THE NEW VALUE FRONTIER

KYOCERA

耐热合金、难切削材用铣削材质

CA6535/PR1535

For Milling of Heat Resistant Alloy

2种材质可对应广泛的被切削材、加工形态。

2 types of grades suitable for variety of workpiece materials and applications

CA6535：CVD涂层(镍基耐热合金、马氏体系不锈钢用)
For Ni-base heat resistant alloy and martensitic stainless steel

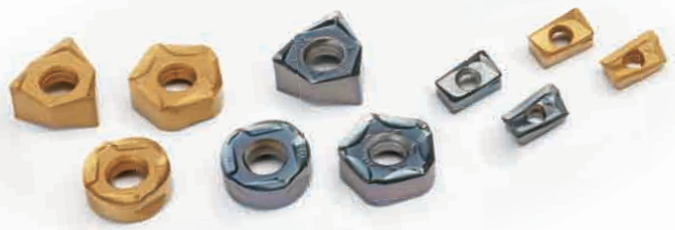
PR1535：PVD涂层(钛合金、析出硬化系不锈钢用)
For titanium alloy and precipitation hardened stainless steel

ADVANCING PRODUCTIVITY

致力于生产效率提高的京瓷

2种材质实现耐热合金、难削材的长寿命加工。

2 types of grades realizes tool life extension
at machining of heat resistant alloy and difficult-to-cut materials



CA6535 (CVD)镍基耐热合金、马氏体系不锈钢用

For Ni-base heat resistant alloy and martensitic stainless steel

PR1535 (PVD)钛合金、析出硬化系不锈钢用

For titanium alloy and precipitation hardened stainless steel

NEW

应对广泛的被切削材！

Suitable for variety of workpiece materials

抑制突发崩损、实现稳定加工。
抗崩损性能卓越、可实现高效率加工

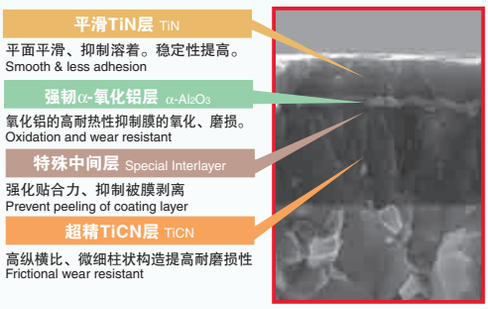
Stable cutting by preventing sudden insert fracture
Suitable for high efficiency machining

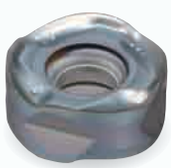
新开发
高韧性母材
New Development
High Toughness Substrate

CA6535

镍基耐热合金、马氏体系不锈钢用
发挥CVD涂层的高耐热性、耐磨性
采用薄膜涂层稳定性提高

For Ni-base heat resistant alloy and martensitic stainless steel
High heat resistance and wear resistance with CVD coating
Improved stability due to thin film coating technology





PR1535

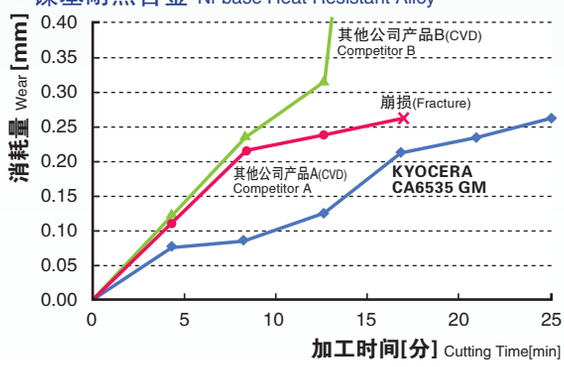
钛合金、析出硬化系不锈钢用特殊纳米涂层
[MEGACOAT NANO]实现铣削加工的稳定性和长寿命

For titanium alloy and precipitation hardened stainless steel
Stabilized milling operation and long tool life by special nano coating layer
MEGACOAT NANO

MEGACOAT基层构造
Layer structure of MEGACOAT

寿命比较 Tool Life Comparison

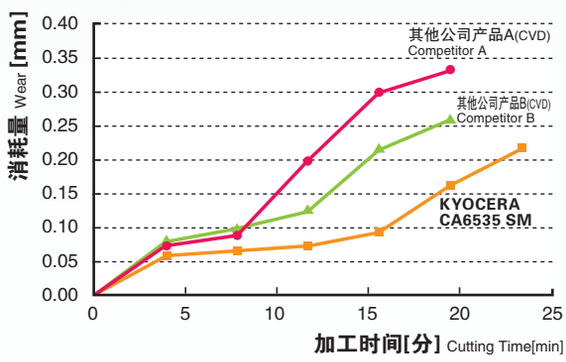
● 镍基耐热合金 Ni-base Heat Resistant Alloy



<切削条件Cutting Condition> Vc=50m/min,ap=1.0mm,fz=0.15mm/t,WET

第一推荐 GM 断屑槽
First recommendation GM chipbreaker

● 马氏体系不锈钢 Martensitic Stainless Steel



<切削条件Cutting Condition> Vc=300m/min,ap=2.0mm,fz=0.2mm/t,WET

第一推荐 SM 断屑槽
First recommendation SM chipbreaker

高效率多刃刀尖 圆弧铣刀
High Efficiency Radius Cutter with Multiple-edge

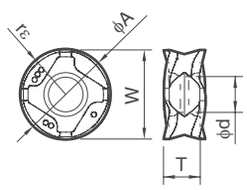
MRW型

1.双面8刃式样 具有经济性
Economical 8-edge insert

2.螺旋切刃实现低阻力。刀尖逆正角式样 提高强度
Low cutting force by helical cutting edge. Obtuse edge increases cutting edge toughness.

