



突切り工具 Cut-off tool

自動盤用KGD型

KGD type for Automatic Lathe

世界最薄※

The World's Thinnest

幅1.3mmからのレパトリ

Edge width is available from 1.3mm

- 新3次元ブレーカPF/PQにより
優れた切りくず処理性能

Excellent chip control due to new 3D chipbreaker PF/PQ

- 新発想のホルダ形状により
チップ拘束力アップ

Improved insert clamping force by innovative toolholder design

※2013年3月現在 3次元ブレーカ付突切りチップにおいて、当社調べ
According to our own research, as of March 2013



ADVANCING PRODUCTIVITY

生産性向上に貢献する京セラ

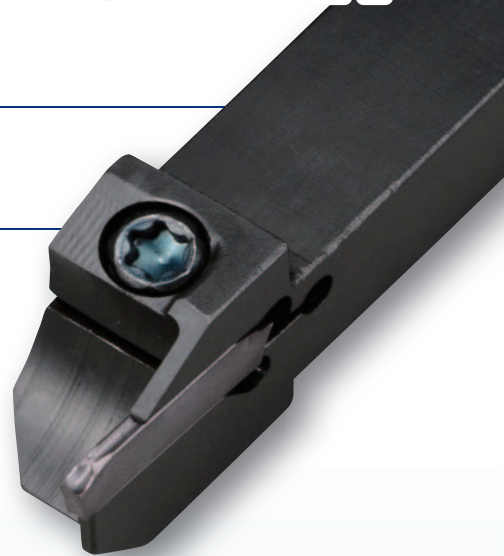
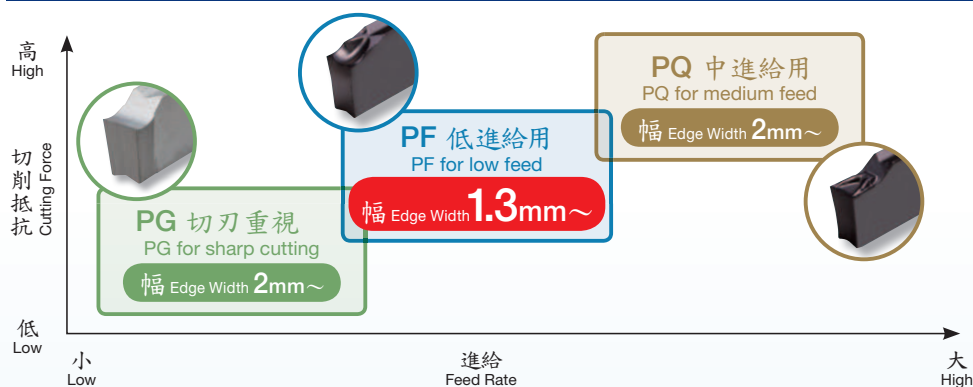
世界最薄！※

The World's Thinnest

幅1.3mm

根據不同加工用途，選擇斷屑槽

Chipbreaker lineup you can choose depending on application



新3次元斷屑槽 優量排屑處理性能

Excellent chip control due to new 3D chipbreakers

PF 斷屑槽

PF chipbreaker

斷屑槽的中心凹槽
使排屑在低進給 (0.01~0.05mm/rev)
能穩定捲曲排出。
小R角 ($R(r\epsilon) = 0.03\text{mm}$)
有效抑制加工件的中心殘留。

Depression in center of chipbreaker curls chips stably at low feed range ($f=0.01\text{--}0.05\text{mm/rev}$). Small corner $R(r\epsilon)=0.03\text{mm}$ effectively reduces the boss remaining on the workpiece surface.

