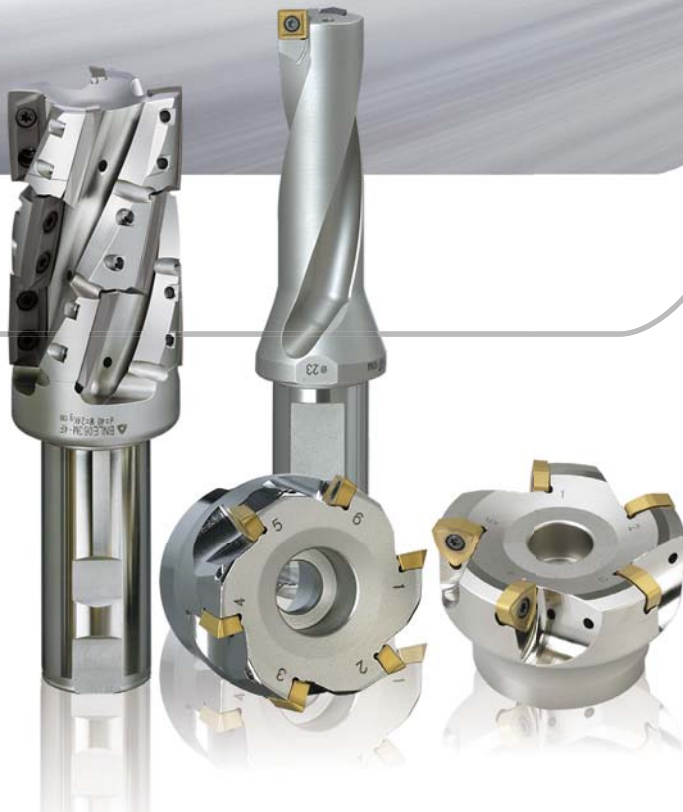


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# KORLOY

## FERRAMENTAS DE CORTE

2015



 **KORLOY**

# KORLOY FERRAMENTAS DE CORTE

2015





# FERRAMENTAS DE CORTE KORLOY

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# Seleção de classes KORLOY

## > Torneamento

Peça de Trabalho	Aço					M Aço inoxidável				K Ferro fundido				N Não ferroso			S HRSA				H Endurecido				
	P01	P10	P20	P30	P40	P50	M10	M20	M30	M40	K01	K10	K20	K30	N10	N20	N30	S01	S10	S20	S30	H01	H10	H20	
Metal Duro revestido	NC3010																								
	NC3220																								
	NC3120																								
	NC3030																								
	NC5330																								
Cermet	CN1000																								
	CN2000																								
	CN20																								
Metal Duro não revestido	ST05																								
	ST10																								
	ST15																								
	ST20																								
	ST30N																								

## > Fresamento

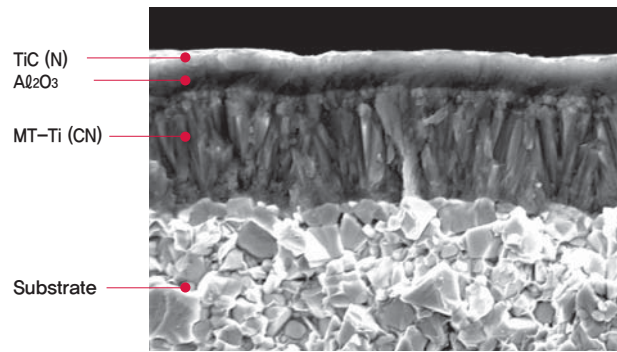
Peça de Trabalho	Aço					M Aço inoxidável				K Ferro fundido				N Não ferroso			S HRSA				H Endurecido				
	P01	P10	P20	P30	P40	P50	M10	M20	M30	M40	K01	K10	K20	K30	K40	N10	N20	N30	S01	S10	S20	S30	H01	H10	H20
Metal Duro revestido	NC5330																								
	NCM325																								
	PC3600																								
	PC5300																								
	NCM335																								
Cermet	CN2000																								
	CN20																								
	CN30																								
Metal Duro não revestido	ST20																								
	ST30A																								

## > Furação e Fresamento de topo

Peça de Trabalho	Aço				M Aço inoxidável			K Ferro fundido			N Não ferroso			S HRSA			H Endurecido								
	Velocidade elevada	Velocidade média	Desbaste em velocidade baixa	Usinagem pesada interrompida	Velocidade elevada	Velocidade média	Desbaste em velocidade baixa	Velocidade elevada	Velocidade média	Desbaste em velocidade baixa	Velocidade elevada	Velocidade média	Velocidade baixa	Velocidade elevada	Velocidade média	Velocidade baixa	Velocidade elevada	Velocidade média	Velocidade baixa						
Revestido Cementado Metal Duro	PC205F																								
	PC203F																								
	PC220																								
Micro Grãos Cementado Metal Duro	FG2																								
	FS1																								
	FA2				FCC																				

## Características

- ▶ A estrutura cristalina especial da nova tecnologia de revestimento alcança uma tenacidade superior
- ▶ Um revestimento multi camadas com elevada força de ligação que fornece uma resistência superior ao desgaste



Vista em corte do revestimento CVD

## Guia de Seleção da Classe

### > Torneamento

Peça de Trabalho	Tipo de corte	Classe recomendada	Velocidade de corte recomendada (m/min)	ISO	Gama de aplicação
P	Corte contínuo	NC3010	300 (200~400)	P01	
		NC3220 <i>Novo</i>	280 (150~380)	P10	
		NC3120	250 (150~350)	P15	
	Corte interrompido	NC3030	200 (150~250)	P20	
		NC5330	190 (100~230)	P30	
		NC500H	100 (50~150)	P35	
M	Corte contínuo	NC9025	140 (80~220)	M30	
	Corte interrompido			M40	
K	Corte contínuo	NC6205 <i>Novo</i>	450 (250~550)	K05	
		NC6210 <i>Novo</i>	350 (250~450)	K10	
	Corte interrompido	NC315K	200 (150~250)	K20	
		NC5330	180 (130~230)	K30	
S	Corte contínuo	NC5330	40 (20~60)	S20	
	Corte interrompido			S30	

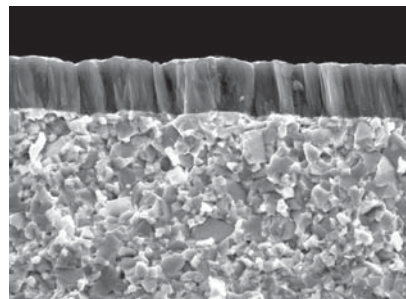
### > Fresamento

Peça de Trabalho	Tipo de corte	Classe recomendada	Velocidade de corte recomendada (m/min)	ISO	Gama de aplicação
P	Corte contínuo	NC5330	270 (220~320)	P15	
				P20	
	Corte contínuo	NCM325	250 (150~300)	P25	
M	Corte contínuo	NCM335	230 (120~280)	P30	
				P35	
M	Corte contínuo	NC5330	200 (150~250)	M10	
	Corte contínuo	NCM325	180 (140~230)	M20	
	Corte interrompido	NCM335	170 (120~210)	M30	
K	Corte contínuo	NC5330	170 (130~220)	M40	
				K20	
				K30	

# Classes com revestimento PVD

## Características

- ▶ A tecnologia de revestimento PVD tem vantagens inerentes como resistência superior ao lascamento da película de revestimento enquanto se mantém a tenacidade do substrato  
Assim é possível aumentar significativamente a vida útil da ferramenta
- ▶ Os revestimentos PVD garantem arestas de corte afiadas sem enfraquecer o substrato
- ▶ As películas de revestimento baseadas em Ti podem fornecer um acabamento de superfície excelente e usinagem de alta precisão devido ao baixo atrito da película de Ti com a peça de trabalho



Vista em corte do revestimento PVD

## Vantagens dos revestimentos PVD

- ▶ O Revestimento TiAlN é ótimo para usinagem de alta velocidade
- ▶ A tenacidade do TiAlN foi melhorada para reduzir a fragilidade do TiAlN convencional
- ▶ A camada TiN Externo reduz o atrito e melhora a suavidade da superfície
- ▶ Fácil de reconhecer a quantidade de desgaste na aresta de corte

## Guia de Seleção da Classe

### > Torneamento

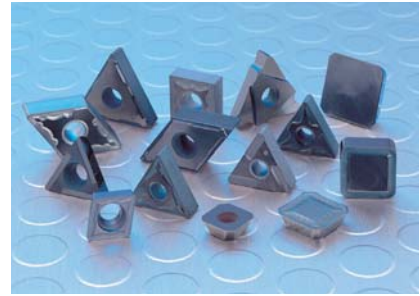
Peça de Trabalho	Tipo de corte	Classe recomendada	Velocidade de corte recomendada (m/min)	ISO	Gama de aplicação
P Aço	Corte contínuo	PC5300	150(120~220)	P30	PC5300
	Corte interrompido			P40	
	Corte interrompido	PC5400 <i>Novo</i>	150(120~220)	P50	PC5400 <i>Novo</i>
M Aço inoxidável	Corte contínuo	PC8110	200(150~250)	M10	PC8110
		PC5300	170(120~220)	M20	PC5300
	Corte interrompido	PC9030	120(50~180)	M30	PC9030
		PC5400 <i>Novo</i>	120(50~180)	M40	PC5400 <i>Novo</i>
S HRSA	Corte contínuo	PC8110	60(40~90)	S10	PC8110
		PC5300	50(30~70)	S20	PC5300
	Corte interrompido	PC5400 <i>Novo</i>	40(20~60)	S40	PC5400 <i>Novo</i>

### > Fresamento

Peça de Trabalho	Tipo de corte	Classe recomendada	Velocidade de corte recomendada (m/min)	ISO	Gama de aplicação
P Aço	Corte contínuo	PC3600 <i>Novo</i>	200 (150~250)	P20	PC3600 <i>Novo</i>
		PC5300		P30	PC5300
	Corte interrompido	PC5400 <i>Novo</i>	120 (100~150)	P40	PC5400 <i>Novo</i>
		PC3545		P50	PC3545
M Aço inoxidável	Corte contínuo	PC5300	120 (100~150)	M20	PC5300
		PC9530	130 (50~200)	M30	PC9530
	Corte interrompido	PC5400 <i>Novo</i>	120 (100~150)	M40	PC5400 <i>Novo</i>
K Ferro fundido	Corte contínuo	PC8110	250 (200~400)	K01	PC8110
		PC6510	200 (150~250)	K05	PC6510
	Corte interrompido	PC5300	165 (120~210)	K10	PC5300
				K20	PC5400 <i>Novo</i>
S HSRA	Corte contínuo	PC5300	70(40~100)	S20	PC5300
	Corte interrompido	PC5400 <i>Novo</i>	50(30~70)	S30	PC5400 <i>Novo</i>
H Endurecido	Corte contínuo	PC210F	250(150~300)	H01	PC210F
				H10	

## Características

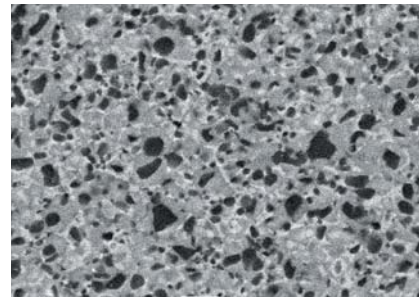
O Cermet da KORLOY é um Cermet do tipo carbonitreto que tem uma microestrutura ultrafina completa por adição de TiN e TiCN como aditivos. Também tem uma tenacidade superior, resistência ao choque térmico e ao desgaste.



## Vantagens

A Cermet, usando o TiCN como componente principal, é mais dura que o Carboneto Cementado (Metal Duro) e tem menor atrito com materiais ferrosos em temperaturas elevadas, assim os Cermets têm vantagens especiais como as listadas abaixo:

- **Comparada com Metais Duros não revestidos**
  - ▶ Visto que a cermet têm resistência superior ao desgaste e à craterização, pode ser aplicada em uma operação com maior velocidade de corte
  - ▶ O baixo atrito com materiais ferrosos permite operações de corte com baixas até altas velocidades e proporciona um acabamento de superfície excelente
  - ▶ Vida útil da ferramenta e desempenho de corte excepcionais podem ser adquiridos em acabamentos de alta velocidade
- **Comparada com Metais Duros revestidos**
  - ▶ Adequado para corte leve e acabamento
  - ▶ Resistência ao desgaste acabamento de superfície melhores podem ser adquiridos nas mesmas condições de corte



## Guia de Seleção da Classe

### > Torneamento

Peça de Trabalho	Tipo de corte	Classe recomendada	Velocidade de corte recomendada (m/min)	ISO	Gama de aplicação
P Aço	Corte contínuo	CN1000	280 (150 ~ 400)	P10	CN1000
	Corte interrompido	CN20 CN2000	210 (120 ~ 300)	P20	CN20 CN2000
K Ferro fundido	Acabamento	CN1000	280 (150 ~ 400)	K01 K10	CN1000

### > Fresamento

Peça de Trabalho	Tipo de corte	Classe recomendada	Velocidade de corte recomendada (m/min)	ISO	Gama de aplicação
P Aço	Corte contínuo	CN2000	250 (200 ~ 300)	P10 ~ P20	CN2000
	Corte contínuo	CN20	180 (130 ~ 230)	P15 ~ P25	CN20
	Corte interrompido	CN30	150 (100 ~ 200)	P20 ~ P30	CN20 CN30



# Classes de metal duro não revestidos

## Características

Devida à tecnologia de sinterização avançada, as classes de metal duro não revestido da KORLOY têm uma fina estrutura de ligas que é necessária para ter ferramentas de corte com qualidade superior



## Vantagens

- ▶ As classes de metal duro P, M, K podem ser usadas para usinagem de todo o tipo de materiais
- ▶ Têm qualidade excelente em usinagem com refrigeração devido à superior resistência às trincas térmicas do metal duro
- ▶ Devido ao design especial do carboneto, tem uma microestrutura fina e um baixo atrito com a peça de trabalho
- ▶ Tem uma rigidez excelente e produz cargas de corte baixas

ISO	Composição	Características	Material de Trabalho
<b>P</b>	WC-TiC-TaC-Co	Excelente resistência ao choque térmico e resistência à deformação plástica	Aço carbono, aço de liga, aço inoxidável
<b>M</b>	WC-TiC-TaC-Co	Usinagem geral, resistência ao choque térmico e Dureza	Aço carbono, aço de liga, aço inoxidável, Aço fundido
<b>K</b>	WC-Co	Dureza elevada e resistência ao desgaste superior	Ferro fundido, metal não ferroso, não metal

ISO	Classe	Dureza (H <sub>R</sub> A)	TRS (kgf/mm <sup>2</sup> )	Constante elástica (10 <sup>3</sup> kgf/mm <sup>2</sup> )	Coefficiente de expansão térmica (10 <sup>-6</sup> /°C)	Condutividade térmica (cal/cm · sec · °C)
<b>P</b>	ST05	92.7	140	-	-	-
	ST10	92.1	175	48	6.2	25
	ST20	91.9	200	56	5.2	45
	ST30A	91.3	230	53	5.2	-
<b>M</b>	U10	92.4	170	47	-	-
	U20	91.1	210	-	-	88
	ST30A	91.3	230	53	5.2	-
	A40	89.2	270	-	-	-
<b>K</b>	H02	93.2	185	61	4.4	105
	H01	92.9	210	66	4.7	109
	G10	90.9	250	63	-	105

1kPa = 102kg/m<sup>2</sup>, 1w/m·k = 2.39×10<sup>-3</sup>cal/cm·sec·°C

## Guia de Seleção da Classe

### > Torneamento

Peça de Trabalho	Classe recomendada	Velocidade de corte recomendada (m/min)	ISO	Gama de aplicação
P Aço	ST10	150 (100 ~ 200)	P10	ST10
	ST15	140 (90 ~ 190)	P20	ST15
	ST20	130 (70 ~ 180)	P20	ST20
	ST30A	130 (70 ~ 180)	P30	ST30A
K Ferro fundido	H02	150 (100 ~ 200)	K01	H02
	H01, H05	140 (100 ~ 200)	K10	H01
	H10, G10	130 (90 ~ 190)	K10	H05
	H01	500 (300 ~ 800)	K20	H10
Alumínio de liga	H01	500 (300 ~ 800)	K20	G10
Cobre de liga	H01	200 (150 ~ 300)	K30	

### > Fresamento

Peça de Trabalho	Classe recomendada	Velocidade de corte recomendada (m/min)	ISO	Gama de aplicação
P Aço	ST30A	130 (70 ~ 180)	P30	ST30A
K Ferro fundido	H01, H05	150 (100 ~ 200)	K01	
	H10, G10	140 (90 ~ 190)	K10	H01
Liga de Alumínio	H01	500 (300 ~ 800)	K20	H05
Ligas de cobre	H01	200 (150 ~ 300)	K30	G10



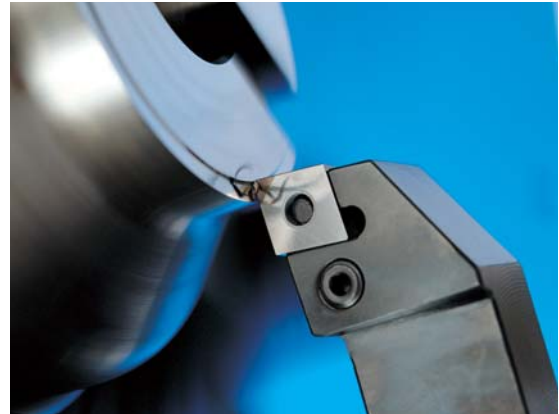
# Classes de cBN

## Características

O cBN é uma ferramenta de corte feito sob pressões e temperaturas ultra elevadas com a sinterização de nitreto cúbico de boro e um material ligante de cerâmica especial

As ferramentas de cBN são adequadas para usinagem precisa de alta velocidade em aços endurecidos e ferros fundidos

Usinar com cBN pode substituir efetivamente o processo convencional de retífica



### > Para usinagem de aço endurecido geral

#### • Condição de corte recomendada

Classe	Velocidade de corte, vc (m/min)					Avanço fn(mm/rev)				
	50	100 (120)	150	200	250	0	0.1	0.2	0.3	0.5
KB410			150	200		fn	0.03	0.13		
						ap	0.03	0.2		
KB420		120	150			fn	0.03	0.3		
						ap	0.03	0.5		
KB425			150	200		fn	0.03	0.3		
						ap	0.03	0.5		
KB320	80	120				fn	0.03	0.2		
						ap	0.03	0.3		
KB210			150	200		fn	0.03	0.2		
						ap	0.03	0.3		
KB335	80	110				fn	0.03	0.2		
						ap	0.03	0.3		
DNC250		120		220		fn	0.05	0.3		
						ap	0.05	0.3		

### > Para usinagem de ferro fundido

#### • Condição de corte recomendada

Funcionamento	Peça de Trabalho		Velocidade de corte, vc (m/min)			fn (mm/rev)	ap (mm)
	Material	Classe	100	1000	2000		
Torneamento	Ferro fundido cinzento	KB370		500	2000	0.1~0.5	≤ 1.0
		KB350	200	700		0.1~0.5	≤ 1.0
	Ferro fundido De liga	KB370	200	800		0.1~0.4	≤ 0.5
		KB370	80	200		0.1~0.4	≤ 0.6
	Ferro fundido dúctil	KB350	100	350		0.1~0.4	≤ 0.5
		KB410	250	500		0.1~0.4	≤ 0.5
Fresamento	Ferro fundido cinzento	KB370		800	2000	0.1~0.5	≤ 0.5

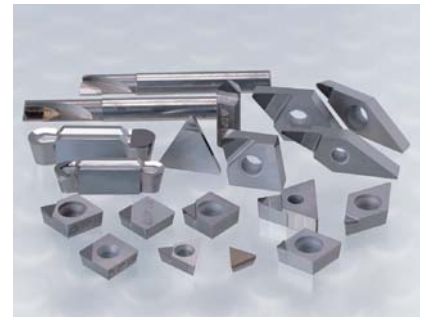
## Características

Os produtos de PCD da KORLOY são fabricados sobre temperaturas e pressões ultra elevadas usando pontas PCD de alta qualidade

A ponta de PCD é soldada no inserto de metal duro da KORLOY

Os produtos de PCD de alta qualidade da KORLOY atendem aos requisitos em uma grande gama de aplicações em torneamento, fresamento e fresamento de topo

- ▶ Excelente vida útil da ferramenta para liga de Alumínio e liga de Cobre
- ▶ Excelente vida útil da ferramenta para Cerâmica, Alumínio com alto teor de Silício, e rochas ou pedras
- ▶ Excelente vida útil da ferramenta para borracha, Carbono, Grafite e madeira



## Classes de PCD

Classe	Características	Aplicação	Tamanho do grão (µm)	Dureza (Hv)	TRS (kgf/mm <sup>2</sup> )
DP90	Foi usado grão de diamante grosso para obter uma excelente resistência ao desgaste, suficiente para usinar carboneto cementado (metal duro) e Liga de Alumínio com alto teor de Silício	Carboneto cementado (Metal Duro) Desbaste de cerâmica Liga de Alumínio com alto teor de Silício Rocha, Pedra	50	10,000~12,000	110
DP150	Pelo fato do uso do grão de diamante fino ter uma boa propriedade de ligação, é adequado para usinagem de metais não ferrosos, Grafite	Liga de Alumínio com alto teor de Silício Cobre, Liga de Bronze Borracha, Madeira, Carbono	5	10,000~12,000	200
DP200	O uso de grão de diamante ultrafino garante uma aresta de corte afiada Dessa forma, é apropriado para usinagem de materiais não ferrosos	Plástico Madeira Acabamento preciso de alumínio	0.5	8,000~10,000	220

## ➤ Condição de corte recomendada

Peça de Trabalho	Velocidade de corte (m/min)	Avanço (mm/rev)	Profundidade de corte (mm)	Classe recomendada	
				1	2
Liga de Alumínio (4% ~ 8% de Silício)	1000 ~ 3000	0.1 ~ 0.6	~ 3	DP150	DP200
Liga de Alumínio (9% ~ 14% de Silício)	600 ~ 2500	0.1 ~ 0.5	~ 3	DP150	DP200
Liga de Alumínio (15% ~ 18% de Silício)	300 ~ 700	0.1 ~ 0.4	~ 3	DP150	DP200
Cobre, Liga de Bronze	~ 1000	0.05 ~ 0.2	~ 3	DP150	DP200
Plástico reforçado	~ 1000	0.1 ~ 0.3	~ 2	DP150	DP200
Madeira	~ 4000	0.1 ~ 0.4	-	DP150	DP200
Carboneto cementado (Metal Duro)	10 ~ 30	~ 0.2	~ 0.5	DP90	DP150










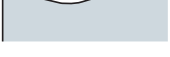


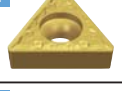



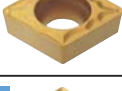

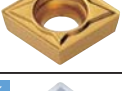



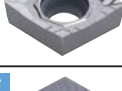

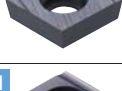






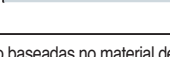
# Quebra Cavacos

## > Quebra Cavacos para torneamento

Geometria	Aresta de corte	Gama de aplicação											Características												
		taxa de avanço (mm/rev)																							
		0.04	0.063	0.10	0.16	0.25	0.4	0.63	1.0	1.6	2.5	4.0		6.3											
profundidade de corte (mm)																									
											0.1	0.16	0.25	0.4	0.63	1.0	1.6	2.5	4.0	6.3	10.0	11.6	13		
Série V	VG							0.1~0.35																	<b>Para acabamento</b> <ul style="list-style-type: none"> <li>• Assegura fluxo de cavaco estável mesmo com profundidade de corte muito pequena</li> <li>• Adequado para operação de cópia</li> </ul>
	VQ							0.1~0.4																	<b>Para corte médio a acabamento</b> <ul style="list-style-type: none"> <li>• A aresta de corte robusta garante um desempenho de corte excelente em corte interrompido</li> </ul>
	VL							0.1~0.35																	<b>Para corte médio</b> <ul style="list-style-type: none"> <li>• Controle de cavaco estável em material com rigidez elevada; aço com baixo teor de Carbono, tubos e insertos de aço</li> <li>• Controle de cavaco melhorado em faceamento e operações de cópia; melhor superfície Acabamento</li> </ul>
	VF							0.05~0.35																	<b>Para acabamento</b> <ul style="list-style-type: none"> <li>• Bom controle de cavaco em várias profundidades de corte</li> <li>• Excelente força da aresta de corte devido ao Quebra cavaco especial</li> </ul>
	VB							0.15~0.45																	<b>Para acabamento</b> <ul style="list-style-type: none"> <li>• Melhor controle de cavaco em profundidades de corte pequenas</li> <li>• Excelente controle de cavaco em operações de cópia, usinagem de contorno em raio</li> </ul>
	VC							0.12~0.45																	<b>Para acabamento médio</b> <ul style="list-style-type: none"> <li>• Controle de cavaco estável em operações de cópia e usinagem interna com variadas profundidades de corte</li> </ul>
	VM							0.1~0.5																	<b>Para corte médio</b> <ul style="list-style-type: none"> <li>• Excelente controle de cavaco de acabamento médio a desbaste médio</li> <li>• Quebra cavaco adequado para usinagem CNC</li> </ul>
	VK							0.15~0.5																	<b>Para Fresamento, de médio ao desbaste</b> <ul style="list-style-type: none"> <li>• Ótimo para usinagem de alta velocidade e usinagem Interrompida</li> </ul>
	VH																								<b>Para corte pesado</b> <ul style="list-style-type: none"> <li>• Concebido especialmente para usinagem pesada</li> <li>• Quebra cavaco especializado para as indústrias pesadas como a da construção naval, de Geração de energia</li> </ul>
	VT																								<b>Para corte pesado</b> <ul style="list-style-type: none"> <li>• Concebido especialmente para usinagem pesada</li> <li>• Quebra cavaco especializado para as indústrias pesadas como a da construção naval, de Geração de energia</li> </ul>
	VP1																								<b>Para acabamento</b> <ul style="list-style-type: none"> <li>• Aresta de corte altamente positiva</li> <li>• O contato reduzido do cavaco minimiza a temperatura para melhorar vida útil da ferramenta</li> </ul>
	VP2																								<b>Para acabamento médio</b> <ul style="list-style-type: none"> <li>• Controle de cavaco estável e alta usinabilidade em operações de cópia com variadas profundidades de corte</li> </ul>
	VP3																								<b>Para usinagem média</b> <ul style="list-style-type: none"> <li>• Aresta de corte altamente positiva com superfície ampla</li> <li>• Desempenho de corte estável em usinagem interrompida com rigidez elevada</li> <li>• Usinabilidade estável e controle de cavaco em usinagem com profundidade de corte elevada</li> </ul>
	Série H	HR																							<b>Para desbaste</b> <ul style="list-style-type: none"> <li>• Excelente controle de cavaco em grande profundidade de corte e alta taxa de avanço</li> <li>• A aresta de corte robusta assegura um excelente desempenho de corte em corte interrompido</li> </ul>
		HA																							<b>Para usinagem Liga Leve, Aço inoxidável</b> <ul style="list-style-type: none"> <li>• A aresta de corte afiada proporciona baixa força de corte</li> <li>• Aresta de corte principal dura especialmente projetada</li> <li>• Adequado para corte de Aço com baixo teor de Carbono, Aço Inoxidável, Alumínio</li> </ul>

