on system



True perpendicularity



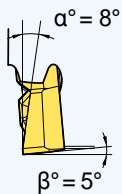
Strong clamping

- 3-face clamping seat
- Full flat bottom seat



Cutting Performance

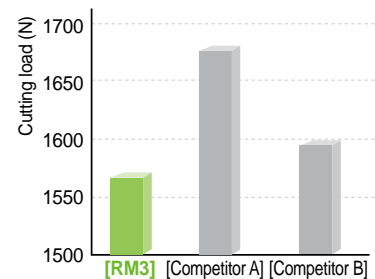
[Cutting edge]



- True positive clearance due to high rake angle
→ **Excellent machineability**

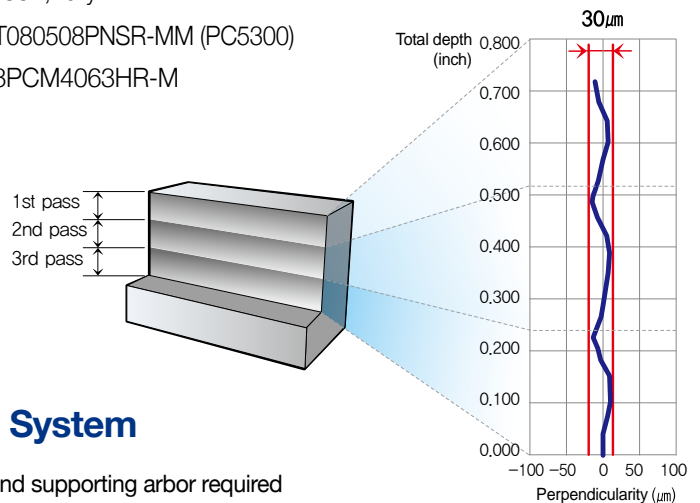
Cutting Load

- Workpiece A332-4140 (200HB)
- Cutting conditions $vc(\text{sfm}) = 820$, $fz(\text{ipt}) = 0.004$, $ap(\text{inch}) = 0.118$, dry
- Tools
Insert XNKT080508PNSR-MM (PC5300)
Cutter RM3PCM4063HR-M



Perpendicularity

- Workpiece A332-4140 (200HB)
- Cutting conditions $vc(\text{sfm}) = 820$, $fz(\text{ipt}) = 0.004$, $ap(\text{inch}) = 0.276 \times 3$ pass, $ae(\text{inch}) = 0.394$, dry
- Tools
Insert XNKT080508PNSR-MM (PC5300)
Cutter RM3PCM4063HR-M



Through Coolant System

- Exclusive through coolant bolt and supporting arbor required
- Effective coolant distribution directly onto the cutting edges



➤ Grades Application Guidelines

Workpiece		P		M	K	N
		Carbon steel	Alloy steel	Stainless steel	Cast iron	Nonferrous
Chip breaker	First choice	MM	MM	ML	ML	MA
	Second choice	ML	ML	-	MM	-
Grade	High speed machining	PC3600	PC3600	PC5300	PC6510	H01
	General machining	PC5400	PC5300	PC5400	PC5300	H01
	Interrupted machining	PC5400	PC5400	PC5400	PC5400	H01

➤ Recommended Cutting Conditions

▶ RM3 3000 Type

Workpiece	Grade	Cutting conditions				Available inserts	Cutting conditions			
		vc (sfm)	fz (ipt)	max ap(inch)	vc (sfm)		fz (ipt)	max ap(inch)	Available inserts	
P	steel	PC3600	524~885	0.010~0.002	0.217	XNKT060405 PNSR-MM	524~885	0.008~0.002	0.217	XNKT060405 PNER-ML
		PC5300	492~787	0.010~0.002	0.217		492~787	0.010~0.002	0.217	
		PC5400	426~688	0.010~0.002	0.217		426~688	0.010~0.002	0.217	
M	Stainless steel	PC5300	295~492	0.008~0.002	0.217		295~492	0.006~0.002	0.217	
		PC5400	229~393	0.008~0.002	0.217		229~393	0.006~0.002	0.217	
K	Cast iron	PC6510	459~754	0.012~0.003	0.217		459~754	0.010~0.003	0.217	
		PC5300	393~656	0.012~0.003	0.217		393~656	0.010~0.003	0.217	

* Maximum cutting conditions : vc(sfm)=1148, fz(ipt)=0.020 according to the cutting environment