PQ 斷屑槽

PQ chipbreaker

2段斷屑點在中進給($f=0.04\sim0.1\text{mm/rev}$)
使排屑穩定。
新增 $R(r\epsilon)=0.1\text{mm}$ 規格
兼顧切刃立銳利度及耐崩損性

Chipbreaker for finely breaking chips with double projection at medium feed range ($f=0.04\text{--}0.1\text{mm/rev}$). Corner $R(r\epsilon)=0.1\text{mm}$ is newly added in lineup, combining both sharpness and fracture resistance

● 切屑形狀

Chip shape

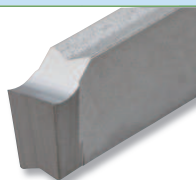
切削條件
Cutting Conditions

$V_c=80\text{m/min}$ f =可變 Variable

被削材 Workpiece : S45C($\phi 10$) WET(油性 Oil base)

PF 斷屑槽 PF chipbreaker	
0.03mm/rev	
0.02mm/rev	
New PF 斷屑槽 PF chipbreaker	他社品A Competitor A

PQ 斷屑槽 PQ chipbreaker	
0.05mm/rev	
0.04mm/rev	
New PQ 斷屑槽 PQ chipbreaker	他社品B Competitor B



非金屬用PG斷屑槽 對應各種不同之加工件

PG chipbreaker for nonferrous metals is now available.
Applicable for various type of workpieces with chipbreaker lineup

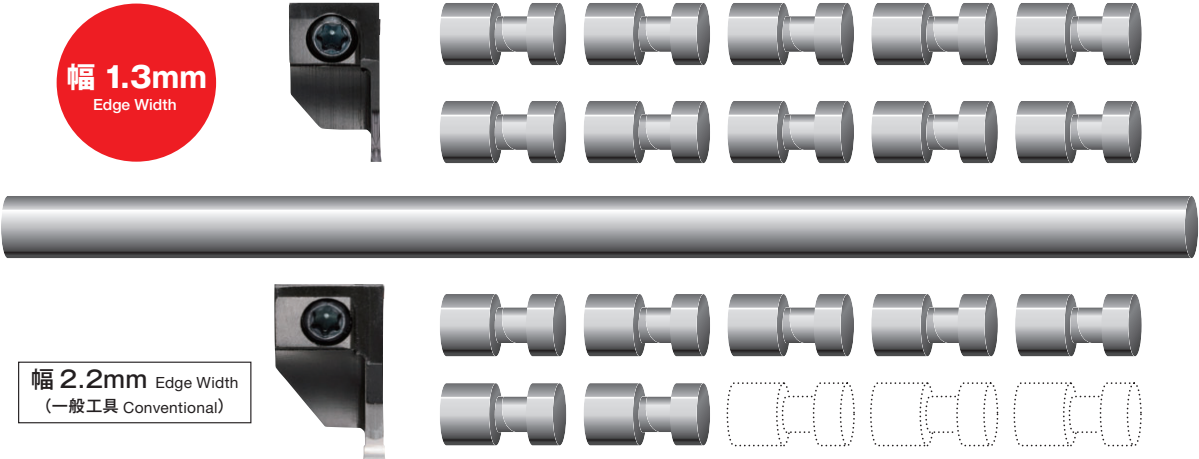
新產品規格到位

Edge width 1.3mm is now available

刃幅が細くなる事によるメリット (PF断削槽 1.3mm / 1.5mm) 刃幅縮小の好处

切斷加工時の材料浪費削減

Possible to save waste of material at cut-off operation



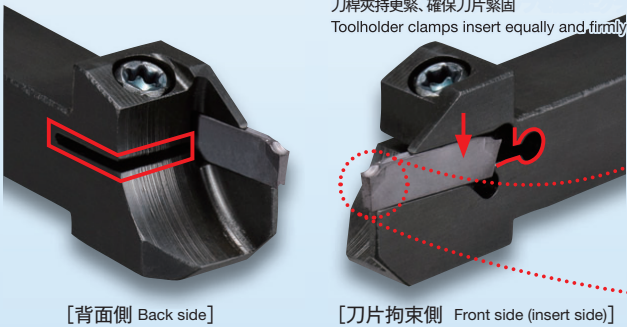
※在使用1.3mm幅刀片時，請先參考第六頁的建議切削條薦
When using 1.3mm width insert, see the recommended cutting conditions on page 6.

