

超硬品质 全心服务
Super Quality Dedicated Service

PCD切削刀片
PCD CUTTING INSERT



山田PCD系列

YAMADA PCD Series

我们的优势：

山田公司率先和国际顶尖材料供应商战略合作，针对性开发了优质的聚晶金刚石切削用材料。根据被加工材料不同的需求开发了细颗粒、中颗粒，粗颗粒以及混合颗粒几大不同的原材料系列，拥有最高的耐磨损性和耐崩损性，以保证在所有铝合金和非铁合金的加工中发挥高性能、高精度和高效率！合理的设计理念、全自动化批量生产模式使产品能够拥有更稳定的品质并最大限度的发挥出 PCD 材质的优异性能！

Our advantages:

Shanghai Yamada Tools Co.,Ltd leads to cooperate strategically with outstanding international material suppliers, specifically developing superior PCD cutting materials. According to different processing material demands,a few different raw material series (including with fine particle,medium particle,coarse particle and mixed particle)are developed, top wear and crash damage resistance to assure the high-performance, high-precision and high-efficiency in all the Aluminium alloy and non-iron alloy processing! Rational design concept and fully automated mass production mode will make the production stable and the PCD texture excellent to the furthest.

山田PCD Yamada grades	粒 度 granularity	加工对象 work material	我们的优势 our advantages
DS72	<1um	通用材料 general material	超细颗粒，晶粒间结合能力强，相对普通细颗粒材质在拥有高的刀刃质量的同时兼具更高的韧性、耐磨性和耐崩损性。 For superfine particle,the intergranular combining capacity is strong, compared with the common fine particle texture,it owns high cutting edge quality ,meanwhile high toughness,high wear and crash damage resistance.
DS31	10um	Si<13%的硅铝合金； 铜、铜合金； 石墨以及石墨复合材料； 未烧结陶瓷和硬质合金； Si<13% silumin, copper,copper alloy, graphite and graphite composite material, non-sintering ceramics and cemented carbide	一般切削用材料，刀刃质量高，耐磨性优秀，并具有相当的抗冲击强度，PCD 层的厚度包括标准、厚和薄三种，因此可以制作各种普通加工、粗加工以及精加工刀具和耐磨器件 General cutting material with high quality cutting edge, excellent wear resistance and considerable shock resistance strength.The PCD layer thickness includes standard,thick and thin,so it can make all kinds of common machining,rough machining,finish machining and wear resistance components.
DS51	25um	Si>13%的硅铝合金； 金属基复合材料； 烧结陶瓷和硬质合金； 其他高耐磨材料； Si>13% silumin, metal matrix composite, sintering ceramics and cemented carbide, other high wear resistance materials	由25um左右大的粗颗粒金刚石粒子烧结而成，耐磨性和抗冲击强度极高，拥有超长的工具寿命！ Sintered by 25um coarse particle diamond granule.The wear and shock strength resistance is strong.So it has a long tool life!
DS71	2um+30um	复合金属（铝+铸铁）； 低速切削铸铁； composite metal(Al+cast iron), low-speed cutting cast iron	由2um和30um的金刚石粒子混合烧结而成，从而使该材料能够拥有细颗粒材料的韧性和粗颗粒材料的耐磨性，并能够刃磨出锋利的切削刃，在苛刻的复合材料加工中发挥最佳的性能！ Mixed sintered by 2um and 30um diamond granule,which makes the material possess fine particle toughness and coarse particle wear-resistance,and be able to grind out sharp cutting edge,it plays the best performance in harsh composite material processing.

切削推荐条件

Recommended cutting conditions

被加工材料 Work material	切削速度Vc(m/min) cut speed	进给f(mm/rev) feed rate	切深ap(mm) cut depth	推荐材质 recommended material	
铝合金 (Si<13%)(Aluminum alloy)	100–3000	0.03–0.5	0.1–3	DS31	DS72
铝合金(Si>13%)(Aluminum alloy)	100–2500	0.03–0.4	0.1–2.5	DS51	
铜合金(Copper alloy)	100–1000	0.03–0.3	0.1–3	DS31	
强化塑料(reinforced plastics)	100–1000	0.05–0.3	0.1–2		
钛合金(titanium alloy)	100– 200	0.05–0.2	0.1–2		
硬质合金(cemented carbide)	10–30	0.03–0.1	0.05–0.3		
木材(Wood)	100–4000	0.1–0.4	0.1–3		
石墨(graphite)	100–600	0.1–0.5	0.05–2		

PCD断屑槽系列

Line up of PCD chipbreaker

◆特点：

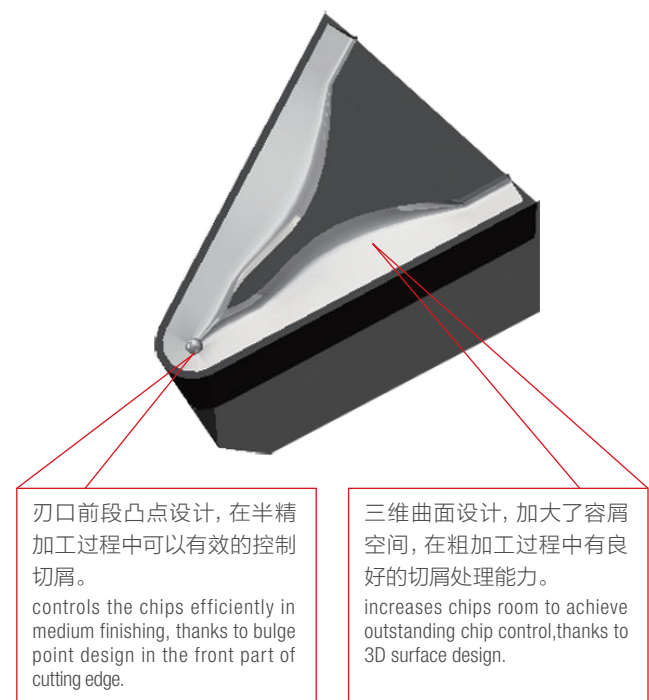
山田专利的断屑槽系列，可以轻松的应对加工过程中铝屑缠绕的问题，有效的折断切屑，大幅度提高加工效率，满足精加工表面粗糙度需求。

◆ Feature:

Yamada chipbreaker can solve aluminum chip control problems easily break chips effectively,to drastically improve work efficiency,and meet the requirement of surface roughness for finishing.