3.平锁构造实现在加工中抑制刀片旋转实现稳定加工。
Flat Lock structure realizes stable machining by preventing insert rotation during machining.

适用刀片 Applicable Insert

形 状 Insert		型 号 Description	尺寸(mm) Dimension					MEGACOAT NANO			CVD涂层 CVD coating
			ϕA	T	ϕd	W	rε	PR1535	PR1525	PR1510	CA6535
 通用 General Purpose		ROMU 1204M0ER-GM	12	4.75	4.6	11.8	6	●	●	●	●
		1605M0ER-GM	16	5.48	6.2	15.8	8	●	●	●	●
 低抵抗型 Low Cutting Force		ROMU 1204M0ER-SM	12	4.75	4.6	11.8	6	●	●		●
		1605M0ER-SM	16	5.48	6.2	15.8	8	●	●		●
 刀尖强化型(重切削用) Tough Edge (Heavy Milling)		ROMU 1204M0ER-GH	12	4.75	4.6	11.8	6		●	●	
		1605M0ER-GH	16	5.48	6.2	15.8	8		●	●	

●：标准库存 Std. Item

推荐切削条件 Recommended Cutting Conditions

断屑槽 Chipbreaker	被切削材 Workpiece Material	进给fz (mm/t) feed	推荐刀片材质 (切削速度Vc: m/min) Recommended Insert Grade			
			MEGACOAT NANO			CVD
			PR1535	PR1525	PR1510	CA6535
GM	碳钢 Carbon Steel SXXC	0.1 ~ **0.2** ~ 0.3	-	★ 120 ~ **180** ~ 250	-	-
	合金钢 Alloy Steel SCM 等 etc	0.1 ~ **0.2** ~ 0.3	-	★ 100 ~ **160** ~ 220	-	-
	模具钢 Mold Steel SKD/NAK等 etc	0.1 ~ **0.15** ~ 0.25	-	★ 80 ~ **140** ~ 180	-	-
	奥氏体系不锈钢 Austenitic Stainless Steel SUS304 等 etc	0.1 ~ **0.15** ~ 0.2	-	☆ 100 ~ **160** ~ 200	-	-
	马氏体系不锈钢 SUS403等 etc Martensitic Stainless Steel	0.1 ~ **0.15** ~ 0.2	☆ 150 ~ **200** ~ 250	-	-	-
	析出硬化系不锈钢 SUS630等 etc recipitation Hardened Stainless Steel	0.1 ~ **0.15** ~ 0.2	★ 90 ~ **120** ~ 150	-	-	-
	灰口铸铁 Gray Cast Iron FC	0.1 ~ **0.2** ~ 0.3	-	-	★ 120 ~ **180** ~ 250	-
	球墨铸铁 Nodular Cast Iron FCD	0.1 ~ **0.15** ~ 0.25	-	-	★ 100 ~ **150** ~ 200	-
	镍基耐热合金	0.1 ~ **0.12** ~ 0.15	-	-	-	★ 20 ~ **30** ~ 50
	钛合金 Titanium Alloys Ti-6Al-4V	0.1 ~ **0.12** ~ 0.15		-	☆ 30 ~ **50** ~ 70	-
SM	碳钢 Carbon Steel SXXC	0.06 ~ **0.15** ~ 0.2	-	☆ 120 ~ **180** ~ 250	-	-
	合金钢 Alloy Steel SCM 等 etc	0.06 ~ **0.15** ~ 0.2	-	☆ 100 ~ **160** ~ 220	-	-
	模具钢 Mold Steel SKD/NAK等 etc	0.06 ~ **0.12** ~ 0.2	-	☆ 80 ~ **140** ~ 180	-	-
	奥氏体系不锈钢 Austenitic Stainless Steel SUS304 等 etc	0.06 ~ **0.12** ~ 0.2	★ 100 ~ **160** ~ 200	-	-	-
	马氏体系不锈钢 SUS403等 etc Martensitic Stainless Steel	0.06 ~ **0.12** ~ 0.2		-	-	★ 180 ~ **240** ~ 300
	析出硬化系不锈钢 SUS630等 etc Precipitation Hardened Stainless Steel	0.06 ~ **0.12** ~ 0.2	☆ 90 ~ **120** ~ 150	-	-	-
	镍基耐热合金	0.06 ~ **0.1** ~ 0.15	-	-	-	☆ 20 ~ **30** ~ 50
	钛合金 Titanium Alloys Ti-6Al-4V	0.06 ~ **0.1** ~ 0.15	★ 40 ~ **60** ~ 80	-	-	-
GH	碳钢 Carbon Steel SXXC	0.15 ~ **0.3** ~ 0.35	-	☆ 120 ~ **180** ~ 250	-	-
	合金钢 Alloy Steel SCM 等 etc	0.15 ~ **0.3** ~ 0.35	-	☆ 100 ~ **160** ~ 220	-	-
	模具钢 Mold Steel SKD/NAK等 etc	0.15 ~ **0.2** ~ 0.3	-	☆ 80 ~ **140** ~ 180	-	-
	灰口铸铁 Gray Cast Iron FC	0.15 ~ **0.3** ~ 0.35	-	-	☆ 120 ~ **180** ~ 250	-
	球墨铸铁 Nodular Cast Iron FCD	0.15 ~ **0.2** ~ 0.3	-	-	☆ 100 ~ **150** ~ 200	-

※ 切削条件中的粗体字表示推荐条件的中间值。根据实际的加工状况、请在范围内调整切削速度、进给。
The figure in bold font is center value of the recommended cutting conditions. Adjust the cutting speed and the feed rate within the above conditions according to the actual machining situation.