創新刀桿設計提升刀片的夾持力

Improved insert clamping force by innovative toolholder design

Point 1 新夾縫形狀

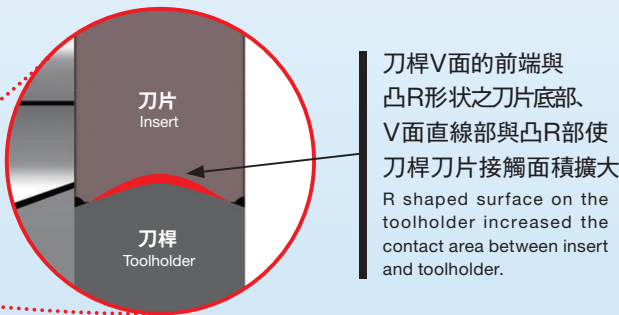
New slit design



刀片拘束側強力緊固改善刀片夾持
Insert clamping force improved by firmly fastening the front side (insert side) of the toolholder.

Point 2 R形狀接觸面

R shaped surface on the toolholder



刀桿V面的前端與
凸R形狀之刀片底部
V面直線部與凸R部使
刀桿刀片接觸面積擴大
R shaped surface on the
toolholder increased the
contact area between insert
and toolholder.

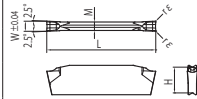
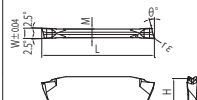
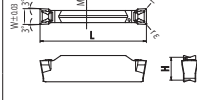
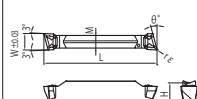
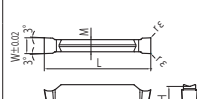
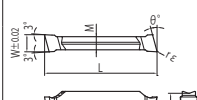
刀片與刀桿的接觸面積增加、
改善刀片的夾持力
Insert clamping force and installation improved by increasing contact
area between insert and toolholder

● 拘束力測試 (橫移加工) Clamping test (traversing)

[切削條件] ~0.3mm/rev ap=1~3mm
[Cutting Conditions] 被削材 Workpiece : SK4(φ10) WET(油性 Oil base)

切深 (ap)	1mm		1.5mm		2mm		3mm	
進給 (f)	0.25mm/rev	0.3mm/rev	0.25mm/rev	0.3mm/rev	0.25mm/rev	0.3mm/rev	0.25mm/rev	0.3mm/rev
New KGD型 KGD-type								×
他社品C Competitor C			×					
他社品D Competitor D			×					

使用的分類 Classification of usage	P	炭素鋼・合金鋼 Carbon steel / Alloy steel		
●: 連續~輕斷續/第1選擇 Continuous to light Interruption / 1st Choice	M	不銹鋼 Stainless Steel	●	☉
☉: 連續~輕斷續/第2選擇 Continuous to light Interruption / 2nd Choice				
●: 連續/第1選擇 Continuous / 1st Choice	N	非鉄金属 Non-ferrous Metals		●
☉: 連續/第2選擇 Continuous / 2nd Choice				