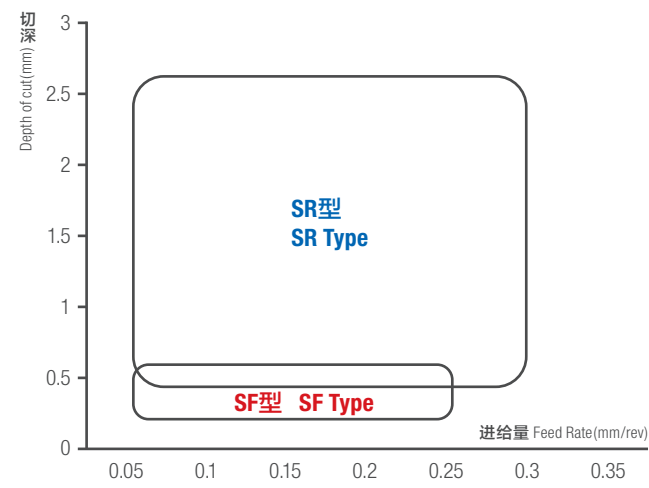
SR型：粗加工—半精加工

SR type: roughing-medium finishing



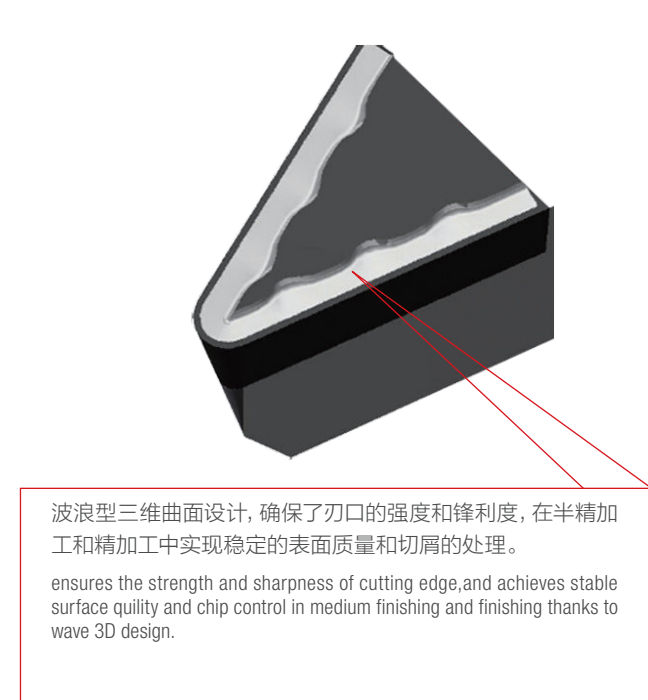
加工范围

process range



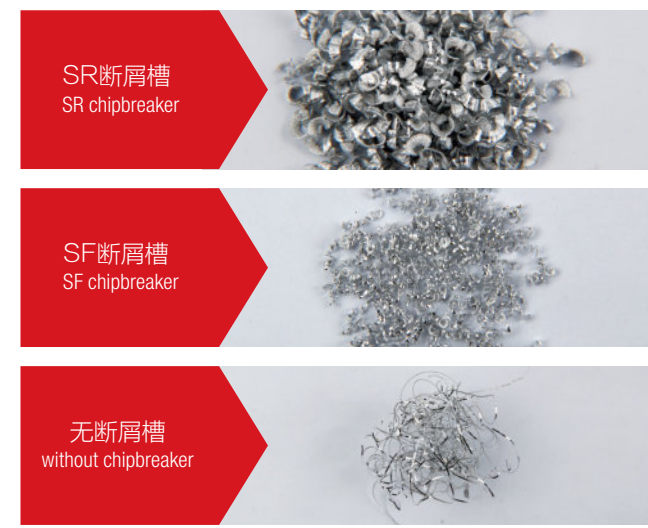
SF型：半精加工—精加工

SF type: medium finishing-finishing



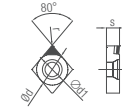
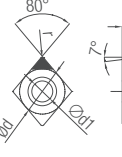
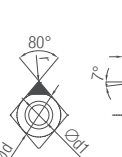
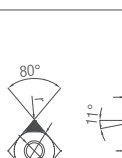
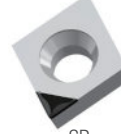
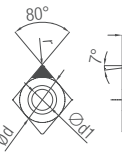
断屑效果

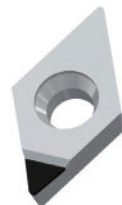
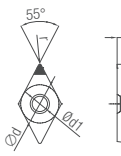
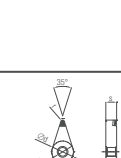
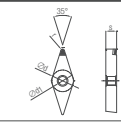
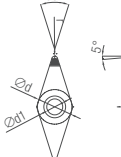
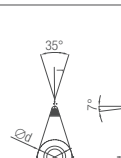
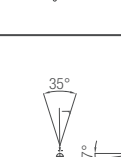
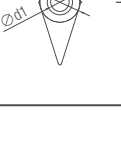
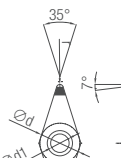
chipbreaker effect

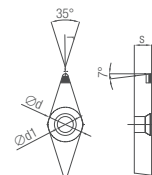
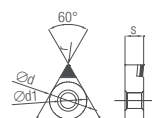
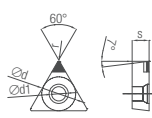
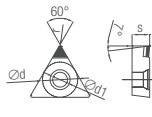
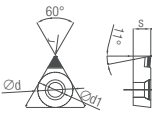
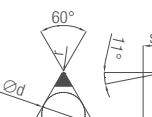


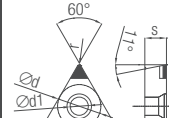
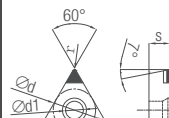
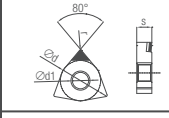
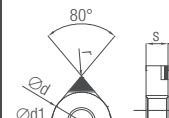
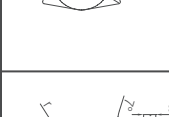
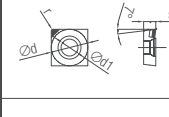
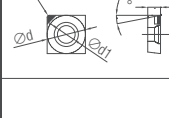
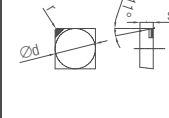
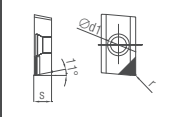
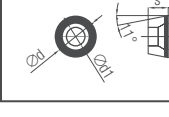
PCD标准刀片规格表

PCD standard insert specification listings

外观 appearance	外形 shape	型号 type	材质 material				内切圆(ϕd) inscribed circle	厚度(s) thickness	刀尖r角 nose radius	孔径(ϕd1) hole diameter
			DS72	DS31	DS51	DS71				
		CNMM	120404				12.7	4.76	0.4	5.16
			120408						0.8	
			120412						1.2	
		CCGW	060201				6.35	2.38	0.1	2.8
			060202						0.2	
			060204						0.4	
		CCGW	09T302				9.525	3.97	0.2	4.4
			09T304						0.4	
			09T308						0.8	
		CCMT	060202				6.35	2.38	0.2	2.8
			060204						0.4	
			060208						0.8	
			09T302						0.2	
		CPMT	080201				7.94	2.38	0.1	2.8
			080202						0.2	
			080204						0.4	
			090304						0.4	
		CPMT	090308				9.525	3.18	0.8	4.4
			090312						1.2	
		CCGT	060202-SR				6.35	2.38	0.2	2.8
			060204-SR						0.4	
		CCGT	060202-SF						0.2	4.4
			060204-SF						0.4	
		CCGT	09T302-SR				9.525	3.97	0.2	4.4
			09T304-SR						0.4	
			09T308-SR						0.8	
		CCGT	09T302-SF						0.2	4.4
			09T304-SF						0.4	
			09T308-SF						0.8	

外观 appearance	外形 shape	型号 type	材质 material				内切圆(ϕd) inscribed circle	厚度(s) thickness	刀尖r角 nose radius	孔径(ϕd1) hole diameter
			DS72	DS31	DS51	DS71				
		DNMM	150402				12.7	4.76	0.2	5.16
			150404						0.4	
			150408						0.8	
			150412						1.2	
		DCMT	070201				6.35	2.38	0.1	2.8
			070202						0.2	
			070204						0.4	
		DCMT	11T301				9.525	3.97	0.1	4.4
			11T302						0.2	
			11T304						0.4	
			11T308						0.8	
		DCMT	11T302-SR				9.525	3.97	0.2	4.4
			11T304-SR						0.4	
			11T308-SR						0.8	
		DCMT	11T302-SF				9.525	3.97	0.2	4.4
			11T304-SF						0.4	
			11T308-SF						0.8	
		VNMM	160404				9.525	4.76	0.4	3.8
			160408						0.8	
			160412						1.2	
		VBMT	110302				6.35	3.18	0.2	2.8
			110304						0.4	
			110308						0.8	
		VBMT	160402				9.525	4.76	0.2	4.4
			160404						0.4	
			160408						0.8	
			160412						1.2	
		VCMT	110302				6.35	3.18	0.2	2.8
			110304						0.4	
			110308						0.8	
		VCMT	160404				9.525	4.76	0.4	4.4
			160408						0.8	
			160412						1.2	
		VCMT	110302-SR				6.35	3.18	0.2	2.8
			110304-SR						0.4	
		VCMT	110302-SF				9.525	4.76	0.2	4.4
			110304-SF						0.4	
		VCMT	160404-SR						0.4	4.4
			160408-SR						0.8	
		VCMT	160412-SR						1.2	

外观 appearance	外形 shape	型号 type	材质 material				内切圆(ϕd) inscribed circle	厚度(s) thickness	刀尖r角 nose radius	孔径(ϕd1) hole diameter
			DS72	DS31	DS51	DS71				
		VCMT	160404-SF				9.525	4.76	0.4	4.4
			160408-SF						0.8	
			160412-SF						1.2	
		TNMM	160404				9.525	4.76	0.4	3.81
			160408						0.8	
			160412						1.2	
		TCGW	110302				6.35	3.18	0.2	3.4
			110304						0.4	
		TCGT	110202				6.35	2.38	0.2	2.8
			110204						0.4	
		TCMT	080202				4.76	2.38	0.2	2.4
			080204						0.4	
		TCMT	090202				5.56	2.38	0.2	2.5
			090204						0.4	
		TCMT	110301				6.35	3.18	0.1	3.4
			110302						0.2	
			110304						0.4	
		TPGW	080202				4.76	2.38	0.2	2.4
			080204						0.4	
		TPGW	090202				5.56	2.38	0.2	2.8
			090204						0.4	
		TPGW	110302				6.35	3.18	0.2	3.4
			110304						0.4	
		TPGW	160404				9.525	4.76	0.4	4.4
			160408						0.8	
			160412						1.2	
		TPGT	110302				6.35	3.18	0.2	3.4
			110304						0.4	
		TPGN	090204				5.56	2.38	0.4	/
			090208						0.8	
		TPGN	110302				6.35	3.18	0.2	/
			110304						0.4	
			110308						0.8	
		TPGN	160302				9.525	3.18	0.2	/
			160304						0.4	
		TPGN	160308						0.8	