▶ RM3 4000 Type

Workpiece	Grade	Cutting conditions				Available inserts	Cutting conditions					
		vc (sfm)	fz (ipt)	max ap(inch)	vc (sfm)		fz (ipt)	max ap(inch)	Available inserts			
P	steel	PC3600	524~885	0.012~0.002	0.315	XNKT080508 PNSR-MM	524~885	0.010~0.002	0.315	XNKT080508 PNER-ML		
		PC5300	492~787	0.012~0.002	0.315		492~787	0.010~0.002	0.315			
		PC5400	426~688	0.012~0.002	0.315		426~688	0.010~0.002	0.315			
M	Stainless steel	PC5300	295~492	0.010~0.002	0.315		295~492	0.008~0.002	0.315			
		PC5400	229~393	0.010~0.002	0.315		229~393	0.008~0.002	0.315			
K	Cast iron	PC6510	459~754	0.014~0.003	0.315		459~754	0.012~0.003	0.315			
		PC5300	393~656	0.014~0.003	0.315		393~656	0.012~0.003	0.315			
N	Aluminum	H01	1312~3937	0.016~0.004	0.315		XNCT080508 PNFR-MA	-	-		-	-

* Maximum cutting conditions : vc(sfm)=1148, fz(ipt)=0.028 according to the cutting environment

➤ Cutting Performance

* Surface finish
(shouldering, side face)



[RM3]



[Competitor]

Carbon steel (A108-1045, HB200)

- Cutting conditions Competitor's $vc(\text{sfm}) = 885$, $fz(\text{ipt}) = 0.008$, $ap(\text{inch}) = 0.236 \times 4$ pass, $ae(\text{inch}) = 0.197$
RM3 $vc(\text{sfm}) = 885$, $fz(\text{ipt}) = 0.039$, $ap(\text{inch}) = 0.118 \times 8$ pass, $ae(\text{inch}) = 0.197$
- Application area Shouldering
- Tools Insert XNKT080508PNSR-MM (PC5300) Cutter RM3PCM4063HR-M

RM3

7.494 inch³/min

2.5times more

Competitor

2.996 inch³/min

Chip removal rate(inch³/min)

RM3

3.9min

60% less

Competitor

9.8min

Machining time(min)

* Surface roughness



[RM3]



[Competitor]

Alloy steel (A332-4140, HB200)

- Cutting conditions Competitor's $vc(\text{sfm}) = 820$, $fz(\text{ipt}) = 0.005$, $ap(\text{inch}) = \text{Finishing } 0.02 / \text{Roughing } 0.276$
RM3 $vc(\text{sfm}) = 820$, $fz(\text{ipt}) = 0.005$, $ap(\text{inch}) = \text{Finishing } 0.02 / \text{Roughing } 0.276$
- Application area Facing
- Tools Insert XNKT080508PNSR-MM (PC5300) Cutter RM3PCM4063HR-M

RM3

1500ea

1.4times more

Competitor

1050ea

Workpiece(ea)

RM3

1.81 μm

45% less

Competitor

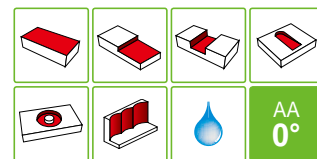
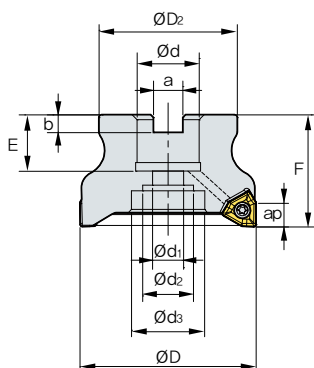
3.29 μm

Surface roughness(μm)

➤ Available Inserts

Insert Shape	Designation	Cutter	Coated				Uncoated	Dimensions (inch)						Configuration
			PC3600	PC5300	PC5400	PC6510	H01	ℓ	d	t	r	d ₁	a	
	XNCT 080508PNFR-MA	4000 type	-	-	-	-	●	0.323	0.394	0.217	0.031	0.177	0.114	
	XNKT 060405PNER-ML	3000 type	●	●	●	●	-	0.224	0.256	0.157	0.020	0.134	0.071	
	080508PNER-ML	4000 type	●	●	●	●	-	0.323	0.394	0.217	0.031	0.177	0.114	
	XNKT 060405PNSR-MM	3000 type	●	●	●	●	-	0.224	0.256	0.157	0.020	0.134	0.071	
	080508PNSR-MM	4000 type	●	●	●	●	-	0.323	0.394	0.217	0.031	0.177	0.114	
	080812PNSR-MM	4000 type	-	-	-	-	-	0.323	0.394	0.217	0.047	0.177	0.114	
	080516PNSR-MM	4000 type	-	-	-	-	-	0.323	0.394	0.217	0.063	0.177	0.114	
	080520PNSR-MM	4000 type	-	-	-	-	-	0.323	0.394	0.217	0.079	0.177	0.114	

RM3PCA3000



•AR : -5°
•RR : -10°--6°

(inch)