形状 Shape 底下表示为右手刀 Handed insert shows Right-hand			型番 Description	寸法(mm) Dimension					角度(°) Angle	MEGACOAT		超硬 Carbide		
				刃幅(W) Edge Width		R角 (rε) CornerR (rε)	M	L	H	θ	PR1225	PR1215	GW15	
切斷 Cut-off	 低進給 2刀 Low Feed Rate 2-edge		GDM 1316N-003PF		1.3									±0.04
			1316N-015PF			0.15	●	●						
			1516N-003PF		1.5	0.03	1.2	●	●					
			1516N-015PF			0.15		●	●					
			2020N-003PF		2.0	0.03	1.7	20	4.3	●	●			
			2520N-003PF		2.5		2.1			●	●			
			3020N-003PF		3.0		2.3			●	●			
	 15°斜角 低進給・2刀 15°Lead Angle Low Feed Rate 2-edge		GDM 1316 ^R / _L -003PF-15D		1.3	±0.04	0.03	1.0	16	3.7	15°	●	●	
			1516 ^R / _L -003PF-15D		1.5			1.2				●	●	
			2020 ^R / _L -003PF-15D		2.0			1.7	20	4.3		●	●	
			2520 ^R / _L -003PF-15D		2.5			2.1				●	●	
			3020 ^R / _L -003PF-15D		3.0			2.3				●	●	
	 中進給 2刀 Medium Feed Rate 2-edge		GDM 2020N-010PQ		2.0	±0.03	0.1	1.7	20	4.3	-	●	●	
			2520N-010PQ		2.5			2.1				●	●	
			3020N-010PQ		3.0			2.3				●	●	
	 15°斜角 中進給・2刀 15°Lead Angle Medium Feed Rate 2-edge		GDM 2020R-010PQ-15D		2.0	±0.03	0.1	1.7	20	4.3	15°	●	●	
			2520R-010PQ-15D		2.5			2.1				●	●	
			3020R-010PQ-15D		3.0			2.3				●	●	
	 低抵抗 2刀 Low Cutting Force 2-edge		GDG 2020N-005PG		2.0	±0.02	0.05	1.7	20	4.3	-			●
			2520N-005PG		2.5			2.1				●		●
			3020N-005PG		3.0			2.3						●
	 15°斜角 低抵抗・2刀 15°Lead Angle Low Cutting Force 2-edge		GDG 2020R-005PG-15D		2.0	±0.02	0.05	1.7	20	4.3	15°			●
			2520R-005PG-15D		2.5			2.1				●		●
			3020R-005PG-15D		3.0			2.3						●

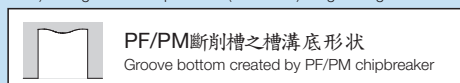
刀片販賣個數一盒10片
Inserts are sold in 10 piece boxes.

●: 標準在庫 Std. Item

- PQ斷削槽R角較小、設計為自動車床專用 The corner-R(rε) of PQ chipbreakers are small, designed for automatic lathe.
- PF斷削槽R角較大(R部強化型) PF chipbreaker has large corner R(rε) type, too.

◆ 切削條件請參照第6頁。 For cutting conditions, see 6 page.

注) PF/PM斷削槽(切斷用) 用在槽溝加工, 溝底形狀並不是平坦(下圖參照)。
Note) Using PF/PM chipbreaker (for cut-off) for grooving cannot create a flat bottom (See figure below).



GDM型/GDMS型

GDM-type/GDMS-type

使用分類 Classification of usage	P	炭素鋼・合金鋼 Carbon steel / Alloy steel	●	●	○
●: 連續~輕斷續/第1選擇 Continuous to light Interruption / 1st Choice	M	不銹鋼 Stainless Steel		●	○
○: 連續~輕斷續/第2選擇 Continuous to light Interruption / 2nd Choice	K	鑄鐵 Cast Iron			●
●: 連續/第1選擇 Continuous / 1st Choice					
○: 連續/第2選擇 Continuous / 2nd Choice					