Aviso: As gamas de aplicação são baseadas no material de corte principal

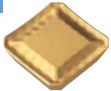

















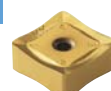









## > Quebra Cavacos para torneamento

Geometria	Aresta de corte	Gama de aplicação											Características		
		taxa de avanço (mm/rev)													
		0.04	0.063	0.10	0.16	0.25	0.4	0.63	1.0	1.6	2.5	4.0		6.3	
profundidade de corte (mm)															
		0.1	0.16	0.25	0.4	0.63	1.0	1.6	2.5	4.0	6.3	10.0	11.6	13	
Série H	HS 					0.1~0.4				1.0~4.0					<b>Para corte médio de aço inoxidável</b> <ul style="list-style-type: none"> <li>O design exclusivo para corte de aço inoxidável proporciona uma vida útil mais longa da ferramenta</li> <li>Resistência ao desgaste superior devido ao ângulo de inclinação acentuado da superfície do quebra cavaco</li> </ul>
Série G	GR 							0.3~0.8				3.0~8.0			<b>Para médio a desbaste</b> <ul style="list-style-type: none"> <li>Adequado para grandes profundidades de corte e alto avanço em aço e ferro fundido</li> <li>Adequado para corte interrompido</li> </ul>
	GH 							0.3~1.3				3.0~11.0			<b>Para corte pesado</b> <ul style="list-style-type: none"> <li>Adequado para corte pesado devido às arestas de corte robustas</li> <li>Ampla gama de quebra cavacos com baixa força de corte</li> </ul>
	GS 					0.15~0.5				1.5~5.5					<b>Para médio a desbaste de aço inoxidável</b> <ul style="list-style-type: none"> <li>Quebra cavaco exclusivo para aço inoxidável</li> </ul>
	B25 								0.5~1.0				4.0~10.0		
Série V-posi	VF 					0.05~0.25				0.1~1.5					<b>Para acabamento</b> <ul style="list-style-type: none"> <li>Acabamento da superfície e precisão do tamanho melhorados devido à estabilidade em furos</li> </ul>
	VL 					0.05~0.20				0.1~1.0					<b>Para acabamento</b> <ul style="list-style-type: none"> <li>Controle de cavaco superior em aço de baixo teor de Carbono, tubos e insertos de aço</li> </ul>
Série H-posi	HFP 					0.05~0.25				0.1~1.5					<b>Para acabamento</b> <ul style="list-style-type: none"> <li>Excelente controle de cavaco em profundidade de corte superficial e baixa taxa de avanço</li> <li>Excelente acabamento da superfície da peça devido a força de corte reduzida</li> <li>Adequado para madrilamento fino</li> </ul>
	HMP 							0.08~0.4				0.5~3.5			<b>Para corte médio</b> <ul style="list-style-type: none"> <li>Excelente controle de cavaco dentro de uma gama ampla de condições de corte</li> <li>Adequado para corte de aço inoxidável</li> </ul>
Série C	C25 					0.1~0.35						1.0~3.0			<b>Para corte médio</b> <ul style="list-style-type: none"> <li>Adequado para corte interrompido e usinagem de ferro fundido</li> <li>Bom acabamento da superfície devido a baixa força de corte</li> <li>Adequado para madrilamento e torneamento do diâmetro externo</li> </ul>
Série AL	AK 					0.03~0.4						0.1~4.0			<b>Para corte de alumínio</b> <ul style="list-style-type: none"> <li>Ângulo de inclinação acentuado e aresta de corte de resistência baixa asseguram uma prolongada vida útil da ferramenta em corte contínuo no torneamento de alumínio</li> <li>Operação de acabamento em velocidade elevada</li> </ul>
	AR 					0.05~0.5						0.5~4.0			<b>Para corte de alumínio</b> <ul style="list-style-type: none"> <li>A alta estabilidade da aresta de corte assegura um desempenho excelente em velocidades elevadas e usinagem interrompida</li> <li>Velocidade elevada nas operações média e interrompida</li> </ul>
Série Auto Tool	KF 					0.01~0.12						0.01~1.0			<b>Para acabamento</b> <ul style="list-style-type: none"> <li>Profundidade de corte superficial com aresta afiada</li> <li>Vida útil da ferramenta mais longa em cortes com velocidade elevada devido a baixa força de corte</li> <li>Bom acabamento da superfície</li> </ul>
	KM 					0.04~0.15						0.05~1.5			<b>Para corte médio a acabamento</b> <ul style="list-style-type: none"> <li>O melhor controle de cavaco garante uma prolongada vida útil da ferramenta e melhor usinagem</li> </ul>
Série Peça de Trabalho Limpeza	LW 							0.15~0.6				1.0~5.0			<b>Para corte médio (Alisador)</b> <ul style="list-style-type: none"> <li>Garante uma excelente rugosidade da superfície e bom controle de cavaco em usinagem de alto avanço</li> </ul>
	VW 							0.15~0.5				0.5~3.5			<b>Para acabamento (Alisador)</b> <ul style="list-style-type: none"> <li>Rugosidade da superfície melhorada em profundidade de corte superficial e alto avanço devido a aresta de corte robusta</li> </ul>

Aviso: As gamas de aplicação são baseadas no material de corte principal









# Quebra Cavacos

## > Quebra Cavacos para Fresamento







Geometria	Aresta de corte	Gama de aplicação											Características						
		taxa de avanço (mm/t)																	
		0.04	0.063	0.10	0.16	0.25	0.4	0.63	1.0	1.6	2.5	4.0		6.3					
profundidade de corte (mm)																			
0.1	0.16	0.25	0.4	0.63	1.0	1.6	2.5	4.0	6.3	10.0	11.6	13							
Série MX	MX							0.1~0.3										<b>Para Fresamento geral</b> <ul style="list-style-type: none"> <li>• Aumento da produtividade devido ao aumento de avanço e da profundidade de corte</li> <li>• Excelente resistência ao calor devido ao design especial do quebra cavaco da face superior do inserto</li> </ul>	
Série Futur Mill	MF							0.05~0.2										<b>Para acabamento em fresamento</b> <ul style="list-style-type: none"> <li>• Design especial para corte leve de materiais rígidos como aço inoxidável e materiais difíceis de cortar; fornece uma superfície com acabamento fino e uma vida útil da ferramenta mais prolongada</li> </ul>	
	MM							0.05~0.3										<b>Para corte médio em fresamento</b> <ul style="list-style-type: none"> <li>• Design do quebra cavaco feito para cobrir condições de corte gerais dentro de uma ampla gama de aplicação</li> <li>• Disponível nos tipos afiado e sinterizado</li> </ul>	
	MR							0.05~0.35										<b>Para desbaste em fresamento</b> <ul style="list-style-type: none"> <li>• As arestas de corte muito robustas proporcionam uma vida útil da ferramenta estável mesmo em caso de corte instável com corte interrompido pesado e desbaste pesado</li> </ul>	
	MA							0.1~0.35											<b>Para alumínio</b> <ul style="list-style-type: none"> <li>• Design adequado para usinagem de alumínio, como aresta de corte afiada, face superior do inserto espelhada que previne a formação de arestas postiças; fornece um excelente desempenho de corte</li> </ul>
	MA							0.05~0.35											<b>Para alumínio</b> <ul style="list-style-type: none"> <li>• Aresta de corte afiada e face superior desbastada mostra um excelente fluxo de cavaco e resistência à fusão em usinagem de alumínio</li> </ul>
Rich Mill Série RM8	MF							0.05~0.35										<b>Para acabamento em fresamento</b> <ul style="list-style-type: none"> <li>• O design do quebra cavaco de baixa força de corte assegura uma vida útil da ferramenta mais prolongada e excelente usinabilidade em material difícil de cortar e usinagem leve</li> </ul>	
	MM							0.1~0.4										<b>Para médio a desbaste em Fresamento</b> <ul style="list-style-type: none"> <li>• Design da geometria adequado para fresamento geral dentro de uma ampla gama de operações de usinagem</li> </ul>	
	MF							0.05~0.2										<b>Para acabamento em fresamento</b> <ul style="list-style-type: none"> <li>• O design do quebra cavaco de baixa força de corte assegura uma vida útil da ferramenta mais prolongada em material difícil de cortar e usinagem leve</li> </ul>	
Rich Mill Série RMT	MM							0.05~0.3										<b>Para médio a desbaste em fresamento</b> <ul style="list-style-type: none"> <li>• Design da geometria adequado para fresamento geral dentro de uma ampla gama de operações de usinagem</li> </ul>	
	MA							0.05~0.3										<b>Para corte de alumínio</b> <ul style="list-style-type: none"> <li>• O design da aresta de corte afiada assegura uma resistência baixa ao corte e uma excelente usinagem em materiais difíceis de cortar, alumínio e usinagem leve</li> </ul>	
Rich Mill Série RM16	MF							0.05~0.4										<b>Para acabamento em fresamento</b> <ul style="list-style-type: none"> <li>• O design do quebra cavaco de baixa força de corte assegura uma vida útil da ferramenta mais prolongada em material difícil de cortar e usinagem leve</li> </ul>	
	MM							0.1~0.45										<b>Para médio a desbaste em fresamento</b> <ul style="list-style-type: none"> <li>• Design da geometria adequado para fresamento geral dentro de uma ampla gama de operações de usinagem</li> </ul>	
	W							0.05~0.3										<b>Para acabamento em fresamento (Alisador)</b> <ul style="list-style-type: none"> <li>• O inserto Wiper (Alisador) proporciona uma rugosidade da superfície melhorada devido à aresta de corte especial</li> </ul>	

Aviso: As gamas de aplicação são baseados no material de corte principal

## > Quebra Cavacos para Fresamento

Geometria	Aresta de corte	Gama de aplicação													Características									
		taxa de avanço (mm/t)																						
		0.04	0.063	0.10	0.16	0.25	0.4	0.63	1.0	1.6	2.5	4.0	6.3											
profundidade de corte (mm)																								
0.1													0.16	0.25	0.4	0.63	1.0	1.6	2.5	4.0	6.3	10.0	11.6	13
Série Alpha Mill	<b>MA</b> 						0.1~0.4		0.5~16								<b>Para alumínio</b> • Aresta de corte afiada e face superior desbastada mostram um excelente fluxo de cavaco e resistência à fusão em usinagem de alumínio							
	<b>MF</b> 		0.05~0.15		0.5~16										<b>Para acabamento em fresamento</b> • O design do quebra cavaco de baixa força de corte assegura uma vida útil da ferramenta mais prolongada em material difícil de cortar e usinagem leve									
	<b>MM</b> 				0.1~0.25		0.5~16								<b>Para médio a desbaste em fresamento</b> • Design da geometria adequado para fresamento geral dentro de uma ampla gama de operações de usinagem									
	<b>ML</b> 		0.05~0.15		0.5~16										<b>Para usinagem de material duro de cortar</b> • O quebradores de aparas com resistência de corte inferior assegura uma usinagem superior em materiais duros de cortar									

## > Quebra cavaco para perfuração

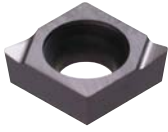
Geometria	Aresta de corte	Gama de aplicação													Características								
		taxa de avanço (mm/rev)																					
		0.04	0.063	0.10	0.16	0.25	0.4	0.63	1.0	1.6	2.5	4.0	6.3										
profundidade de corte (mm)																							
30													60	90	120	150	180	210	240	270	300	330	900
Série KING-DRILL	<b>PD</b> 		0.04~0.20				60~300								<b>Para usinagem de aço geral</b> • Quebra de aparas com extremidade de corte robusta para aplicações universais com aço, aço inoxidável, e ferro Fundido								
	<b>ND</b> 		0.04~0.10		100~400										<b>Metais não ferrosos</b> • Quebra de aparas com extremidade de corte afiado e polido para alumínio e metais não ferrosos. A usinagem com o King Drill assegura um bom fluxo de cavacos e resistência à solda de aparas								
	<b>LD</b> 		0.04~0.15		40~250								<b>Para aço geral (aços macios e forjados)</b> • Controle de aparas superior em usinagem de macio, aço forjado e aço inoxidável										

Aviso: As gamas de aplicação são baseados no material de corte principal



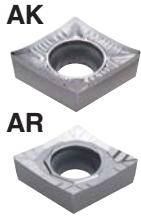
# Insertos de torneamento

## CCET



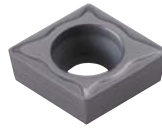
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030101R/L  
030102R/L  
030104R/L  
0401005R/L  
040101R/L  
040102R/L  
040104R/L

## CCGT-AK/AR



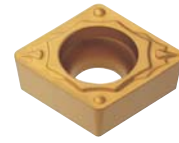
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## CCGT-C05



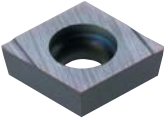
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## CCGT-HFP



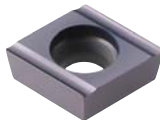
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## CCGT-KF



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060201R/L  
060202R/L  
09T3003R/L  
09T301R/L  
09T302R/L

## CCGT-KM



0602003R/L  
060201R/L  
060202R/L  
09T3003R/L  
09T301R/L  
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## CCMT-C25



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## CCMT-HFP



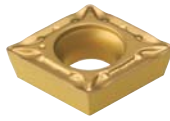
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## CCMT-HMP



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## CCMT-VF



060202  
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09T308  
120404

## CNGG-HU



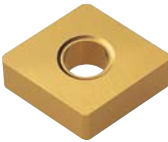
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## CNGG-VP1



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## CNMA



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## CNMG-B25



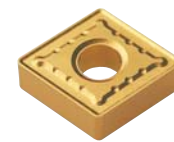
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## CNMG-GM



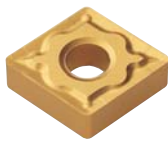
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## CNMG-GR



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160616

## CNMG-GS



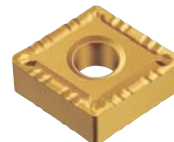
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## CNMG-HA



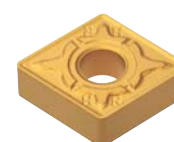
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## CNMG-HC



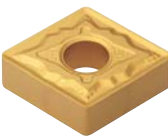
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## CNMG-HR



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## CNMG-HS



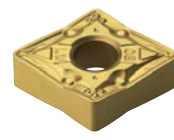
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120408  
120412  
160612  
160616  
190612  
190616

## CNMG-HU



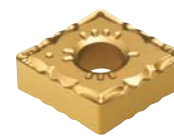
120404  
120408  
120412

## CNMG-LW



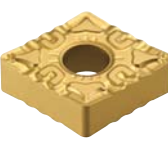
120408  
120412

## CNMG-VB



120404  
120408  
120412

## CNMG-VC



120404  
120408  
120412

## CNMG-VF



090304  
090308  
120404  
120408  
120412

## CNMG-VG



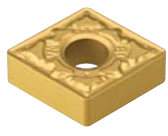
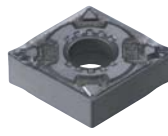
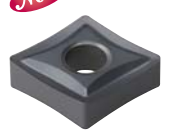

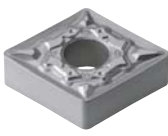
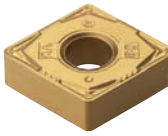

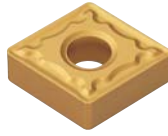


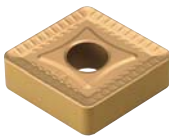
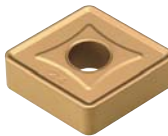
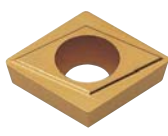

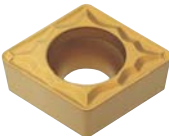
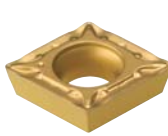
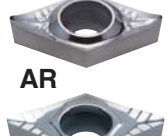

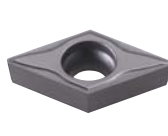

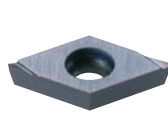







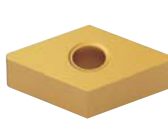
090304  
090308  
120404  
120408

## CNMG-VL



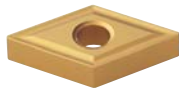
120404  
120408

# Insertos de torneamento

<p><b>CNMG-VM</b></p>  <p>090304 090308 120404 120408 120412 120416 160608 160612</p>	<p><b>CNMG-VK</b></p>  <p>120408 120412 120416</p>	<p><b>CNMG-VP2</b></p> <p><i>Novo</i></p>  <p>120404 120408</p>	<p><b>CNMG-VP3</b></p> <p><i>Novo</i></p>  <p>120404 120408 120412</p>
<p><b>CNMG-VQ</b></p>  <p>090304 090308 120404 120408</p>	<p><b>CNMG-VW</b></p>  <p>120404 120408</p>	<p><b>CNMM-GH</b></p>  <p>120408 190608 120412 190612 160412 190616 160424 190624 160612 250724 160616 250924 160624 250950</p>	<p><b>CNMM-GM</b></p>  <p>120408</p>
<p><b>CNMM-GR</b></p>  <p>120408 120412 190612 190616</p>	<p><b>CNMM-HA</b></p>  <p>120408</p>	<p><b>CNMM-VH</b></p>  <p>190612 190616 190624 250724 250924</p>	<p><b>CNMM-VT</b></p>  <p>190612 190616 190624 250724 250924</p>
<p><b>CPGT</b></p>  <p>080202 080204 080208 090302 090304 090308</p>	<p><b>CPGT-C05</b></p>  <p>080204 080208 090304 090308</p>	<p><b>CPGT-HMP</b></p>  <p>090308</p>	<p><b>CPMT-VF</b></p>  <p>080204 080208 090304 090308</p>
<p><b>DCGT-AK/AR</b></p> <p><b>AK</b></p>  <p>070202 070204 070208 11T302 11T304 11T308 11T312</p> <p><b>AR</b></p> 	<p><b>DCGT-C05</b></p>  <p>070202 070204 11T302 11T304 11T308</p>	<p><b>DCGT-HFP</b></p>  <p>070202 070204 070208 11T301 11T302 11T304 11T308</p>	<p><b>DCGT-KF</b></p>  <p>0702003R/L 070201R/L 070202R/L 11T3003R/L 11T301R/L 11T302R/L</p>
<p><b>DCGT-KM</b></p>  <p>0702003R/L 070201R/L 070202R/L 11T3003R/L 11T301R/L 11T302R/L</p>	<p><b>DCMT-C25</b></p>  <p>070202 070204 070208 11T302 11T304 11T308</p>	<p><b>DCMT-HFP</b></p>  <p>070202 070204 070208 11T301 11T302 11T304 11T308</p>	<p><b>DCMT-HMP</b></p>  <p>070202 070204 070208 11T302 11T304 11T308</p>
<p><b>DCMT-VF</b></p>  <p>070202 070204 11T302 11T304 11T308</p>	<p><b>DNGG-HU</b></p>  <p>150604 150608</p>	<p><b>DNGG-VP1</b></p> <p><i>Novo</i></p>  <p>150404 150408 150604 150608</p>	<p><b>DNMA</b></p>  <p>110408 150404 150408 150412 150604 150608 150612 190608</p>

# Insertos de torneamento

## DNMG-B25



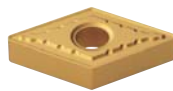
150402 150602  
150404 150604  
150408 150608  
150412 150612  
150425 150625

## DNMG-GM



110308  
110404  
110408  
150404  
150408  
150412  
150604  
150608  
150612

## DNMG-GR



150408  
150412  
150416  
150608  
150612  
150616

## DNMG-GS



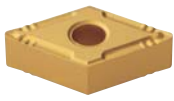
150404  
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150412  
150604  
150608  
150612

## DNMG-HA



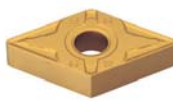
150404  
150408  
150604  
150608

## DNMG-HC



150404  
150408  
150412  
150604  
150608  
150612

## DNMG-HR



150408  
150412  
150416  
150608  
150612  
150616  
190612

## DNMG-HS



110408  
110412  
150404  
150408  
150412  
150604  
150608  
150612

## DNMG-HU



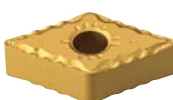
150404  
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150412  
150604  
150608  
150612

## DNMG-LW



150408  
150412  
150608  
150612

## DNMG-VB



150404  
150408  
150604  
150608  
150612

## DNMG-VC



150404  
150408  
150412  
150604  
150608  
150612

## DNMG-VF



110402  
110404  
110408  
150404  
150408  
150412  
150604  
150608  
150612

## DNMG-VG



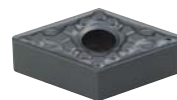
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150404  
150408  
150604  
150608

## DNMG-VL



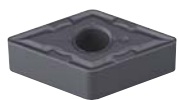
110408  
150404  
150408  
150412  
150604  
150608  
150612

## DNMG-VM



110404  
110408  
110412  
150404  
150408  
150412  
150604  
150608  
150612

## DNMG-VK



150404  
150408  
150608  
150612

## DNMG-VP2



150404  
150408  
150604  
150608

## DNMG-VP3



150404  
150408  
150412  
150604  
150608  
150612

## DNMG-VQ



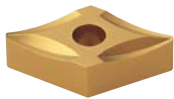
110404  
110408  
150404  
150408  
150604  
150608

## DNMG-VW



150404  
150408  
150604  
150608

## DNMP



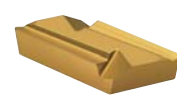
150408  
150608

## DNMX-SH



150404 R/L  
150408 R/L  
150604 R/L  
150608 R/L

## KNUX-11



160405 R/L  
160410 R/L

## KNUX-12



160405 R/L  
160410 R/L

## RCGT-AK/AR



0602M0  
0803M0  
1003M0  
10T3M0  
1204M0

## RCMX




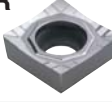
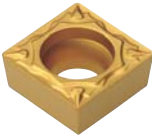
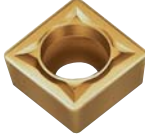

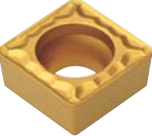
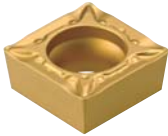
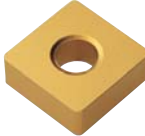

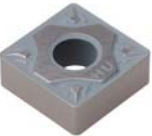


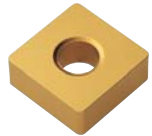

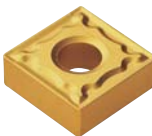

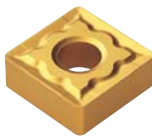

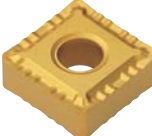
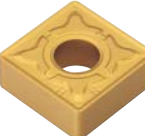

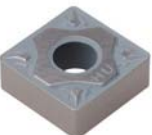
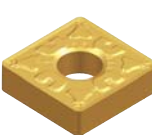

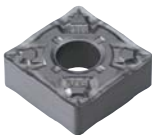
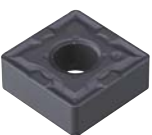


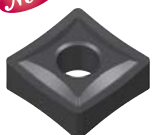
1003M0  
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1606M0  
2006M0  
2507M0  
3209M0

## RNMG-B25


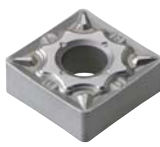

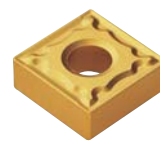

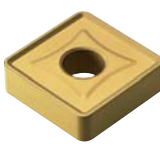
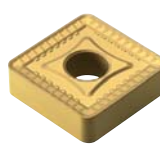

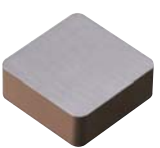
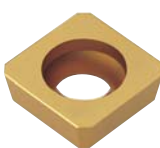
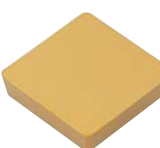
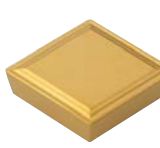
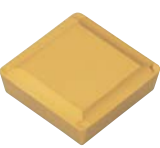
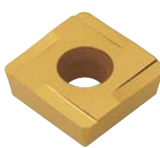

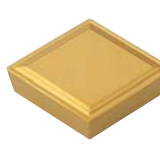
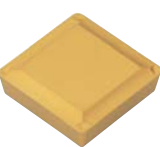


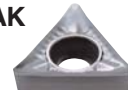
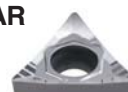
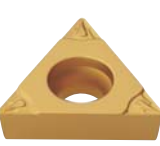
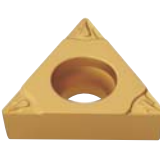


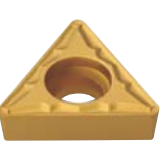
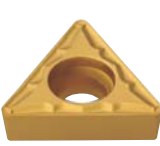

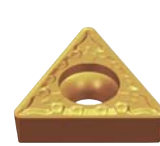


090300  
120400  
150600  
190600  
250600  
250900  
310900

# Insertos de torneamento

<p><b>SCGT</b></p> <p><b>AK</b> </p> <p>09T302 09T304 09T308 120404 120408 120416</p> <p><b>AR</b> </p>	<p><b>SCGT-HFP</b></p> <p></p> <p>09T304</p>	<p><b>SCMT-C25</b></p> <p></p> <p>060204 09T304 09T308 120404 120408</p>	<p><b>SCMT-HFP</b></p> <p></p> <p>09T304</p>
<p><b>SCMT-HMP</b></p> <p></p> <p>09T304 09T308 120404 120408</p>	<p><b>SCMT-VF</b></p> <p></p> <p>09T304</p>	<p><b>SNGA</b></p> <p></p> <p>090304 090308 120404 120408 120412 150608 150616 190608 190612</p>	<p><b>SNGG</b></p> <p></p> <p>090304R/L 090308R/L 120404R/L 120408R/L 120412R/L</p>
<p><b>SNGG-HU</b></p> <p></p> <p>120408</p>	<p><b>SNG(M)X</b></p> <p></p> <p>120408R</p>	<p><b>SNGN</b></p> <p></p> <p>090302 120424 090304 150402 090308 150408 120304 150412 120308 150416 120312 190402 120402 190412 120404 190416 120408 250604 120412 250616</p>	<p><b>SNMA</b></p> <p></p> <p>090304 150612 090308 150616 090312 190608 120402 190612 120404 190616 120408 190624 120412 250724 120416 250924 120430</p>
<p><b>SNMG-B25</b></p> <p></p> <p>090308 150612 120404 150616 120408 190608 120412 190612 120416 190616 120420 250716 150608 250724</p>	<p><b>SNMG-GM</b></p> <p></p> <p>120404 120408 120412</p>	<p><b>SNMG-GR</b></p> <p></p> <p>120404 190608 120408 190612 120412 190616 150608 250724 150612 250924</p>	<p><b>SNMG-GS</b></p> <p></p> <p>120404 120408 120412 120416 190612</p>
<p><b>SNMG-HA</b></p> <p></p> <p>120404 120408 120412</p>	<p><b>SNMG-HC</b></p> <p></p> <p>120404 120408</p>	<p><b>SNMG-HR</b></p> <p></p> <p>120408 190608 120412 190612 120416 190616 150608 190624 150612 250724 150616 250924 150624</p>	<p><b>SNMG-HS</b></p> <p></p> <p>090304 090308 120404 120408 120412 150612 150616 190612 190616</p>
<p><b>SNMG-HU</b></p> <p></p> <p>120404 120408 120412</p>	<p><b>SNMG-VC</b></p> <p></p> <p>120408</p>	<p><b>SNMG-VF</b></p> <p></p> <p>120404 120408 090304 090308</p>	<p><b>SNMG-VG</b></p> <p></p> <p>090304 090308 120404 120408</p>
<p><b>SNMG-VK</b></p> <p></p> <p>120404 120408 120412</p>	<p><b>SNMG-VL</b></p> <p></p> <p>120408</p>	<p><b>SNMG-VM</b></p> <p></p> <p>090304 090308 120404 120408 120412 190612</p>	<p><b>SNMG-VP2</b></p> <p></p> <p><i>Novo</i></p> <p>120404 120408 120412</p>