★：第一推荐 ☆：第二推荐
★：1st recommendation ☆：2nd recommendation

※ 镍基耐热合金、钛合金推荐湿式加工。
Machining with coolant is recommended for Ni-base Heat Resistant Alloy and Titanium Alloy

※ 切削条件中的推荐进给表示切深(ap)为rε/2 (ROMU12型3mm、ROMU16型4mm)时的基准值。
Recommended feed rate is the reference value when ap is r ε /2 (3mm for ROMU12, 4mm for ROMU16).
For lower feed rate than the above conditions, the conversion factor in the following table is recommended.

双面4刀尖式样 新世代立铣刀

New Generation Endmill with Double Sided 4-edge Use

MEW型

1.京瓷独家模具技术 实现媲美正角刀片的低阻力

Kyocera's unique mold technology reduces cutting force equivalent to positive inserts

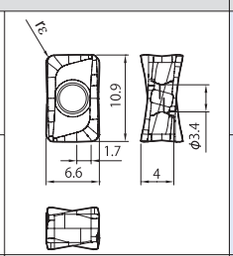
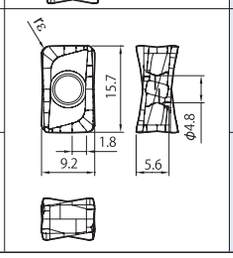
2.双面4刀尖 具有经济性

Economical 4-edge Insert

3.刀杆耐久性提高与刀片安装精度提高

Improved Toolholder Durability and Insert Installation Accuracy

适用刀片 Applicable Insert

形 状 Insert		型 号 Description		刀尖角R (rε)	MEGACOAT NANO			CVD
					PR1535	PR1525	PR1510	CA6535
通用 General Purpose		LOMU	100404ER-GM	0.4	●	●	●	●
			100408ER-GM	0.8	●	●	●	●
			100412ER-GM	1.2	●	●	●	●
低阻力型 Low Cutting Force		LOMU	100408ER-SM	0.8	●	●	●	●
通用 General Purpose		LOMU	150504ER-GM	0.4	●	●	●	●
			150508ER-GM	0.8	●	●	●	●
			150512ER-GM	1.2	●	●	●	●
低阻力型 Low Cutting Force		LOMU	150508ER-SM	0.8	●	●	●	●

●：标准库存 Std. Item

推荐切削条件 Recommended Cutting Conditions

断屑槽 Chipbreaker	被切削材 Workpiece Material	进给fz (mm/t) feed		推荐刀片材质 (切削速度Vc: m/min) Recommended Insert Grade			
		刀杆型号 Toolholder Descriptions		MEGACOAT NANO			CVD
		MEW16 ~ MEW18	MEW20 ~ MEW50 MEW032R ~ MEW080R	PR1535	PR1525	PR1510	CA6535
GM	碳钢 Carbon Steel SXXC	0.06 ~ ~ 0.2	0.08 ~ **0.15** ~ 0.25	-	★ 120 ~ **180** ~ 250	-	-
	合金钢 Alloy Steel SCM 等 etc	0.06 ~ **0.1** ~ 0.14	0.08 ~ **0.15** ~ 0.2	-	★ 100 ~ **160** ~ 220	-	-
	模具钢 Mold Steel SKD/NAK等 etc	0.06 ~ **0.08** ~ 0.12	0.08 ~ **0.12** ~ 0.2	-	★ 80 ~ **140** ~ 180	-	-
	奥氏体系不锈钢 Austenitic Stainless Steel SUS304 等 etc	0.06 ~ **0.08** ~ 0.12	0.08 ~ **0.12** ~ 0.15	☆ 100 ~ **160** ~ 200	☆ 100 ~ **160** ~ 200	-	-
	马氏体系不锈钢 SUS403等 etc Martensitic Stainless Steel	0.06 ~ **0.08** ~ 0.12	0.08 ~ **0.12** ~ 0.2	☆ 150 ~ **200** ~ 250	-	-	★ 180 ~ **240** ~ 300
	析出硬化系不锈钢 SUS630等 etc Precipitation Hardened Stainless Steel	0.06 ~ **0.08** ~ 0.12	0.08 ~ **0.12** ~ 0.2	★ 90 ~ **120** ~ 150	-	-	-
	灰口铸铁 Gray Cast Iron FC	0.06 ~ **0.1** ~ 0.17	0.08 ~ **0.18** ~ 0.25	-	-	★ 120 ~ **180** ~ 250	-
	球墨铸铁 Nodular Cast Iron FCD	0.06 ~ **0.08** ~ 0.12	0.08 ~ **0.15** ~ 0.2	-	-	★ 100 ~ **150** ~ 200	-
	镍基耐热合金	0.06 ~ **0.08** ~ 0.12	0.08 ~ **0.12** ~ 0.15	☆ 20 ~ **30** ~ 50	-	-	★ 20 ~ **30** ~ 50
	钛合金 Titanium Alloys Ti-6Al-4V	0.06 ~ **0.08** ~ 0.12	0.08 ~ **0.15** ~ 0.2	☆ 40 ~ **60** ~ 80	-	☆ 30 ~ **50** ~ 70	-
SM	碳钢 Carbon Steel SXXC	0.06 ~ **0.1** ~ 0.17	0.08 ~ **0.15** ~ 0.2	-	★ 120 ~ **180** ~ 250	-	-
	合金钢 Alloy Steel SCM 等 etc	0.06 ~ **0.08** ~ 0.12	0.08 ~ **0.12** ~ 0.18	-	★ 100 ~ **160** ~ 220	-	-
	模具钢 Mold Steel SKD/NAK等 etc	0.06 ~ **0.08** ~ 0.12	0.08 ~ **0.1** ~ 0.15	-	★ 80 ~ **140** ~ 180	-	-
	奥氏体系不锈钢 Austenitic Stainless Steel SUS304 等 etc	0.06 ~ **0.08** ~ 0.12	0.08 ~ **0.1** ~ 0.15	★ 100 ~ **160** ~ 200	☆ 100 ~ **160** ~ 200	-	-
	马氏体系不锈钢 SUS403等 etc Martensitic Stainless Steel	0.06 ~ **0.08** ~ 0.12	0.08 ~ **0.1** ~ 0.15	☆ 150 ~ **200** ~ 250	-	-	★ 180 ~ **240** ~ 300
	析出硬化系不锈钢 SUS630等 etc Precipitation Hardened Stainless Steel	0.06 ~ **0.08** ~ 0.12	0.08 ~ **0.1** ~ 0.15	☆ 90 ~ **120** ~ 150	-	-	-
	镍基耐热合金	0.06 ~ **0.08** ~ 0.1	0.08 ~ **0.1** ~ 0.12	☆ 20 ~ **30** ~ 50	-	-	★ 20 ~ **30** ~ 50
	钛合金 Titanium Alloys Ti-6Al-4V	0.06 ~ **0.08** ~ 0.12	0.08 ~ **0.12** ~ 0.18	★ 40 ~ **60** ~ 80	-	☆ 30 ~ **50** ~ 70	-