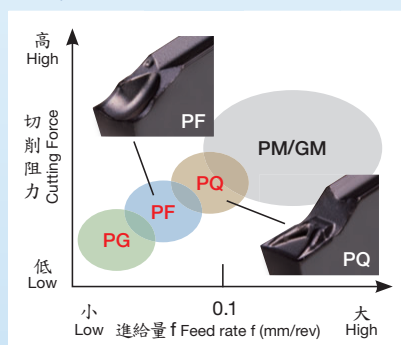
形状 Shape 圖示為附方向刀片之右手刀(R) Handed insert shows Right-hand		型號 Description	尺寸(mm) Dimension					角度(°) Angle	金屬陶瓷 Cermet	MEGACOAT		
			刀寬(W) Edge Width		角R (rε) CornerR (rε)	M	L	H	θ	TN90	PR1225	PR1215
切斷加工 Cut-off	 2 刃型 2-edge	GDM 2020N-020PM	2.0	±0.03	0.2	1.5	20	-		●	●	
		2520N-020PM	2.5		0.2	1.95				●	●	
		3020N-025PM	3.0		0.25	2.3				●	●	
		4020N-030PM	4.0		0.3	3.3				●	●	
	 2 刃型 2-edge	GDM 2020R-020PM-6D	2.0	±0.03	0.2	1.5	20	6°		●	●	
		2520R-020PM-6D	2.5		0.2	1.95				●	●	
		3020R-025PM-6D	3.0		0.25	2.3				●	●	
	 1 刃型 1-edge	GDMS 2020N-020PM	2.0	±0.03	0.2	1.5	20	-		●	●	
		3020N-025PM	3.0		0.25	2.3				●	●	
		4020N-030PM	4.0		0.3	3.3				●	●	
	 1 刃型 1-edge	GDMS 2020R-020PM-6D	2.0	±0.03	0.2	1.5	20	6°		●	●	
		3020R-025PM-6D	3.0		0.25	2.3				●	●	
4020R-030PM-6D		4.0	0.3		3.3				●	●		
溝・突切り Grooving and Cut-off	 汎用 2刃型 For general purpose 2-edge	GDM 2420N-020GM	2.4	±0.03	0.2	1.95	20	4.3	-	●	●	●
		3020N-020GM	3.0		0.2	2.3				●	●	●
		3020N-040GM			0.4					●	●	●
		4020N-020GM			0.2					●	●	●
		4020N-040GM	4.0		0.4	3.3				●	●	●
		4020N-080GM			0.8					●	●	●
	 汎用 1刃型 For general purpose 1-edge	GDMS 2220N-020GM	2.2	±0.03	0.2	1.75	20	4.3	-	●	●	●
		3020N-040GM	3.0		0.4	2.3				●	●	●
		4020N-040GM	4.0		0.4	3.3				●	●	●

刀片為1盒10片裝
Inserts are sold in 10 piece boxes.

●: 標準在庫 Std. Item

PM/GM斷屑槽推薦切削條件一覽表 Recommended Cutting Conditions of PM / GM chipbreaker

適用領域 Applicable Range

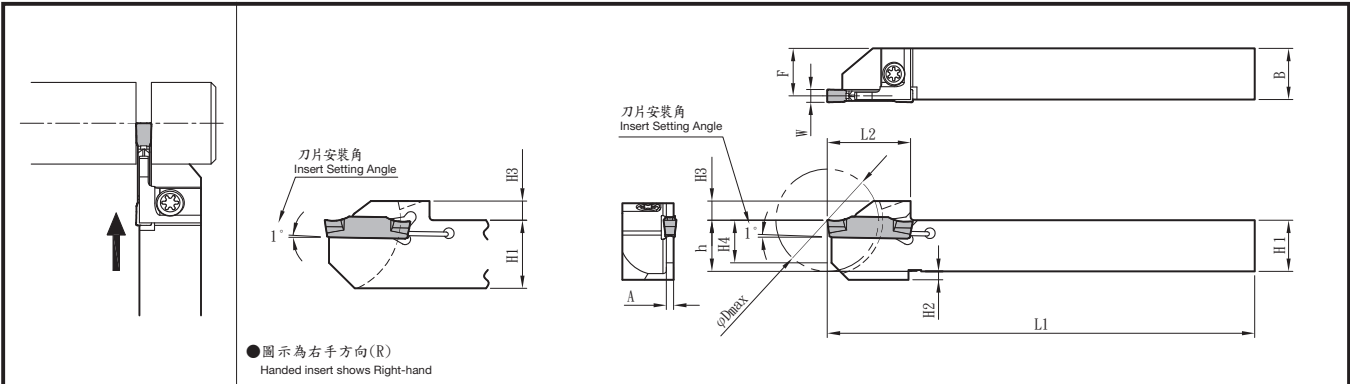


			進給量 Feed Rate (mm/rev)			
切削材質 Workpiece	推薦刀片材質 Recommended Insert Grade		PM	GM		備註 Remarks
	MEGACOAT		刀寬 W(mm) Edge Width	刀寬 W(mm) Edge Width		
	PR1215	PR1225	2~4	2.2/2.4	3.0/4.0	
碳鋼 Carbon Steel	☆ 100~200	★ 80~200	0.08~0.18	0.05~0.18	0.08~0.2	濕式 Wet
合金鋼 Alloy Steel	☆ 80~180	★ 70~180				
不鏽鋼 Stainless Steel	☆ 60~150	★ 60~150	0.06~0.12	0.05~0.12	0.08~0.15	
鐵鑄 Cast Iron	★ 100~200	-	0.08~0.18	0.05~0.20	0.08~0.22	