# Insertos de torneamento

<p><b>SNMG-VP3</b></p> <p><i>Novo</i></p>  <p>120404 120408 120412</p>	<p><b>SNMG-VQ</b></p>  <p>090304 090308 120404 120408</p>	<p><b>SNMM-GH</b></p>  <p>120408 120412 150612 190612 190616 190624 250724 250924 250932</p>	<p><b>SNMM-GM</b></p>  <p>120408 120412</p>
<p><b>SNMM-GR</b></p>  <p>120408 120412 190612 190616</p>	<p><b>SNMM-VH</b></p>  <p>190612 190616 190624 250724 250920 250924</p>	<p><b>SNMM-VT</b></p>  <p>190612 190616 190624 250724 250920 250924</p>	<p><b>SNMN</b></p>  <p>120304 120308 120312 120404 120408 120412 150408 150412 190416</p>
<p><b>SNUN</b></p>  <p>120408 120412 190412 120412TN 250724TN</p>	<p><b>SPGA</b></p>  <p>060204 090308T 090308T-Z</p>	<p><b>SPGN</b></p>  <p>070202 120408 070208 150404 090302 150408 090304 150412 090308 150416 120302 150420 120304 190404 120308 190408 120312 190412 120316 190416 120402 190424 120404</p>	<p><b>SPGR-F</b></p>  <p>090304 120304</p>
<p><b>SPGR-M</b></p>  <p>090308 120308</p>	<p><b>SPGT</b></p>  <p>090304R/L 090308R/L</p>	<p><b>SPGT-C05</b></p>  <p>090304 090308</p>	<p><b>SPMR-F</b></p>  <p>090304 120304</p>
<p><b>SPMR-M</b></p>  <p>090308 120308 120312</p>	<p><b>SPMT-VF</b></p>  <p>090304 090308</p>	<p><b>TBGT</b></p>  <p>060102L 060104L</p>	<p><b>TCGT</b></p> <p><b>AK</b></p>  <p>090202 16T304 090204 16T308 110202 16T312 110204 16T316 110208 16T325 16T302</p> <p><b>AR</b></p> 
<p><b>TCGT-C05</b></p>  <p>090204 110204 110208</p>	<p><b>TCGT-HFP</b></p>  <p>090204 110202 110204 16T304</p>	<p><b>TCGT-KF</b></p>  <p>0802003 R/L 080201 R/L 080202 R/L</p>	<p><b>TCMT-C25</b></p>  <p>090204 090208 110202 110204 110208 16T304 16T308</p>
<p><b>TCMT-HFP</b></p>  <p>090204 110202 110204 16T302 16T304</p>	<p><b>TCMT-HMP</b></p>  <p>090204 090208 110202 110204 110208 16T304 16T308</p>	<p><b>TCMT-VF</b></p>  <p>110202 110204 110208 16T304</p>	<p><b>TCMT-VL</b></p>  <p>16T304 16T308</p>

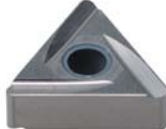
# Insertos de torneamento

## TNGA



110302 220402  
110304 220404  
160304 220408  
160402 220412  
160404 270612  
160408 270624  
220304

## TNGG



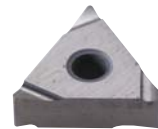
110304R/L  
160402R/L  
160404R/L  
160408R/L  
220404R/L  
220408R/L  
220412R/L

## TNGG-HU



160404  
160408

## TNGG-SC



160402 R/L  
160404 R/L

## TNGN



110302 160412  
110304 220404  
110308 220408  
160302 220412  
160304 220416  
160308 220424  
160404 270630  
160408

## TNMA



110308 220416  
160404 220420  
160408 220432  
160412 270608  
160416 270612  
220404 270616  
220408 330924  
220412

## TNMG-B25



110308 220408  
160304 220412  
160308 220416  
160312 220424  
160316 220432  
160404 270608  
160408 270612  
160412 270616  
160416 330716  
220404 330924

## TNMG-GM



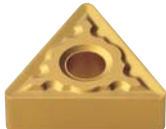
160304  
160404  
160408  
160412  
220404  
220408  
220412

## TNMG-GR



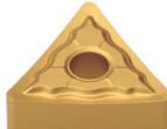
160408  
160412  
220408  
220412  
220416  
270608  
270612  
270616  
330924

## TNMG-GS



160404  
160408  
160412  
220408  
220412

## TNMG-HA



160404  
160408  
160412  
220408

## TNMG-HC



160404  
160408  
160412  
220408

## TNMG-HR



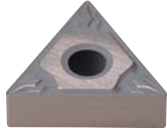
160408 270608  
160412 270612  
220404 270632  
220408 330716  
220412 330924  
220416

## TNMG-HS



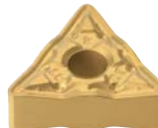
160404  
160408  
160412  
220408  
220412

## TNMG-HU



160404  
160408

## TNMG-LW



160408  
160412

## TNMG-VB



160404  
160408  
220408  
220412

## TNMG-VC



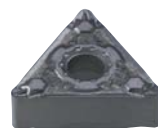
160404  
160408  
160412  
220408  
220412

## TNMG-VF



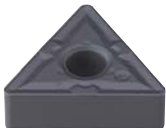
110304  
160404  
160408  
160412  
220404  
220408

## TNMG-VG



110304  
160404  
160408  
220404

## TNMG-VK



160404  
160408  
160416  
220412  
220416

## TNMG-VL



160404  
160408  
220408  
220412

## TNMG-VM



110308  
160404  
160408  
160412  
220404  
220408  
220412

## TNMG-VP2



*Novo*

160404  
160408

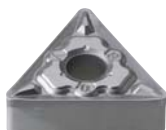
## TNMG-VP3



*Novo*

160404  
160408

## TNMG-VQ



110304  
160404  
160408  
220404

## TNMG-VW



160404  
160408

## TNMM-GH



160408  
220408  
220412  
220416  
270616  
270624  
330924

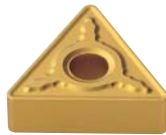
# Insertos de torneamento

## TNMM-GM



160412  
220408  
220412  
220416

## TNMM-GR



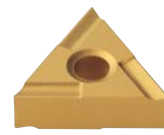
220408  
220412  
220416

## TNMN



160408  
220408  
220412

## TNMX



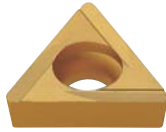
160402R  
160404R  
160408R  
220404R  
220408R  
160404L  
160408L

## TNMX-SH



160404 R/L  
160408 R/L

## TOEH



060102L  
090204L  
140304L

## TPGH



080202L  
080204L  
110202L  
110204L

## TPGN



090204 160316  
110302 160404  
110304 220404  
110308 220408  
160302 220412  
160304 220430  
160308 220440  
160310 270408  
160312 270608

## TPGR-F



110302  
110304  
160304

## TPGR-M



110308  
160308

## TPGT



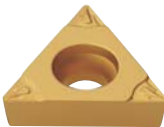
080202R/L  
110302R/L  
110304R/L  
110308R/L  
160404R/L  
160408R/L

## TPGT-C05



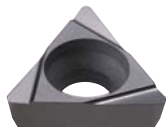
110304  
160404

## TPGT-HFP



110304  
160308

## TPGX



090202L  
090204L  
090208L  
110304L

## TPMR-F



090202  
090204  
110302  
110304  
110308  
160304  
160308

## TPMR-M



110304  
110308  
160304  
160308  
160312  
220408

## TPMT-VF



110304  
110308  
160404  
160408

## TPUN



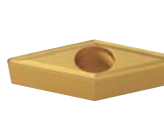
090308 220404  
110208 220408  
110304 220412  
110308 330620  
160304 160308TN  
160308 160312TN  
160312 220412TN

## VBGT-AK/AR



110302  
110304  
110308  
160402  
160404  
160408  
160412

## VBGT



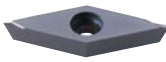
160404  
160408

## VBGT-HFP



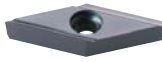
110301  
160408

## VBGT-KF



1103003R/L  
110301R/L  
110302R/L

## VBGT-KM



1103003R/L  
110301R/L  
110302R/L

## VBMT



160404  
160408

## VBMT-HMP



110204  
110208  
110304  
110308  
160404  
160408  
160412

## VBMT-VF



160404  
160408

## VBMT-VL



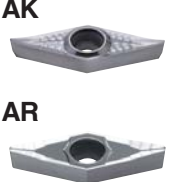











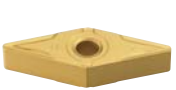










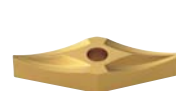




160404  
160408

## VBMT-VM



160404  
160408

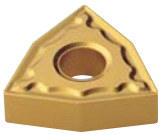
# Insertos de torneamento

<p><b>VCGT-AK/AR</b></p> <p><b>AK</b></p> <p>110301 160402 110302 160404 110304 160408 110308 160412</p> <p><b>AR</b></p> <p>130302 220516 130304 220525 130308 220530</p> 	<p><b>VCGT-HFP</b></p> <p>110302 110304 110308 160404 160408</p> 	<p><b>VCGT-KF</b></p> <p>1103003R/L 110301R/L 110302R/L</p> 	<p><b>VCGT-KM</b></p> <p>1103003R/L 110301R/L 110302R/L</p> 
<p><b>VCMT-HFP</b></p> <p>110302 110304 110308 160404 160408</p> 	<p><b>VCMT-HMP</b></p> <p>160404 160408</p> 	<p><b>VCMT-VF</b></p> <p>080202 080204 110304 160404</p> 	<p><b>VCMT-VL</b></p> <p>160404 160408</p> 
<p><b>VCMT-VM</b></p> <p>160404 160408</p> 	<p><b>VNGG-HA</b></p> <p>160408</p> 	<p><b>VNMG-GM</b></p> <p>160404 160408</p> 	<p><b>VNMG-HA</b></p> <p>160404 160408</p> 
<p><b>VNMG-HR</b></p> <p>160408</p> 	<p><b>VNMG-HS</b></p> <p>160404 160408</p> 	<p><b>VNMG-VB</b></p> <p>160404 160408</p> 	<p><b>VNMG-VC</b></p> <p>160404 160408</p> 
<p><b>VNMG-VF</b></p> <p>160402 160404 160408</p> 	<p><b>VNMG-VG</b></p> <p>160404 160408</p> 	<p><b>VNMG-VL</b></p> <p>160404 160408</p> 	<p><b>VNMG-VM</b></p> <p>160404 160408 160412 220404 220408</p> 
<p><b>VNMG-VK</b></p> <p>160412</p> 	<p><b>VNMG-VP3</b></p> <p><i>Novo</i></p> <p>160404 160408</p> 	<p><b>VNMG-VQ</b></p> <p>160404 160408</p> 	<p><b>VNMP</b></p> <p>160404 160408</p> 
<p><b>WBGT</b></p> <p>020102R S30204R 020102L S30202L S30204L</p> 	<p><b>WCGT-C05</b></p> <p>080408</p> 	<p><b>WNMA</b></p> <p>060404 060408 060412 080404 080408 080412</p> 	<p><b>WNMG-B25</b></p> <p>080404 080408 080412</p> 



# Insertos de torneamento

## WNMG-GM



060404  
060408  
080404  
080408  
080412

## WNMG-GR



080404  
080408  
080412  
080416

## WNMG-GS



060404  
060408  
060412  
080404  
080408  
080412

## WNMG-HA



060404  
060408  
080404  
080408  
080412

## WNMG-HC



060404  
080404  
080408

## WNMG-HR



060408  
060412  
080408  
080412  
080416

## WNMG-HS



060404  
060408  
060412  
080404  
080408  
080412

## WNMG-HU



080404  
080408  
080412

## WNMG-LW



060408  
060412  
080408  
080412

## WNMG-VB



080404  
080408

## WNMG-VC



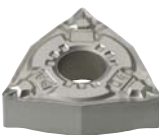
080404  
080408

## WNMG-VF



060404  
060408  
080404  
080408

## WNMG-VG



060404  
060408  
080404  
080408

## WNMG-VK



080404  
080408  
080412  
080416

## WNMG-VL



060408  
080404  
080408

## WNMG-VM



060402  
060404  
060408  
060412  
080404  
080408  
080412

## WNMG-VP2



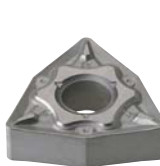
*Novo*  
080404  
080408  
080412

## WNMG-VP3



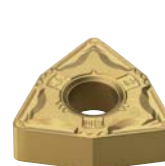
*Novo*  
080404  
080408  
080412

## WNMG-VQ



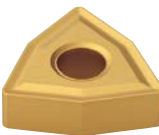
060404  
060408  
080404  
080408

## WNMG-VW



080404  
080408

## WNMM-B25






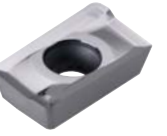





100608  
130612

## WNMX-SH



*Novo*  
080404R/L  
080408R/L

# Insertos de fresamento

<b>ADKA</b>  150308R 150308TR 150308SR	<b>ADLT</b>  150308R 150308SR 150308TR	<b>APFT-X22</b>  1604PDSR 1604PDTR	<b>APFT-X28</b>  1604PDR 1604PDSR 1604PDTR
<b>APKT</b>  1604PDSR	<b>APKT-MA</b>  1604PDFR	<b>APKT-MA2</b>  1604PDFR 160416FR 160432FR	<b>APKT-MA3</b>  1604PDFR 160420FR
<b>APKT-MF</b>  1604PDSR	<b>APKT-MM</b>  1604PDSR	<b>APKT-MM1</b>  160432R	<b>APKT-X22</b>  1604PDSR 1604PDTR
<b>APKT-X23</b>  1604PDR 1604PDTR	<b>APKT-X24</b>  1604PDR 1604PDR	<b>APLT</b>  070304R	<b>APMT-MA</b>  <i>Novo</i> 0602PDR 0903PDR 11T3PDR 1604PDR 1806PDR
<b>APMT-MF</b>  11T3PDSR 1604PDSR 1806PDSR 180612PDSR	<b>APMT-ML</b>  <i>Novo</i> 0903PDER 11T3PDER 1604PDER 1806PDER	<b>APMT-MM</b>  060202PDSR 0602PDSR 060208PDSR 060212R 060216R 0903PDSR 090306PDSR 090308PDSR 090312R 090316R	090320R 090331R 090332R 11T3PDSR 11T308PDSR 11T312PDSR 11T316R 11T318R 11T324R 1604PDSR 160410PDSR 160416PDSR 160424R 160430R 160432R 160450R 160464R 1806PDSR 180612PDSR-MM 180616PDSR-MM 180620PDSR-MM 180624PDSR-MM 180630R-MM 180632R-MM 180640R-MM 180648R-MM 180650R-MM 180660R-MM 180664R-MM
<b>APXT-MA</b>  11T3PDR-MA 11T318R-MA	<b>APXT-MR</b>  11T3PDSR 11T308PDR	<b>CPMH-MM</b>  120408	<b>CPMT-MM</b>  060204 080308 09T308
<b>HECN</b>  090408FN 090408SN 090408TN 110412FN 110412TN	<b>HPEN</b>  090408FN 090408SN 090408EN 110412FN	<b>HPEN-WC</b>  090408 110412	<b>LBH/LBS</b>  080 200 090 210 100 250 110 260 120 300 130 310 160 320 170

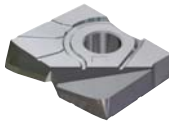
# Insertos de fresamento

## LCF



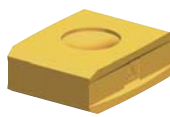
160-D90  
200-D90  
250-D90

## LFH



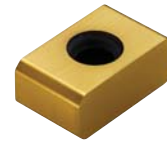
100  
120  
160  
200  
250  
300  
320

## LNCS



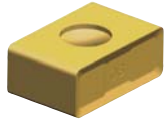
1907-C1.5-WC  
1907-R3.0-WC

## LNE



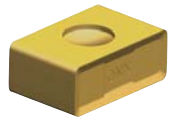
324-C1.0  
324-R0.8

## LNEX



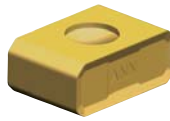
150608-MF  
150608-ML

## LNEX-QNN



1506QNN-MF  
1506QNN-ML

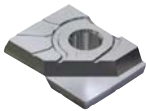
## LNEX-ANN



1506ANN-MF  
1506ANN-ML

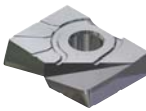
## LR / LRH

### LR



(Tipo especial)

### LRH



100-R05 160-R05 200-R30 300-R20  
100-R10 160-R10 210-R05 300-R30  
100-R20 160-R20 250-R05 310-R05  
110-R05 160-R30 250-R10 320-R10  
120-R05 170-R05 250-R20 320-R20  
120-R10 200-R05 250-R30 320-R30  
120-R20 200-R10 260-R05  
130-R05 200-R20 300-R10

## LXET-MA



250404PEFR-32 340504PEFR-50  
2504PEFR-32 3405PEFR-50  
250412PEFR-32 340512PEFR-50  
250416PEFR-32 340516PEFR-50  
250404PEFR-40 340504PEFR-63  
2504PEFR-40 3405PEFR-63  
250412PEFR-40 340512PEFR-63  
250416PEFR-40 340516PEFR-63

## LXET-ML



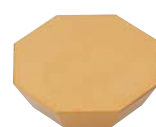
250404PEER-32 340504PEER-50  
2504PEER-32 3405PEER-50  
250412PEER-32 340512PEER-50  
250416PEER-32 340516PEER-50  
250404PEER-40 340504PEER-63  
2504PEER-40 340508PEER-63  
250412PEER-40 340512PEER-63  
250416PEER-40 340516PEER-63

## MPMT



090308  
120408

## OFCN



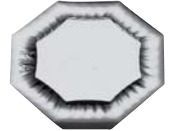
0704SN  
0704FN  
070408FN  
070408SN  
070408TN

## OFCW



05T3SN  
05T3FN  
05T308FN

## OFKR-MA



0704FN  
0704EN

## OFKR-MF



0704SN  
070408SN

## OFKR-MM



0704SN  
070408SN

## OFKT-MA



05T3FN  
05T3EN  
0704EN  
0704FN

## OFKT-MF



05T3SN  
05T308SN

## OFKT-MM



05T3SN  
05T308SN  
0704SN

## ONHX-MA



060608  
080608

## ONH(M)X-MF



060608  
080608  
0606ANN  
0806ANN

## ONH(M)X-MM



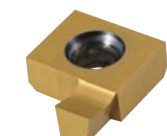
060608  
080608  
0606ANN  
0806ANN

## ONHX-W



060608  
080608

## ORG



265  
325  
405  
470

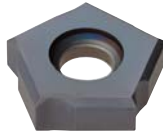
# Insertos de fresamento

## PNEJ



1223N 1255N  
1225N 1260N  
1230N 1265N  
1235N 1270N  
1240N 1275N  
1245N 1285N  
1250N

## PNEJ-C



1223N-C03  
1230N-C03  
1235N-C03  
1240N-C05  
1245N-C05  
1250N-C05  
1255N-C05  
1260N-C05  
1265N-C05  
1270N-C05  
1275N-C05

## RC



16  
20  
25  
30  
32

## RDCT-MA



10T3M0  
1204M0

## RDHW



0501M0-F(E,S)  
06T1M0-F(E,S)  
0702M0-F(E,S)  
0803M0-F(E,S)

## RDHW



1605M0-F(E,S)  
2006M0-F(E,S)

## RDKT-MF



10T3M0  
1204M0  
1605M0

## RDKT-ML



1605M0

## REKR-MM



170400-MM

## RDKT-MM



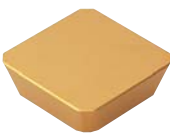
10T3M0  
1204M0  
1605M0  
2006M0

## RDKW



0501M0E  
06T1M0E  
0702M0E  
0803M0E

## SDCN



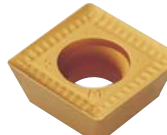
42R 53L 42AESN  
42L 53M 42AESN-RH  
42M 53M-G 42AESN-RH  
42M-G 53MT 53AEEN  
42MT 53MT-RH 53AEEN-RH  
42MT-RH 53MT-S20 53AESN  
42MT-S20 42AEEN 53AEEN-RH  
53R 42AEEN-RH

## SDET-MA



09M402R  
09M404R  
09M405R  
130504R

## SDET-MF



09M405R  
130508R

## SDET-MM



09M405R  
130508R

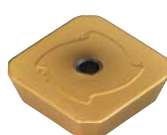
## SDKN-MU



*Novo*

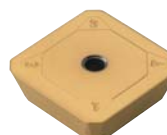
1203AESN  
1504AESN

## SDKN-SM



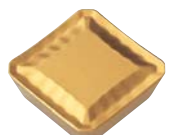
1203AESN  
1203AEEN  
1504AESN  
1504AEEN

## SDKN-SU



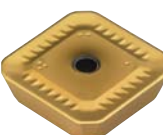
1203AESN  
1504AESN

## SDKR-MX



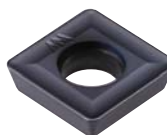
1203AESN  
1203AETN  
1203AEN  
1504AESN  
1504AETN  
1504AEN

## SDKR-SM



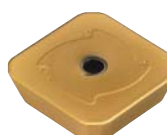
1203AESN  
1504AESN

## SDMT-MM



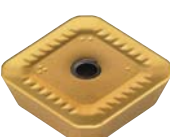
090308

## SDXN-FM



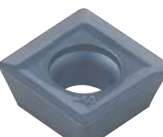
1203AESN  
1203AEEN  
1504AESN  
1504AEEN

## SDXR-FM



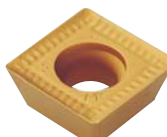
1203AESN  
1504AESN

## SDXT-MA



09M405R  
130508R

## SDXT-MF



09M403R/L  
09M404R/L  
09M405R/L  
130508R

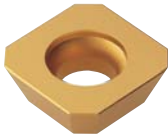
## SDXT-MM



09M405R/L  
130508R/L  
130538

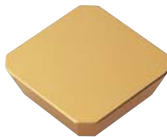
# Insertos de fresamento

## SECA



1204AFSN  
1204AFTN  
1204AFFN  
1204AFEN  
1504AFSN  
1504AFTN  
1504AFFN

## SECN



1203AFEN 1504AFEN  
1203AFFN 1504AFFN  
1203AFSN 1504AFSN  
1203AFTN 1504AFTN  
1203AFEN-RH 1504AFEN-RH  
1203AFSN-RH 1504AFSN-RH  
1203AFTN-S20 1504AFTN-S20

## SEET-MA



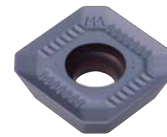
0903AGFN  
14M4AGFN

## SEET-MF



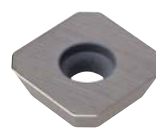
0903AGSN  
14M4AGSN

## SEET-MM



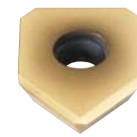
0903AGSN  
14M4AGSN

## SEEW



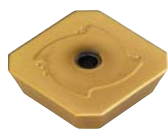
0903AGTN  
14M4AGTN

## SEEW-W



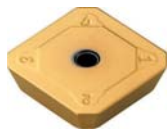
14M4AGFN  
14M4AGSN  
14M4AGTN

## SEKN-SM



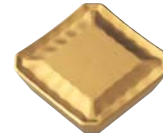
1203AFEN  
1203AFSN  
1504AFEN  
1504AFSN

## SEKN-SU



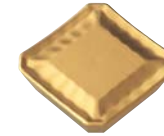
1203AFSN  
1504AFSN

## SEKR-MF1



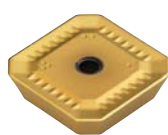
1203AFSN

## SEKR-MX



1203AFSN  
1204AFSN  
1504AFSN

## SEKR-SM



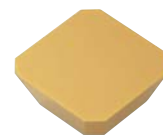
1204AFSN  
1504AFSN

## SEKR-X35



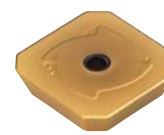
1203AFFN  
1203AFSN  
1204AFFN

## SEMN



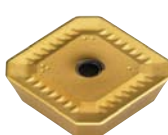
1204AZ

## SEXN-FM



1203AFEN  
1203AFSN  
1504AFEN  
1504AFSN

## SEXR-FM



1203AFSN  
1504AFSN

## SEXT-MF



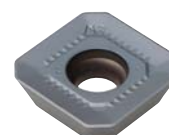
0903AGSN  
14M4AGSN

## SEXT-MM



0903AGSN  
14M4AGSN

## SEXT-MR



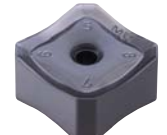
0903AGSN  
14M4AGSN

## SFCN



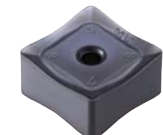
1203EFR

## SNCF-MF



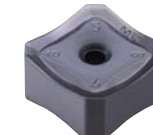
1206ANN  
1206ENN  
1206QNN  
1507ANN  
1507ENN

## SNMF-MF



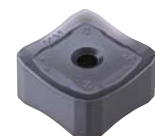
1206ANN  
1206ENN  
1206QNN  
1507ANN  
1507ENN

## SNCF-MM



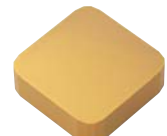
1206ANN  
1206ENN  
1206QNN  
1507ANN  
1507ENN

## SNMF-MM



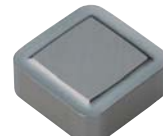
1206ANN  
1206ENN  
1206QNN  
1507ANN  
1507ENN

## SNCN



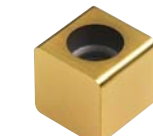
1204ENN  
1504ENN

## SNEF



435  
535

## SNEX



101010  
1010ZNN

## SNEX-CU1



101010  
1010ZNN  
121212  
1212ZNN

## SNEX-MA



1206ANN  
1206ENN  
1206QNN  
120612

## SNKN



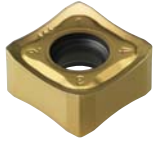
1204ENN  
1504ENN

## SNE(M)X-MF



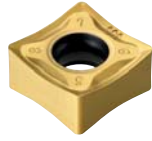
1206ANN  
1507ANN

## SNE(M)X-MF



1206ENN  
1507ENN

## SNE(M)X-MF



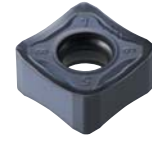
1206QNN  
120612

## SNE(M)X-MM



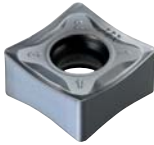
1206ANN  
1507ANN

## SNE(M)X-MM



1206ENN  
1507ENN

## SNE(M)X-MM



1206QNN  
120612

## SNEX-W



1206ANN-W

## SPCN



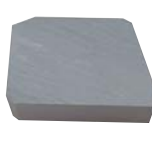
1203EDR/L 1203EDR-S20 1504EDR-G  
1203EDR-RH 1204EDR 1504EDER-RH  
1203EDR-G 150412T 1504EDSR-RH  
1203EDER-RH 1504EDR/L 1504EDTR-RH  
1203EDSR-RH 1504EDR-RH 1504EDR-S20  
1203EDTR-RH 1504EDSR

## SPEN-WC



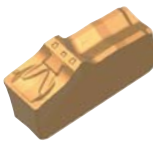
120416  
150412  
150416  
150420  
190424