Designation			ØD	ØD ₂	Ød	Ød ₁	Ød ₂	Ød ₃	a	b	E	F	ap	lbs
RM3PCA	3150HR	5	1.50	1.417	0.50	0.287	0.430	-	0.252	0.170	0.630	1.50	0.315	0.441
	3150HR-M	6	1.50	1.417	0.50	0.287	0.430	-	0.252	0.170	0.630	1.50	0.315	0.441
	3200HR	6	2.00	1.772	0.75	0.413	0.630	-	0.315	0.220	0.787	1.75	0.315	0.661
	3200HR-M	7	2.00	1.772	0.75	0.413	0.630	-	0.315	0.220	0.787	1.75	0.315	0.661
	3250HR	7	2.50	2.205	1.00	0.551	0.827	-	0.374	0.248	0.787	1.75	0.315	1.080
	3250HR-M	8	2.50	2.205	1.00	0.551	0.827	-	0.374	0.248	0.787	1.75	0.315	1.080
	3300HR	8	3.00	2.205	1.00	0.551	0.866	-	0.374	0.248	0.787	2.00	0.315	1.918
	3300HR-M	10	3.00	2.205	1.00	0.551	0.866	-	0.374	0.248	0.787	2.00	0.315	1.940

Available Inserts



XNKT-ML



XNKT-MM

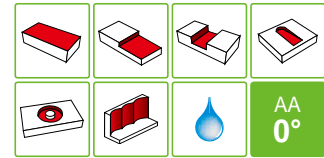
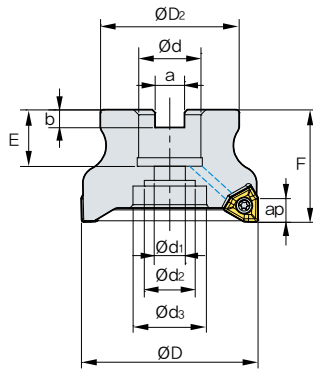
Designation	Cermet		Coated									Uncoated		
	CN2000	CN30	NCM325	NC5330	PC3500	PC3600	PC3545	PC9530	PC6510	PC5300	PC5400	A30	G10E	H01
XNKT 060405PNER-ML						●				●	●	●		
060405PNSR-MM						●				●	●	●		

Parts

Specification	Screw 	Wrench
Ø1.50 - Ø3.00	FTKA0306	TW09S

RM3

RM3PCA4000



• AR : -5°
• RR : -8°-6°

(inch)

Designation	⊙	ØD	ØD ₂	Ød	Ød ₁	Ød ₂	Ød ₃	a	b	E	F	ap	lbs	
RM3PCA	4150HR	3	1.50	1.417	0.50	0.287	0.430	-	0.252	0.170	0.630	1.50	0.315	0.45
	4150HR-M	4	1.50	1.417	0.50	0.287	0.430	-	0.252	0.170	0.630	1.50	0.315	0.45
	4200HR	4	2.00	1.772	0.75	0.413	0.630	-	0.315	0.220	0.787	1.75	0.315	0.72
	4200HR-M	5	2.00	1.772	0.75	0.413	0.630	-	0.315	0.220	0.787	1.75	0.315	0.72
	4250HR	5	2.50	2.205	1.00	0.551	0.827	-	0.374	0.248	0.787	1.75	0.315	1.15
	4250HR-M	6	2.50	2.205	1.00	0.551	0.827	-	0.374	0.248	0.787	1.75	0.315	1.15
	4300HR	5	3.00	2.205	1.00	0.551	0.866	-	0.374	0.248	0.787	2.00	0.315	1.81
	4300HR-M	7	3.00	2.205	1.00	0.551	0.866	-	0.374	0.248	0.787	2.00	0.315	1.81
	4400HR	7	4.00	2.874	1.25	0.689	1.024	1.614	0.500	0.319	0.787	2.00	0.315	3.37
	4400HR-M	8	4.00	2.874	1.25	0.689	1.024	1.614	0.500	0.319	0.787	2.00	0.315	3.37
	4500HR	8	5.00	3.937	1.50	0.827	1.220	1.969	0.626	0.394	1.063	2.50	0.315	7.24
	4500HR-M	10	5.00	3.937	1.50	0.827	1.220	1.969	0.626	0.394	1.063	2.50	0.315	7.30

Available Inserts



XNCT-MA



XNKTK-ML



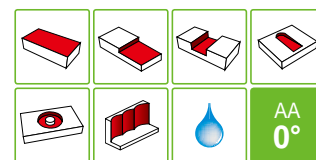
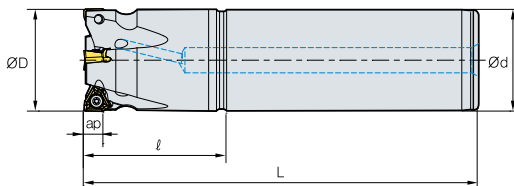
XNKTK-MM