外观 appearance	外形 shape	型号 type	材质 material				内切圆(ϕd) inscribed circle	厚度(s) thickness	刀尖r角 nose radius	孔径(ϕd1) hole diameter
			DS72	DS31	DS51	DS71				
		TPGT	090202-SR				5.56	2.38	0.2	2.8
			090204-SR						0.4	
		TPGT	090202-SF				5.56	2.38	0.2	2.8
			090204-SF						0.4	
		TPGT	110302-SR				6.35	3.18	0.2	3.4
			110304-SR						0.4	
		TPGT	110302-SF				6.35	3.18	0.2	3.4
			110304-SF						0.4	
		TPGT	160404-SR				9.525	4.76	0.4	4.4
			160408-SR						0.8	
			160412-SR						1.2	
		TPGT	160404-SF				9.525	4.76	0.4	4.4
			160408-SF						0.8	
			160412-SF						1.2	
		WNMM	080404				12.7	4.76	0.4	5.16
			080408						0.8	
			080412						1.2	
		WNMT	080404-SR				12.7	4.76	0.4	5.16
			080408-SR						0.8	
			080412-SR						1.2	
		WNMT	080404-SF				12.7	4.76	0.4	5.16
			080408-SF						0.8	
			080412-SF						1.2	
		SCMT	09T302				9.525	3.97	0.2	4.4
			09T304						0.4	
			09T308						0.8	
		SPGW	090304				9.525	3.18	0.4	4.4
			090308						0.8	
		SPGN	090304				9.525	3.18	0.4	/
			090308						0.8	
		SPGN	120304				12.7	3.18	0.4	/
		SPGN	120308						0.8	
		APMT	160404				/	4.76	0.4	4.4
			160408						0.8	
		RPGW	080300				8	3.18	/	3.4
		RPGT	080300						/	



山田CBN系列

Yamada CBN series

我们的优势:

山田公司和国际优秀材料供应商战略合作，针对性开发了高效率CBN切削用材料。CBN材料的硬度仅次于PCD，并且与铁系金属亲和性低，即使在高温（1000℃）状态下仍然能够保持原有的强度和硬度，并且不会和铁、镍、钴等金属发生化学反应。在加工淬火钢、粉末冶金、铸铁等难切削材料时实现了高效率 and 长寿命！合理的设计理念、全自动化批量生产模式使产品能够拥有更稳定的品质并最大限度的发挥出 CBN 材质的优异性能！

Our advantages:

Shanghai Yamada Tools Co.,Ltd. builds a strategic cooperation with foreign material suppliers, specificky developing high-efficiency CBN cutting material.CBN material hardness is next to PCD,and the affinity with iron metal is low, it can still keep original sthrength and hardness even though under high temperature（1000℃）, won't react chemically with iron,Ni,Co or other metals.The high-efficiency and long-life will come ture while processing hardened steel,powdering metallurgy,casting iron and difficult-cut materials! Rational design philosophy and fully automated mass production mode will make the production stable and the CBN material excellent to the furthest.

加工材质 work material	是否涂层 coated or not	山田CBN YAMADA CBN grade	加工形态 process form	我们的优势 our advantage
淬火钢 hardened steel	涂层 coated	BT C10	高速连续加工 high-speed continuous machining	PVD 涂层材质，结合耐月牙洼磨损的 CBN 母材和特殊高耐磨损性的 PVD 涂层，所以特别适合在连续车削条件下对淬硬钢进行高速精加工。 PVD coated material is especially suitable for high-speed finishing of hardened steel in continuous turning, thanks to crater wear resistance CBN base material and special high wear resistance PVD coating.
		BT C20	通用型 general type	PVD 涂层材质，选用耐磨性和高韧性的 CBN 母材，并附加高耐磨性的涂层，所以特别适合在连续切削至中等断续切削条件下对淬硬钢进行精加工。对淬硬钢的切削有较高的通用性。 PVD coated material is especially suitable for finishing of hardened steel in continuous cutting to medium interrupted cutting,and more universal to cutting for hardened steel ,thanks to using wear resistance and high toughness CBN base material and high wear coating.
		BT C30	断续－重断续加工 interrupted-heavy interrupted machining	PVD 涂层材质，选用具有优异耐磨性的 CBN 母材和耐剥落性的 PVD 涂层，特别适合在重断续切削条件下对淬硬钢进行精加工，尤其适合纯粹的断续切削。 PVD coated material is especially suitable for finishing of hardened steel in heavy interrupted cutting,specific for interrupted cutting,thanks to using excellent breakage resistance CBN base material and peel resistance PVD coating.
	无涂层 uncoated	BT 100	连续加工 continuous machining	低含量的 CBN 材质，主要强调抗月牙洼磨损性能，用于在连续切削条件下对淬硬钢进行高速精加工。 Low content of CBN material,mainly emphasized on crater wear performance,used for high-speed finishing of hardened steel in continuous cutting.
		BT 110	连续－轻断续 continous-light interrupted	低含量的 CBN 材质，有较高的耐磨性，用于在连续切削至轻微断续切削条件下对淬硬钢进行中速精加工。 Low content of CBN material,with high wear resistance,used for medium-speed finishing of hardened steel in continuous cutting to light interrupted cutting.
		BT 120	连续－中断续 continuous-midium interrupted	中等含量的 CBN 材质，在耐磨性和抗冲击韧性间高度均衡，用于在连续切削至中断续切削条件下对淬硬钢进行精加工。具有较高的通用性。 Middle content of CBN material,high equal in wear resistance and impact toughness resistance,used for finishing of hardened steel in continuous cutting to medium interrupted cutting,has high general purpose.
		BT 130	连续－重断续 continuous-heavy interrupted	高含量的 CBN 材质，有较高的抗冲击韧性，用于在连续切削至重断续切削条件下对淬硬钢进行精加工。 High content of CBN material,has high impact toughness resistance,used for finishing of hardened steel in continuous cutting to heavy interrupted cutting.

加工材质 work material	是否涂层 coated or not	山田CBN YAMADA CBN grade	加工形态 process form	我们的优势 our advantage
淬火钢 hardened steel	无涂层 uncoated	BT 135	纯粹的重断续 heavy interrupted	高含量的 CBN 材质，具有非常高的强韧性和抗冲击韧性，主要针对对淬硬钢纯粹的重断续切削而开发。 High content of CBN material,with strong toughness and impact roughness resistance,aimed at developing for heavy interrupted cutting of hardened steel.
铸铁 cast iron	无涂层 uncoated	BT 310	连续－断续 continuous-interrupted	高含量的 CBN 材质，铸铁加工的通用材料。 High content of CBN ,is general material for machining cast iron.
		BT 320	连续－断续 continuous-interrupted	高含量的 CBN 材质，具有较高的耐磨性和卓越的冲击强度，适用于连续切削至间断切削条件下切削高硬度铸铁和球墨铸铁。 High content of CBN material has high wear resistance and outstanding impact resistance,suitable for high hardness cast iron and nodular cast iron in continuous cutting to interrupted cutting.
		BT 330	连续－断续 continuous-interrupted	高含量的 CBN 材质，具有较高的耐磨性和卓越的冲击强度，适用于连续切削至间断切削条件下切削珠光体灰口铸铁。 High content CBN material,has high wear resistance and outstanding impact resistance strength,suitable for cutting pearlitic grey cast iron in continuous cutting to interrupted cutting.
高温合金 / 烧结金属 high temperature alloy /sintering metal	无涂层 uncoated	BT 510	连续－轻断续 continuous-light interrupted	中等含量的 CBN 材质，具有良好的化学稳定性和耐磨性，适用于连续切削至轻微断续切削条件下对高温合金和烧结金属进行加工，尤其适合进排气阀座的加工。 Middle content of CBN material,with excellent chemical stability and wear resistance,suitable for machining high temperature alloy and sintering metal in continuous cutting and light interrupted cutting,especially suitable for machining intake and exhaust valve seat.
		BT 520	连续－断续 continuous-interrupted	高含量的 CBN 材质，有较高的耐磨性和韧性，适用于连续切削到中等断续切削条件下对高温合金和烧结金属进行加工。 High content of CBN material,with high wear resistance and toughness,suitable for machining high temperature alloy and sintering metal in continuous cutting to middle interrupted cutting.