## SPEX



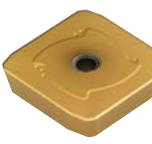
1203EDR-1  
1203EDL-1  
1504EDR-1  
1504EDL-1

## SPFN



200-N  
300-N  
400-N

## SPKN-SM



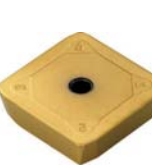
1203EDSR  
1203EDER  
1504EDSR  
1504EDER

## SPKN-MU



1203EDSR  
1504EDSR

## SPKN-SU



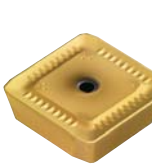
1203EDSR  
1203EDSL  
1504EDSR  
1504EDSL

## SPKR-MX



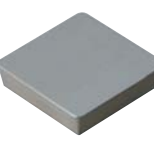
1203EDSR  
1203EDSL  
1504EDR  
1504EDSR

## SPKR-SM



1203EDSR  
1504EDSR

## SPMN



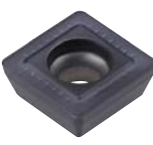
120308

## SPMT



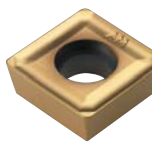
060304

## SPMT-KC



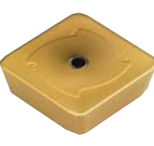
110408

## SPMT-MM



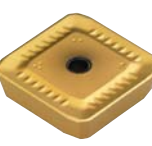
120408  
120508

## SPXN-FM



1203EDSR  
1203EDER  
1504EDSR  
1504EDER

## SPXR-FM



1203EDSR  
1504EDSR

## TECN



22R  
22TR  
32R  
32R-G  
32TR  
32TR-S20  
43R-G  
43TR  
43TR-Z

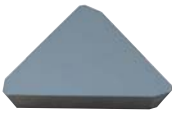
## TEEN



32TR  
43R-Z  
43TR-Z  
43TR-ZH  
43R  
43R-G  
43TR  
43TR-S20

# Insertos de fresamento

## TFCN



2203PFR  
2203PFL

## TNMX-NM



2710AZNR  
2710AZNL

## TPCN



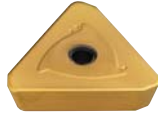
1103PPN 1603PPTR 2204PDSR  
1103PPTN 1603PPR-RH 2204PDTR  
1603PDR 1603PDER-RH 2204PPN  
1603PPN 1603PDSR-RH 2204PPTN  
1603PPR 1603PDR-S20 2204PDR-RH  
1603PPR-RH 2204PDR 2204PDER-RH  
1603PPR-G 2204PDR-RH 2204PDSR-RH  
1603PPSR 2204PDR-G 2204PDR-S20  
1603PPTN 2204PDL

## TPKN-MU



2204PDSR

## TPKN-SM



1603PDSR  
1603PDER  
2204PDSR  
2204PDER

## TPKN-SU



1603PDSR  
1603PDSL  
2204PDSR  
2204PDSL

## TPKR-MX



1603PDSN  
1603PDSR  
1603PPR  
1603PPSN  
1603PPSR  
2204PDR  
2204PDSR  
2204PPR

## TPKR-SM



1603PDSR  
2204PDSR

## TPXN-FM



1603PDER  
1603PDSR  
2204PDER  
2204PDSR

## TPXR-FM



1603PDSR  
2204PDSR

## TWX-KC



16R-KC  
22R-KC

## VCKT-MA



220530N

## VDKT-MA



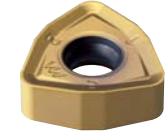
11T210N  
11T220N

## WDKT-MH



080316ZDSR  
10T320ZDSR  
130520ZDSR  
150625ZDSR

## WNMX-MM



060312ZNN  
09T316ZNN  
130520ZNN  
160720ZNN

## XCET-KC



310404ER

## XEKT-MA



19M504FR 19M532FR 250620FR  
19M508FR 19M540FR 250630FR  
19M512FR 19M550FR 250632FR  
19M516FR 250604FR 250640FR  
19M518FR 250608FR 250650FR  
19M520FR 250612FR  
19M530FR 250616FR

## ZDMT-R-MM



080310R  
110312.5R  
130416R

## ZPET-MM



Internal

080M  
100M  
125M  
150M  
160M  
200M  
250M

## ZPET-MM



External

080S  
100S  
125S  
150S  
160S  
200S  
250S

## ZPMT-MM/MMN



1504PPSR-MM  
1505PPSR-MMN

## ZPMT-R-MM




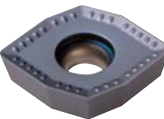
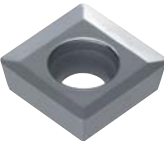


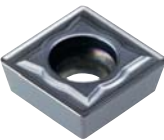
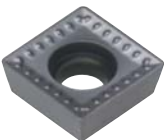



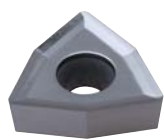








160520R  
160525R  
160531R

## ZPMT-R-MR



160525R

<b>LPMT-DF</b>  040203	<b>NPET-DA</b>  222408 252808 293208 334008 415008 516012	<b>NPET-DR</b>  222408 252808 293208 334008 415008 516012	<b>NPMT-DM</b>  222408 252808 293208 334008 415008 516012
<b>NPMT-DS</b>  222408 252808 293208 334008 415008 516012	<b>SPET-DA</b>  050203 060204 070204	<b>SPET-ND</b>  Novo 040204 050204 060205 07T208 090308 11T308 130410 15M510 180510	<b>SPMT-DF</b>  050203 060204 070204
<b>SPMT-DM</b>  050203 060204 070204	<b>SPMT-DS</b>  050203 060204 070204	<b>SPMT-LD</b>  Novo 060205 07T208 090308 11T308 130410 15M510 180510	<b>SPMT-PD</b>  Novo 040204 050204 060205 07T208 090308 11T308 130410 15M510 180510
<b>WCKT-C21</b>  030204 040204 050308 06T308 080408	<b>WCKT-DA</b>  030208 040208 050308 06T308 080408	<b>WCMT-C20</b>  030208 040208 050308 06T308 080408 080412	<b>WCMT-C21</b>  030204 040204 040208 050308 06T308 080408
<b>WCMT-DS(P)</b>  030204-DSP 040204-DSP 050308-DS 06T308-DS 080408-DS 080412-DS	<b>XOET-ND</b>  Novo 040204 050204 060204 07T205 090305 11T306 130406 15M508 180508	<b>XOMT-LD</b>  Novo 060204 07T205 090305 11T306 130406 15M508 180508	<b>XOMT-PD</b>  Novo 040204 050204 060204 07T205 090305 11T306 130406 15M508 180508



# Insertos para usinagem em alumínio

## Para Torneamento

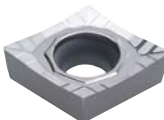
### CCGT

AK

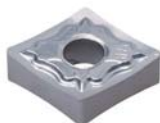


060202  
060204  
060208  
09T302  
09T304  
09T308  
120402  
120404  
120408

AR



### CNMG-HA



120404  
120408  
120412

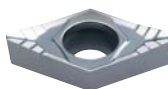
### DCGT

AK



070202  
070204  
070208  
11T302  
11T304  
11T308  
11T312

AR



### RCGT

AK



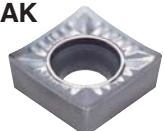
0602MO  
0803MO  
1003MO  
10T3MO  
1204MO

AR



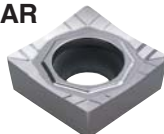
### SCGT

AK



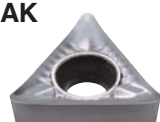
09T302  
09T304  
09T308  
120404  
120408  
120416

AR



### TCGT

AK



090202  
090204  
110202  
110204  
110208  
16T302  
16T304  
16T308  
16T312  
16T316  
16T325

AR



### VBGT

AK



110302  
110304  
110308  
160402  
160404  
160408  
160412

AR



### VCGT

AK



110301  
110302  
110304  
110308  
130302  
130304  
130308  
160402  
160404  
160408  
160412  
220516  
220525  
220530

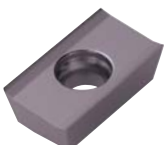
AR



## Para Fresamento

### APKT-MA

1604PDFR



### APKT-MA2

1604PDFR  
160416FR  
160432FR



### APKT-MA3

1604PDFR  
160420FR



### APMT-MA

*Novo*



0602PDFR  
0903PDFR  
11T3PDFR  
1604PDFR  
1806PDFR

### APXT-MA

11T3PDSR  
11T318R



### CDEW-XCF

1204R/L



### OFKR-MA

0704FN  
0704EN



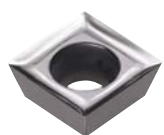
### OFKT-MA

05T3FN  
05T3EN  
0704EN  
0704FN



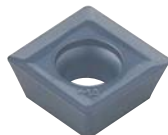
### SDET-MA

09M402R  
09M404R  
09M405R  
130504R



### SDXT-MA

09M405R  
130508R



### SEET-MA

0903AGFN  
14M4AGFN



### SNEX-MA

1206ANN  
1206ENN  
1206QNN  
120612



### VCKT-MA

220530N



### VDKT-MA

11T210N  
11T220N



### XEKT-MA

19M504FR 19M518FR 19M540FR 250612FR 250632FR  
19M508FR 19M520FR 19M550FR 250616FR 250640FR  
19M512FR 19M530FR 250604FR 250620FR 250650FR  
19M516FR 19M532FR 250608FR 250630FR



■ XEKT19M5□□-MA Tipo de ponta em R

ISO	0.4	0.8	1.2	1.6	1.8	2	3	3.2	4	5
ASA	1	2	3	4	4.5	5	7.5	8	10	12.5

# Insertos para usinagem em alumínio

## Para Canal

### MGGN-A



300-02  
300-04  
300-08  
400-02  
400-04  
400-08  
500-02  
500-04  
500-08

### MRGN-A



400  
500  
600  
800

### MRGN-A5



6N  
8N

### MRGN-AM



6N  
8N

### MRGN-AP



6N  
8N

### MVGN



8N-A-R1.2  
8N-A-R1.6

## Para Perfuração

### LPMT-DF



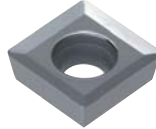
040203

### NPET-DA



222408  
252808  
293208  
334008  
415008  
516012

### SPET-DA



050203  
060204  
070204

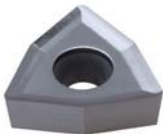
### SPET-ND



*Novo*

040204  
050204  
060205  
07T208  
090308  
11T308  
130410  
15M510  
180510

### WCKT-DA



030208  
040208  
050308  
06T308  
080408

### XOET-ND



*Novo*

040204  
050204  
060204  
07T205  
090305  
11T306  
130406  
15M508  
180508

# Ferramentas multifuncionais (Insertos)

## KGT

### KGMN-L



Suporte  
KGEHR/L  
KGEVR/L  
KGFVR/L  
KGFHR/L

· Largura : 2~8mm

### KGMN-R



Suporte  
KGEHR/L  
KGEVR/L  
KGFVR/L  
KGFHR/L

· Largura : 2~8mm

### KGMN-T



Suporte  
KGEHR/L  
KGEVR/L  
KGFVR/L  
KGFHR/L

· Largura : 2~8mm

### KGMI-T



Suporte  
KGIVR/L

· Largura : 2~4mm

### KGGN-B



Suporte  
KGEHR/L  
KGEVR/L

· Largura : 3.2mm

### KGMR-LP



Suporte  
KGEHR/L

· Largura : 3mm

### KGMR-RP



Suporte  
KGEHR/L

· Largura : 3mm

### KRMN-C



Suporte  
KGEHR/L  
KGEVR/L  
KGEUR/L  
KGFVR/L  
KGFHR/L  
KGIUR/L

· Largura : 3~4mm

## MGT

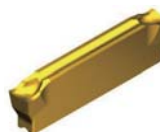
### MFMN



Suporte  
MGFVR/L  
MGFHR/L

· Largura : 3mm

### MGMN-L,R,T



Suporte  
MGEHR/L  
MGEVR/L  
MGIVR  
MCER/L  
MCFR/L

· Largura : 2~5mm

### MGGN-A



Suporte  
MGEHR/L  
MGEVR/L  
MGIVR  
MCER/L  
MCFR/L

· Largura : 3~5mm

### MGGN-M



Suporte  
MGEHR/L  
MGEVR/L  
MGIVR  
MCER/L

· Largura : 3~6mm

### MGMN-M,G



Suporte  
MGEHR/L  
MGEVR/L  
MGIVR  
MCER/L  
MCFR/L

· Largura : 1.5~8mm

### MGMR/L-PS



Suporte  
MGEHR/L  
MCER/L

· Largura : 3~5mm

### MGMR/L-PT



Suporte  
MGEHR/L  
MCER/L

· Largura : 2~5mm

### MRMN-M



Suporte  
MGEHR/L  
MGEVR/L  
MGEUR/L  
MGIVR  
MGIUR/L  
MCER/L  
MCFR/L

· Raio : 2-8(mm)

## Para Corte (Part-Off)

### SP



SP	160	400
	180	400R/L
	200	500
	200R/L	500R/L
	300	600
	300R/L	600R/L

Suporte : SPB-S or SPH-S, SPB or SPH

### ESB



Suporte  
EH

· Largura : 9.525mm

### POB



Suporte  
PH

· Largura : 3.0~5.0mm

## Para Usinagem Lateral

### BF



Suporte  
GFT, GFIP

· Largura : 3.1~8.1mm

# Ferramentas multifuncionais (Insertos)

## Para Ferramentas de micro mandrilamento

**NFTF, NFTG, NFTT**



Suporte : NFTTIH

\* para Canal interno, Rosqueamento e operação de Cópia

## Para Canal

**DB**



Suporte  
DBH

· Largura : 3.0~8.0mm

**DC**



Suporte  
DBH

· Largura : 3.0~5.0mm

**FGD/FGM/FMM**



Suporte  
FGHH  
FGVH

· Largura : 3.0~5.0mm

**GO**



Suporte  
GH

· Largura : 2.5~4.1mm

**GS**



Suporte  
GH

· Largura : 1.23~4.28mm

**GW**



Suporte  
GFT  
GFIP

· Largura : 1.1~8.0mm

**IG**



Suporte  
IGH

· Largura : 1.25~2.8mm

**GR**



Suporte  
GFT  
GFIK

· Largura : 2.0~8.0mm

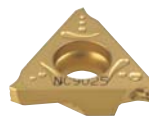
**TB**



Suporte  
TBH

· Largura : 3000 Tipo 1.25~4.3mm  
4000 Tipo 1.25~4.5mm

**TB-M**



Suporte  
TBH

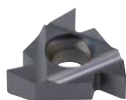
· Largura : 4000 Tipo : 1.5~4.5mm

## Para Rosqueamento

### <Standard>

- Perfil parcial de 60°
- Perfil parcial de 55°
- ISO Métrica (Perfil completo)
- UN Americana (Perfil completo) UN, UNC, UNF, UNEF
- Whitworth (Perfil completo) BSW, BSF, BSP
- Norma Britânica de Rosca de Tubulação (Perfil completo) BSPT
- Rosca de Tubulação Nacional (Perfil completo) NPT
- Roscas de Tubulação Nacional - Dryseal (Perfil completo) NPTF
- DIN Redonda 405
- DIN Trapezooidal 103
- ACME Americana
- Stub ACME
- UNJ
- American Buttress
- British Buttress
- Metric Buttress-Sagengewinde
- API
- API Buttress Casing
- API Round Casing & Tubing
- EL-Extreme Line

**ER**



Suporte : ER(L)H / ER(L)H-C

**ERM**



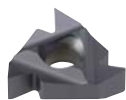
Suporte : ER(L)H / ER(L)H-C

**ERM-U**



Suporte : ER(L)H / ER(L)H-C

**IR**



Suporte : IR(L)H / IR(L)H-C

**IRM**



Suporte : IR(L)H / IR(L)H-C

**IRM-U**



Suporte : IR(L)H / IR(L)H-C

**VETR**

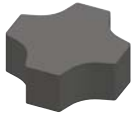


Suporte : VTH

# Insertos para rolamento

## Chanframento com Raio

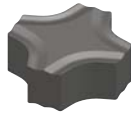
### MC



0906 1220  
0910 1225  
1206 1525  
1210 1530  
1212 1540  
1215

Suporte : CMSN...F  
CMSN...B

### MC-BR



1206  
1210  
1212  
1215  
1220  
1230  
1235

Suporte : CMSN...F  
CMSN...B

## Torneamento interno

### RPGT



0802M0  
1203M0  
1604M0  
2004M0

Suporte : SRGP...E  
SRGP...F  
SRGP...B

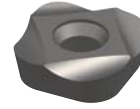
### SPGR



120440R/L

Suporte : CSKP...B

### SPGH

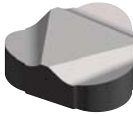


090330R/L

Suporte : SSKP...B

## Usinagem de O-RING

### KORIC



2204R/L  
2704R/L  
3306R/L  
3806R/L  
4408R/L

Suporte : CKFN...RW  
CKGN...RW

### SNGN-W

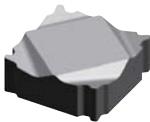


0903WR/L  
1504WR/L  
1905WR/L

Suporte : CSGN...RW

## Usinagem da blindagem do rolamento

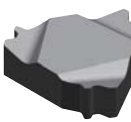
### SNGN-S



0903SR/L  
1204SR/L  
1504SR/L

Suporte : CSBN...BS  
CSKN...BS

### TNGN



2204SR/L

Suporte : STGN...BS

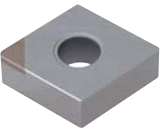
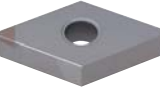



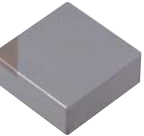
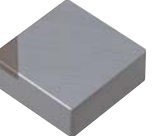
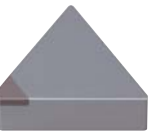
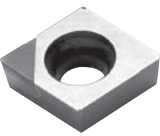
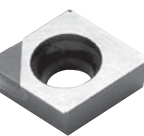
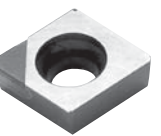
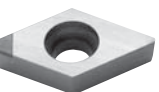
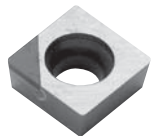



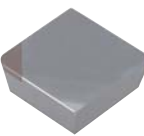
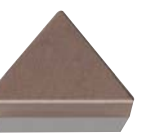
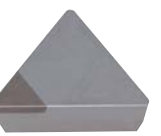
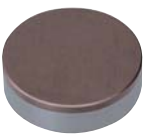



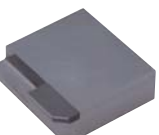
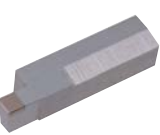
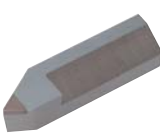
### SP



160 400R  
180 400L  
200 500  
200R 500R  
200L 500L  
300 600  
300R 600R  
300L 600L  
400

Suporte : SPB-S

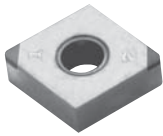
## Tipo de Reafiação (Negativo/Positivo)

CNMA	DNMA	SNMA	TNMA
 <p>120404 120404W 120408 120408W 120412 120412W</p>	 <p>150404 150408 150412</p>	 <p>120404 120408 120412</p>	 <p>160404 160408 160412 220404 220408 220412</p>
VNMA	CNGN	SNGN	TNGN
 <p>160404 160408 160412</p>	 <p>090304 090308 090312 090404 090408 090412</p>	 <p>090304 090308 090312 090404 090408 090412</p>	 <p>160404 160408 160412</p>
CCMW	GPGB	CPGW	DCMW
 <p>09T304 09T308</p>	 <p>080204 080208 090304 090308 090312</p>	 <p>080204 080208</p>	 <p>070204 070208 070212 11T304 11T308 11T312</p>
SCMW	TCGW	VBMW	VCMW
 <p>09T304 09T308 09T312</p>	 <p>110204 110208 16T304 16T308 16T312</p>	 <p>110204 110208 110304 110308 160404 160408 160412</p>	 <p>160404 160408 160412</p>
SPGN	TBGN	TPGN	RNGN
 <p>090304 090308 090312 120304 120308 120312</p>	 <p>060102-B 060104-B 060108-B</p>	 <p>110304 110308 110312 160304 160308 160312</p>	 <p>120400-B</p>
RBG	RCGA	RTGN	SNEN
 <p>08-B 10-B 12-B 16-B 20-B 26-B</p>	 <p>0906MO</p>	 <p>0508MO 0608MO 0711MO 0811MO 0914MO 1014MO 1214MO</p>	 <p>1504ADTR 1504ADTL 1504DTR-W 1504DTL-W</p>
BNGNT	BNTT		
 <p>0200R/L 0250R/L 0300R/L 0400R/L 0500R/L 0600R/L</p>	 <p>1020R/L 1530R/L</p>		

# Insertos de cBN

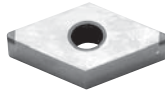
## Tipo Múlti Arestas (Negativo/Positivo)

### 2 / 4NU-CNGA



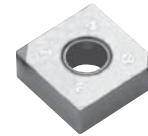
120404  
120404W  
120408  
120408W  
120412  
120412W

### 2 / 4NU-DNGA



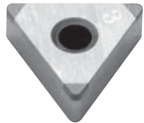
150404  
150408  
150412

### 2 / 4 / 8NU-SNGA



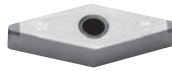
120404  
120408  
120412

### 3 / 6NU-TNGA



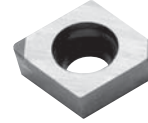
160404  
160408  
160412

### 2 / 4NU-VNGA



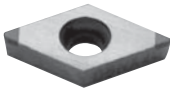
160404  
160408  
160412

### 2NU-CCGW / 2NU-CCMW



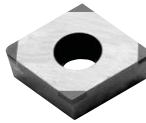
2NU-CCGW	2NU-CCMW
060204W	060204
060208W	060208
09T304	
09T304W	
09T308	
09T308W	
09T312	
09T312W	

### 2NU-DCGW



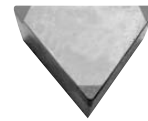
11T302  
11T304  
11T308

### 4NU-SCGW



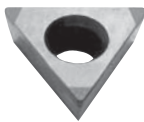
09T304  
09T308  
09T312

### 3NU-TPGN



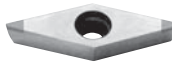
110304  
110308  
160404  
160408

### 3NU-TPGB / 3NU-TPGW



3NU-TPGB	3NU-TPGW
110304	160404
110308	160408

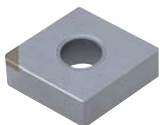
### 2NU-VBGW



110304  
110308  
160404  
160408

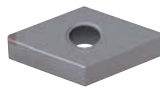
## Tipo Uso Único (Negativo/Positivo)

### NU-CNMA



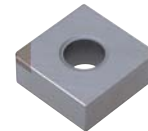
120404  
120408  
120412

### NU-DNMA



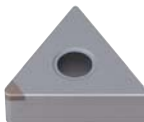
150404  
150408  
150412

### NU-SNMA



120404  
120408  
120412

### NU-TNMA



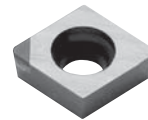
160404  
160408  
160412

### NU-VNMA



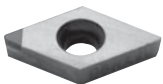
160404  
160408  
160412

### NU-CCMW / NU-CPMB



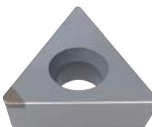
NU-CCMW	NU-CPMB
060202	080204
060204	080208
060208	090304
09T302	090308
09T304	
09T308	

### NU-DCMW



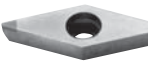
070202  
070204  
070208  
11T302  
11T304  
11T308

### NU-TCGW / NU-TPGW



NU-TCGW	NU-TPGW
090204	080202 110302
090208	080204 110304
110202	080208 110308
110204	090204 160404
110208	090208 160408
16T304	
16T308	

### NU-VBMW / NU-VCMW

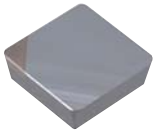


NU-VBMW	NU-VCMW
110202	110304
110204	110308
110302	160404
110304	160408
110308	160412
160402	
160404	
160408	

# Insertos de cBN / Insertos de PCD

## Tipo Uso Único (Negativo/Positivo)

### NU-SPGN



090304  
090308  
120304  
120308  
120404  
120408

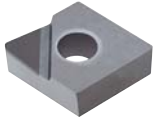
### NU-TPGN



110304  
110308  
160304  
160308

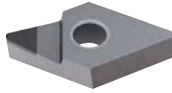
## Insertos de PCD

### CNMM / CNMX



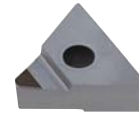
120404  
120408  
120412

### DNMM / DNMX



150404  
150408  
150412

### TNMX



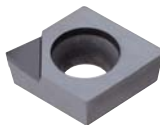
160404  
160408  
160412

### VNMX



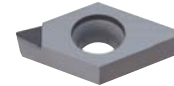
160404  
160408  
160412

### CCMT / CPMT



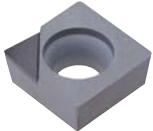
CCMT	CPMT
060202	080204
060204	080208
060208	080212
09T304	090304
09T308	090408
09T312	090312

### DCMT



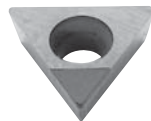
070202  
070204  
070208  
11T302  
11T304  
11T308

### SCMT / SPGW



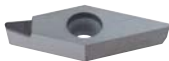
SCMT	SPGW
09T304	090302
09T308	090304
09T312	090308

### TBGW / TCMT / TPGB / TPGW / TPGT



TBGW	TCMT	TPGB	TPGW	TPGT
060102	090201	080204	080202	110302
060104	090202	080208	080204	110304
	090204	090204	110302	
	110201	090208	110304	
	110202	110304	110308	
	110204	110308	160404	
			160408	

### VBMT / VCMT



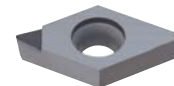
VBMT	VCMT
110302	110302
110304	110304
110308	110308
160402	160404
160404	160408
160408	160412
160412	

### TPGN



09T304  
09T308  
09T312

### SPGN



090304  
090308  
120304  
120308



# Porta-ferramentas

## ● Porta Ferramentas de Torneamento

### Sistema de Fixação Dupla

#### DCBNR/L



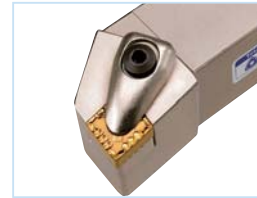
2020-K12  
2525-M12  
3225-P12  
2525-M16  
3232-P16  
3232-P19  
4040-S19

#### DCKNR/L



2020-K12  
2525-M12  
3225-P12  
3232-P16  
4040-S16  
4040-S19

#### DCLNR/L



2020-K09 3225-P16  
2525-M09 3232-P16  
2020-K12 2525-M19  
2525-M12 3225-P19  
3225-P12 3232-P19  
3232-P12 4040-S19  
2525-M16

#### DDJNR/L



2020-K11 3225-P15  
2525-M11 3232-P15  
3225-P11 2020-K15-3  
3232-P11 2525-M15-3  
2020-K15 3232-P15-3  
2525-M15 4040-S15