★: 第1推薦 1st Recommendation ☆: 第2推薦 2nd Recommendation

刀片型號表示方法 Indication of Description

①系列名稱 Series	②精度記號 Accuracy	③角數 No. of edges	④刀寬 Width	⑤刀片長度 Insert Length	⑥方向 Hand of Tool	⑦角R (rε) Corner-R(rε)	⑧斷屑槽記號 Chipbreaker Symbol	⑨尖端斜角 Lead Angle
G D	M: M級 Class M	無記號: 2角 Without Indication: 2-edge S: 1角 S: 1-edge	20: 2mm 30: 3mm 40: 4mm	20: 20mm	R: 右手刀 Right-hand N: 無方向 Neutral	0.20: 0.2mm 0.25: 0.25mm 0.30: 0.3mm	PM: 切斷 Cut-Off PH: 溝・切斷 Grooving and Cut-off (高進給量) High feed	無記號: 0° Without Indication 6D: 6°
M								
S								
30								
20								
R								
025								
PM								
6D								

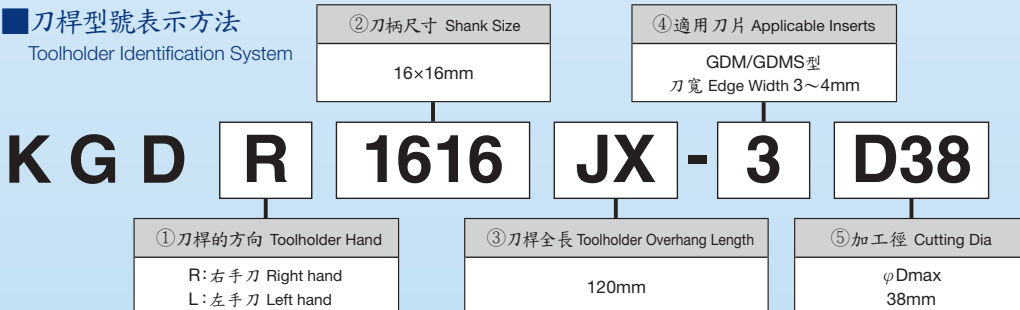


型 號 Description	庫存 Stock		加工徑 Cutting Dia.	尺 寸 (mm) Dimension										刀寬 W(mm) Edge Width		零 件 Spare Parts	
	R	L	φ Dmax	H1=h	H2	H3	H4	B	L1	L2	F	A	MIN.	MAX.	螺釘 Screw	板手 Wrench	
																	
KGD ^{R/L} 1010JX-1.3	●	●	20	10	2	4.5	8	10	120	18	9.5	1.0	1.3	1.3	SB-40120TR	LTW-15S	
	1212JX-1.3	●	●	24			12	10		12	19.5						11.5
KGD ^{R/L} 1010JX-1.5	●	●	20	10	2		8	10	120	18	9.4	1.2	1.5	1.5			
	1212JX-1.5	●	●	24			12	10		12	19.5						11.4
KGD ^{R/L} 1212F-1.3	●	●	24	12	2		10	12	85	19.5	11.5	1.0	1.3	1.3			
	1212F-1.5	●								●	19.5						11.4
KGD ^{R/L} 1010JX-2	●	●	20	10	2	4.5	8	10	120	18	9.15	1.7	2.0	3.0	SB-40120TR	LTW-15S	
	1212JX-2	●	●	24			12	10		12	19.5						11.15
	1616JX-2	●	●	32			16			-	16						24.5
KGD ^{R/L} 1010JX-2.4	●	●	20	10	2		8	10	120	18	9	2.0	2.4	3.0	SB-40120TR	LTW-15S	
	1212JX-2.4	●	●	24			12	10		12	19.5						11
	1616JX-2.4	●	●	32			16			-	16						24.5
KGD ^{R/L} 1212JX-3	●	●	24	12	2	10	12	120	19.5	10.8	2.4	3.0	3.0	SB-40120TR	LTW-15S		
	1616JX-3	●	●	32	16		-		16	24.5			14.8			4.0	
KGD ^{R/L} 1212F-2	●	●	24	12	2	10	12	85	19.5	11.15	1.7	2.0	3.0	SB-40120TR	LTW-15S		
	1212F-2.4	●							●	19.5						11	2.0
KGD ^{R/L} 1616JX-3D38	●	●	38	16	-	6	10	16	120	29	14.8	2.4	3.0	4.0	SE-50125TR	LTW-20	
	2012JX-3D42	●	●	42	20		-	14		12	31						10.8
	2020JX-3D42	●	●							20							18.8