标准CBN刀片编号规则

Standard CBN insert numbering rule

2 **XX** - **C** **N** **G** **A** **12** **04** **08** **SH** **S** **012** **25**

① ② ③ ④ ⑤

① 切削刃记号 cutting edge mark		② 涂层记号 coating mark		④ 特殊刃口处理 special edge treatment		⑤ 刀尖样式 tool nose type		
记号 (mark)	切刃数 (no. of cutting edges)	记号 (mark)	意义 (mean)	记号 (mark)	意义 (mean)	倒棱尺寸 (chamfer size)	记号 (mark)	意义 (mean)
无 none	1 个切刃 (1 cutting edges)	MC	涂层 (coated)	SH	锋利型 sharp type	0.1°15°	F	锋利刀尖 sharp tool nose
2	2 个切刃 (2 cutting edges)	MU	无涂层 (uncoated)	无 (none)	通用加工 general machining	0.12°25°	E	仅珩磨 R just honing R-angle
4	4 个切刃 (4 cutting edges)	③ ISO 标准代号 standard code		ST	强化刃口 strengthen the edge	0.17°30°	T	仅倒棱 just chamfer
6	6 个切刃 (6 cutting edges)			FU	全面 CBN full face CBN		S	倒棱 + 珩磨 chamfer+honing
8	8 个切刃 (8 cutting edges)			TR	粗加工 断屑槽 rough machining chipbreaker			
				TF	精加工 断屑槽 finish machining chipbreaker			
				W	带修光刃 with wiper cutting edge			

备注 :S01225 表示:倒棱角度为 25°, 宽度为 0.12mm, 有 R 钝圆

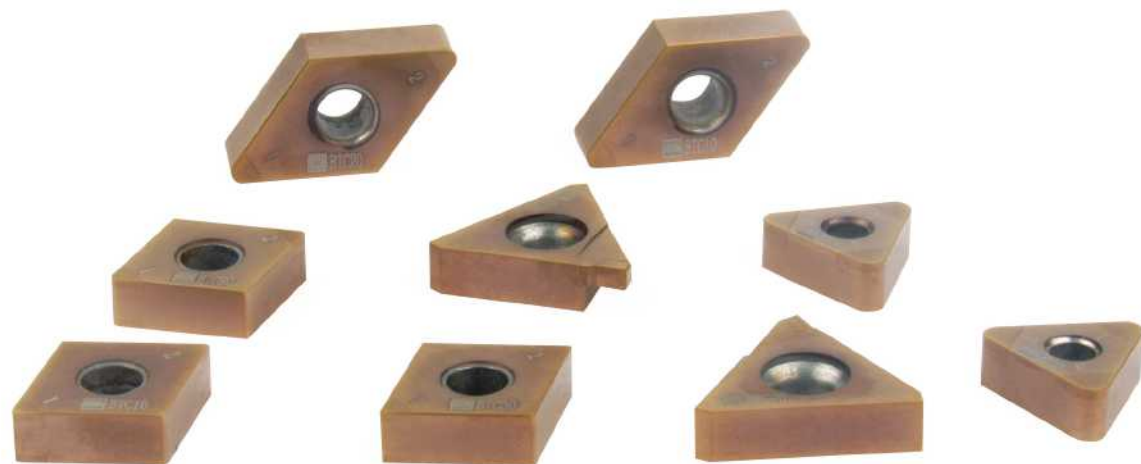
remark:S01225 means the chamfer angle 25°, land width 0.12mm with R blunt round

备注 :S01225 表示:倒棱角度为 25°，宽度为 0.12mm，有 R 钝圆
remark:S01225 means the chamfer angle 25°，land width 0.12mm,with R blunt round



淬火钢切削涂层CBN系列

CBN coating series for cutting hardened steel



◆特点:

随着以车代磨技术的日益普及，客户对切削速度和刀具寿命的要求也越来越高，山田刀具开发了具有高韧性的 CBN 母材和优异耐磨性的涂层工艺，实现了淬火钢加工的全新产品系列 CBN 涂层刀片，由于取得更高的切削效率和刀具寿命，所以可以有效的降低淬火钢的切削成本！

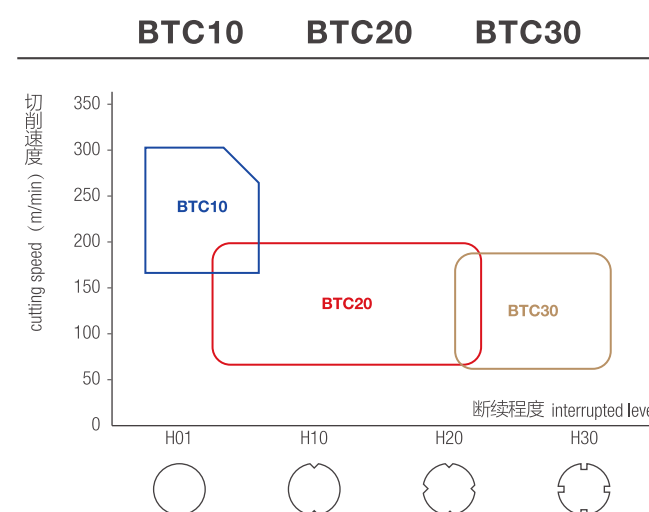
◆ Feature:

With the growing popularity of turning instead of grinding technology ,customers have higher requirement of cutting speed and tool life,Yamada develops high toughness CBN base material and excellent wear resistance coated craft,realizing new CBN coated insert series for machining hardened steel, reducing cutting cost of hardened steel as achieving higher cutting efficiency and tool life.

淬火钢加工推荐切削条件

recommended cutting condition for machining hardened steel

材质 material	切削速度 cutting speed Vc(m/min)						进给 feed rate f (mm/rev)	切深 depth of cut ap (mm)
	50	100	150	200	250	300		
BTC10				180-220-300			0.03-0.08-0.15	0.05-0.12-0.2
BTC20		80-140-200					0.05-0.15-0.3	0.1-0.3-0.5
BTC30		80-140-180					0.05-0.1-0.2	0.05-0.2-0.4