#### DSBNR/L



2020-K09 2525-M15  
2525-M09 3225-P15  
2020-K12 3232-P15  
2525-M12 3232-P19  
3225-P12 4040-S19  
3232-P12

#### DSDNN



2020-K09  
2020-K12  
2525-M12  
3225-P12  
3232-P12  
2525-M15  
3232-P15  
3232-P19  
4040-S19

#### DSKNR/L



2020-K09  
2020-K12  
2525-M12  
3232-P12  
3232-P15  
3232-P19  
4040-S19

#### DSSNR/L



2020-K09  
2020-K12  
2525-M12  
3225-P12  
3232-P12  
2525-M15  
3232-P15  
3232-P19  
4040-S19

#### DTFNR/L



2020-K16  
2525-M16  
3232-P16  
2525-M22  
3225-P22  
3232-P22

#### DTGNR/L



2020-K16  
2525-M16  
3232-P16  
2525-M22  
3225-P22  
3232-P22

#### DVJNR/L



2020-K16  
2525-M16  
3232-P16

#### DVVNN



2020-K16  
2525-M16  
3232-P16

#### DWLNR/L



2020-K06  
2525-M06  
2020-K08  
2525-M08

## ● Porta Ferramentas de Torneamento

### Sistema de trava por alavanca

#### PCBNR/L



<b>NOVO tipo</b>		
2020-K12N	3225-P12N	3232-P16N
2525-M12N	2525-M16N	
2020-K12	2525-M16	4040-S19
2525-M12	3232-P16	4040-S25
3225-P12	3232-P19	4040-S25-5

#### PCKNR/L



<b>NOVO tipo</b>		
2020-K12N	3225-P12N	4040-S16N
2525-M12N	3232-P16N	
2020-K12	3225-P12	4040-S16
2525-M12	3232-P16	

#### PCLNR/L



<b>NOVO tipo</b>		
1616-M09N	2020-K12N	2525-M16N
2020-K09N	2525-M12N	3232-P16N
2525-M09N	3225-P12N	
1616-H12N	3232-P12N	
1616-M09	3232-P12	4040-S19
2020-K09	2525-M16	4040-S25
2525-M09	3232-P16	5050-T25
1616-H12	2525-M19	4040-S25-5
2020-K12	3225-P19	5050-S25-5
2525-M12	3232-P19	
3225-P12	4040-P19	

#### PDJNR/L



<b>NOVO tipo</b>		
1616-H11N	2525-M15N	2525-M15-3N
2020-K11N	3225-P15N	3232-P15-3N
2525-M11N	3232-P15N	
2020-K15N	2020-K15-3N	
1616-H11	2525-M15	2525-M15-3
2020-K11	3225-P15	3232-P15-3
2525-M11	3232-P15	
2020-K15	2020-K15-3	

#### PDNNR/L



<b>NOVO tipo</b>		
2020-K15N	3232-P15N	3232-P15-3N
2525-M15N	2525-M15-3N	
2020-K15	3232-P15	2525-M15-3
2525-M15	4025-M15	4025-M15-3

#### PRDCN



2020-M10	3225-Q12	3232-Q20
2525-M10	2525-Q16	4040-S25
2525-M12	3225-Q16	4040-T25
2020-K12	3232-Q16	5050-U32

#### PRGCR/L



2020-K10	2525-M12	3225-P16
2525-M10	3225-P12	3232-P20
2020-K12	2525-M16	4040-S25

#### PSBNR/L



<b>NOVO tipo</b>		
1616-H09N	2525-M12N	2525-M15N
2020-K09N	3225-P12N	3232-P15N
2020-K12N	3232-P12N	
1616-H09	3232-P12	4040-S25
2020-K09	2525-M15	4040-S25-6
2020-K12	3232-P15	5050-T25
2525-M12	3232-P19	
3225-P12	4040-S19	

#### PSDNN



<b>NOVO tipo</b>		
1616-H09N	3225-P12N	3232-P15N
2020-K12N	3232-P12N	
2525-M12N	2525-M15N	
1616-H09	3232-P15	4040-T25
2020-K12	3225-P19	4040-S25-6
2525-M12	3232-P19	5050-T25-6
3232-P12	4040-S19	
2525-M15	4040-S25	

#### PSKNR/L



<b>NOVO tipo</b>		
1616-H09N	2525-M12N	3232-P15N
2020-K09N	3232-P12N	
2020-K12N	2525-M15N	
1616-H09	3232-P12	4040-S19
2020-K09	2525-M15	4040-S25
2020-K12	3232-P15	4040-S25-6
2525-M12	3232-P19	5050-T25-6

#### PSSNR/L



<b>NOVO tipo</b>		
1616-H09N	3225-P12N	3232-P15N
2020-K12N	3232-P12N	
2525-M12N	2525-M15N	
1616-H09	2525-M15	4040-S19
2020-K12	3232-P15	4040-S25
2525-M12	3232-P19	4040-S25-6
3232-P12	4040-R19	

#### PTFNR/L



<b>NOVO tipo</b>		
1616-H16N	2525-M22N	4040-S27N
2020-K16N	3232-P22N	
2525-M16N	3232-P27N	
1616-H16	2525-M22	4040-S27
2020-K16	3232-P22	
2525-M16	3232-P27	

# Porta-ferramentas

## ● Porta Ferramentas de Torneamento

### Sistema de trava por alavanca

#### PTGNR/L



NOVO tipo		
1616-H16N	3232-P16N	3232-P27N
2020-K16N	2525-M22N	4040-S27N
2525-M16N	3232-P22N	
1212-F11	1616-H16	2525-M22
1616-H11	2020-K16	3232-P22
2020-K11	2525-M16	3232-P27
2525-M11	3232-P16	4040-S27

#### PTTNR/L



NOVO tipo	
1616-H16N	2525-M16N
2020-K16N	2525-M22N
1616-H16	2525-M16
2020-K16	2525-M22

#### PWLNLR/L



NOVO tipo		
1616-H06N	2525-M06N	2525-M08N
2020-K06N	2020-K08N	
1616-H06	2525-M06	2525-M08
2020-K06	2020-K08	

### Sistema de Pinça em cunha

#### WTJNR/L



2020-K16
2525-M16
3232-P16
2525-M22
3232-P22

#### WTXNR/L



2020-K16
2525-M16
3232-P16

#### WWLNLR/L



2020-K08
2525-M08
3232-P08

### Sistema de grampo

#### CKJNR



2020-K16
2525-M16
3225-M16
3225-P16
3232-P16
4040-R16

#### CKJNL



2020-K16
2525-M16
3232-P16
4040-R16

#### CKNNR/L



2525-M16
3232-P16

#### CSDPN



1616-H09
2525-M12

#### CSKPR/L



2525-M12
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#### CTFPR/L



2020-K16
2525-M16

#### CTGPR/L



1212-F11
1616-H11
2020-K11
2020-K16
2525-M16
2525-M22
3232-P22

## ● Porta Ferramentas de Torneamento

### Sistema de Trava múltipla

#### MCKNR/L



2020-K12  
2525-M12  
3232-P12

#### MCLNR/L



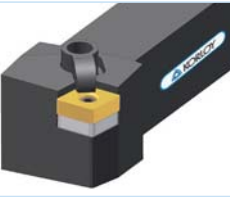
1616-H09 2525-M16  
2020-K09 3232-P16  
2525-M09 4040-S16  
2020-K12 2525-M19  
2525-M12 3232-P19  
3225-P12 4040-S19  
3232-P12 4040-S25

#### MCMNN



2020-K12  
2525-M12  
3232-P12  
2525-M16  
3232-P16  
3232-P19  
4040-S19

#### MCRNR/L



2020-K12  
2525-M12  
2525-M16  
3232-P16  
3232-P19  
4040-S19

#### MDJNR/L



2020-K11  
2525-M11  
2020-K15-3  
2525-M15-3  
3232-P15-3  
2020-K15  
2525-M15  
3232-P15

#### MDNNN



2525-M15-3  
2525-M15

#### MDQNR/L



2525-M15  
3232-P15  
2525-M15-3  
3232-P15-3

#### MSBNR/L



2020-K12  
2525-M12  
2525-M15  
3232-P15  
3232-P19  
4040-S19

#### MSDNN



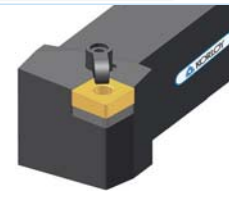
1616-H09  
2020-K09  
2020-K12  
2525-M12  
3225-P12  
2525-M15  
3225-P15  
3232-P15  
4040-S15  
3232-P19  
4040-S19

#### MSKNR/L



1616-H09  
2020-K09  
2020-K12  
2525-M12  
3225-P12  
2525-M15  
3232-P15  
3232-P19  
4040-S19  
4040-S25

#### MSRNR/L



1616-H09  
2020-K09  
2020-K12  
2525-M12  
2525-M15  
3232-P15  
3225-P19  
3232-P19  
4040-S19  
4040-S25

#### MSSNR/L



1616-H09  
2020-K09  
2020-K12  
2525-M12  
2525-M15  
3232-P15  
3232-P19  
4040-S19

# Porta-ferramentas

## ● Porta Ferramentas de Torneamento

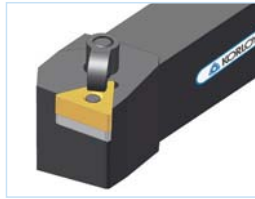
### Sistema de Trava múltipla

#### MTENN



2020-K16  
2525-M16  
2525-M22  
3225-P27  
4040-S33

#### MTFNR/L



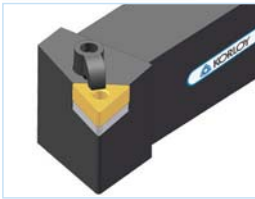
1616-H16  
2020-K16  
2525-M16  
2525-M22  
3232-P22  
4040-S22  
3232-P27  
4040-S27  
4040-S33

#### MTGNR/L



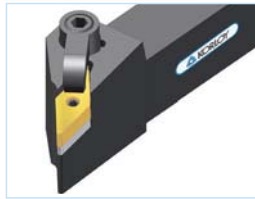
1616-H16  
2020-K16  
2525-M16  
2525-M22  
3232-P22  
3232-P27  
4040-S27  
4040-S33

#### MTJNR/L



2020-K16  
2525-M16  
2525-M22  
3232-P22  
3232-P27  
4040-S27  
4040-S33

#### MVJNR/L



2020-K16  
2525-M16  
3232-P16  
2525-M22  
3232-P22  
4040-S22

#### MVQNR/L



2020-K16  
2525-M16  
3232-P16

#### MVVNN



2020-K16  
2525-M16

#### MWLNR



2020-K06  
2525-M06  
3232-P06  
2020-K08  
2525-M08  
3232-P08

### Sistema de parafuso

#### SCACR/L



1010-E06  
1212-F09

#### SCLCR/L



0808-D06  
1010-E06  
1212-F09  
1616-H09  
2020-K09  
2020-K12  
2525-M12

#### SDACR/L



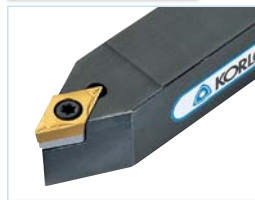
1010-E07  
1212-F11  
1616-H11

#### SDJCR/L



1010-E07  
1212-F07  
1616-H07  
2020-K07  
1212-F11  
1616-H11  
2020-K11  
2525-M11

#### SDNCN



1010-E07  
1212-F07  
1212-H11  
1616-H11  
2020-K11

#### SRDCN



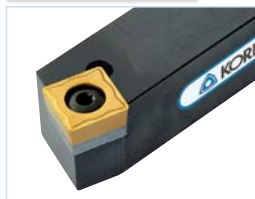
1010-E06 2525-M08  
1212-F06 1616-H10  
1616-H06 2020-K10  
2525-M06 2525-M10  
1616-H08 2020-K12  
2020-K08 2525-M12

#### SRGCR/L



1010-E06 1616-H10  
1212-F06 2020-K10  
1616-H06 2525-M10  
1616-H08 2020-K12  
2020-K08 2525-M12  
2525-M08

#### SSBCR/L



1212-F09  
1616-H09  
2020-K12

#### SSDCN

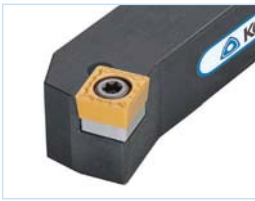


1212-F09  
1616-H09

## ● Porta Ferramentas de Torneamento

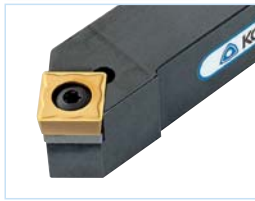
### Sistema de parafuso

#### SSKCR/L



1616-H09

#### SSSCR/L



1616-H09  
2020-K12

#### STACR/L



1010-E09  
1212-F11

#### STFCR/L



1010-E09  
1212-F11  
1616-H11  
1616-H16  
2020-K16

#### STGCR/L



0808-D09  
1010-E09  
1212-F11  
1616-H11  
2020-K16  
2525-M16

#### STTCR/L



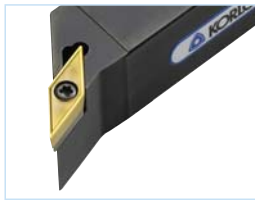
1616-H11  
1616-H16  
2020-K16

#### SVABR/L



1616-M16  
2020-K16

#### SVHBR/L



2525-M16  
3225-P16

#### SVJVR/L



1212-F11  
1616-H11  
2020-K11  
1616-H16  
2020-K16  
2525-M16  
3225-P16

#### SVJCR/L



1212-F11  
1616-H11  
2020-K11  
1212-F13  
1616-H13  
2020-K13  
1616-H16  
2020-K16  
2525-M16

#### SVVBN



1212-F11  
1616-H11  
2020-K11  
1616-H16  
2020-K16  
2525-M16  
3225-P16

#### SVVCN



1212-F11  
1616-H11  
2020-K11  
1212-F13  
1616-H13  
2020-K13  
1616-H16  
2020-K16  
2525-M16

#### SWACR/L



1010-E04  
1212-F04  
1616-H06  
2020-K08

## • Auto Tools

### Torneamento e Faceamento Externos

#### SCACR/L



0808-X06A  
1010-X06A  
1010-X09A  
1212-X09A  
1616-X09A

#### SCLCR/L



0808-X06A  
1010-X06A  
1010-X09A  
1212-X09A  
1616-X09A

#### STACR/L



0808-X08A  
1010-X08A

### Torneamento e Operação de Cópia Externos

#### SDJCR/L



0808-X07A  
1010-X07A  
1010-X11A  
1212-X11A  
1616-X11A

#### SDNCN



0808-X07A  
1010-X07A  
1010-X11A  
1212-X11A  
1616-X11A

#### SVJBR/L



1010-X11A  
1212-X11A  
1616-X11A

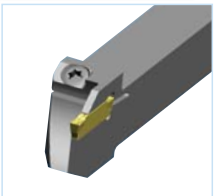
#### SVJCR/L



1010-X11A  
1212-X11A  
1616-X11A

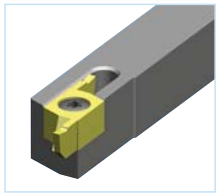
### Corte e Canal

#### MGEHR/L



Inserto : MGMN  
1010-X15A  
1212-X15A  
1010-X20A  
1212-X20A  
1616-X20A  
1010-X25A  
1212-X25A  
1616-X25A

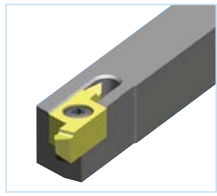
#### SXGNR/L



Inserto : SG, SC  
1010-X06A  
1212-X06A  
1616-X06A  
2020-X06A  
1212-X08A  
1616-X08A  
2020-X08A

### Rosqueamento

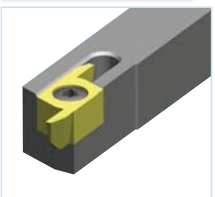
#### SXGNR/L



Inserto : ST  
1010-X06A  
1212-X06A  
1616-X06A  
2020-X06A  
1212-X08A  
1616-X08A  
2020-X08A

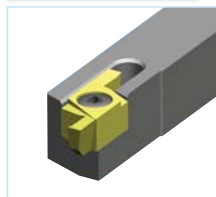
### Torneamento em retrocesso

#### SXGNR/L



Inserto : SB  
1010-X06A  
1212-X06A  
1616-X06A  
2020-X06A  
1212-X08A  
1616-X08A  
2020-X08A

#### SXGNR/L



Inserto : SGB  
1010-X06A  
1212-X06A  
1616-X06A  
2020-X06A  
1212-X08A  
1616-X08A  
2020-X08A

### Mandrilamento

#### SCLCR/L



S10H-SCLCR/L-0305  
S10H-SCLCR/L-0306  
S10J-SCLCR/L-0407  
S10J-SCLCR/L-0408

#### STUBR/L



A08F-STUBR/L-06  
S08K-STUBR/L-06

#### STUPR/L



A08F-STUPR/L-08  
S08K-STUPR/L-08

#### SWUBR/L



S05H-SWUBR/L-02  
S08K-SWUBR/L-02  
S08K-SWUBR/L-S3  
A08F-SWUBR/L-02  
A08F-SWUBR/L-S3

## ● Barras de madrilamento

### Sistema de Fixação Dupla

#### DCLNR/L



A25R-DCLNR/L-09  
A25R-DCLNR/L-12  
A32S-DCLNR/L-12  
A40T-DCLNR/L-12  
A50U-DCLNR/L-16

#### DDUNR/L



A40T-DDUNR/L-15  
A50U-DDUNR/L-15  
A40T-DDUNR/L-15-3  
A50U-DDUNR/L-15-3

#### DSKNR/L



A25R-DSKNR/L-09  
A25R-DSKNR/L-12  
A32S-DSKNR/L-12  
A40T-DSKNR/L-12

#### DTFNR/L



A25R-DTFNR/L-16  
A32S-DTFNR/L-16  
A40T-DTFNR/L-22  
A50U-DTFNR/L-22

#### DWLNRL/L



A25R-DWLNRL/L-06  
A32S-DWLNRL/L-06  
A40T-DWLNRL/L-06  
A25R-DWLNRL/L-08  
A32S-DWLNRL/L-08  
A40T-DWLNRL/L-08  
A50U-DWLNRL/L-08

### Sistema de trava por alavanca

#### PCLNR/L



NOVO tipo  
S16R-PCLNR/L-09N  
S20S-PCLNR/L-09N  
S25R-PCLNR/L-09N  
S25R-PCLNR/L-12N  
S32S-PCLNR/L-12N  
S40T-PCLNR/L-12N  
S50U-PCLNR/L-12N  
S50U-PCLNR/L-19N

A16R-PCLNR/L-09N  
A20S-PCLNR/L-09N  
A25R-PCLNR/L-09N  
A25R-PCLNR/L-12N  
A32S-PCLNR/L-12N  
A40T-PCLNR/L-12N  
A50U-PCLNR/L-12N  
A50U-PCLNR/L-19N

S16R-PCLNR/L-09  
S20S-PCLNR/L-09  
S25R-PCLNR/L-09  
S25R-PCLNR/L-12  
S32S-PCLNR/L-12  
S40T-PCLNR/L-12

S50U-PCLNR/L-12  
S50U-PCLNR/L-19  
A25R-PCLNR/L-12  
A32S-PCLNR/L-12  
A40T-PCLNR/L-12

#### PDSNR/L



NOVO tipo  
S32S-PDSNR/L-15N  
S40T-PDSNR/L-15N  
S32S-PDSNR/L-15-3N  
S40T-PDSNR/L-15-3N

A32S-PDSNR/L-15N  
A40T-PDSNR/L-15N  
A32S-PDSNR/L-15-3N  
A40T-PDSNR/L-15-3N

S32S-PDSNR/L-15  
S40T-PDSNR/L-15  
S32S-PDSNR/L-15-3

S40T-PDSNR/L-15-3  
A32S-PDSNR/L-15  
A32S-PDSNR/L-15-3

#### PDUNR/L



NOVO tipo  
S20S-PDUNR/L-11N  
S25R-PDUNR/L-11N  
S32S-PDUNR/L-11N  
S32S-PDUNR/L-15N  
S40T-PDUNR/L-15N  
S50U-PDUNR/L-15N  
S32S-PDUNR/L-15-3N  
S40T-PDUNR/L-15-3N

A20S-PDUNR/L-11N  
A25R-PDUNR/L-11N  
A32S-PDUNR/L-11N  
A32S-PDUNR/L-15N  
A40T-PDUNR/L-15N  
A50U-PDUNR/L-15N  
A32S-PDUNR/L-15-3N  
A40T-PDUNR/L-15-3N

S20S-PDUNR/L-11  
S25R-PDUNR/L-11  
S32S-PDUNR/L-11  
S32S-PDUNR/L-15  
S40T-PDUNR/L-15  
S50U-PDUNR/L-15

S32S-PDUNR/L-15-3  
S40T-PDUNR/L-15-3  
A32S-PDUNR/L-15  
A32S-PDUNR/L-15-3

#### PSKNR/L



NOVO tipo  
S25R-PSKNR/L-12N  
S32S-PSKNR/L-12N  
S40T-PSKNR/L-12N

A25R-PSKNR/L-12N  
A32S-PSKNR/L-12N  
A40T-PSKNR/L-12N

S25R-PSKNR/L-12  
S32S-PSKNR/L-12  
S40T-PSKNR/L-12

A25R-PSKNR/L-12  
A32S-PSKNR/L-12

#### PTFNR/L



NOVO tipo  
S25R-PTFNR/L-16N  
S32S-PTFNR/L-16N  
S40T-PTFNR/L-16N

A25R-PTFNR/L-16N  
A32S-PTFNR/L-16N  
A40T-PTFNR/L-16N

S16R-PTFNR/L-11  
S20S-PTFNR/L-11  
S25R-PTFNR/L-11  
S25R-PTFNR/L-16

S32S-PTFNR/L-16  
S40T-PTFNR/L-16  
A25R-PTFNR/L-16  
A32S-PTFNR/L-16

#### PWLNRL/L



NOVO tipo  
S20S-PWLNRL/L-06N  
S25R-PWLNRL/L-06N  
S32S-PWLNRL/L-06N

S25R-PWLNRL/L-08N  
S32S-PWLNRL/L-08N

S20S-PWLNRL/L-06  
S25R-PWLNRL/L-06  
S32S-PWLNRL/L-06

S25R-PWLNRL/L-08  
S32S-PWLNRL/L-08



# Barras de madrilamento

## ● Barras de madrilamento

### Sistema de grampo

#### CKUNR/L



S32S-CKUNR/L-16  
S40T-CKUNR/L-16  
S50U-CKUNR/L-16

#### CSKPR/L



S16R-CSKPR/L-09  
S20S-CSKPR/L-09  
S25R-CSKPR/L-12  
S20S-CSKPR/L-12

#### CTFPR/L



S12M-CTFPR/L-11  
S16R-CTFPR/L-11  
S20S-CTFPR/L-11  
S16R-CTFPR/L-16  
S20S-CTFPR/L-16  
S25R-CTFPR/L-16  
S32S-CTFPR/L-16  
S40T-CTFPR/L-16  
S40T-CTFPR/L-22

#### MCLNR/L



S20S-MCLNR/L-09  
S25R-MCLNR/L-09  
S25R-MCLNR/L-12  
S32S-MCLNR/L-12  
S40T-MCLNR/L-12  
A25R-MCLNR/L-12  
A32S-MCLNR/L-12

#### MDUNR/L



S32S-MDUNR/L-15-3  
S40T-MDUNR/L-15-3  
A32S-MDUNR/L-15-3

#### MSKNR/L



S25R-MSKNR/L-12  
S32S-MSKNR/L-12  
S40T-MSKNR/L-12  
A25R-MSKNR/L-12  
A32S-MSKNR/L-12  
A40T-MSKNR/L-12

#### MTFNR/L



S25R-MTFNR/L-16  
S32S-MTFNR/L-16  
S40T-MTFNR/L-16  
A25R-MTFNR/L-16  
A32S-MTFNR/L-16

#### MVUNR/L



S32S-MVUNR/L-16  
S40T-MVUNR/L-16  
A32S-MVUNR/L-16  
A40T-MVUNR/L-16

#### MWLNRL/L



S25R-MWLNRL/L-08  
S32S-MWLNRL/L-08  
S40T-MWLNRL/L-08  
S25R-MWLNRL/L-08  
S32S-MWLNRL/L-08  
S40T-MWLNRL/L-08  
A25R-MWLNRL/L-06  
A32S-MWLNRL/L-06  
A25R-MWLNRL/L-08  
A32S-MWLNRL/L-08

### Sistema de parafuso

#### SCLCR/L



S08K-SCLCR/L-06 S40T-SCLCR/L-12  
S10K-SCLCR/L-06 A08F-SCLCR/L-06  
S10M-SCLCR/L-06 A10H-SCLCR/L-06  
S12M-SCLCR/L-06 A12K-SCLCR/L-06  
S16R-SCLCR/L-06 A12K-SCLCR/L-09  
S12M-SCLCR/L-09 A16M-SCLCR/L-09  
S16R-SCLCR/L-09 A20Q-SCLCR/L-09  
S20S-SCLCR/L-09 A25R-SCLCR/L-09  
S25R-SCLCR/L-09 A25R-SCLCR/L-12  
S25R-SCLCR/L-12 A32S-SCLCR/L-12  
S32S-SCLCR/L-12

#### SCLPR/L



S10M-SCLPR/L-08  
S12M-SCLPR/L-08  
S16N-SCLPR/L-09  
S16R-SCLPR/L-09  
S20N-SCLPR/L-09  
S20S-SCLPR/L-09  
A10H-SCLPR/L-08  
A12K-SCLPR/L-08  
A16M-SCLPR/L-09  
A20Q-SCLPR/L-09

#### SDQCR/L



S10M-SDQCR/L-07  
S12M-SDQCR/L-07  
S16R-SDQCR/L-07  
S16R-SDQCR/L-11  
S20S-SDQCR/L-11  
S25R-SDQCR/L-11  
A10H-SDQCR/L-07  
A12K-SDQCR/L-07  
A16M-SDQCR/L-11  
A20Q-SDQCR/L-11  
A25R-SDQCR/L-11

#### SDUCR/L



S10M-SDUCR/L-07  
S12M-SDUCR/L-07  
S16R-SDUCR/L-07  
S16R-SDUCR/L-11  
S20S-SDUCR/L-11  
S25R-SDUCR/L-11  
S32S-SDUCR/L-11  
A10H-SDUCR/L-07  
A12K-SDUCR/L-07  
A16M-SDUCR/L-07  
A20Q-SDUCR/L-11  
A25R-SDUCR/L-11

#### SDZCR/L



S16R-SDZCR/L-07  
S20S-SDZCR/L-07  
S25R-SDZCR/L-11  
S32S-SDZCR/L-11  
S40T-SDZCR/L-11  
A25R-SDZCR/L-11  
A32S-SDZCR/L-11

#### SSKCR/L



S12M-SSKCR/L-09  
S16R-SSKCR/L-09  
S20S-SSKCR/L-09  
S25R-SSKCR/L-12  
S32S-SSKCR/L-12  
A12K-SSKCR/L-09  
A16M-SSKCR/L-09  
A20Q-SSKCR/L-09  
A25R-SSKCR/L-12  
A32S-SSKCR/L-12

#### SSKPR/L



S12M-SSKPR/L-09  
S16N-SSKPR/L-09  
S16R-SSKPR/L-09  
S20N-SSKPR/L-09  
S20S-SSKPR/L-09  
A12K-SSKPR/L-09  
A16M-SSKPR/L-09  
A20Q-SSKPR/L-09