※ 切削条件中的粗体字表示推荐条件的中间值。根据实际的加工状况、请在范围内调整切削速度、进给。

The figure in bold font is center value of the recommended cutting conditions. Adjust the cutting speed and the feed rate within the above conditions according to the actual machining situation.

※ 镍基耐热合金、钛合金推荐湿式加工。

Machining with coolant is recommended for Ni-base Heat Resistant Alloy and Titanium Alloy

★：第一推荐 ☆：第二推荐

★：1st recommendation ☆：2nd recommendation

双面6刀尖 低抵抗90° 铣刀

Low Cutting Force 90°Cutter with Double Sided 6-edge Use

MFWN型

1.双面6刀尖式样更实惠。厚规格加工更强韧切刃

Economical 6-edge insert and strong thick edge

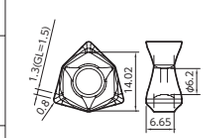
2.实现低阻力、低振感

Low cutting force and less chattering

3.无方向刀片可应对左手刀杆(非标品)

Available for left-hand toolholder (custom order) by neutral type insert

适用刀片 Applicable Insert

形 状 shape		型 号 Description	MEGACOAT NANO (NEW)			CVD (NEW)
			PR1535	PR1525	PR1510	CA6535
通用 General Purpose		WNMU 080608EN-GM	●	●	●	●
低阻力型 Low Cutting Force		WNMU 080608EN-SM	●	●	●	●
重视粗糙度(精密级) Surface-Finish Oriented (High precision)		WNEU 080608EN-GL	●	●	●	●

● : 标准库存 Std. Item

推荐切削条件 Recommended Cutting Conditions

断屑槽 Chipbreaker	被切削材 Workpiece Material	进给fz (mm/t) feed	推荐刀片材质 (切削速度Vc: m/min) Recommended Insert Grade			
			MEGACOAT NANO			CVD
			PR1535	PR1525	PR1510	CA6535
GM	碳钢 Carbon Steel SXXC	0.1 ~ **0.2** ~ 0.3	-	★ 120 ~ **180** ~ 250	-	-
	合金钢 Alloy Steel SCM 等 etc	0.1 ~ **0.2** ~ 0.3	-	★ 100 ~ **160** ~ 220	-	-
	模具钢 Mold Steel SKD/NAK等 etc	0.1 ~ **0.15** ~ 0.25	-	★ 80 ~ **140** ~ 180	-	-
	奥氏体系不锈钢 Austenitic Stainless Steel SUS304 等 etc	0.1 ~ **0.15** ~ 0.25	☆ 100 ~ **150** ~ 200	-	-	-
	马氏体系不锈钢 SUS403等 etc Martensitic Stainless Steel	0.1 ~ **0.15** ~ 0.25	-	-	-	☆ 180 ~ **240** ~ 300
	析出硬化系不锈钢 SUS630等 etc Precipitation Hardened Stainless Steel	0.1 ~ **0.15** ~ 0.25	★ 90 ~ **120** ~ 150	-	-	-
	灰口铸铁 Gray Cast Iron FC	0.1 ~ **0.2** ~ 0.3	-	-	★ 120 ~ **180** ~ 250	-
	球墨铸铁 Nodular Cast Iron FCD	0.1 ~ **0.15** ~ 0.25	-	-	★ 100 ~ **150** ~ 200	-
	镍基耐热合金	0.1 ~ **0.12** ~ 0.2	-	-	-	★ 20 ~ **30** ~ 50
SM	碳钢 Carbon Steel SXXC	0.06 ~ **0.12** ~ 0.2	-	☆ 120 ~ **180** ~ 250	-	-
	合金钢 Alloy Steel SCM 等 etc	0.06 ~ 0.12 ~ 0.2	-	☆ 100 ~ **160** ~ 220	-	-
	模具钢 Mold Steel SKD/NAK等 etc	0.06 ~ **0.08** ~ 0.15	-	☆ 80 ~ **140** ~ 180	-	-
	奥氏体系不锈钢 Austenitic Stainless Steel SUS304 等 etc	0.06 ~ **0.12** ~ 0.2	★ 100 ~ **150** ~ 200		-	-
	马氏体系不锈钢 SUS403等 etc Martensitic Stainless Steel	0.06 ~ **0.12** ~ 0.2		-	-	★ 180 ~ **240** ~ 300
	析出硬化系不锈钢 SUS630等 etc Precipitation Hardened Stainless Steel	0.06 ~ **0.12** ~ 0.2	☆ 90 ~ **120** ~ 150	-	-	-
	灰口铸铁 Gray Cast Iron FC	0.06 ~ **0.12** ~ 0.2	-	-	120 ~ **180** ~ 250	-
	球墨铸铁 Nodular Cast Iron FCD	0.06 ~ **0.08** ~ 0.15	-	-	100 ~ **150** ~ 200	-
	镍基耐热合金	0.06 ~ **0.1** ~ 0.15	-	-	-	☆ 20 ~ **30** ~ 50
	钛合金 Titanium Alloys Ti-6Al-4V	0.06 ~ **0.08** ~ 0.15	★ 40 ~ **60** ~ 80	-	-	-
GL	碳钢 Carbon Steel SXXC	0.06 ~ **0.12** ~ 0.2	-	120 ~ **180** ~ 250	-	-
	合金钢 Alloy Steel SCM 等 etc	0.06 ~ **0.12** ~ 0.2	-	100 ~ **160** ~ 220	-	-
	模具钢 Mold Steel SKD/NAK等 etc	0.06 ~ **0.08** ~ 0.15	-	80 ~ **140** ~ 180	-	-
	奥氏体系不锈钢 Austenitic Stainless Steel SUS304 等 etc	0.06 ~ **0.12** ~ 0.2	100 ~ **150** ~ 200	-	-	-
	马氏体系不锈钢 SUS403等 etc Martensitic Stainless Steel	0.06 ~ **0.12** ~ 0.2		-	-	180 ~ **240** ~ 300
	析出硬化系不锈钢 SUS630等 etc Precipitation Hardened Stainless Steel	0.06 ~ **0.12** ~ 0.2	90 ~ **120** ~ 150	-	-	-
	灰口铸铁 Gray Cast Iron FC	0.06 ~ **0.12** ~ 0.2	-	-	120 ~ **180** ~ 250	-
	球墨铸铁 Nodular Cast Iron FCD	0.06 ~ **0.08** ~ 0.15	-	-	100 ~ **150** ~ 200	-
	镍基耐热合金	0.06 ~ **0.1** ~ 0.15	-	-	-	20 ~ **30** ~ 50
	钛合金 Titanium Alloys Ti-6Al-4V	0.06 ~ **0.08** ~ 0.15	40 ~ **60** ~ 80	-	-	-