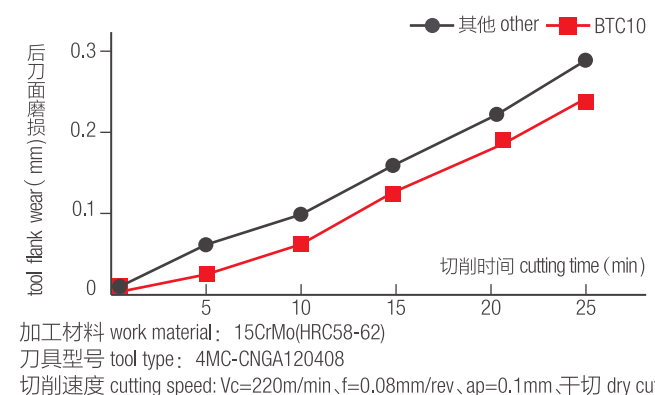


加工实例

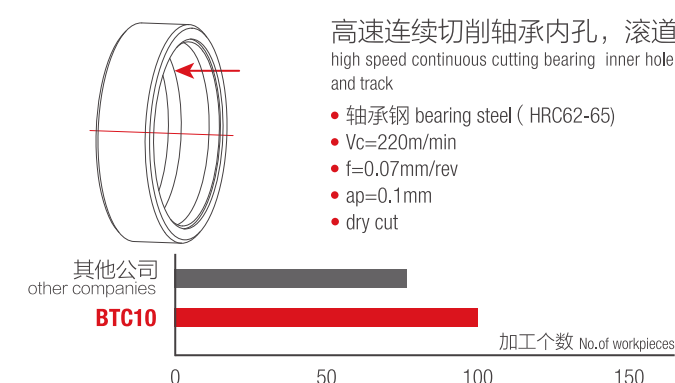
Process instance

BTC10 高速连续切削 BTC10 high-speed continuous cutting

切削性能 cut performance

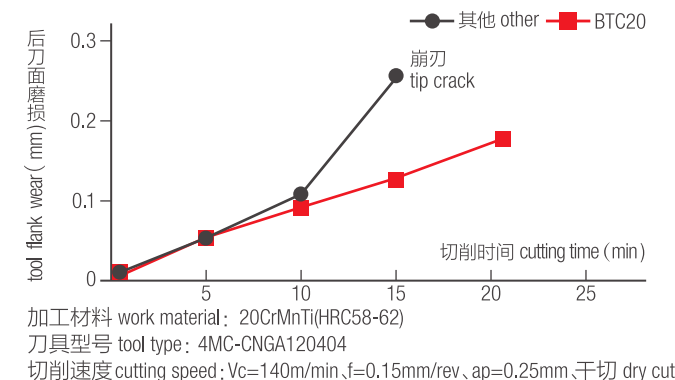


测试结果 test result

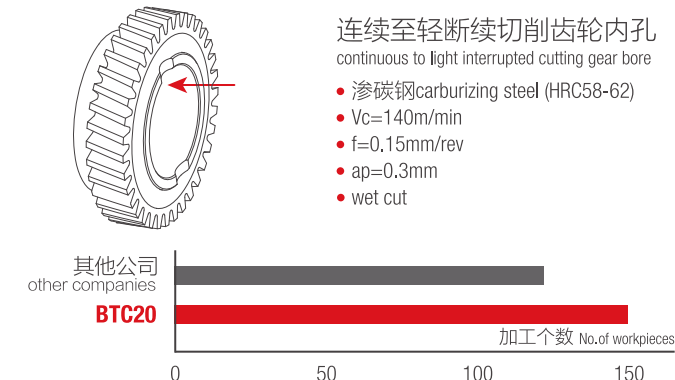


BTC20 通用加工 BTC20 general machining

切削性能 cut performance

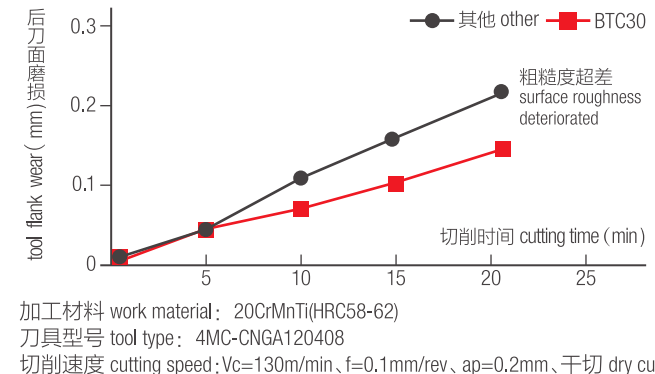


测试结果 test result

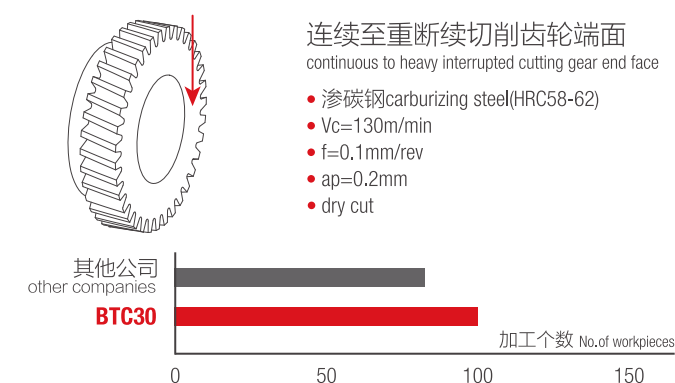


BTC30 重断续切削 BTC30 heavy interrupted cutting

切削性能 cut performance



测试结果 test result



淬火钢切削CBN系列

CBN series for cutting hardened steel



◆ 特点:

山田非涂层 CBN, 采用不同粒径的 CBN 微粒和最新技术的结合剂, 兼具优异的耐崩损性和耐磨性, 从淬火钢的高速连续加工到严重断续加工均有不同的材质相对应, 配合山田优化的焊接和刃磨工艺, 更是将 CBN 的优势发挥的淋漓尽致, 并保证较高稳定性!

◆ Feature:

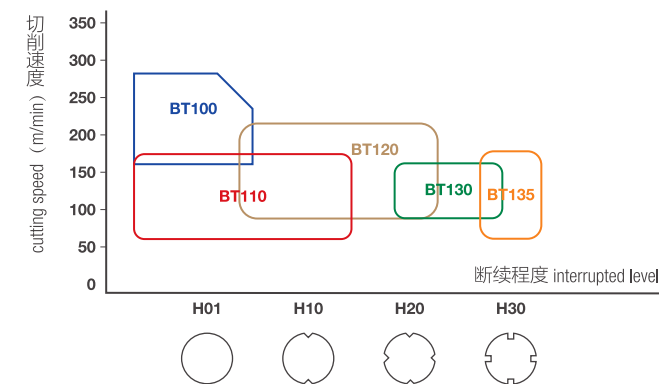
Yamada uncoated CBN, adopts different diameters of CBN particles and newly developed binder, with excellent breakage and wear resistance, has different corresponding materials from high speed continuous machining to heavy interrupted machining of hardened steel, and Yamada optimizing welding and grinding craft, makes CBN merit to an extreme and keep high stability.

淬火钢加工推荐切削条件

Recommended cutting conditions for processing hardened steel

材质 material	切削速度 cutting speed Vc(m/min)						进给 feed rate f (mm/rev)	切深 depth of cut ap (mm)
	50	100	150	200	250	300		
BT100				170-220-280			0.03-0.08-0.15	0.05-0.12-0.2
BT110		100-130-180					0.05-0.15-0.3	0.1-0.3-0.5
BT120			150-180-220				0.05-0.1-0.2	0.05-0.2-0.3
BT130		80-130-150					0.05-0.1-0.35	0.05-0.2-0.4
BT135		80-130-180					0.05-0.1-0.35	0.05-0.2-0.3

BT100 BT110 BT120 BT130 BT135

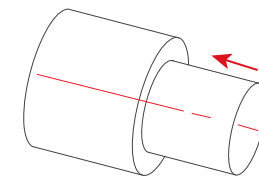


加工实例

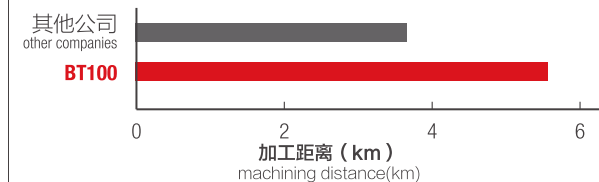
Process instance

BT100 高速连续切削

high speed continuous cutting

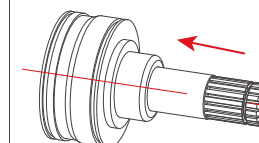


- 高速连续切削轴外径
high speed continuous cutting shaft external diameter
- 淬硬钢hardened steel (HRC58-65)
 - 4MU-DNGA150408
 - Vc=250m/min
 - f=0.08mm/rev
 - ap=0.1mm
 - dry cut

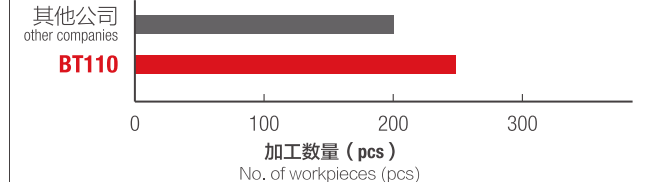


BT110 连续-轻断续切削

continuous-light interrupted cutting

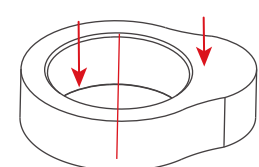


- 连续切削外星轮外径
continuous cutting besides-star wheel external diameter
- 淬硬钢hardened steel (HRC58-62)
 - 4MU-CNGA120408
 - Vc=150m/min
 - f=0.15mm/rev
 - ap=0.3mm
 - dry cut

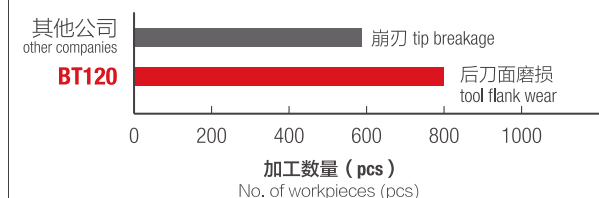


BT120 连续-中断续切削

continuous-medium interrupted cutting

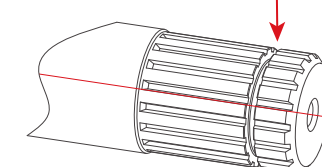


- 凸轮刮面、精车内孔
cam facing, finish turning internal hole
- 100Cr6
 - TPGN160308 FU
 - Vc=170m/min
 - f=0.18/0.05mm/rev
 - ap=0.3mm
 - dry cut