#### STFCR/L



S10M-STFCR/L-09 S40T-STFCR/L-16  
S12M-STFCR/L-09 A10H-STFCR/L-09  
S12M-STFCR/L-11 A12K-STFCR/L-09  
S16R-STFCR/L-11 A12K-STFCR/L-11  
S20S-STFCR/L-11 A16M-STFCR/L-11  
S20S-STFCR/L-16 A20Q-STFCR/L-11  
S25R-STFCR/L-16 A25R-STFCR/L-16  
S32S-STFCR/L-16 A32S-STFCR/L-16

#### STFPR/L



S10M-STFPR/L-11  
S12M-STFPR/L-11  
S16N-STFPR/L-11  
S16R-STFPR/L-11  
S20N-STFPR/L-16  
S20S-STFPR/L-16  
A10H-STFPR/L-11  
A12H-STFPR/L-11  
A16M-STFPR/L-11  
A20Q-STFPR/L-16

## ● Barras de madrilamento

### Sistema de parafuso

#### STWPR/L



S10M-STWPR/L-11  
S12M-STWPR/L-11  
S16R-STWPR/L-11  
S20R-STWPR/L-11

#### SVJCR/L



S12M-SVJCR/L-08  
S16Q-SVJCR/L-08

#### SVQBR/L



S32S-SVQBR/L-16  
S40T-SVQBR/L-16  
A32S-SVQBR/L-16

#### SVQCR/L



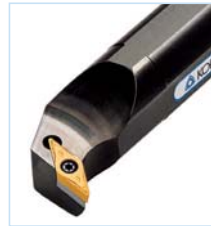
S16R-SVQCR/L-11  
S20S-SVQCR/L-11  
S25R-SVQCR/L-11  
S20S-SVQCR/L-13  
S25R-SVQCR/L-13  
S25R-SVQCR/L-16  
S32S-SVQCR/L-16  
S40T-SVQCR/L-16

#### SVUBR/L



S32S-SVUBR/L-16  
S40T-SVUBR/L-16  
A32S-SVUBR/L-16

#### SVUCR/L



S16R-SVUCR/L-11  
S20S-SVUCR/L-11  
S25T-SVUCR/L-11  
S20S-SVUCR/L-13  
S25R-SVUCR/L-13  
S25R-SVUCR/L-16  
S32S-SVUCR/L-16  
S40T-SVUCR/L-16

### Bucha

#### SL



SL1603  
SL1604  
SL1605  
SL1606  
SL1607  
SL2008  
SL2010

#### SWLCR/L



S25R-SWLCR/L-08  
S32S-SWLCR/L-08  
A25R-SWLCR/L-08  
A32S-SWLCR/L-08

### Barra de Mandrilamento com Haste de Metal Duro

#### SCLCR/L



C04G-SCLCR/L-03  
C05H-SCLCR/L-03  
C06H-SCLCR/L-04  
C07K-SCLCR/L-04  
C08K-SCLCR/L-06  
C10K-SCLCR/L-06  
C10M-SCLCR/L-06  
C12M-SCLCR/L-06  
C12Q-SCLCR/L-06  
C12M-SCLCR/L-09  
C12Q-SCLCR/L-09  
C16R-SCLCR/L-09  
C16S-SCLCR/L-09  
C20R-SCLCR/L-09  
C20S-SCLCR/L-09  
C25T-SCLCR/L-12  
E06H-SCLCR/L-04  
E07K-SCLCR/L-04  
E08K-SCLCR/L-06  
E10K-SCLCR/L-06  
E10M-SCLCR/L-06  
E12M-SCLCR/L-06  
E12Q-SCLCR/L-06  
E12M-SCLCR/L-09  
E12Q-SCLCR/L-09  
E16R-SCLCR/L-09  
E16S-SCLCR/L-09  
E20R-SCLCR/L-09  
E20S-SCLCR/L-09  
E25T-SCLCR/L-12

#### SCLPR/L



C10K-SCLPR/L-08  
C10M-SCLPR/L-08  
C12M-SCLPR/L-08  
C12Q-SCLPR/L-08  
C12M-SCLPR/L-09  
C12Q-SCLPR/L-09  
C16R-SCLPR/L-09  
C16S-SCLPR/L-09  
C20R-SCLPR/L-09  
C20S-SCLPR/L-09  
E10K-SCLPR/L-08  
E10M-SCLPR/L-08  
E12M-SCLPR/L-08  
E12Q-SCLPR/L-08  
E12M-SCLPR/L-09  
E12Q-SCLPR/L-09  
E16R-SCLPR/L-09  
E16S-SCLPR/L-09  
E20R-SCLPR/L-09  
E20S-SCLPR/L-09

#### SDQCR/L



C08K-SDQCR/L-07  
C10K-SDQCR/L-07  
C12M-SDQCR/L-07  
C16R-SDQCR/L-07  
C16R-SDQCR/L-11  
C20R-SDQCR/L-11  
C20S-SDQCR/L-11  
E08K-SDQCR/L-07  
E10K-SDQCR/L-07  
E12M-SDQCR/L-07  
E16R-SDQCR/L-07  
E16R-SDQCR/L-11  
E20R-SDQCR/L-11  
E20S-SDQCR/L-11

#### SDUCR/L



C10K-SDUCR/L-07  
C10M-SDUCR/L-07  
C12M-SDUCR/L-07  
C12Q-SDUCR/L-07  
C16R-SDUCR/L-07  
C16S-SDUCR/L-07  
C16R-SDUCR/L-11  
C16S-SDUCR/L-11  
C20R-SDUCR/L-11  
C20S-SDUCR/L-11  
C25T-SDUCR/L-11  
E10K-SDUCR/L-07  
E12M-SDUCR/L-07  
E12Q-SDUCR/L-07  
E16R-SDUCR/L-07  
E16S-SDUCR/L-07  
E16R-SDUCR/L-11  
E16S-SDUCR/L-11  
E20R-SDUCR/L-11  
E20S-SDUCR/L-11  
E25T-SDUCR/L-11

#### STFCR/L



C08K-STFCR/L-09  
C10K-STFCR/L-09  
C10K-STFCR/L-11  
C12M-STFCR/L-11  
C16R-STFCR/L-11  
C20R-STFCR/L-11  
C20S-STFCR/L-11  
C20R-STFCR/L-16  
C20S-STFCR/L-16  
E08K-STFCR/L-09  
E10K-STFCR/L-09  
E10K-STFCR/L-11  
E12M-STFCR/L-11  
E16R-STFCR/L-11  
E20R-STFCR/L-11  
E20S-STFCR/L-11  
E20R-STFCR/L-16  
E20S-STFCR/L-16

#### STFPR/L



C08K-STFPR/L-08  
C10K-STFPR/L-11  
C10M-STFPR/L-11  
C12M-STFPR/L-11  
C12Q-STFPR/L-11  
C16R-STFPR/L-11  
C16S-STFPR/L-11  
C20R-STFPR/L-11  
C20S-STFPR/L-11  
C20R-STFPR/L-16  
C20S-STFPR/L-16  
C25T-STFPR/L-16  
E08K-STFPR/L-08  
E10K-STFPR/L-11  
E10M-STFPR/L-11  
E12M-STFPR/L-11  
E12Q-STFPR/L-11  
E16R-STFPR/L-11  
E16S-STFPR/L-11  
E20R-STFPR/L-11  
E20S-STFPR/L-11  
E20R-STFPR/L-16  
E20S-STFPR/L-16  
E25T-STFPR/L-16

#### STUBR/L



C08K-STUBR/L-06  
C10K-STUBR/L-06  
E08K-STUBR/L-06  
E10K-STUBR/L-06

#### STUPR/L



C08K-STUPR/L-08  
C10K-STUPR/L-11  
C10M-STUPR/L-11  
C12M-STUPR/L-11  
C12Q-STUPR/L-11  
C16R-STUPR/L-11  
C16S-STUPR/L-11  
C20R-STUPR/L-11  
C20S-STUPR/L-11  
C20R-STUPR/L-16  
C20S-STUPR/L-16  
C25T-STUPR/L-16  
E08K-STUPR/L-08  
E10K-STUPR/L-11  
E10M-STUPR/L-11  
E12M-STUPR/L-11  
E12Q-STUPR/L-11  
E16R-STUPR/L-11  
E16S-STUPR/L-11  
E20R-STUPR/L-11  
E20S-STUPR/L-11  
E20R-STUPR/L-16  
E20S-STUPR/L-16  
E25T-STUPR/L-16

#### SWUBR/L



C05H-SWUBR/L-02  
C06H-SWUBR/L-02  
C08K-SWUBR/L-02  
C08K-SWUBR/L-03  
E06H-SWUBR/L-02  
E08K-SWUBR/L-02  
E08K-SWUBR/L-03

# Ferramentas multifuncionais (Suportes)

## KGT

### KGEHR/L



• Inseto  
KGMN  
KGGN  
KGMR  
KRMN

### KGEVR/L



• Inseto  
KGGN  
KGMN  
KRMN

### KGEUR/L



• Inseto  
KRMN

### KGFVR/L



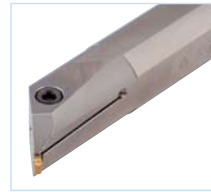
• Inseto  
KGMN  
KRMN

### KGFHR/L



• Inseto  
KGMN  
KRMN

### KGIUR/L



• Inseto  
KRMN

### KGIVR/L



• Inseto  
KGMN

## MGT

### MGEHR/L



• Inseto  
MGMN  
MRMR  
MGGN  
MRMN  
MRGN

### MGIVR/L



• Inseto  
MGMN  
MRMR  
MGGN  
MRMN  
MRGN

### MGEUR/L



• Inseto  
MRMN  
MRGN

### MGEVR/L



• Inseto  
MGMN  
MGGN  
MRMN  
MRGN

### MGIUR/L



• Inseto  
MRMN  
MRGN

## MGT Cápsula

### MCER/L



MGMN  
MRMR/L  
MGGN  
MRMN

### MCFR/L



MFMN  
MGMN

### MCHR/L



MCER/L  
MCFR/L

### MCVR/L



MCER/L  
MCFR/L

# Ferramentas multifuncionais (Suportes)

## Corte Interno

### GFIK



316R/L  
325R/L  
340R/L  
525R/L  
540R/L  
840R/L

Inserto : GR

### GFIP



316R/L  
320R/L  
325R/L  
340R/L  
525R/L  
540R/L  
840R/L

Inserto : BF, GW

### IGH



214R/L  
216R/L  
220R/L

Inserto : IG

## NFTIH



08206C	11208C	14012C	16312C
08212C	11212C	14016C	16312S
08312C	11312C	14112C	16412C
08312S	11312S	14116C	16512C
08412C	11412C	14212C	16316C
08512C	11512C	14216C	16416C
		14312C	16516C
		14316C	

Inserto : NFTG, NFFT, NFTF

## Saw-man

### SPB



• Lâmina  
226  
326  
426  
526  
626  
232  
332  
432  
532  
632

Inserto : SP

### SPB-S (Tipo Vedante)



• Lâmina  
226-S  
326-S  
426-S  
526-S  
626-S  
232-S  
332-S  
432-S  
532-S  
632-S

Inserto : SP

### SPH



• Lâmina  
316  
320  
420R/L  
520R/L  
325R/L  
425R/L  
525R/L

Inserto : SP

### SPH-S (Holder)



• Lâmina  
316R/L-S  
320R/L-S  
420R/L-S  
520R/L-S  
325R/L-S  
425R/L-S  
525R/L-S

Inserto : SP

### SMBB



• Lâmina  
0712  
1010  
1012  
1212

Inserto : SP

# Ferramentas multifuncionais (Suportes)

## Corte Externo

### DBH



320R/L  
325R/L  
520R/L  
525R/L  
720R/L  
725R/L

Inserto : DB

### EH



620R  
625R

Inserto : ESB

### GFT



320R/L  
325R/L  
525R/L  
825R/L

Inserto : GW, BF

### GH



2020R/L-3  
2025R/L-3  
2020R/L-4  
2525R/L-4

Inserto : GS, GO

### TBH



320-23R/L 420-23R/L  
320-33R/L 420-33R/L  
320-43R/L 420-45R/L  
325-23R/L 425-23R/L  
325-33R/L 425-33R/L  
325-43R/L 425-45R/L

Inserto : TB

### PH



320R/L  
325R/L  
420R/L  
425R/L  
520R/L  
525R/L

Inserto : FOB

## Ferramentas para Canal de Face

### FGHH (FGVH)



320R  
325R  
420R  
425R  
520R  
525R

Inserto : FGD/FGM/FMM

### MGFHR



325-24/35-T10  
325-29/40-T10  
325-34/50-T10  
325-44/70-T10  
325-64/99-T10  
425-62/120-T15  
425-112/200-T15

Inserto : MFMN/MGMM

### MGFVR



325-24/35-T10  
325-29/40-T10  
325-34/50-T10  
325-44/70-T10  
325-64/99-T10  
425-44/60-T10  
425-60/120-T10  
425-112/200-T10

Inserto : MFMN/MGMM

## Rosqueamento

### ER(L)H



• Sistema de parafuso  
ER(L)H□□-□□

Inserto : ER/ERM/ERM-U

### ER(L)H-C



• Sistema de grampo  
ER(L)H□□-□□C

Inserto : ER/ERM/ERM-U

### IR(L)H



• Sistema de grampo  
IR(L)H□□-□□

Inserto : IR/IRM/IRM-U

### IR(L)H-C



• Sistema de grampo  
IR(L)H□□-□□C

Inserto : IR/IRM/IRM-U

### VTH



2020R  
2525R  
3225R

Inserto : VETR

## Série Rich Mill

### RM8ACM 4000/5000



■ 4000 Tipo

: Ø50 - Ø400mm

• Inseto

SNEX1206ANN-MF/MM  
SNMX1206ANN-MF/MM  
SNEX1206ANN-MA  
SNEX1206ANN-W

■ 5000 Tipo

: Ø80 - Ø400mm

• Inseto

SNEX1507ANN-MF/MM  
SNMX1507ANN-MF/MM

### RMH8ACM 4000/5000



■ 4000 Tipo

: Ø80 - Ø400mm

• Inseto

SNEX1206ANN-MF/MM  
SNMX1206ANN-MF/MM  
SNEX1206ANN-MA  
SNEX1206ANN-W

■ 5000 Tipo

: Ø80 - Ø400mm

• Inseto

SNEX1507ANN-MF/MM  
SNMX1507ANN-MF/MM

### RM8ECM4000/5000



■ 4000 Tipo

: Ø50 - Ø400mm

• Inseto

SNEX1206ENN-MF/MM  
SNMX1206ENN-MF/MM  
SNEX1206ENN-MA

■ 5000 Tipo

: Ø80 - Ø400mm

• Inseto

SNEX1507ENN-MF/MM  
SNMX1507ENN-MF/MM

### RMH8ECM 4000/5000



■ 4000 Tipo

: Ø80 - Ø400mm

• Inseto

SNEX1206ENN-MF/MM  
SNMX1206ENN-MF/MM  
SNEX1206ENN-MA

■ 5000 Tipo

: Ø80 - Ø400mm

• Inseto

SNEX1507ENN-MF/MM  
SNMX1507ENN-MF/MM

### RM8QCM 4000



■ 4000 Tipo

: Ø63 - Ø200mm

• Inseto

SNEX1206QNN-MF/MM  
SNMX1206QNN-MF/MM  
SNEX1206QNN-MA  
SNEX120612-MF/MM  
SNMX120612-MF/MM  
SNEX120612-MA

### RMH8QCM 4000



■ 4000 Tipo

: Ø80 - Ø200mm

• Inseto

SNEX1206QNN-MF/MM  
SNMX1206QNN-MF/MM  
SNEX1206QNN-MA  
SNEX120612-MF/MM  
SNMX120612-MF/MM  
SNEX120612-MA

### RM16ACM 6000/8000



■ 6000 Tipo

: Ø63 - Ø400mm

• Inseto

ONMX060608-MM/MF  
ONHX060608-MM/MF  
ONHX060608-W  
ONMX060608-ANN-MM/MM  
ONHX060608-ANN-MM/MM  
ONHX060608-MA

■ 8000 Tipo

: Ø63 - Ø400mm

• Inseto

ONMX080608-MF/MM  
ONHX080608-MF/MM  
ONHX080608-W  
ONMX080608-ANN-MF/MM  
ONHX080608-ANN-MF/MM  
ONHX080608-MA

### RMT8AM 4000/5000



■ 4000 Tipo

: Ø80 - Ø315mm

• Inseto

SNCF1206ANN-MF/MM  
SNMF1206ANN-MF/MM

■ 5000 Tipo

: Ø80 - Ø315mm

• Inseto

SNCF1507ANN-MF/MM  
SNMF1507ANN-MF/MM

### RMT8EM 4000/5000



■ 4000 Tipo

: Ø80 - Ø315mm

• Inseto

SNCF1206ANN-MF/MM  
SNMF1206ANN-MF/MM

■ 5000 Tipo

: Ø80 - Ø315mm

• Inseto

SNCF1507ANN-MF/MM  
SNMF1507ANN-MF/MM

### RMT8QM 4000



■ 4000 Tipo

: Ø80 - Ø315mm

• Inseto

SNMF1206QNN-MF/MM

## Série Future Mill

### FMACM 3000/4000



■ 3000 Tipo

: Ø50 - Ø125mm

• Inseto

SEET0903AGFN-MA  
SEET0903AGSN-MF/MM  
SEXT0903AGSN-MF/MM/MR  
SEEW0903AGTN

■ 4000 Tipo

: Ø50 - Ø200mm

• Inseto

SEET14M4AGFN-MA  
SEET14M4AGSN-MF/MM  
SEXT14M4AGSN-MF/MM/MR  
SEEW14M4AGTN  
SEEW14M4AGFN-W  
SEEW14M4AGSN-W  
SEEW14M4AGTN-W

### FMAS 3000/4000



■ 3000 Tipo

: Ø25 - Ø63mm

• Inseto

SEET0903AGFN-MA  
SEET0903AGSN-MF/MM  
SEXT0903AGSN-MF/MM/MR  
SEEW0903AGTN

■ 4000 Tipo

: Ø50 - Ø63mm

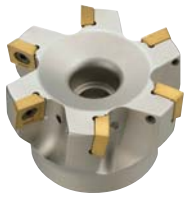
• Inseto

SEET14M4AGFN-MA  
SEET14M4AGSN-MF/MM  
SEXT14M4AGSN-MF/MM/MR  
SEEW14M4AGTN  
SEEW14M4AGFN-W  
SEEW14M4AGSN-W  
SEEW14M4AGTN-W

# Fresas de Faceamento

## Série Future Mill

### FMPCM 3000/4000



▪ **3000 Tipo**  
: Ø50 - Ø100mm

• **Inserto**  
SDET09M402R-MA  
SDET09M405R-MF/MM  
SDXT09M405R/L-MF  
SDXT09M405R/L-MM  
SDXT09M405R-MA

▪ **4000 Tipo**  
: Ø63 - Ø125mm

• **Inserto**  
SDET09M402R-MA  
SDET09M405R-MF/MM  
SDXT09M405R/L-MF  
SDXT09M405R/L-MM  
SDXT09M405R-MA

### FMPS 3000/4000



▪ **3000 Tipo**  
: Ø25 - Ø63mm

• **Inserto**  
SDET09M402R-MA  
SDET09M405R-MF/MM  
SDXT09M405R/L-MF  
SDXT09M405R/L-MM  
SDXT09M405R-MA

▪ **4000 Tipo**  
: Ø40 - Ø63mm

• **Inserto**  
SDET09M402R-MA  
SDET09M405R-MF/MM  
SDXT09M405R/L-MF  
SDXT09M405R/L-MM  
SDXT09M405R-MA

### FMRCM 3000/4000



▪ **3000 Tipo**  
: Ø40 - Ø100mm

• **Inserto**  
RDCT10T3M0-MA  
RDKT10T3M0-MF/MM

▪ **4000 Tipo**  
: Ø50 - Ø125mm

• **Inserto**  
RDCT1204M0-MA  
RDKT1204M0-MF/MM

### FMRCM 5000/6000



▪ **5000 Tipo**  
: Ø50 - Ø125mm

• **Inserto**  
RDHW1605M0E, F, S  
RDKT1605M0-MM/ML

▪ **6000 Tipo**  
: Ø63 - Ø160mm

• **Inserto**  
RDHW2006M0E, F, S  
RDKT2006M0-MM

### FMRS 1000/1500



▪ **1000 Tipo**  
: Ø8 - Ø20mm

• **Inserto**  
RDHW0501M0E, F, S  
RDKW0501M0E  
RDHW06T1M0E, F, S  
RDKW06T1M0E

▪ **1500 Tipo**  
: Ø8 - Ø20mm

• **Inserto**  
RDHW0501M0E, F, S  
RDKW0501M0E  
RDHW06T1M0E, F, S  
RDKW06T1M0E

### FMRS 2000/2500



▪ **3000 Tipo**  
: Ø15 - Ø25mm

• **Inserto**  
RDHW0702M0E, F, S  
RDKW0702M0E  
RDHW0803M0E, F, S  
RDKW0803M0E

▪ **4000 Tipo**  
: Ø15 - Ø25mm

• **Inserto**  
RDHW0702M0E, F, S  
RDKW0702M0E  
RDHW0803M0E, F, S  
RDKW0803M0E

### FMRS 3000/4000



▪ **3000 Tipo**  
: Ø21 - Ø40mm

• **Inserto**  
RDCT10T3M0-MA  
RDKT10T3M0-MF/MM

▪ **4000 Tipo**  
: Ø32 - Ø50mm

• **Inserto**  
RDCT1204M0-MA  
RDKT1204M0-MF/MM

### FMRS 5000/6000



▪ **5000 Tipo**  
: Ø40 - Ø63mm

• **Inserto**  
RDHW1605M0E, F, S  
RDKT1605M0-MM/ML

▪ **6000 Tipo**  
: Ø50 - Ø63mm

• **Inserto**  
RDHW2006M0E, F, S  
RDKT2006M0-MM

### FMRM 1000/1500/2000/2500



▪ **1000 / 1500 / 2000 / 2500 Tipo**  
: Ø8 - Ø25mm

• **Inserto**  
RDHW0501M0E, F, S  
RDKW0501M0E  
RDHW06T1M0E, F, S  
RDKW06T1M0E  
RDHW0702M0E, F, S  
RDKW0702M0E  
RDHW0803M0E, F, S  
RDKW0803M0E

### FMRM 3000/4000/5000



▪ **3000 / 4000 / 5000 Tipo**  
: Ø21 - Ø40mm

• **Inserto**  
RDCT10T3M0-MA  
RDKT10T3M0-MF/MM  
RDCT1204M0-MA  
RDKT1204M0-MF/MM  
RDHW1605M0E, F, S  
RDKT1605M0-MM/ML

### FMACM 3000-A/4000-A



Corpo em alumínio

▪ **3000-A Tipo**  
: Ø63 - Ø125mm

• **Inserto**  
SEET0903AGFN-MA  
SEET0903AGSN-MF/MM  
SEXT0903AGSN-MF/MMMR  
SEEW0903AGTN

▪ **4000-A Tipo**  
: Ø63 - Ø315mm

• **Inserto**  
SEET14M4AGFN-MA  
SEET14M4AGSN-MF/MM  
SEXT14M4AGSN-MF/MMR  
SEEW14M4AGTN  
SEEW14M4AGFN-W  
SEEW14M4AGSN-W  
SEEW14M4AGTN-W

### FMPCM 3000-A/4000-A



Corpo em alumínio

▪ **3000-A Tipo**  
: Ø63 - Ø100mm

• **Inserto**  
SDET09M402R-MA  
SDET09M405R-MF/MM  
SDXT09M405R/L-MF  
SDXT09M405R/L-MM  
SDXT09M405R-MA

▪ **4000-A Tipo**  
: Ø63 - Ø315mm

• **Inserto**  
SDET130504R-MA  
SDET130508R-MF/MM  
SDXT130508R-MF/MM  
SDXT130538-MM  
SDXT130508R-MA

## HRM / HRMDouble Ferramentas

### HRMDCM 09/13



- 09 Tipo  
: Ø40 - Ø100mm
- 13 Tipo  
: Ø50 - Ø125mm
- Inseto  
WNNMX09T316ZNN-MM
- Inseto  
WNNMX130520ZNN-MM

### HRMDCM 16



- 16 Tipo  
: Ø80 - Ø315mm
- Inseto  
WNNMX160720ZNN-MM

### HRMDS 06



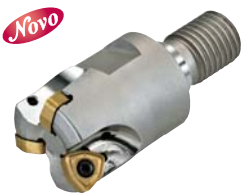
- 06 Tipo  
: Ø16 - Ø33mm
- Inseto  
WNNMX060312ZNN-MM

### HRMDS 09/13



- 09 Tipo  
: Ø25 - Ø50mm
- 13 Tipo  
: Ø32 - Ø63mm
- Inseto  
WNNMX09T316ZNN-MM
- Inseto  
WNNMX130520ZNN-MM

### HRMDM 06



- 06 Tipo  
: Ø16 - Ø33mm
- Inseto  
WNNMX060312ZNN-MM

### HRMDM 09/13



- 09 / 13 Tipo  
: Ø25 - Ø40mm
- Inseto  
WNNMX09T316ZNN-MM
- Inseto  
WNNMX130520ZNN-MM

### HRMCM 13/15



- 13 / 15 Tipo  
: Ø50 - Ø160mm
- Inseto  
WDKT130520ZDSR-MH
- Inseto  
WDKT150625ZDSR-MH

### HRMS 08/10



- 08 / 10 Tipo  
: Ø32 - Ø40mm
- Inseto  
WDKT080316ZDSR-MH
- Inseto  
WDKT10T320ZDSR-MH

### HRMS 13/15



- 13 Tipo  
: Ø32 - Ø40mm
- 15 Tipo  
: Ø50 - Ø63mm
- Inseto  
WDKT130520ZDSR-MH
- Inseto  
WDKT150625ZDSR-MH

### HRMM 08/10/13



- 08 / 10 / 13 Tipo  
: Ø20 - Ø40mm
- Inseto  
WDKT080316ZDSR-MH
- Inseto  
WDKT10T320ZDSR-MH
- Inseto  
WDKT130520ZDSR-MH



# Fresas de Faceamento

## Série Mill-max

### ADNM 4000



- 4000 Tipo  
: Ø80 - Ø315mm
- Inseto  
SDCN42  
SDCN1203  
SDKN1203  
SDKR1203  
SDXN1203  
SDXR1203

### AEM 4000/5000



- 4000 Tipo  
: Ø80 - Ø315mm
- 5000 Tipo  
: Ø80 - Ø315mm
- Inseto  
SECN1203  
SEKN1203  
SEKR1203  
SEXN1203  
SEXR1203
- Inseto  
SECN1504  
SEKN1504  
SEKR1504  
SEXN1504  
SEXR1504

### EFM 4000



- 4000 Tipo  
: Ø80 - Ø315mm
- Inseto  
SFCN1203EFR

### ENM 4000



- 4000 Tipo  
: Ø80 - Ø315mm
- Inseto  
SNCN1204ENN  
SNKN1204ENN

### EPNM 4000



- 4000 Tipo  
: Ø80 - Ø315mm
- Inseto  
SPCN1203  
SPKN1203  
SPKR1203  
SPXN1203  
SPXR1203

### PFM 4000



- 4000 Tipo  
: Ø80 - Ø315mm
- Inseto  
TFCN2203PFR  
TFCN2203PFL

### PPNM 4000



- 4000 Tipo  
: Ø80 - Ø315mm
- Inseto  
TPCN2204  
TPKN2204  
TPKR2204  
TPXN2204  
TPXR2204