※ 切削条件中的粗体字表示推荐条件的中间值。根据实际的加工状况、请在范围内调整切削速度、进给。

The figure in bold font is center value of the recommended cutting conditions. Adjust the cutting speed and the feed rate within the above conditions according to the actual machining situation.

★: 第一推荐 ☆: 第二推荐

★: 1st recommendation ☆: 2nd recommendation

※ 镍基耐热合金、钛合金推荐湿式加工。

Machining with coolant is recommended for Ni-base Heat Resistant Alloy and Titanium Alloy

高效率面铣刀
High Efficiency Face Mill

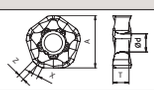
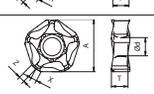
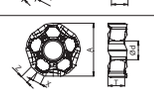
MFPN型

1.五角形/10刀刃粗加工、通用加工铣刀
Roughing and general-purpose facemill with 10-edge pentagonal inserts

2.圆弧切刃构造实现低阻力
Low cutting force due to helical cutting-edge design

3.圆弧切刃构造实现低阻力
Fractures suppressed by double-edge structure

适用刀片 Applicable Insert

形 状 Shape		型 号 Description	尺 寸 (mm) Dimension(mm)					MEGACOAT NANO (NEW)			MEGACOAT		CVD (NEW)
			A	T	φd	X	Z	PR1535	PR1525	PR1510	PR1225	PR1210	CA6535
 通用 General		PNMU 1205ANER-GM	17.88	5.56	6.2	2.0	2.0	●	●	●	●	●	●
 低阻力型 Low cutting force		PNMU 1205ANER-SM						●	●	●	●	●	●
 精密级(精加工用) High precision (For finishing)		PNEU 1205ANER-GL	17.51	5.56		2.7	2.7	●	●	●	●	●	●