●KGD^{R/L}1212JX-3雖能安裝寬4.0mm之刀片,但就刀桿剛性而言並不推薦
4.0mm-width insert can be installed in KGD^{R/L}1212JX-3, but is not recommended due to the toolholder's rigidity.

●: 標準庫存 Std. Item

刀桿型號表示方法 Toolholder Identification System





安裝訣竅

Tips for Machining

● 請將刀桿伸長量設定至最小(L2尺寸)

Toolholder overhang (L2) is designed to be minimum length

優點
Advantage

1

根據自動刀盤規格不受「刀桿伸長量限制」更便於使用

Easy to use without constraint of overhang length depending on machine specification

優點
Advantage

2

最少・最適宜之刀桿伸長量有效抑制振刀

Control chatter due to the minimum and optimum overhang length

● 針對最大加工直徑至 $\phi 42$

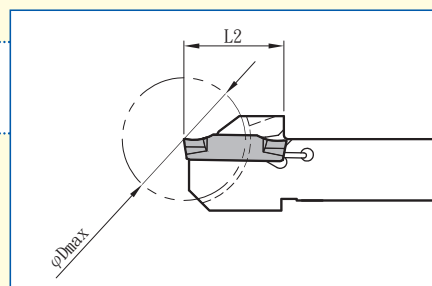
Product lineup with maximum cutting diameter 42mm

注) KGD[®]/L.....-3D38型及、-3D42型刀桿進行加工直徑大於 $\phi 36$ 之加工時
請使用1角規格刀片

使2角規格刀片時最大加工直徑為 $\phi 36$ 以內

Note) When machining the material larger than $\phi 36$ mm with KGD[®]/L.....-3D38 or KGD[®]/L.....-3D42 type toolholder,
please use 1-edge insert.

Maximum workpiece diameter for 2-edge insert is $\phi 36$ mm.



PF/PQ/PG斷屑槽推薦切削條件表 Recommended Cutting Conditions of PF / PQ / PG chipbreaker

				進給量 Feed Rate (mm/rev)								
被削材 Workpiece	推薦刀片材質 Recommended Insert Grade			PF			PQ		PG		備註 Remarks	
	MEGACOAT		超硬 Carbide	刀寬 W (mm) Edge Width			刀寬 W (mm) Edge Width		刀寬 W (mm) Edge Width			
	PR1215	PR1225	GW15	1.3/1.5	2.0	2.5/3.0	2.0	2.5/3.0	2.0	2.5/3.0		
碳鋼 Carbon Steel	☆ 70~180	★ 70~150	-	0.01~0.04	0.02~0.06	0.02~0.08	0.03~0.1	0.04~0.12	-	-	濕式 Wet	
合金鋼 Alloy Steel	☆ 70~180	★ 70~150	-									
不鏽鋼 Stainless Steel	☆ 60~150	★ 60~120	-	0.01~0.03	0.01~0.04	0.01~0.05	0.02~0.07	0.02~0.08	-	-		
鑄鐵 Cast Iron	★ 80~200	-	☆ 50~100	0.01~0.05	0.02~0.07	0.03~0.08	0.04~0.1	0.04~0.12	0.01~0.04	0.01~0.05		
鋁 Aluminum	-	-	★ 200~450	-	-	-	-	-	0.01~0.05	0.01~0.06		
黃銅 Brass	-	-	★ 100~200	-	-	-	-	-	0.01~0.07	0.01~0.08		