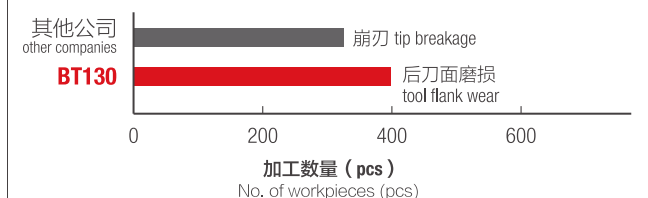


BT130 连续-重断续切削

continuous-heavy interrupted cutting

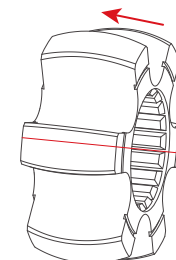


- 花键割槽
Spline cutting groove
- UC1 (HRC58-62)
 - Vc=110m/min
 - f=0.04mm/rev
 - ae=2.25mm
 - dry cut

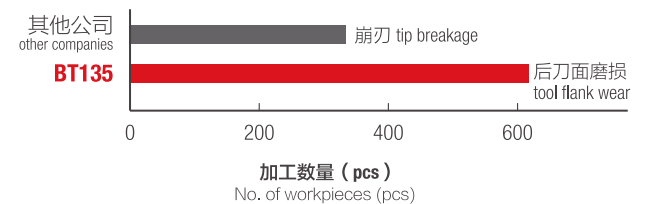


BT135 纯粹的重断续切削

heavy interrupted cutting



- 重断续切削内星轮外径
heavy interrupted cutting internal star wheel external diameter
- 20MnCr5 (HRC58-62)
 - 3MU-TNGA160416
 - Vc=170m/min
 - f=0.08mm/rev
 - ap=0.3mm
 - dry cut



铸铁切削CBN系列

CBN series for cutting cast iron



◆特点:

山田非涂层 CBN 铸铁切削系列, 选用高含量的 CBN 材质, 具有较高的耐磨性和抗月牙洼磨损能力。并且高含量的 CBN 具有较高的热传导率和韧性, 能够胜任灰铸铁和冷硬铸铁的高速粗精加工!

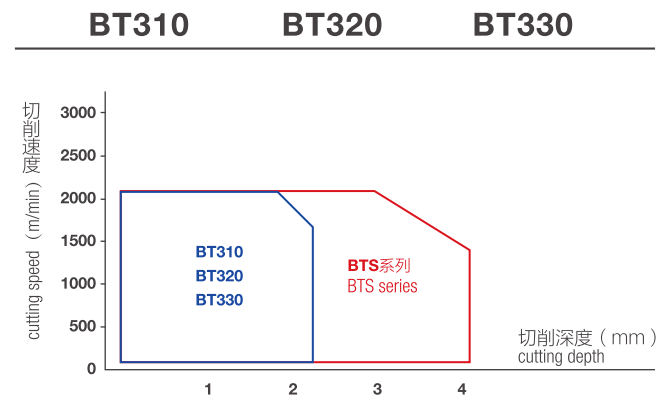
◆ Feature:

Yamada uncoated CBN series for cutting cast iron, adopts high content of CBN material, with high wear resistance and crater wear resistance. High content of CBN has high thermal conductivity and toughness, realizing high speed rough and finish machining for gray cast iron and chilled cast iron.

加工推荐切削条件

recommended cutting conditions

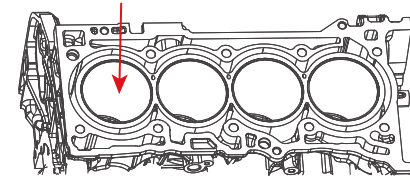
材质 material	切削速度 cutting speed Vc(m/min)						进给 feed rate f (mm/rev)	切深 depth of cut ap (mm)
	100	500	1000	1500	2000	3000		
BT310	200—800—2000						0.1—0.2—0.5	0.1—0.5—2.0
BT320	80—250—500						0.05—0.15—0.4	0.1—0.3—0.5
BT330	200—600—1000						0.08—0.15—0.4	0.1—0.3—0.5



加工实例

Process instance

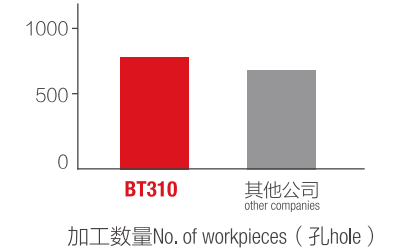
BT310 连续 – 断续 continuous-interrupted



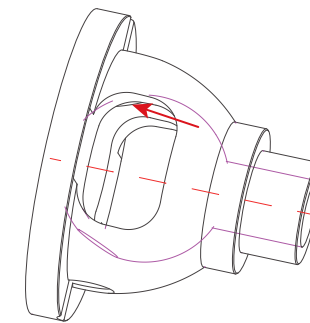
精镗缸孔

finish boring cylinder hole

- 加工材质work material: HT250
- 刀片型号insert type: HDGN050304
- Vc=800m/min
- fz=0.12mm/rev
- ap=0.75mm
- wet cut



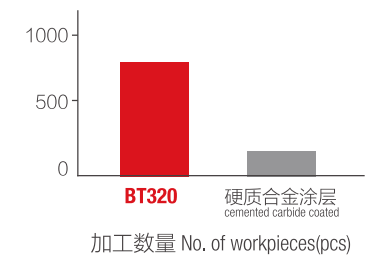
BT320 连续 – 断续 continuous-interrupted



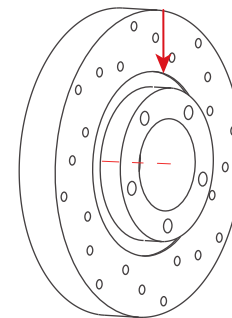
精车差速器壳体内球面

finish turning differential mechanism housing inner sphere

- 加工材质work material: QT600
- 刀片型号insert type: 4MU-DNGA150412
- Vc=300m/min
- f=0.2mm/rev
- ap=0.3mm
- dry cut



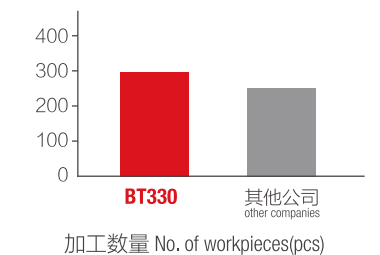
BT330 连续 – 断续 continuous-interrupted



精车刹车盘

finish turning brake flange

- 加工材质work material: TL048A
- 刀片型号insert type: 2MU-CNGA120408
- Vc=700m/min
- f=0.15mm/rev
- ap=0.3mm
- dry cut



高温合金及烧结金属切削CBN系列

CBN series for cutting high temperature alloy and sintering metal



◆ 特点:

山田非涂层 CBN 高温合金及烧结金属切削系列, 选用特殊的结合剂和 CBN 微粒烧结而成, 具有很高的强韧性, 在刀尖很锋利的情况下依然可以保持刀口具有很高的强度, 从而可以抑制高温合金切削时毛刺的产生, 并实现稳定加工。

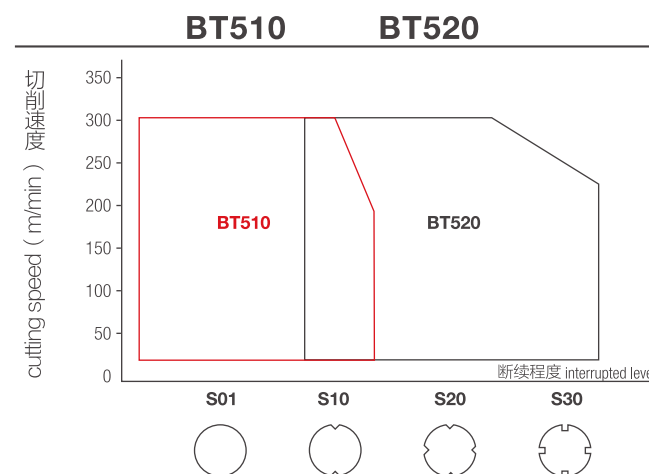
◆ Feature:

Yamada uncoated CBN high temperature alloy and sintering metal series, adopts special binder and CBN particles sintered, has strong toughness, and keeps cutting edge with a high strength in sharp tool nose, so it can prevent the burrs to generate in cutting high temperature alloy, and achieve the machining stability.