● : 标准库存 Std. Item

推荐切削条件 Recommended Cutting Conditions

断屑槽 Chipbreaker	被切削材 Workpiece Material	进给fz (mm/t) feed	推荐刀片材质 (切削速度Vc: m/min) Recommended Insert Grade			
			MEGACOAT NANO			CVD
			PR1535	PR1525	PR1510	CA6535
GM	碳钢 Carbon Steel SXXC	0.1 ~ **0.2** ~ 0.4	-	★ 120 ~ **180** ~ 250	-	-
	合金钢 Alloy Steel SCM 等 etc	0.1 ~ **0.2** ~ 0.4	-	★ 100 ~ **160** ~ 220	-	-
	模具钢 Mold Steel SKD/NAK等 etc	0.1 ~ **0.2** ~ 0.35	-	★ 80 ~ **140** ~ 180	-	-
	奥氏体系不锈钢 Austenitic Stainless Steel SUS304 等 etc	0.1 ~ **0.2** ~ 0.4	☆ 100 ~ **150** ~ 200	-	-	-
	马氏体系不锈钢 SUS403等 etc Martensitic Stainless Steel	0.1 ~ **0.2** ~ 0.4	-	-	-	☆ 180 ~ **240** ~ 300
	析出硬化系不锈钢 SUS630等 etc Precipitation Hardened Stainless Steel	0.1 ~ **0.2** ~ 0.3	★ 90 ~ **120** ~ 150	-	-	-
	灰口铸铁 Gray Cast Iron FC	0.1 ~ **0.2** ~ 0.4	-	-	★ 120 ~ **180** ~ 250	-
	球墨铸铁 Nodular Cast Iron FCD	0.1 ~ **0.2** ~ 0.35	-	-	★ 100 ~ **150** ~ 200	-
	镍基耐热合金	0.1 ~ **0.12** ~ 0.2	-	-	-	★ 20 ~ **30** ~ 50
SM	碳钢 Carbon Steel SXXC	0.06 ~ **0.12** ~ 0.25	-	☆ 120 ~ **180** ~ 250	-	-
	合金钢 Alloy Steel SCM 等 etc	0.06 ~ **0.12** ~ 0.25	-	☆ 100 ~ **160** ~ 220	-	-
	模具钢 Mold Steel SKD/NAK等 etc	0.06 ~ **0.1** ~ 0.2	-	☆ 80 ~ **140** ~ 180	-	-
	奥氏体系不锈钢 Austenitic Stainless Steel SUS304 等 etc	0.06 ~ **0.12** ~ 0.25	★ 100 ~ **150** ~ 200		-	-
	马氏体系不锈钢 SUS403等 etc Martensitic Stainless Steel	0.06 ~ **0.12** ~ 0.25		-	-	★ 180 ~ **240** ~ 300
	析出硬化系不锈钢 SUS630等 etc Precipitation Hardened Stainless Steel	0.06 ~ **0.12** ~ 0.25	☆ 90 ~ **120** ~ 150	-	-	-
	灰口铸铁 Gray Cast Iron FC	0.06 ~ **0.12** ~ 0.25	-	-	120 ~ **180** ~ 250	-
	球墨铸铁 Nodular Cast Iron FCD	0.06 ~ **0.1** ~ 0.2	-	-	100 ~ **150** ~ 200	-
	镍基耐热合金	0.06 ~ **0.1** ~ 0.15	-	-	-	☆ 20 ~ **30** ~ 50
	钛合金 Titanium Alloys Ti-6Al-4V	0.06 ~ **0.08** ~ 0.15	★ 40 ~ **60** ~ 80	-	-	-
GL	碳钢 Carbon Steel SXXC	0.06 ~ **0.12** ~ 0.25	-	120 ~ **180** ~ 250	-	-
	合金钢 Alloy Steel SCM 等 etc	0.06 ~ **0.12** ~ 0.25	-	100 ~ **160** ~ 220	-	-
	模具钢 Mold Steel SKD/NAK等 etc	0.06 ~ **0.1** ~ 0.2	-	80 ~ **140** ~ 180	-	-
	奥氏体系不锈钢 Austenitic Stainless Steel SUS304 等 etc	0.06 ~ **0.12** ~ 0.25	100 ~ **150** ~ 200	-	-	-
	马氏体系不锈钢 SUS403等 etc Martensitic Stainless Steel	0.06 ~ **0.12** ~ 0.25		-	-	180 ~ **240** ~ 300
	析出硬化系不锈钢 SUS630等 etc Precipitation Hardened Stainless Steel	0.06 ~ **0.12** ~ 0.25	90 ~ **120** ~ 150	-	-	-
	灰口铸铁 Gray Cast Iron FC	0.06 ~ **0.12** ~ 0.25	-	-	120 ~ **180** ~ 250	-
	球墨铸铁 Nodular Cast Iron FCD	0.06 ~ **0.1** ~ 0.2	-	-	100 ~ **150** ~ 200	-
	镍基耐热合金	0.06 ~ **0.1** ~ 0.15	-	-	-	20 ~ **30** ~ 50
	钛合金 Titanium Alloys Ti-6Al-4V	0.06 ~ **0.08** ~ 0.15	40 ~ **60** ~ 80	-	-	-

※ 切削条件中的粗体字表示推荐条件的中间值。根据实际的加工状况、请在范围内调整切削速度、进给。
The figure in bold font is center value of the recommended cutting conditions. Adjust the cutting speed and the feed rate within the above conditions according to the actual machining situation.

※ 镍基耐热合金、钛合金推荐湿式加工。
Machining with coolant is recommended for Ni-base Heat Resistant Alloy and Titanium Alloy

★: 第一推荐 ☆: 第二推荐
★: 1st recommendation ☆: 2nd recommendation

螺旋形立铣刀
Helical Endmill

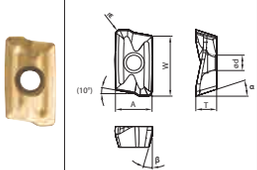
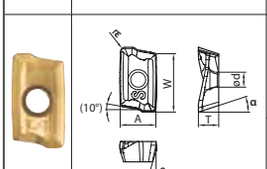
MEC型

1.低阻力、良好的锋利度
Low cutting force and sharp cutting performance

2.良好的直角度、平滑的加工壁面
Perfect 90°shoulders, and smooth surface of shoulder wall

3.拥有可对应钢、不锈钢、铸铁、铝等广泛工件材质，丰富的刀具材料系列。
An extensive grade lineup applicable to a wide range of workpiece materials,
such as steel, stainless steel, cast iron and aluminum.

适用刀片 Applicable Insert

形状 Shape		型号 Description		尺寸 (mm) Dimension(mm) A	T	φd	W	rε	角度 (°) Angle α	β	MEGACOAT NANO PR1535	MEGACOAT PR1225	MEGACOAT PR1210	CVD CA6535
		BDMT	11T302ER-JT	6.7	3.8	2.8	11.0	0.2	18	13	●	●	●	●
			11T304ER-JT					0.4			●	●	●	●
			11T308ER-JT					0.8			●	●	●	●
			11T312ER-JT					1.2			●	●	●	●
			11T316ER-JT					1.6			●	●	●	●
			11T320ER-JT					2.0			●	●	●	●
			11T324ER-JT					2.4			●	●	●	●
			11T331ER-JT					3.1			●	●	●	●
		BDMT	170404ER-JT	9.6	4.9	4.4	17.0	0.4	18	13	●	●	●	●
			170408ER-JT					0.8			●	●	●	●
			170412ER-JT					1.2			●	●	●	●
			170416ER-JT					1.6			●	●	●	●
			170420ER-JT					2.0			●	●	●	●
			170424ER-JT					2.4			●	●	●	●
			170431ER-JT					3.1			●	●	●	●
			170440ER-JT					4.0			●	●	●	●
		BDMT	11T302ER-JS	6.7	3.8	2.8	11.0	0.2	18	13	●	●		●
			11T304ER-JS					0.4			●	●		●
			11T308ER-JS					0.8			●	●		●
		BDMT	170404ER-JS	9.6	4.9	4.4	17.0	0.4	18	13	●	●		●
			170408ER-JS					0.8			●	●		●