## Série Mill-max Plus

### ADNM 5000+



- 5000+ Tipo  
: Ø80 - Ø315mm
- Inseto  
SDCN53  
SDCN1504  
SDKN1504  
SDKR1504  
SDXN1504  
SDXR1504

### EPNM 5000+



- 5000+ Tipo  
: Ø80 - Ø315mm
- Inseto  
SPCN1504  
SPKN1504  
SPKR1504  
SPXN1504  
SPXR1504

## Série Double-Mill

### AFOM 4000



- 4000 Tipo  
: Ø80 - Ø125mm
- Inseto  
OFCW05T3SN  
OFCW05T3FN  
OFCW05T308FN  
OFKT05T3SN-MF/MM  
OFKT05T308SN-MF/MM  
OFKT05T3FN-MA  
OFKT05T3EN-MA

### AFOM 5000



- 5000 Tipo  
: Ø80 - Ø315mm
- Inseto  
OFCN0704SN  
OFCN0704FN  
OFCN070408SN  
OFCN070408FN  
OFKR0704SN-MF/MM  
OFKR0704E(F)N-MA  
OFKT0704SN-MM  
OFKT0704E(F)N-MA  
REKR170400-MM

## Série Power Buster

### PBACM 5000



- 5000 Tipo  
: Ø80 - Ø315mm
- Inseto  
TNMX2710AZNR-NM  
TNMX2710AZNL-NM

### PBZCM 5000



- 5000 Tipo  
: Ø80 - Ø315mm
- Inseto  
TNMX2710AZNR-NM  
TNMX2710AZNL-NM

## Série Alpha Mill

### AMCM-S

1000S, 1500S, 2000S, 3000S(-K), 4000S



- 1000 Tipo  
: Ø32 - Ø63mm
- 1500 Tipo  
: Ø40 - Ø100mm
- 2000 Tipo  
: Ø40 - Ø100mm
- 3000 Tipo  
: Ø40 - Ø100mm
- 4000 Tipo  
: Ø50 - Ø200mm

### AMCM-SE

1000SE, 2000SE, 3000SE



- 1000 Tipo  
: Ø40 - Ø50mm
- 2000 Tipo  
: Ø80 - Ø100mm
- 3000 Tipo  
: Ø80 - Ø100mm

### AMCM-M

2000M, 3000M, 4000M



- 2000 Tipo  
: Ø50 - Ø100mm
- 3000 Tipo  
: Ø63 - Ø100mm
- 4000 Tipo  
: Ø63 - Ø125mm

### AMS-S

1000S, 1500S, 2000S, 3000S(-K), 4000S



- 1000 Tipo  
: Ø10 - Ø33mm
- 1500 Tipo  
: Ø10 - Ø40mm
- 2000 Tipo  
: Ø10 - Ø63mm
- 3000 Tipo  
: Ø25 - Ø63mm
- 4000 Tipo  
: Ø20 - Ø63mm

### AMS-SE

1000SE, 2000SE, 3000SE



- 1000 Tipo  
: Ø25mm
- 2000 Tipo  
: Ø25 - Ø63mm
- 3000 Tipo  
: Ø50 - Ø63mm

### AMS-M

1000M, 1500M, 2000M, 4000M



- 1000 Tipo  
: Ø16 - Ø25mm
- 1500 Tipo  
: Ø20 - Ø32mm
- 2000 Tipo  
: Ø20 - Ø40mm
- 4000 Tipo  
: Ø32 - Ø50mm

### AMS-MH

1000MH, 1500MH, 2000MH, 3000MH-K



- 1000 Tipo  
: Ø14 - Ø18mm
- 1500 Tipo  
: Ø20mm
- 2000 Tipo  
: Ø25 - Ø32mm
- 3000 Tipo  
: Ø40mm

### AMM

1000M, 1500M, 2000M



- 1000 Tipo  
: Ø12 - Ø32mm
- 1500 Tipo  
: Ø12 - Ø32mm
- 2000 Tipo  
: Ø16 - Ø40mm

### BT Sistema de ferramentas (Único)



- 1000 Tipo  
: Ø10 - Ø20mm
- 1500 Tipo  
: Ø16 - Ø40mm
- 2000 Tipo  
: Ø16 - Ø32mm
- 3000 Tipo  
: Ø25 - Ø50mm
- 4000 Tipo  
: Ø20 - Ø50mm

### HSK Sistema de ferramentas (Único)



- 1000 Tipo  
: Ø10 - Ø20mm
- 1500 Tipo  
: Ø16 - Ø40mm
- 2000 Tipo  
: Ø16 - Ø50mm
- 3000 Tipo  
: Ø25 - Ø50mm
- 4000 Tipo  
: Ø20 - Ø50mm

### BT Sistema de ferramentas (Várias)



- 1000 Tipo  
: Ø16 - Ø25mm
- 1500 Tipo  
: Ø20 - Ø32mm
- 2000 Tipo  
: Ø20 - Ø100mm
- 3000 Tipo  
: Ø50 - Ø100mm
- 4000 Tipo  
: Ø40 - Ø100mm

### HSK Sistema de ferramentas (Várias)



- 1000 Tipo  
: Ø16 - Ø25mm
- 1500 Tipo  
: Ø20 - Ø32mm
- 2000 Tipo  
: Ø20 - Ø100mm
- 3000 Tipo  
: Ø50 - Ø100mm
- 4000 Tipo  
: Ø40 - Ø100mm

## Inserto

### · Série 1000

APMT060202PDSR-MM  
APMT0602PDFR-MA  
APMT0602PDSR-MM  
APMT060208PDSR-MM  
APMT060212R-MM  
APMT060216R-MM

### · Série 1500

APMT0903PDER-ML  
APMT0903PDFR-MA  
APMT0903PDSR-MM  
APMT090306PDSR-MM  
APMT090308PDSR-MM  
APMT090312R-MM  
APMT090316R-MM  
APMT090320R-MM  
APMT090331R-MM  
APMT090332R-MM

### · Série 2000

APMT11T3PDER-ML  
APMT11T3PDFR-MA  
APMT11T3PDSR-MM  
APMT11T3PDSR-MF  
APMT11T308PDSR-MM  
APMT11T312PDSR-MM  
APMT11T316R-MM  
APMT11T318R-MM  
APMT11T324R-MM

### · Série 3000

APMT1604PDER-ML  
APMT1604PDFR-MA  
APMT1604PDSR-MM  
APMT1604PDSR-MF  
APMT160410PDSR-MM  
APMT160416PDSR-MM  
APMT160424R-MM  
APMT160430R-MM  
APMT160432R-MM  
APMT160450R-MM  
APMT160464R-MM

### · Série 3000-K

APKT1604PDSR  
APKT1604PDSR-MF  
APKT1604PDSR-MM  
APKT1604PDFR-MA  
APKT1604PDFR-MA3  
APKT160410PDFR-MA3  
APKT160420FR-MA3

### · Série 4000

APMT1806PDER-ML  
APMT1806PDFR-MA  
APMT1806PDSR-MM  
APMT1806PDSR-MF  
APMT180612PDSR-MM  
APMT180612PDSR-MM  
APMT180616PDSR-MM  
APMT180620PDSR-MM  
APMT180624PDSR-MM  
APMT180630R-MM  
APMT180632R-MM  
APMT180640R-MM

APMT180648R-MM  
APMT180650R-MM  
APMT180660R-MM  
APMT180664R-MM

# Fresas multifuncionais

## Série Tank Mill

THE

Ø25 - Ø50mm



- **Inserto**  
THESPMT060304  
SDMT090308-MM  
SPMT120408-MM  
APLT070304R  
ADLT150308R  
ZPMT1504PPSR-MM

## Série Chamfer Tool

CE (Trás e Frente)



- **Ângulos do chanfro**  
15°, 30°, 45°, 60°
- **Inserto**  
SPMT110408-KC  
15-1125R-S20  
30-1125R-S20  
45-1107R-S20  
45-1119R-S20  
45-1125R-S20  
60-1125R-S32

CE (Frontal)



- **Ângulos do chanfro**  
45°
- **Inserto**  
SPMN120308  
45-1207R-S32  
45-1220R-S32  
45-1225R-S32  
45-1235R-S32

CE (Chanfro Longo)



- **Ângulos do chanfro**  
30°, 45°, 60°
- **Inserto**  
XCET310404ER-KC  
30-3105R-S32  
45-3105R-S32  
60-3105R-S32

CE (Multifuncional)



- **Ângulos do chanfro**  
45°
- **Inserto**  
TWX16R-KC  
TWX22R-KC  
45-1600R-S12  
45-1600R-S20  
45-1600R-L20  
45-2200R-S12  
45-2200R-S25  
45-2200R-L25

## Série T-Cutter

TFE

Ø21 - Ø50mm



- **Inserto**  
CPMT21.51-MM  
CPMT2.522-MM  
CPMT32.52-MM  
CPMH432-MM

## Série Turbo Mill

ADS 4000/5000



- **4000 Tipo**  
: Ø50 - Ø63mm
- **Inserto**  
SDCN42  
SDCN1203  
SDKN1203  
SDKR1203  
SDXN1203  
SDXR1203

- **5000 Tipo**  
: Ø50 - Ø63mm
- **Inserto**  
SDCN53  
SDCN1504  
SDKN1504  
SDKR1504  
SDXN1504  
SDXR1504

PES 2000/3000/4000



- **2000/3000/4000 Tipo**  
: Ø20 - Ø63mm
- **Inserto**  
TECN22R/TR  
TECN32R/TR  
TECN32TR-S20  
TEEN43R/TR  
TEEN43R-G  
TEEN43TR-S20  
TEEN43TR-Z  
TEEN43TR-ZH

# Para fresamento em alumínio

## Pro-L Mill

### PALCM

**Novo**



- 063HR Tipo  
: Ø63mm
- Inseto  
LXET3405□□PEFR-63-MA  
LXET3405□□PEER-63-ML

### PALS(Aresta Única)

**Novo**



- 032HR Tipo  
: Ø32mm
- Inseto  
LXET2504□□PEFR-32-MA  
LXET2504□□PEER-32-ML
- 040HR Tipo  
: Ø40mm
- Inseto  
LXET2504□□PEFR-40-MA  
LXET2504□□PEER-40-ML
- 050HR Tipo  
: Ø50mm
- Inseto  
LXET3405□□PEFR-50-MA  
LXET3405□□PEER-50-ML
- 063HR Tipo  
: Ø63mm
- Inseto  
LXET3405□□PEFR-63-MA  
LXET3405□□PEER-63-ML

### PALS(Filo Múltiple)

**Novo**



- 063HM Tipo  
: Ø20 - Ø42mm
- Inseto  
LXET3405□□PEFR-63-MA  
LXET3405□□PEER-63-ML

## Pro-X Mill

### PAXCM 5000/6000



- 5000 Tipo  
: Ø40 - Ø125mm
- Inseto  
XEKT19M5□□FR-MA
- 6000 Tipo  
: Ø50 - Ø125mm
- Inseto  
XEKT2506□□FR-MA

### PAXS 5000/6000



- 5000 Tipo  
: Ø20 - Ø42mm
- Inseto  
XEKT19M5□□FR-MA
- 6000 Tipo  
: Ø25 - Ø40mm
- Inseto  
XEKT2506□□FR-MA

### PAXM 5000



- 5000 Tipo  
: Ø25 - Ø40mm

### HSK Sistema de amarre (Simple)



- 5000 Tipo  
: Ø32, Ø80, Ø100mm

## Pro-A Mill

### PACM 4000



- 4000 Tipo  
: Ø40 - Ø100mm
- Inseto  
VCKT220530N-MA

### PAS 2000/4000



- 2000/4000 Tipo  
: Ø12 - Ø40mm
- Inseto  
VDKT11T210N-MA  
VCKT220530N-MA

### PAM 2000



- 2000 Tipo  
: Ø12 - Ø42mm
- Inseto  
VDKT11T210N-MA

# Para fresamento em alumínio / Fresa de alto avanço

## Aero Mill

### APDM-A



Ø80 - Ø315mm

- **Inserto**  
CDEW1204R-XCF  
CDEW1204R/L-XAF  
CDEW1204R-NAF(WSP Typ)  
CDEW1204R/L-XAW  
CDEW1204R-NAW

### APDM-B



Ø80 - Ø315mm

- **Lâmina**  
BAPDR/L-XAF  
BAPDR/L-XAW  
BAPDL-NAW

## Aero Mill - Mini

### MAPD000HR/L-Z0



Ø40 - Ø63mm

- **Inserto**  
SNEW09T3ADFR  
SNEW09T3ADTR-XAF  
SNEW09T3ADTR-NAF

### MAPDS000HR/L-Z0



Ø32 - Ø40mm

- **Lâmina**  
SNEW09T3ADFR  
SNEW09T3ADTR-XAF  
SNEW09T3ADTR-NAF

## • Cabeçote de alto avanço

### Cabeçote de alto avanço

#### ANHM 4000/5000



- **4000 Tipo**  
: Ø100 - Ø450mm
- **5000 Tipo**  
: Ø100 - Ø450mm
- **Inserto**  
SNCN1204ENN  
SNKN1204ENN
- **Inserto**  
SNCN 1504ENN  
SNKN 1504ENN

#### CDHM 4000/5000



- **4000 Tipo**  
: Ø100 - Ø450mm
- **5000 Tipo**  
: Ø100 - Ø450mm
- **Inserto**  
SDCN42R  
SDCN42L
- **Inserto**  
SDCN53R  
SDCN53L

#### DEHM 5000



- **5000 Tipo**  
: Ø100 - Ø450mm
- **Inserto**  
HECN090408FN  
HECN090408SN  
HECN090408TN

#### DPHM 5000



- **5000 Tipo**  
: Ø100 - Ø450mm
- **Inserto**  
HPEN090408FN  
HPEN090408SN  
HPEN090408EN  
HPEN090408-WC

#### PNHM 4000/5000



- **4000/5000 Tipo**  
: Ø125 - Ø450mm
- **Inserto**  
SNEF435  
SNEF535

#### PPHM 4000



- **4000 Tipo**  
: Ø125 - Ø450mm
- **Inserto**  
SPEN120416-WC

ANHM Tipo



CDHM Tipo



DEHM Tipo



DPHM Tipo



PNHM/PPHM Tipo



# Fresa de alto avanço / Cabeçote Lateral Ajustável

## Shave Mill Ultra

### SVUM 6000

- 6000 Tipo  
Ø80 - Ø315mm

• Inseto  
LNCS1907-R3.0-WC  
LNCS1907-C1.5-WC



### SVUM 6000-B

- 6000-B Tipo  
Ø80 - Ø315mm

• Inseto  
LNCS1907-R3.0-WC  
LNCS1907-C1.5-WC



## • Cabeçote Lateral Ajustável

### Tipo tangencial (Cabeçote lateral completo)

#### TAFCPM

Ø100 - Ø315mm

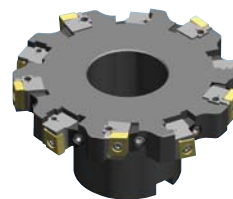
• Inseto  
CNHQ1005-□□□  
CNHQ1305-□□□  
CNHQ1606-□□□



#### TAFCBM

Ø100 - Ø315mm

• Inseto  
CNHQ1005-□□□  
CNHQ1305-□□□  
CNHQ1606-□□□



### Tipo tangencial (Cabeçote lateral - metade)

#### TAHCPM

Ø100 - Ø315mm

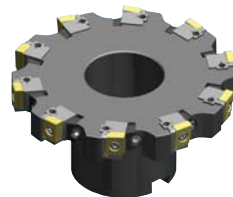
• Inseto  
CNHQ1005-□□□  
CNHQ1305-□□□  
CNHQ1606-□□□



#### TAHCBM

Ø100 - Ø315mm

• Inseto  
CNHQ1005-□□□  
CNHQ1305-□□□  
CNHQ1606-□□□



### Tipo radial (Cabeçote lateral completo)

#### RAFCPM

Ø80 - Ø315mm

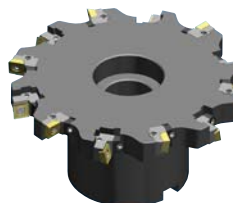
• Inseto  
SDXT09M40□□R/L  
SDXT13050□□R/L



#### RAFCBM

Ø100 - Ø315mm

• Inseto  
SDXT09M40□□R/L  
SDXT13050□□R/L



### Tipo radial (Cabeçote lateral - metade)

#### RAHCPM

Ø100 - Ø315mm

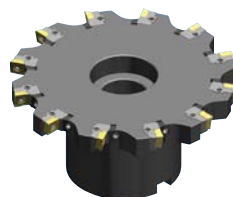
• Inseto  
SDXT09M40□□R/L  
SDXT13050□□R/L



#### RAHCBM

Ø100 - Ø315mm

• Inseto  
SDXT09M40□□R/L  
SDXT13050□□R/L



# Cabeçote lateral

## Cabeçote lateral

### FCM (Cabeçote lateral completo)

Ø80 - Ø315mm



• Inseto  
TPCN22PPN  
TPCN32PPN

### HCM (Cabeçote lateral - metade)

Ø100 - Ø315mm



• Inseto  
TPCN32PPN

### SPPM

Ø80 - Ø200mm



• Inseto  
PNEJ12□□N

### SPBM

Ø80 - Ø200mm



• Inseto  
PNEJ12□□N

### SPS

Ø50 - Ø200mm



• Inseto  
SPFN200  
SPFN300  
SPFN400

## WIND Mill

### WFSBM - Tipo cubo

Ø80 - Ø250mm



• Inseto  
1102308R/L-WX 120508R/L-WX  
110308R/L-WX 1205408R/L-WX  
120308R/L-WX 120608R/L-WX  
1203508R/L-WX 1206508R/L-WX  
120408R/L-WX 120708R/L-WX  
1204508R/L-WX 1207508R/L-WX

### WFSPM - Tipo plano

Ø80 - Ø250mm



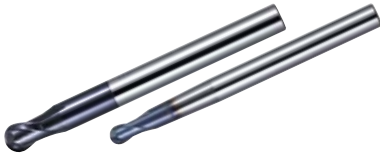
• Inseto  
1102308R/L-WX 120508R/L-WX  
110308R/L-WX 1205408R/L-WX  
120308R/L-WX 120608R/L-WX  
1203508R/L-WX 1206508R/L-WX  
120408R/L-WX 120708R/L-WX  
1204508R/L-WX 1207508R/L-WX

# Fresas de topo sólidas

- Classe de grão ultrafino (FS03, FA1, FS1)
- Superfície de corte precisa e boas operações de acabamento com excelente tenacidade

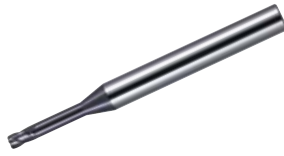
## H-Max

**HPBE2000/2000L/2000T**



N.º de cortes : 2  
Diâmetro de corte : Ø0.6 ~ Ø16

**HPRE2000/2000T**



N.º de cortes : 2  
Diâmetro de corte : Ø2

**HPRE4000/4000T**



N.º de cortes : 4  
Diâmetro de corte : Ø2 ~ Ø16

## V-Endmill

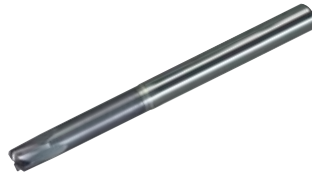
**VFE4000 (Standard)**



N.º de cortes : 4  
Diâmetro de corte : Ø2.5 ~ Ø16

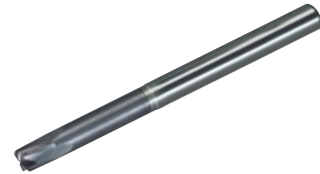
## F-Endmill

**FME4000 (Standard)**



N.º de cortes : 4  
Diâmetro de corte : Ø6 ~ Ø12

**FME4000 (Longo)**



N.º de cortes : 4  
Diâmetro de corte : Ø6 ~ Ø12

## Metal duro revestido I-Max

**IFE2000 (Reto) Standard**



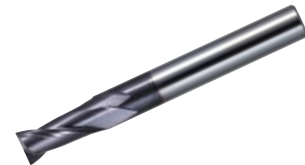
N.º de cortes : 2  
Diâmetro de corte : Ø1 ~ Ø20

**IFE3000 (Reto) Standard**



N.º de cortes : 3  
Diâmetro de corte : Ø2 ~ Ø16

**IFE4000 (Reto) Standard**



N.º de cortes : 4  
Diâmetro de corte : Ø2.5 ~ Ø20

**IFE2000 (Reto longo)**



N.º de cortes : 2  
Diâmetro de corte : Ø3 ~ Ø20

**IFE4000 (Reto longo)**



N.º de cortes : 4  
Diâmetro de corte : Ø3 ~ Ø20

**IFE2000-T (Cônico Reto)**



N.º de cortes : 2  
Diâmetro de corte : Ø3 ~ Ø16

**IBE2000 (Esférica)**



N.º de cortes : 2  
Diâmetro de corte : Ø1 ~ Ø20

**IBE4000 (Esférica)**



N.º de cortes : 4  
Diâmetro de corte : Ø3 ~ Ø20

**IBE2000 (Esférica longa)**



N.º de cortes : 2  
Diâmetro de corte : Ø3 ~ Ø20



# Fresas de topo sólidas

## Metal Duro revestido I-Max

**IBE2000-T (Esférica Cônica)**



N.º de cortes : 2  
Diâmetro de corte : Ø3 ~ Ø16

**IRE2000 (Raio)**



N.º de cortes : 2  
Diâmetro de corte : Ø3 ~ Ø20

**IRE4000 (Raio)**



N.º de cortes : 4  
Diâmetro de corte : Ø3 ~ Ø20

## Metal Duro I-Max

**FE2000 (Reto)**



N.º de cortes : 2  
Diâmetro de corte : Ø1 ~ Ø20

**FE3000 (Reto)**



N.º de cortes : 3  
Diâmetro de corte : Ø2 ~ Ø16

**FE4000 (Reto)**



N.º de cortes : 4  
Diâmetro de corte : Ø2.5 ~ Ø20

**FE2000 (Reto longo)**



N.º de cortes : 2  
Diâmetro de corte : Ø3 ~ Ø20

**FE4000 (Reto longo)**



N.º de cortes : 4  
Diâmetro de corte : Ø3 ~ Ø16

**FE2000-T (Cônico Reto)**



N.º de cortes : 2  
Diâmetro de corte : Ø3 ~ Ø16

**BE2000 (Esférica)**



N.º de cortes : 2  
Diâmetro de corte : Ø1 ~ Ø20

**BE4000 (Esférica)**



N.º de cortes : 2  
Diâmetro de corte : Ø3 ~ Ø20

**BE2000 (Esférica longa)**



N.º de cortes : 2  
Diâmetro de corte : Ø3 ~ Ø20

**BE2000-T (Esférica Cônica)**



N.º de cortes : 2  
Diâmetro de corte : Ø3 ~ Ø16

## I<sup>+</sup>-Endmill

**Novo**

**IPFE2000 (Reto)**



N.º de cortes : 2  
Diâmetro de corte : Ø1 ~ Ø20

**IPFE4000 (Reto)**



N.º de cortes : 4  
Diâmetro de corte : Ø1 ~ Ø20

**IPLFE2000 (Reto longo)**



- Comprido com haste  
N.º de cortes : 2  
Diâmetro de corte : Ø6 ~ Ø12
- Comprido com ranhuras  
N.º de cortes : 2  
Diâmetro de corte : Ø1 ~ Ø20

# Fresas de topo sólidas

## I<sup>+</sup>-Endmill

Novo

### IPLFE4000 (Reto longo)



- Comprido com haste  
N.º de cortes : 4  
Diâmetro de corte : Ø6 ~ Ø12
- Comprido com ranhuras  
N.º de cortes : 4  
Diâmetro de corte : Ø1 ~ Ø20

### IPBE2000 (Esférica)



N.º de cortes : 2  
Diâmetro de corte : Ø1 ~ Ø20

### IPBE4000 (Esférica)



N.º de cortes : 4  
Diâmetro de corte : Ø1 ~ Ø20

### IPLBE2000 (Esférica longa)



N.º de cortes : 2  
Diâmetro de corte : Ø1 ~ Ø16

### IPRE2000 (Raio)



N.º de cortes : 2  
Diâmetro de corte : Ø1 ~ Ø12

### IPRE4000 (Raio)



N.º de cortes : 4  
Diâmetro de corte : Ø2 ~ Ø12

### IPRE2000 (Raio)



N.º de cortes : 2  
Diâmetro de corte : Ø3 ~ Ø12

### IPRE4000 (Raio)



N.º de cortes : 4  
Diâmetro de corte : Ø3 ~ Ø12

## Fresas de topo para Material Difícil de cortar

### IFSE3000 (Reto)



N.º de cortes : 3  
Diâmetro de corte : Ø3 ~ Ø20

## Fresas de topo dedicadas Alumínio

### SSE2000 (Reto)

Al



N.º de cortes : 2  
Diâmetro de corte : Ø1 ~ Ø20

### SSE3000

Al



N.º de cortes : 3  
Diâmetro de corte : Ø2 ~ Ø16

### SSBE2000 (Esférica)

Al



N.º de cortes : 2  
Diâmetro de corte : Ø1 ~ Ø20

## C-Max

### CFE2000 (Reto)



N.º de cortes : 2  
Diâmetro de corte : Ø1 ~ Ø12

### CFNE2000 (Reto de pescoço longo)



N.º de cortes : 2  
Diâmetro de corte : Ø0.5 ~ Ø4

### CBE2000 (Esférica)



N.º de cortes : 2  
Diâmetro de corte : Ø1 ~ Ø12

# Fresas de topo sólidas

## C-Max

**CBNE2000 (Esférica de pescoço longo)**



N.º de cortes : 2  
Diâmetro de corte :  $\varnothing 0.5 \sim \varnothing 4$

**CRE2000 (Raio)**



N.º de cortes : 2  
Diâmetro de corte :  $\varnothing 2 \sim \varnothing 12$

**CRNE2000 (Reto de pescoço longo)**



N.º de cortes : 2  
Diâmetro de corte :  $\varnothing 1 \sim \varnothing 4$

## D-Max

**DBE2000 (Esférica)**



N.º de cortes : 2  
Diâmetro de corte :  $\varnothing 4 \sim \varnothing 8$

**DFE2000 (Reto)**



N.º de cortes : 2  
Diâmetro de corte :  $\varnothing 3 \sim \varnothing 8$

**DRE2000 (Raio)**



N.º de cortes : 2  
Diâmetro de corte :  $\varnothing 4 \sim \varnothing 8$

## Fresas de topo cBN

**CSBE (Esférica)**



N.º de cortes : 2  
Diâmetro de corte :  $\varnothing 0.2 \sim \varnothing 4$

**CSRE (Raio)**



N.º de cortes : 2  
Diâmetro de corte :  $\varnothing 0.2 \sim \varnothing 4$

## Fresas de topo PCD

**PDE1000 (Reto)**



N.º de cortes : 1  
Diâmetro de corte :  $\varnothing 4.0 \sim \varnothing 6$

**PDE2000 (Reto)**



N.º de cortes : 2  
Diâmetro de corte :  $\varnothing 6.0 \sim \varnothing 12$

## Fresas de topo micro

**MSE2000 (Reto)**



N.º de cortes : 2  
Diâmetro de corte :  $\varnothing 0.2 \sim \varnothing 1$

**MSBE2000 (Esférica)**



N.º de cortes : 2  
Diâmetro de corte :  $\varnothing 0.2 \sim \varnothing 1$

## Fresas de topo soldado

**ZSE200 (Reto)**



N.º de cortes : 2  
Diámetro de corte : Ø14 ~ 50

**ZSE300 (Reto)**



N.º de cortes : 3  
Diámetro de corte : Ø14 ~ 50

**ZSE400 (Reto)**



N.º de cortes : 4  
Diámetro de corte : Ø14 ~ 50

**ZSE600 (Reto)**



N.º de cortes : 6  
Diámetro de corte : Ø34 ~ 50

**ZSEA200 (Reto)**



N.º de cortes : 2  
Diámetro de corte : Ø15 ~ Ø50

**ZSEL200 (Reto largo)**



N.º de cortes : 2  
Diámetro de corte : Ø14 ~ Ø50

**ZSEL400 (Reto largo)**



N.º de cortes : 4  
Diámetro de corte : Ø16 ~ Ø40

**ZSEXL200 (Reto largo)**



N.º de cortes : 2  
Diámetro de corte : Ø20 ~ Ø25

**ZSBE200 (Esférica)**



N.º de cortes : 2  
Diámetro de corte : Ø13 ~ Ø50

# Brocas sólidas/ Brocas indexáveis

## Mach Drill

### MSD

MSDA□□□-□P/M/K/N



Relação de aspecto (C/D) : 3, 5, 7  
Diâmetro de corte : Ø2.5 ~ Ø20

### MSDH

MSDHA□□□-□P/M/K/N



Relação de aspecto (C/D) : 3, 5, 7  
Diâmetro de corte : Ø2.5 ~ Ø20

## Mach Long Drill

### MLDP

MLDPA□□□-□P/M/K/N



Relação de aspecto (C/D) : 3, 5, 7  
Diâmetro de corte : Ø3 ~ Ø10

### MLD

MLDA□□□-□P/M/K/N



Relação de aspecto (C/D) : 3, 5, 7  
Diâmetro de corte : Ø3 ~ Ø10

## Vulcan Drill

### VZD-M, MB

Tipo soldado  
Diâmetro de corte :  
Ø12.6 ~ Ø40.5



Podem ser encomendados itens com tamanho especial

### VZD-L, LB

Tipo soldado  
Diâmetro de corte :  
Ø12.6 ~ Ø40.5



Podem ser encomendados itens com tamanho especial

## Metal Duro Drill

### SSD

Metal Duro Sólido  
Diâmetro de corte :  
Ø1 ~ Ø15  
para propósitos gerais



## Brocas indexáveis

### KING DRILL (2D/3D/4D/5D)

Ø12 - Ø60.5mm



**Novo**

#### • Inseto Interno

SPMT040204-PD  
SPMT050204-PD  
SPMT060205-PD  
SPMT07T208-PD  
SPMT090308-PD  
SPMT11T306-PD  
SPMT130410-PD  
SPMT15M510-PD  
SPMT180510-PD