★：第1推薦 1st Recommendation ☆：第2推薦 2nd Recommendation

PF/PQ斷屑槽進給量 Feed Rate of PF / PQ chipbreaker

(切削材質：S45C Workpiece)

斷屑槽名稱 Chipbreaker	刀寬 W (mm) Edge Width	進給量 Feed Rate (mm/rev)						
		0.02	0.04	0.06	0.08	0.1	0.12	
PF 斷屑槽 PF chipbreaker	1.3/1.5							
	2							
	2.5/3							
PQ 斷屑槽 PQ chipbreaker	2							
	2.5/3							

純鉄 Pure Iron	
- 閥體件 Solenoid - Vc=114m/min - f=0.06mm/rev - 濕式 Wet - KGDR1616JX-2 - GDM2020N-010PQ	
PR1225	2,000pcs
他社品A Competitor A	500~1,000pcs

他社品A在0.05mm/rev的加工條件下壽命不安定，500~1,000pcs 常發生崩損
KGD型在0.06mm/rev的加工條件下壽命穩定，達2,000pcs
Tool life of Competitor A was unstable even at f=0.05mm/rev. Frequent fracture after machining 500-1000 pcs.
KGD-type was stable at f=0.06mm and processed 2000 pcs.

(根據客戶評價) Evaluation by the user

STKM13A	
- 導管 Pipe - Vc=115m/min - f=0.035mm/rev - 濕式 Wet - KGDR1212JX-2 - GDM2020N-010PQ	
PR1225	1,000pcs 以上 and more
他社品B Competitor B	1,000pcs

在加工1,000pcs後，KGD型與他社品B相比，展現穩定與更好的刀刃狀態
KGD type showed machining stability and better edge condition than Competitor B after machining 1000 pcs.

(根據客戶評價) Evaluation by the user

SUM22	
- 閥體件 Valve - Vc=110m/min - f=0.07~0.15mm/rev - 濕式 Wet - KGDR2020K-3T20 - GDM3020R-003PF-15D	
PR1225	13,000pcs 以上 and more
他社品C Competitor C	13,000pcs

在加工13,000pcs後，KGD型比他社品C有更好的刀刃狀態，且壽命可超過13,000pcs
KGD type showed better edge condition against Competitor C after machining 13,000 pcs and further machining was possible.

(根據客戶評價) Evaluation by the user

S45CF	
- 凸輪 Cam - Vc=124m/min - f=0.05mm/rev - 濕式 Wet - KGDR1616X-3D38 - GDM3020N-010PQ	
PR1225	500pcs
他社品D Competitor D	400pcs

與他社品D相比，KGD的壽命增加，面粗度好，排屑更穩定
KGD improved tool life and cut-off surface roughness compared with Competitor D.
Chip control was smooth.

(根據客戶評價) Evaluation by the user

S48C	
- 閥體件 Valve - Vc=80m/min - f=0.035mm/rev - 濕式 Wet - KGDL1212JX-2 - GDM2020N-010PQ	
PR1225	1,300pcs
従来品A Conventional A	500pcs

KGD的壽命比従来品A的壽命多2.6倍
KGD的切斷面粗度Rz=5μm以下，而他社品面粗度NG。
KGD showed 2.6 times longer tool life than Conventional A.
KGD satisfied the required cut-off surface roughness Rz=5μm, although Conventional A cannot.

(根據客戶評價) Evaluation by the user

SUS316L	
- 連接體 Union - Vc=70m/min - f=0.06mm/rev - 濕式 Wet - KGDL1616JX-2 - GDM2020N-010PQ	
PR1225	1,200pcs
他社品E Competitor E	800pcs

KGD的壽命比他社品E的壽命多1.5
PQ斷削槽良好控制毛刺及變形，也提升加工表面粗度
KGD achieved 1.5 times longer tool life compared with Competitor E.
PQ chipbreaker controlled burr formation and improved surface finish, too.

(根據客戶評價) Evaluation by the user

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