● : 标准库存 Std. Item

推荐切削条件 Recommended Cutting Conditions

断屑槽 Chipbreaker	被切削材 Workpiece Material	进给fz (mm/t) feed 刀杆型号 Toolholder Descriptions MEC10 ~ MEC19	MEC20 ~ MEC40 MEC040R ~ MEC160R	推荐刀片材质 (切削速度Vc: m/min) Recommended Insert Grade MEGACOAT NANO PR1535	MEGACOAT PR1225	MEGACOAT PR1210	CVD CA6535
JT	碳钢 Carbon Steel SXXC	0.06 ~ **0.1** ~ 0.15	0.08 ~ **0.15** ~ 0.25	-	★ 120 ~ **180** ~ 250	-	-
	合金钢 Alloy Steel SCM 等 etc	0.06 ~ **0.1** ~ 0.12	0.08 ~ **0.15** ~ 0.2	-	★ 100 ~ **160** ~ 220	-	-
	模具钢 Mold Steel SKD/NAK等 etc	0.06 ~ **0.08** ~ 0.1	0.08 ~ **0.12** ~ 0.2	-	★ 80 ~ **140** ~ 180	-	-
	奥氏体系不锈钢 Austenitic Stainless Steel SUS304 等 etc	0.06 ~ **0.08** ~ 0.1	0.08 ~ **0.12** ~ 0.15	☆ 100 ~ **160** ~ 200	☆ 100 ~ **160** ~ 200	-	-
	马氏体系不锈钢 SUS403等 etc Martensitic Stainless Steel	0.06 ~ **0.08** ~ 0.1	0.08 ~ **0.12** ~ 0.2	☆ 150 ~ **200** ~ 250	-	-	★ 180 ~ **240** ~ 300
	析出硬化系不锈钢 SUS630等 etc Precipitation Hardened Stainless Steel	0.06 ~ **0.08** ~ 0.1	0.08 ~ **0.12** ~ 0.2	★ 90 ~ **120** ~ 150	-	-	-
	灰口铸铁 Gray Cast Iron FC	0.06 ~ **0.1** ~ 0.15	0.08 ~ **0.18** ~ 0.25	-	-	★ 120 ~ **180** ~ 250	-
	球墨铸铁 Nodular Cast Iron FCD	0.06 ~ **0.08** ~ 0.1	0.08 ~ **0.15** ~ 0.2	-	-	★ 100 ~ **150** ~ 200	-
	镍基耐热合金	0.06 ~ **0.08** ~ 0.1	0.08 ~ **0.12** ~ 0.15	☆ 20 ~ **30** ~ 50	-	-	★ 20 ~ **30** ~ 50
	钛合金 Titanium Alloys Ti-6Al-4V	0.06 ~ **0.08** ~ 0.1	0.08 ~ **0.15** ~ 0.2	☆ 40 ~ **60** ~ 80	-	☆ 30 ~ **50** ~ 70	-
JS	碳钢 Carbon Steel SXXC	0.06 ~ **0.1** ~ 0.12	0.08 ~ **0.15** ~ 0.18	-	★ 120 ~ **180** ~ 250	-	-
	合金钢 Alloy Steel SCM 等 etc	0.06 ~ **0.08** ~ 0.1	0.08 ~ **0.12** ~ 0.15	-	★ 100 ~ **160** ~ 220	-	-
	模具钢 Mold Steel SKD/NAK等 etc	0.06 ~ **0.08** ~ 0.1	0.08 ~ **0.1** ~ 0.12	-	★ 80 ~ **140** ~ 180	-	-
	奥氏体系不锈钢 Austenitic Stainless Steel SUS304 等 etc	0.06 ~ **0.08** ~ 0.1	0.08 ~ **0.1** ~ 0.12	★ 100 ~ **160** ~ 200	☆ 100 ~ **160** ~ 200	-	-
	马氏体系不锈钢 SUS403等 etc Martensitic Stainless Steel	0.06 ~ **0.08** ~ 0.1	0.08 ~ **0.1** ~ 0.12	☆ 150 ~ **200** ~ 250	-	-	★ 180 ~ **240** ~ 300
	析出硬化系不锈钢 SUS630等 etc Precipitation Hardened Stainless Steel	0.06 ~ **0.08** ~ 0.1	0.08 ~ **0.1** ~ 0.12	☆ 90 ~ **120** ~ 150	-	-	-
	镍基耐热合金	0.06 ~ **0.08** ~ 0.1	0.08 ~ **0.1** ~ 0.12	☆ 20 ~ **30** ~ 50	-	-	★ 20 ~ **30** ~ 50
	钛合金 Titanium Alloys Ti-6Al-4V	0.06 ~ **0.08** ~ 0.1	0.08 ~ **0.1** ~ 0.12	★ 40 ~ **60** ~ 80	-	-	-

※ 切削条件中的粗体字表示推荐条件的中间值。根据实际的加工状况、请在范围内调整切削速度、进给。
The figure in bold font is center value of the recommended cutting conditions. Adjust the cutting speed and the feed rate within the above conditions according to the actual machining situation.