#### Externo

XOMT040204-PD  
XOMT050204-PD  
XOMT060204-PD  
XOMT07T205-PD  
XOMT090305-PD  
XOMT11T306-PD  
XOMT130406-PD  
XOMT15M508-PD  
XOMT180508-PD

### KING DRILL HP (2D/3D/4D)

Ø12 - Ø60.5mm



**Novo**

#### • Inseto Interno

SPMT040204-PD  
SPMT050204-PD  
SPMT060205-PD  
SPMT07T208-PD  
SPMT090308-PD

#### Externo

XOMT040204-PD  
XOMT050204-PD  
XOMT060204-PD  
XOMT07T205-PD  
XOMT090305-PD

### KING DRILL (K2D/K3D/K4D)

KING DRILL-Tipo Cápsula  
Ø61 - Ø100mm



**Novo**

#### • Cápsula Interno

KDC6165C  
KDC6570C  
KDC7075C  
KDC7580C  
KDC8085C  
KDC8590C  
KDC9095C  
KDC95100C

#### Externo

KDC6165P  
KDC6570P  
KDC7075P  
KDC7580P  
KDC8085P  
KDC8590P  
KDC9095P  
KDC95100P

### Inseto KING DRILL



# Brocas indexáveis / Fresas de topo esféricas indexáveis

## Brocas indexáveis

### TPDB (3D/5D/8D)

Ø10 - Ø29.9mm



• Inseto  
TPD100BA ~ TPD299BA

### WPDC (5D/6.5D/8D)

Tipo Standard  
Ø25 - Ø40mm



• Inseto  
WC□T030204-C21  
WC□T040204-C21  
WC□T050308-C21

### WPDC (5D/6.5D/8D)

Tipo de Cápsula com inserto único  
Ø41 - Ø59mm



• Inseto  
WC□T06T308-C21  
WC□T080408-C21

### WPDC (5D/6.5D/8D)

Tipo de Cápsula com dois insertos  
Ø60 - Ø80mm



• Inseto  
WC□T050308-C21  
WC□T06T308-C21

## Fresas de topo esféricas indexáveis

### BFE

Ø16 - Ø32mm



• Inseto  
RC16  
RC20  
RC25  
RC30  
RC32

### BRE

Ø20 - Ø50mm



• Haste Fixa  
SDMT090308-MM  
SPMT060304  
SPMT120408-MM  
SPMT120508-MM  
ZDMT080310R-MM  
ZDMT110312.5FR-MM  
ZDMT130416R-MM  
ZPMT160520R-MM  
ZPMT160525FR-MM  
ZPMT160531.5FR-MM

### GBE

Aresta Única  
Ø16 - Ø50mm



Interno : M  
Externo : S  
ZPET080M(S)-MM  
ZPET100M(S)-MM  
ZPET125M(S)-MM  
ZPET150M(S)-MM  
ZPET160M(S)-MM  
ZPET200M(S)-MM  
ZPET250M(S)-MM

### GBE-M

Várias Arestas  
Ø0.787 ~ Ø1.969inch



Interno : M  
Externo : S  
ZPET100M(S)-MM  
ZPET125M(S)-MM  
ZPET150M(S)-MM  
ZPET160M(S)-MM  
ZPET200M(S)-MM  
ZPET250M(S)-MM  
Principal ext. :  
SPMT060304  
SDMT090308-MM  
SPMT120408-MM

### GBEM

Ø16 - Ø32mm



ZPET080M(S)-MM  
ZPET100M(S)-MM  
ZPET125M(S)-MM  
ZPET150M(S)-MM  
ZPET160M(S)-MM

# Fresas de topo esféricas indexáveis

## Série Laser Mill

### LBE (08/10/12/16/20/25/30/32)

Haste de metal duro – esférica,  
Canto tipo arredondado  
(Tipo reta)



LBE080080S-S08C	LBE200120S-S20C
LBE080100S-S08C	LBE200170S-S20C
LBE08020S-S08C-130	LBE200035S-S20C-190
LBE08020S-S08C-150	LBE200035S-S20C-240
LBE100080S-S10C	LBE250140S-S25C
LBE100120S-S10C	LBE250170S-S25C
LBE100023S-S10C-130	LBE250040S-S25C-220
LBE100023S-S10C-170	LBE250040S-S25C-250
LBE120100S-S12C	LBE300140S-S32C
LBE120150S-S12C	LBE300170S-S32C
LBE120025S-S12C-150	LBE300050S-S32C-230
LBE120025S-S12C-200	LBE300050S-S32C-260
LBE160100S-S16C	LBE320140S-S32C
LBE160150S-S16C	LBE320170S-S32C
LBE160030S-S16C-160	LBE320050S-S32C-230
LBE160030S-S16C-210	LBE320050S-S32C-260

### LBE (08/10/12/16/20/25/30/32)

Haste Fixa – esférica,  
Canto tipo arredondado  
(Tipo Cônico)



LBE080035T-S12	LBE160100T-S20
LBE080055T-S12	LBE200075T-S20
LBE080075T-S12	LBE200115T-S25
LBE100035T-S12	LBE250090T-S25
LBE100055T-S12	LBE250135T-S32
LBE100075T-S12	LBE300105T-S32
LBE120055T-S12	LBE300160T-S32
LBE120085T-S16	LBE320105T-S32
LBE160065T-S16	LBE320160T-S32

### LBE (12/16/20/25/30/32)

Haste Fixa – esférica,  
Canto tipo arredondado  
(Tipo reta)



LBE120035S-S12  
LBE160035S-S16  
LBE200040S-S20  
LBE250045S-S25  
LBE300055S-S32  
LBE320055S-S32

### LRE (10/12/16/20/25/30/32)

Haste de metal duro –  
Canto tipo arredondado  
(Tipo reta)



LRE100080S-S10C	LRE160030S-S16C-160	LRE300140S-S32C
LRE100120S-S10C	LRE160030S-S16C-210	LRE300170S-S32C
LRE100023S-S10C-130	LRE200120S-S20C	LRE300050S-S32C-230
LRE100023S-S10C-170	LRE200170S-S20C	LRE300050S-S32C-260
LRE120100S-S12C	LRE200035S-S20C-190	LRE320140S-S32C
LRE120150S-S12C	LRE200035S-S20C-240	LRE320170S-S32C
LRE120025S-S12C-150	LRE250140S-S25C	LRE320050S-S32C-230
LRE120025S-S12C-200	LRE250170S-S25C	LRE320050S-S32C-260
LRE160100S-S16C	LRE250040S-S25C-220	
LRE160150S-S16C	LRE250040S-S25C-250	

### LRE (10/12)

Haste Fixa – esférica,  
Canto tipo arredondado  
(Tipo Cônico)



LRE100025T-S12  
LRE100050T-S12  
LRE120060T-S16

### LRE (12/16/25/30/32)

Haste Fixa-  
Canto tipo arredondado



LRE120030S-S12  
LRE160050S-S16  
LRE160060S-S16  
LRE200060S-S20  
LRE200080S-S20  
LRE250070S-S25  
LRE250100S-S25  
LRE300070S-S32  
LRE300100S-S32  
LRE320080S-S32  
LRE320100S-S32

### LBE-MHD



LBE100-MHD-M06  
LBE120-MHD-M06  
LBE160-MHD-M08  
LBE200-MHD-M10  
LBE250-MHD-M12  
LBE300-MHD-M16  
LBE320-MHD-M16

## Adaptador de haste para cabeça modular

### MAT (Haste Fixa)

\* Disponível para usar (FMRM, LBE, PAM, AMM, RM4PM, HRMM, PAXM)



MAT-M06-020-S10S	MAT-M06-040-S12T	MAT-M10-110-S25T
MAT-M6B-020-S12S	MAT-M06-065-S16T	MAT-M10-130-S32T
MAT-M6B-040-S12S	MAT-M6B-065-S16T	MAT-M12-050-S25T
MAT-M08-020-S16S	MAT-M6B-080-S16T	MAT-M12-070-S25T
MAT-M10-030-S20S	MAT-M08-040-S16T	MAT-M12-090-S25T
MAT-M12-030-S25S	MAT-M08-065-S16T	MAT-M12-110-S32T
MAT-M16-035-S32S	MAT-M08-080-S20T	MAT-M12-175-S40T
	MAT-M08-110-S25T	MAT-M16-055-S32T
	MAT-M10-050-S20T	MAT-M16-080-S32T
	MAT-M10-070-S20T	MAT-M16-120-S32T
	MAT-M10-090-S25T	MAT-M16-175-S40T

### MAT-C (Mango de metal duro)

\* Disponível para usar (FMRM, LBE, PAM, AMM, RM4PM, HRMM, PAXM)



MAT-M08-010-S16S-C-150	MAT-M08-080-S16S-C
MAT-M08-010-S16S-C-180	MAT-M08-110-S16S-C
MAT-M08-010-S16S-C-250	MAT-M08-150-S16S-C
MAT-M10-010-S20S-C-170	MAT-M10-090-S20S-C
MAT-M10-010-S20S-C-200	MAT-M10-110-S20S-C
MAT-M10-010-S20S-C-300	MAT-M10-175-S20S-C
MAT-M12-015-S25S-C-170	MAT-M12-090-S25S-C
MAT-M12-015-S25S-C-200	MAT-M12-110-S25S-C
MAT-M12-015-S25S-C-300	MAT-M12-175-S25S-C
MAT-M16-020-S32S-C-180	MAT-M16-080-S32S-C
MAT-M16-020-S32S-C-210	MAT-M16-120-S32S-C
MAT-M16-020-S32S-C-300	MAT-M16-175-S32S-C



# A comparação de Quebra-cavacos

Aplicação			KORLOY	KYOCERA	TAEGU TEC	SUMITOMO	SANDVIK	KENNA- METAL	MITSUBISHI	TUNGALOY	SECO
<b>NEGATIVO</b>	<b>P</b>	Ultra Acabamento	VL	DP	FA	FA	QF	FF UF	FH, FS PK	TF 1 TSF	FF1
		Acabamento	VF VB	GP	FG SF	SU LU SU(G)	PF 61	FN	SH C	TS ZF, NS 17	MF2
		Médio para Acabamento	VC	HQ CQ	FC MC	SX SE		LF CT	SA C	AS, NM, ZM CB, 27	MF3
		Usinagem Média	VM	HK, V, GS HS, PS CS	MP PC MT	UG GU, GE UX	PM QM SM	MN MP	MV, MP MA MH	33,37,38 TM, 32Y DM	M3
		Desbaste	HR, GR B25	PT GT, HT MG, PH	RT MG	MU ME MX	PR	RN	GH	TH	M5 MR5, MR7
		Trabalho pesado Usinagem	GH VH VT	PX HX	RH, RX HZ	HG MP	PR QR	RH RM	HZ HV, HX, HAX HBS, HCS, HDS, HXD	57 65 TU	R4, R6 PR9 R8
	Para aço com baixo teor de Carbono	Para aço macio	VL	XF, XP, XPT XQ, XS		FL	LC		FY SY		
	Alto avanço	Corte de alto avanço	VW LW	WP WQ	WS WT	LUW, SEW GUW	WF, WL WM, WMX WR	FW MW RW	SW MW	AFW ASW	WMF2 WM3 WR4, R7
	Aplicação	Eixo (barra longa)	SH KNUX	CJ ST KNMX	FS VF KNUX	HM	K		ES KNMX19		
	<b>M</b>	Para aço inoxidável	HA, VP2 GS, VP3	MQ, GU MS, HU, MU, TK	EA MP, EM ET	SU EX, GU MU, HM	MF MM MR	FP MP RP	SH MS GH, ES	SA, S, P SM TH	MF1 MF3 M5
<b>K</b>	Para ferro fundido	VM GR, VK MA	C ZS MA, GC		UZ UX, GZ MA	KF KM KR	UN	MA GH, MA	CF CM CH		
<b>S</b>	Para HRSA	VP1 VP2 VP3 VM	TK	ML	EX	23.SR XcelSM	MP, FS GP, MS	FJ MJ MS GJ		MF1 MR3, M1, MR4	
<b>N</b>	Para alumínio	HA	AH	ML	UP (GX) AG						

Aplicação			KORLOY	KYOCERA	TAEGU TEC	SUMITOMO	SANDVIK	KENNA- METAL	MITSUBISHI	TUNGALOY	SECO
<b>POSITIVO</b>	<b>P M K</b>	Acabamento	VL VF	XP GP	FA	LU FP FC	PF UF	UF	FV SV	PSF 23	FF1 F1
		Usinagem Média	HMP	XQ HQ CK	FG PC	SU SC	PM UM UM(G)	LF	MV	PSS 24	MF2 F2
		Desbaste	C25		MT	MU	PR UR	MF		PS, PM	M5
		Gran avance			WT	LUW	WF WM	FW MW	SW MW		F2
	<b>M, S</b>	Para aço inoxidável Para HRSA	VP1	MQ	FG	FC	KF KM	LF MF	FJ AM	PF PM	F1 MF2
	<b>K</b>	Para ferro fundido	C25		MT	MU	KR			CM	M3 M5
	<b>N</b>	Para alumínio	AK AR	AH	FL	AW AG	AL	HP	F	PP AL	AL
		Barra de alta precisão para Torneamento (tolerância classe G e E)	VP1 KF, KM	CF GF, GQ FSF, USF	SA	FY, FX, FZ			F(G), SR(E) SS, SM(E)	JRP, JSP, JPP JS J10, W15	

# A comparação de Classes para torneamento

## > WC

ISO	KORLOY	SUMITOMO	KYOCERA	ISCAR	SANDVIK	SECO	KENAMETAL	TOSHIBA	MITSUBISHI	HITACHI	VALENITE	WALTER	TAECUTEC	NTK	DIJET				
Torneamento	P	ST50E ST10	ST10P ST20E	PW30	S1P SM30	TTX TTM TTR	K45 KM K420	TX10S TX20	STi10T STi20T	SRN5 WS20B	S1F	WALTER	P10 P20	NTK	DIJET				
		ST20 MA2 ST30 ST30A ST30N ST40E						A30	IC50M IC54	S30T S6	TX30					UTi20T	EX35 EX40 EX45	VC6 VC5 VC56	P30 P40
		U10 U20						U10E U2 A30 A40		H13A H10F	AT10 AT15 TTR					K2885 K2S	TU10 TU20	UTi20T	WAM10B EX35
M	K	A40 H02 H01 H05 H10 G10	H1	IC4	H1P	THM	K68	TH03 TH10 KS20	HTi10T HTi20T	WH05 W10 WH20	VC3 VC2 VC1		K10 K20 K20M K30						

## > CVD COM COBERTURA

ISO	KORLOY	SUMITOMO	KYOCERA	ISCAR	SANDVIK	SECO	KENAMETAL	TOSHIBA	MITSUBISHI	HITACHI	VALENITE	WALTER	TAECUTEC	NTK	DIJET	
Torneamento	P	NC3010 NC3220*	AC810P AC820P	CA5505 CA5515 CA5525	IC8150 IC8250	GC4205 GC4215 GC4225	TP0500 TP1500 TP2500	KCP05 KCP10 KCP25	T9105 T9115 T9125	UE6105 UE6110 UE6020	HG8010 HG8025	VP5515 VP5525	WPP01 WPP05 WPP10 WPP20	TT8115 TT8125	CP5	JC110V JC215V
		NC3120 NC3030 NC5330* NC500H	AC830P	CA5535	IC8350	GC4235	TP3500	KU30 KCP40	T9135	UE6035	GM8035	VP5535	WPP30	TT8135 TT7100		JC325V JC450
		NC9020 NC9025	AC610M AC630M	CA6515 CA6525	IC8250 IC8350	GC2015 GC2025	TM2000 TM4000	KCM15 KCM25 KCM35	T6020 T6030	US7020 US735	GM25 GX30	VP8515 VP8525	WAM10 WAM20	TT9215 TT9225 TT9235		TT9215 TT9225 TT9235
M	K	NC6205* NC6210* NC315K NC5330*	AC410K AC420K	CA4505 CA4515 CA4120	IC5005 IC5010	GC3205 GC3210 GC3215	TK1001 TK2001	KCK05 KCK15 KCK20	T5105 T5115 T5125	UC5105 UC5115	HG3505 HG3515	VP1505 VP1510 VP5515	WAK10 WAK20	TT1300 TT7310	CP2 CP5	JC105V JC110V JC215V

## > PVD COM COBERTURA

ISO	KORLOY	SUMITOMO	KYOCERA	ISCAR	SANDVIK	SECO	KENAMETAL	TOSHIBA	MITSUBISHI	HITACHI	VALENITE	WALTER	TAECUTEC	NTK	DIJET									
Torneamento	P	PC230 PC5300* PC3545	PR1005 PR915 PR1115 PR930 PR1025 PR630 PR660	IC507 IC808* IC830* IC3028	GC1025	CP200 CP250 CP500	KU10T KU25T	AH710 GH730	VP15TF VP20MF	IP2000 IP3000	VC907 VC927	WTA43 WTA41	TT5030	NTK	JC5003 JC5015									
		PC8110* PC5300* PC9030		AC510U EH510Z AC520U EH520Z AC530U*				PR915 PR930			IC3028 IC830* IC3028					GC1005 GC1105* GC1020 GC1025 GC4125	CP200 CP250 CP500	KC5010 KC5510*	AH330 GH330 AH120 GH730 AH140	VP05RT VP10RT VP15TF VP20MF	IP50S* IP100S*	VC929 VC927 VC902 VC901 VC905	ZM3 QM3 VM1 TAS	JC5003 JC5015
		PC5300*		EH510Z EH520Z							IC330* IC5100* IC810* IC220 IC908 IC228						CP200 CP250 CP500		AH110 GH110 AH120		CY110H	VC929 VC903 VC927 VC902 VC901 VC907		TT5030
M	K	PC8110* PC5300*	AC510U AC520U	PR915 PC660	IC907 IC3028	GC1105 GC1025	TS2000* CP500 TS2500*	KC5010 KC5025	AH110 AH120	VP05RT VP10RT VP15TF			TT5030											

## > CERMET

ISO	KORLOY	SUMITOMO	KYOCERA	ISCAR	SANDVIK	SECO	KENAMETAL	TOSHIBA	MITSUBISHI	HITACHI	VALENITE	WALTER	TAECUTEC	NTK	DIJET		
Torneamento	P	CN1000 CC115* CN2000 CN20	T110A T2000Z*	PV30* TN30	IC20N IC520N	CT5015	CM C15M	HT2 KT125	NS520 GT530*	NX2525 NX3035	CH350 CZ25*	WALTER	PV3010* CT3000	T3N T15 N20	LN10 CX50 CX75		
		T1500A* T3000Z*	PV60* TN60 TN6020 TN90	IC30N IC530N	CT525 GC1525*	TP1020	HT5 KT175 KT195M	NC530 NC540 NC730	UP35N* AP25N* NX335	CH530 CH550 CH570	VC83					WTA43* WTA41*	C30 CX90 CX99
						TP1030*											N40
M	K		T1500A*							NX2525					LN10 CX75 CX99		
		CN1000	T110A T1500A*							NX2525			CT3000	T15	LN10 CX75		

# A comparação de Classes para Fresamento

## > CVD COM COBERTURA

ISO	KORLOY	SUMITOMO	KYOCERA	ISCAR	SANDVIK	SECO	KENAMETAL	TOSHIBA	mitsubishi	HITACHI	VALENITE	WALTER	TAEKUTEC	NTK	DIJET
Fresamento P	NC5330*	ACP100		IC5400	GC4220	MP1500						WQM15	TT7400		
	NCM325				GC4230	MP2500 T25M			FH7020 F7030			WKP25 WQM25 WKP35 WQM35	TT7800		
	NCM335				GC4240	T350M		T3130			SM245				
Fresamento M	NC5330*					MP2500						WQM25			
	MCM325 NCM335				GC2040	GC2040		T3130	F7030			WTP35			
Fresamento K	NC5330*	ACK200		IC5100	GC3220	MK1500 MK3000	KC992M	T1115 T1015	MC5020		V01 VN8	WAK15 WKP25 WKP35	TT6800		

## > PVD COM COBERTURA

ISO	KORLOY	SUMITOMO	KYOCERA	ISCAR	SANDVIK	SECO	KENAMETAL	TOSHIBA	mitsubishi	HITACHI	VALENITE	WALTER	TAEKUTEC	NTK	DIJET
Fresamento P	PC210F									ATH80D PCA08M ACS05E PCA12M PC20M JX1005 TB6005 JX1020 CY9020					
	PC3600 PC3500	ACZ310	PR730	IC903 IC908 IC950	GC1010	MP3000*	KC522M KUC20M	GH330	AP20M GP20M		VC935		TT7070 TT7080 TT7030	QM3 ZM3	JC5003 JC5015
	PC5300*	ACP200 ACZ330	PR830 PR630	IC1008	GC1025 GC1030	F25M F30M	KC525M KUC30M	AH120	VP15TF UP20M	TB6045 CY250 PTH30E					JC5030 JC5040
	PC3545	ACP300 ACZ350	PR660	IC928	GC1030	F40M T60M	KC935M KC7140 KC720		VP30RT				TT8020		
Fresamento M	PC5300*	ACP200	PR730	IC903			KC5510 KC7020			JX1020 CY9020 JX1015 TB6020 CY250				QM3 ZM3	JC5003 JC5015
	PC9530 PC3545	ACP300 ACZ350	PR1025 PR630 PR660	IC900 IC250 IC928	GC1125 GC1025 GC2030 GC1030	F25M F30M F40M	KC522M KC725M KC735M KC7030	AH120 AH140		JX1045 TB6045 JX1060 TB6060	VC928 VC902 VC901	WQM35	TT9080		JC5030 JC5040
	PC8110* PC6510		PR510 PR905	DT7150 IC900 IC910 IC950 IC350			KC510M KC915M		VP10MF VP15TF		VC903 VC928		TT6290		JC5003
Fresamento K	PC5300*						KC520M	AH120	VP20RT		VC902 VC901		TT6030 TT6060		JC5015
Fresamento S	PC5300*	AC520U	PC660	IC328	GC1025	TS2500	KC510M		VP15TF	ACS05E			TT9030		

## > CERMET

ISO	KORLOY	SUMITOMO	KYOCERA	ISCAR	SANDVIK	SECO	KENAMETAL	TOSHIBA	mitsubishi	HITACHI	VALENITE	WALTER	TAEKUTEC	NTK	DIJET
Fresamento P	CN2000 CN20 CN30	T250A	TN100M TC60M	IC30N			KT195M	NS540 NS740	NX2525 NX4545	CH550 CH570			CT3000 CT7000	C50	
		T250A			CT530										
Fresamento K									NX2525						

★ : PVD : Cermet com cobertura ★ : Nova Classe



Sede

Holystar B/D, 1350, Nambusunhwan-ro, Geumcheon-gu, Seoul, 153-823, Korea  
Tel : +82-2-522-3181 Fax : +82-2-522-3184, +82-2-3474-4744  
Web : [www.korloy.com](http://www.korloy.com) E-mail : [export@korloy.com](mailto:export@korloy.com)

Fábrica em Cheongju

55, Sandan-ro, Heungdeok-gu, Cheongju-si, Chungcheongbuk-do, 361-290, Korea  
Tel : +82-43-262-0141 Fax : +82-43-262-0146

Fábrica em Jincheon

54, Gwanghyewonsandan 2-gil, Gwanghyewon-myeon, Jincheon-gun, Chungcheongbuk-do, 365-831, Korea  
Tel : +82-43-535-0141 Fax : +82-43-535-0144

Instituto P&D

55, Sandan-ro, Heungdeok-gu, Cheongju-si, Chungcheongbuk-do, 361-290, Korea  
Tel : +82-43-262-0141 Fax : +82-43-262-0711



620 Maple Avenue, Torrance, CA 90503, USA

Tel : +1-310-782-3800 Toll Free : +1-888-711-0001 Fax : +1-310-782-3885  
[www.korloyamerica.com](http://www.korloyamerica.com) E-mail : [sales@korloy.us](mailto:sales@korloy.us)



Heinrich-Lanz-Allee 12, 60437 Frankfurt am Main, Germany

Tel : +49-69-5069-887-0 Fax : +49-69-5069-887-29  
[www.korloyeurope.com](http://www.korloyeurope.com) E-mail : [sales@korloyeurope.com](mailto:sales@korloyeurope.com)



Ground Floor, Property No. 217, Udyog Vihar Phase 4, Gurgaon 122016, Haryana, INDIA

Tel : +91-124-4050030 Fax : +91-124-4050032  
[www.korloyindia.com](http://www.korloyindia.com) E-mail : [sales.kip@korloy.com](mailto:sales.kip@korloy.com)



Av. Aruana 280, conj.12, WLC, Alphaville, Barueri, CEP06460-010, SP, Brasil

Tel : +55-11-4193-3810  
E-mail : [vendas@korloy.com](mailto:vendas@korloy.com)