淬火钢加工推荐切削条件

recommended cutting condition for machining hardened steel

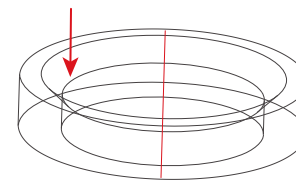
材质 material	切削速度 cutting speed Vc(m/min)						进给 feed rate f (mm/rev)	切深 depth of cut ap (mm)
	50	100	150	200	250	300		
BT510	50—90—150						0.03—0.08—0.15	0.05—0.15—0.25
BT520	50—150—220						0.05—0.12—0.25	0.1—0.3—0.5



加工实例

Process instance

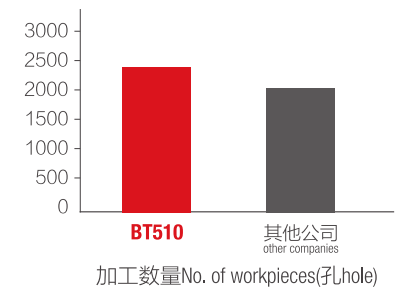
BT510 连续 – 轻断续 continuous-light interrupted



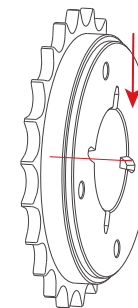
进气阀座精加工

intake valve seat finish machining

- 加工材质work material: 粉末冶金powder metallurgy
- 刀片型号insert type: HDGN060200
- Vc=95m/min
- fz=0.08mm/rev
- ap=0.2mm
- wet cut



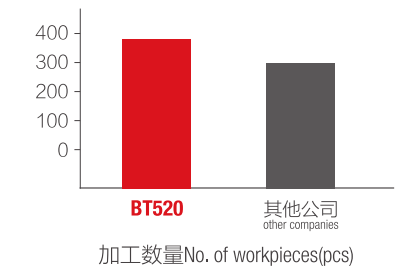
BT520 连续 – 断续 continuous-interrupted



精加工端面

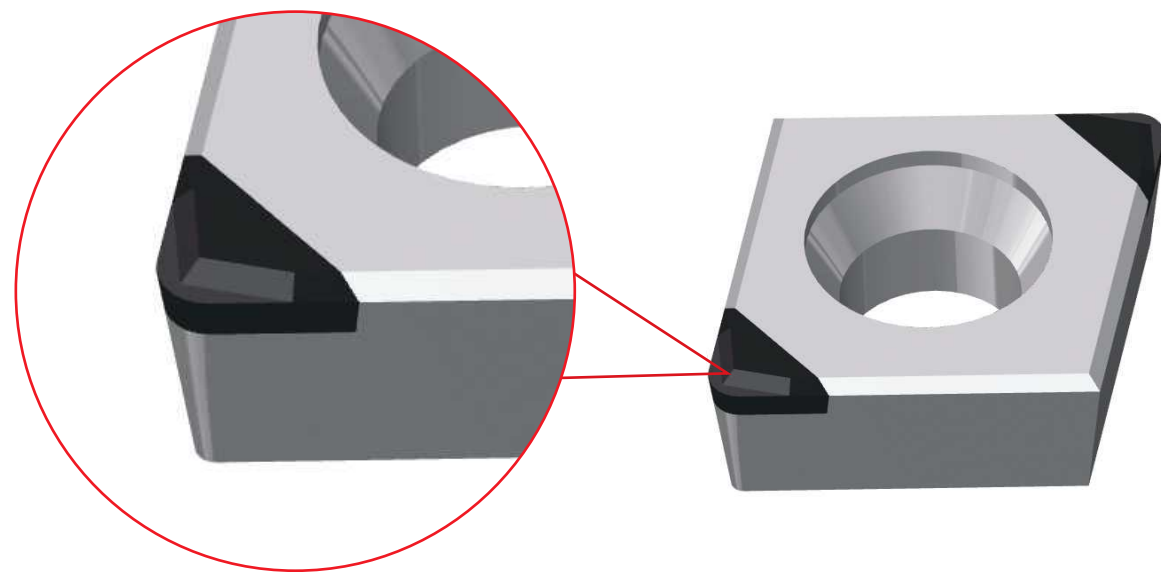
finish machining end face

- 加工材质work material: 高温合金high temperature alloy
- 刀片型号insert type: 2MU-CNGA120408
- Vc=180m/min
- f=0.12mm/rev
- ap=0.25mm
- wet cut



CBN断屑槽系列

CBN chipbreaker series



◆ 特点:

山田专利的断屑槽系列,可以分别应用在不同加工工况和不同加工余量的切削中。在折断铁屑的同时,保证更长的刀具寿命。

◆ Feature:

Yamada patented chipbreaker series,can be applied to cutting in similar working condition and different working allowance.Longer tool life is ensured while breaking iron scrap.

加工案例 process case



齿圈内孔粗加工
gear ring inner hole rough machining

- 加工材质work material: 20CrMnTi
- 刀片型号insert type: 2MC-CCGT09T304
- $V_c=160\text{m/min}$
- $f=0.15\text{mm/rev}$
- $ap=0.75\text{mm}$

断屑效果 chip breaking result



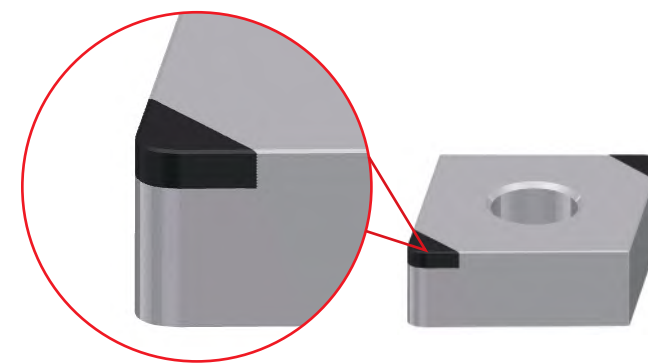
无断屑槽 without chipbreaker



TR型断屑槽 TR type chipbreaker

CBN修光刀系列

CBN wiper series



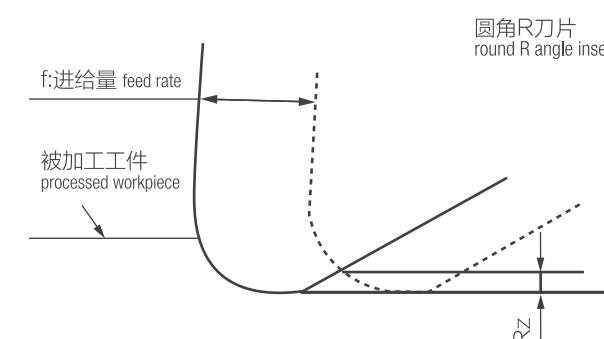
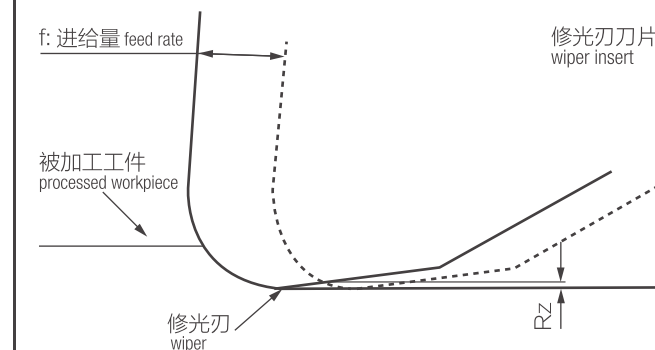
◆ 特点:

山田 CBN 修光刀系列,进一步巩固了以车代磨的加工技术,在低线速和高进给的切削环境下取得更加优异的表面粗糙度,可以与磨削相抗衡,具有高效率、高寿命和优异的光洁度!

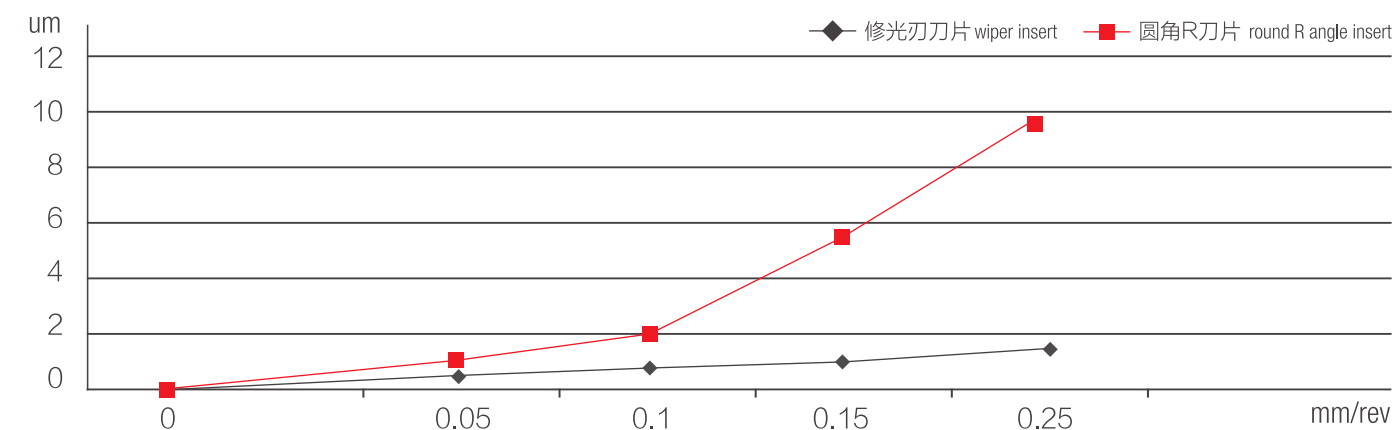
◆ Feature:

Yamada CBN wiper series,reinforces the technology of turning instead of grinding,enabling more excellent surface roughness equal to grinding processing,with high efficiency,long life and outstanding roughness.