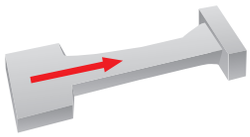
★：第一推荐 ☆：第二推荐
★: 1st recommendation ☆: 2nd recommendation

※ 镍基耐热合金、钛合金推荐湿式加工。
Machining with coolant is recommended for Ni-base Heat Resistant Alloy and Titanium Alloy

MRW型　加工案例 Case Studies

12Cr钢 12Cr Steel

- 涡轮叶片 Turbine Blade
- Vc=270m/min
- fz=0.278mm/t
- ap=0.5 ~ 1.0mm ae=max35mm
- 干式 Dry
- MRW050R-12-6T-M(6枚刃)6 inserts
- ROMU1204M0ER-SM(CA6535)



加工效率1.2倍
Machining efficiency 1.2 times
刀尖角数2倍实惠型
Economical by double face insert

CA6535	稳定加工 Stable machining
其他公司产品A(正角刀盘) Competitor A (Positive cutter)	切削音大不稳定加工 Unstable machining with large noise

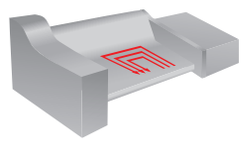
与其他公司产品A相比加工效率1.2倍，寿命同等能实现稳定加工。
MRW型与其他公司产品A相比刀尖角数扩大两倍，经济实惠。

MRW improved machining efficiency by 1.2 times with same tool life compared with Competitor A.
MRW has cost advantage due to double sided inserts.

(来自客户评价) Evaluation by the user

12Cr钢 12Cr Steel

- 涡轮叶片 Turbine Blade
- Vc=250m/min
- fz=0.16mm/t
- ap=2.0mm　ae=5 ~ 30mm
- 湿式 Wet
- MRW050R-12-5T-M(5枚刃)5 inserts
- ROMU1204M0ER-SM(CA6535)



寿命同等以上
Same or longer tool life
刀尖角数2倍实惠型
Economical by double face insert

CA6535	稳定加工可延长寿命 Stable, available for further machining
其他公司产品B(正角刀盘) Competitor B (Positive cutter)	切削音大-不稳定加工 Unstable machining with large noise

与其他公司产品B相比，刀尖损伤小切削声音小。
达成同等以上的寿命、刀尖角数2倍经济实惠。

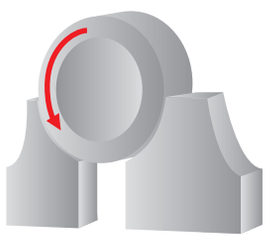
MRW showed less damage on the cutting edge and reduced cutting noise.
MRW has equal or longer tool life and cost advantage due to double sided inserts.

(来自客户评价) Evaluation by the user

MFWN型　加工案例 Case Studies

SUS316L

- 能源设备零件 Energy Plant Part
- Vc=150m/min
- fz=0.15mm/t
- ap=3 ~ 5mm
- 湿式 Wet
- MFWN90160R-8T(8枚刃)
- WNMU080608EN-GM(PR1535)



PR1535	1pcs/刀尖
其他公司产品C(正角刀盘) Competitor C (negative cutter)	1pcs/刀尖

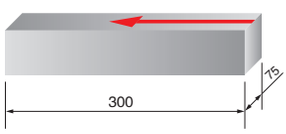
与其他公司产品D相比、可实现同数加工。刀尖状态良好延长寿命。
MFWN improved cutting edge condition and finished surface compared with Competitor C.

(来自客户评价) Evaluation by the user

MFPN型　加工案例 Case Studies

Ti-6Al-4V

- 化学设备零件 Chemical Plant Part
- Vc=26m/min
- fz=0.46mm/t
- ap=3.0mm
- 湿式 Wet
- MFPN45160R-8T(8枚刃)
- PNMU1205ANER-SM(PR1535)



PR1535	4pcs/刀尖
其他公司产品D(正角刀盘) Competitor D (positive cutter)	4pcs/刀尖

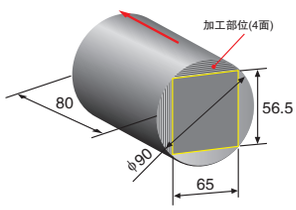
与其他公司产品D相比、可实现同数加工。刀尖状态良好延长寿命。
MFPN型对于其他公司产品D(4刀尖式样刀片)，刀尖角数扩大2.5倍经济实惠。

MFPN processed same number of output as Competitor D. Edge condition was still possible to extend tool life.
MFPN has cost advantage due to 10-edge use compared with Competitor D (4-edge).

(来自客户评价) Evaluation by the user

镍基耐热合金

- 飞机零件
- Vc=160m/min
- fz=0.125mm/t
- ap=2mm
- 湿式 Wet
- MFPN45100R-8T(8枚刃)
- PNMU1205ANER-GM(CA6535)



CA6535	3.5面/刀尖
其他公司产品E(负角刀盘) Competitor L (Positive cutter)	2.5面/刀尖

与其他公司产品E相比，提高1.4倍的寿命。实现稳定加工。

MFPN achieved 1.4 times longer tool life compared with Competitor E. Stable machining.

(来自客户评价) Evaluation by the user

2种iPhone应用程序，为客户生产效率提高做出贡献。

切削条件计算器
帮助铣削、钻孔、车削相关计算。
可导出加工时间，所以在计算出节拍时间方面也有帮助。

其他公司型号对照表
从其他公司材质、断屑槽型号简单导向京瓷相应产品。
可检索在适合不同加工条件的结果。

程序免费

App Store中获取!

在App Store中输入“京瓷”检索相应程序。
※App Store为美国apple.inc.的注册商标。
※iPad也可利用。

可在京瓷网站阅取
最新信息。

京瓷　切削工具　检索

http://www.kyocera.co.jp/prdct/tool/index.html

切削工具相关咨询

400-650-6400-5

●受理时间 8:45–11:45・12:45–17:30
●周六、日以及法定节假日期间不受理业务。

※个人信息的使用：回答用户咨询问题，提高服务品质，提供产品信息。
※咨询时，请确认电话号码的正确性。

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上海市闸北区万荣路700号大宁中心广场A3幢140室(200072)
TEL:021-3660-7711 FAX:021-5638-6200
http://www.kyocera.com.cn/prdct/cuttingtool/index.html

CP311　CAT/5T1304AKGN