Designation	Cermet		Coated									Uncoated		
	CN2000	CN30	NCM325	NC5330	PC3500	PC3600	PC3545	PC9530	PC6510	PC5300	PC5400	A30	G10E	H01
XNCT 080508PNFR-MA														
XNKTK 080508PNER-ML						●			●	●	●			●
080508PNSR-MM						●			●	●	●			
080512PNSR-MM														
080516PNSR-MM														
080520PNSR-MM														

Parts

Specification	Screw	Wrench
Ø1.50 ~ Ø5.00	FTKA0408	TW15S

RM3PSA3000



AR: -5°
RR: -8°-6°

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs
RM3PSA	3075HR-2L075	2	0.75	0.75	1.378	7.874	0.217	0.86
	3100HR-2L100	2	1.00	1.00	1.575	7.874	0.217	1.51
	3100HR-3L100	3	1.00	1.00	1.575	7.874	0.217	1.50
	3125HR-4L125	4	1.25	1.25	1.654	7.874	0.217	2.47
	3150HR-4L150	4	1.50	1.50	1.654	7.874	0.217	3.57
	3150HR-5L150	5	1.50	1.50	1.654	7.874	0.217	3.57

Available Inserts



XNKT-MM



XNKT-ML

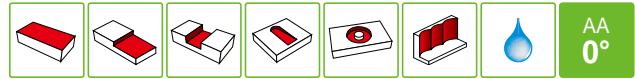
Designation	Cermet		Coated								Uncoated			
	CN2000	CN30	NCM325	NC5330	PC3500	PC3600	PC3545	PC9530	PC6510	PC5300	PC5400	A30	G10E	H01
XNKT 060405PNSR-MM						●			●	●	●			
060405PNER-ML						●			●	●	●			

Parts

Specification	Screw 	Wrench
Ø0.75 ~ Ø1.50	FTKA0306	TW09S

RM3

RM3PSA4000



AA
0°

*AR : -5°
*RR : -7°-5°

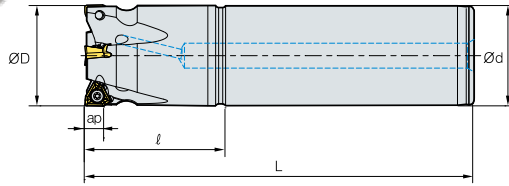


Fig. 1

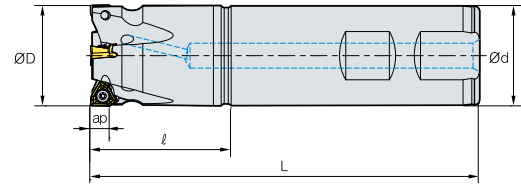


Fig. 2

(inch)

Designation			ØD	Ød	ℓ	L	ap	lbs	Fig.
RM3PSA	4100HR-2L100	2	1.00	1.00	1.575	7.874	0.315	1.322	1
	4100HR-2S100	2	1.00	1.00	1.575	4.528	0.315	0.816	2
	4100HR-3L100	3	1.00	1.00	1.575	7.874	0.315	1.322	1
	4100HR-3S100	3	1.00	1.00	1.575	4.528	0.315	0.837	2
	4125HR-4L125	4	1.25	1.25	1.654	7.874	0.315	2.491	1
	4125HR-4S125	4	1.25	1.25	1.654	4.922	0.315	1.499	2
	4150HR-4L125	4	1.50	1.25	1.654	7.874	0.315	2.689	1
	4150HR-4S125	4	1.50	1.25	1.654	5.315	0.315	1.786	2
	4200HR-4L125	4	2.00	1.25	1.654	7.874	0.315	3.042	1
	4200HR-4S125	4	2.00	1.25	1.654	5.315	0.315	2.182	2
	4200HR-5L125	5	2.00	1.25	1.654	7.874	0.315	3.086	1
	4200HR-5S125	5	2.00	1.25	1.654	4.331	0.315	2.205	2

Available Inserts



XNCT-MA



XNKT-ML



XNKT-MM

Designation	Cermet		Coated									Uncoated		
	CN2000	CN30	NCM325	NC5330	PC3500	PC3600	PC3545	PC9530	PC6510	PC5300	PC5400	A30	G10E	H01
XNCT 080508PNFR-MA														●
XNKT 080508PNFR-ML						●			●	●	●			
080508PNSR-MM						●			●	●	●			
080512PNSR-MM														
080516PNSR-MM														
080520PNSR-MM														

Parts

Specification	Screw 	Wrench
Ø1.00 - Ø2.00	FTKA0408	TW15



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