修光刀刀片切削方式 wiper insert cutting method



修光刀刀片使用性能 wiper insert use performance



CBN标准刀片规格表

CBN standard insert specification listings

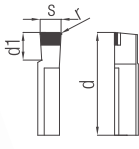
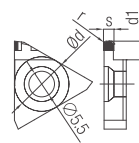
外观 Appearance	刀尖形状 Edge Shape	刃数 No.of edges	型号 Type		材质 Material												内切圆 (C d) Inscribed circle	厚度 (s) Thickness	刀尖r角 Nose Radius	孔径 (C d1) Hole Diameter		
					BT10	BT20	BT30	BT100	BT110	BT120	BT130	BT135	BT310	BT320	BT330	BT510					BT520	
	标准型 standard type	2	CNGA	120404	●											12.7	4.76	0.4	5.16			
				120408	●															0.8		
				120412																1.2		
		4	CNGA	120404	●	●	●													0.4		
				120408	●	●	●													0.8		
				120412	●	●														1.2		
	锋利型 sharp type	4	CNGA	120404SH	●													0.4				
				120408SH	●															0.8		
				120412SH	●															1.2		
	断屑槽型 chipbreaker type	4	CNGG	120404TR														0.4				
				120408TR	●															0.8		
				120412TR	●															1.2		
	修光刀型 wiper type	4	CNGA	120404W	●													0.4				
				120408W	●															0.8		
				120412W																1.2		
	标准型 standard type	2	CCGW	060202														6.35		2.38	0.2	2.8
				060204																	0.4	
				060208																	0.8	
		4	CCGW	09T302	●											9.525	3.97	0.2				
				09T304	●													0.4				
				09T308	●													0.8				
	标准型 standard type	2	DNGA	150404	●											12.7	4.76	0.4	5.16			
				150408	●															0.8		
				150412	●															1.2		
		4	DNGA	150404	●	●	●													0.4		
				150408	●	●	●													0.8		
				150412	●	●	●													1.2		
	锋利型 sharp type	4	DNGA	150404SH	●													0.4				
				150408SH	●															0.8		
				150412SH	●															1.2		
	断屑槽型 chipbreaker type	4	DNGG	150404TR														0.4				
				150408TR	●															0.8		
				150412TR	●															1.2		
				150404TR																0.4		
				150408TR	●															0.8		

外观 Appearance	刀尖形状 Edge Shape	刃数 No.of edges	型号 Type		材质 Material												内切圆 (C d) Inscribed circle	厚度 (s) Thickness	刀尖r角 Nose Radius	孔径 (C d1) Hole Diameter
					BT10	BT20	BT30	BT100	BT110	BT120	BT130	BT135	BT310	BT320	BT330	BT510				
	标准型 standard type	4	DNGA	150604	●											12.7	6.35	0.4	5.16	
				150608	●													0.8		
				150612	●													1.2		
	标准型 standard type	2	DCGW	070202												6.35	2.38	0.2	2.8	
				070204														0.4		
				070208														0.8		
	标准型 standar d type	2	DCGW	11T302	●											9.525	3.97	0.2	4.4	
				11T304	●													0.4		
				11T308	●													0.8		
	标准型 standard type	2	VNGA	160404	●											9.525	4.76	0.4	3.81	
				160408	●															0.8
				160412	●															1.2
		4	VNGA	160404	●	●	●													0.4
				160408	●	●	●													0.8
				160412	●	●	●													1.2
	锋利型 sharp type	4	VNGA	160404SH	●															0.4
				160408SH	●															0.8
				160412SH	●															1.2
	断屑槽型 chipbreaker type	4	VNGG	160404TR																0.4
				160408TR	●															0.8
				160412TR	●															1.2
	标准型 standard type	2	VBGW	110304												6.35	3.18	0.4	2.8	
				110308														0.8		
			VBGW	160404	●														0.4	9.525
	160408	●													0.8					
	标准型 standard type	2	VCGW	160404	●											0.4				
				160408	●											0.8				
	锋利型 sharp type	2	VCGW	160404SH	●											0.4				
				160408SH	●											0.8				
		标准型 standard type	3	TNGA	160404	●											9.525	4.76	0.4	3.81
160408					●														0.8	
160412					●														1.2	
160416					●	●						●							1.6	



外观 Appearance	刀尖形状 Edge Shape	刃数 No.of edges	型号 Type		材质 Material												内切圆 (C d) Inscribed circle	厚度 (s) Thickness	刀尖r角 Nose Radius	孔径 (C d1) Hole Diameter
					BT10	BT20	BT30	BT100	BT110	BT120	BT130	BT135	BT310	BT320	BT330	BT510				
	锋利型 sharp type	3	TNGA	160404SH	●											9.525	4.76	0.4	3.81	
				160408SH	●															0.8
				160412SH	●															1.2
	断屑槽型 chipbreaker type	3	TNGG	160404TR													9.525	4.76	0.4	3.81
				160408TR	●														0.8	
				160412TR															1.2	
	标准型 standard type	3	TPGW	160404													6.35	3.18	0.4	4.4
				160408															0.8	
		3	TPGW	110302															0.2	3.4
				110304															0.4	
	锋利型 sharp type	3	TPGW	160404SH													9.525	4.76	0.4	4.4
				160408SH															0.8	
		3	TPGW	110302SH													6.35	3.18	0.2	3.4
				110304SH															0.4	
				110308SH															0.8	
	标准型 standard type	2	SNGA	120404												12.7	4.76	0.4	5.16	
				120408																0.8
				120416																1.6
	锋利型 sharp type	2	SNGA	120404SH												9.525	3.97	0.4	4.4	
				120408SH																0.8
				120416SH																1.6
	标准型 standard type	2	SCGW	09T304												12.7	4.76	0.4	5.16	
				09T308																0.8
				09T312																1.2
	标准型 standard type	4	SNGA	120404												9.525	3.97	0.4	4.4	
				120408																0.8
				120416																1.6
	标准型 standard type	4	SCGW	09T304												9.525	3.97	0.4	4.4	
				09T308																0.8
				09T312																1.2



外观 Appearance	刀尖形状 Edge Shape	刃数 No.of edges	型号 Type		材质 Material												内切圆 (C d) Inscribed circle	厚度 (s) Thickness	刀尖r角 Nose Radius	孔径 (C d1) Hole Diameter	
					BTc10	BTc20	BTc30	BT100	BT110	BT120	BT130	BT135	BT310	BT320	BT330	BT510					BT520
	标准型 standard type	3	WNGA	080404												12.7	4.76	0.4	5.16		
				080408																0.8	
				080412																1.2	
	标准型 standard type		RNGN	120700FU												12	7.94				
				090600FU													9	6.35			
		3	TBGN	060102FU												3.97	1.59	0.2			
				060104FU																0.4	
				060108FU																0.8	
		4	SDGN	060201FU												6.35	2.38	0.1			
		6	HDGN	060200FU												6	2.5				
			BNGNT0200L R/L													25	2.0	0.2	4		
			BNGNT0250L R/L														25	2.5	0.2	4	
			BNGNT0302L R/L														25	3.0	0.4	5	
			BNGNT0400L R/L														26	4.0	0.4	6	
			BNGNT0450L R/L														26	4.5	0.4	6	
			BNGNT0500L R/L														26	5.0	0.4	6	
			BNGNT0600L R/L														27	6.0	0.4	7	
			GBA40R/L150													11.7	1.5	0.2	3.5		
			GBA40R/L175														11.7	1.75		0.2	
			GBA40R/L200															11.7	2.0	0.2	4.0
			GBA40R/L230															11.7	2.3	0.2	
			GBA40R/L250															11.7	2.5	0.3	
			GBA40R/L280															11.7	2.8	0.3	
			GBA40R/L300															11.7	3.0	0.3	



