

ph HORN ph

超硬切削材料

ULTRA-HARD CUTTING MATERIALS 2023/2024



探索 HORN
EXPLORE HORN

尊敬的HORN用户

卓越的结果总是最佳的加工工艺和完美的工具的结合。为了实现这一目标，HORN结合了先进的技术、性能和可靠性。从单个零件到批量生产，适用于标准或特殊应用：我们的工具为您提供快速，经济，高质量的解决方案。为了帮助您选择切削参数，我们目录中的表各自提供了经过验证的经验值。充分利用我们办公室职员和销售工程师的专业知识。

可持续发展是我们企业理念的核心部分。这就是为什么我们一直关注产品和生产的质量保证、环境保护、能源效率和安全。作为高效可靠的刀具合作伙伴，我们确信您与我们一起创建一个创新和强大的经济未来。



Markus Horn
首席执行官
Paul Horn GmbH



Matthias Rommel
首席执行官
Paul Horn GmbH

Explore HORN

Exceptional results are always a combination of the optimum cutting process and the perfect tool. To achieve this, HORN combines advanced technology, performance and reliability. From single part to series production, for standard or special applications: Our tools offer you fast, economical, high quality solutions. To assist you when choosing cutting parameters, our tables in the respective catalogue provide proven empirical values. Take advantage of the expertise of our office staff and sales engineers.

Sustainability is a central part of our corporate philosophy. That is why we have always focused on quality assurance, environmental protection, energy efficiency and safety with regard to our products and our production. As an efficient and reliable tool partner, we make sure that you join us in an innovative and strong economic future.



Markus Horn
CEO
Paul Horn GmbH



Matthias Rommel
CEO
Paul Horn GmbH

A 多晶金刚石
Polycrystalline Diamond

刀具系列 ISO System ISO	PCD/CVD-D 切槽刀具 PCD/CVD-D Grooving tools
刀具系列 Supermini® System Supermini®	PCD/CVD-D 切槽刀具 PCD/CVD-D Grooving tools
刀具系列 Mini System Mini	PCD/CVD-D 切槽刀具 PCD/CVD-D Grooving tools
刀具系列 DTM System DTM	PCD/CVD-D 平面铣削刀具 PCD/CVD-D Face milling tools
刀具系列 DA32 System DA32	PCD/CVD-D 镶片 PCD/CVD-D tipped
刀具系列 DS System DS	CVD-立铣刀 CVD End milling tools
刀具系列 DDHM/DSFF System DDHM/DSFF	CVD-镗刀 CVD Boring tools


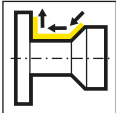

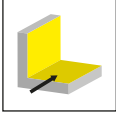

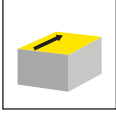

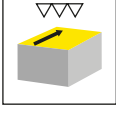
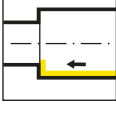
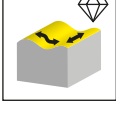
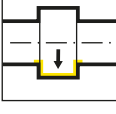
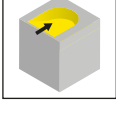
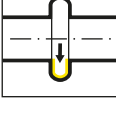
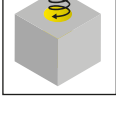
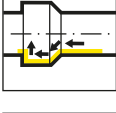
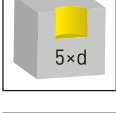
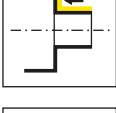
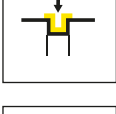
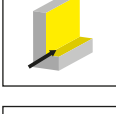
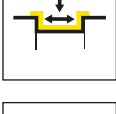
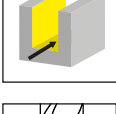
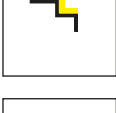
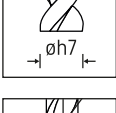

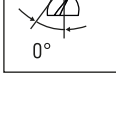
B 单晶金刚石
Monocrystalline Diamond


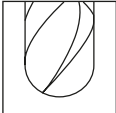


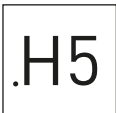




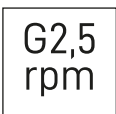

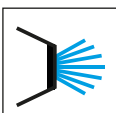
高抛光车削 High polish turning
高抛光铣削 High polish milling

C 立方氮化硼
Cubic boron nitride

刀具系列 Supermini® System Supermini®
刀具系列 Mini System Mini
刀具系列 229 System 229
刀具系列 315 System 315
刀具系列 ISO-CBN Systems ISO PCBN

D 技术说明,附加设备
Technical Instructions, Additional equipment

	CVD镶片 CVD tipped		外径仿形车削 External profiling
	PCD镶片 PCD tipped		倒角铣削 Corner broaching
	MCD镶片 MCD tipped		平面铣削 Face milling
	PCBN镶片 PCBN tipped		精加工 Finishing
	镗内孔 Internal boring		仿形抛光 Profiling Polishing
	内孔切槽 Internal grooving		斜坡 Ramping
	内孔切圆槽 Internal grooving full radius		螺旋插铣 Circular plunging
	镗孔及仿形 Boring and profiling		钻孔深度 Drilling depth 5×d
	外径横车 External side turning		型腔铣削 Pocket milling
	切槽 Grooving		轮廓修饰 Trimming
	切槽和横车 Grooving and side turning		槽铣削 Groove milling
	局部切削 Partial cut		公差 h7 Tolerance h7 - ϕ h7
	仿形车削 Profiling		螺旋角 Helic angle 0°

	形状公差 Shape tolerance		球头铣刀 Full radius
	跳动 Concentricity		刃口过中心切削 Centre cutting
	抛光 Polishing		刀杆形式 Shank form
	断屑槽中置 0° 前角 Chipbreaker neutral 0° Chip angle		刀尖圆角 Corner radius
	正角断屑槽 5° 前角 Chipbreaker positive-neutral 5° Chip angle		轻量化 Lightweight
	正角断屑槽 6° 前角 Chipbreaker positive-neutral 6° Chip angle		齿数 Numbers of teeth
	HORN 3-D 断屑槽用于镗内孔加工 HORN 3D Chip breaker Machining of bores		平衡质量 Balance quality
	HORN 3-D 断屑槽用于中等至粗加工 HORN 3D Chip breaker normal up to roughing		内冷 Internal coolant
	HORN 3-D 断屑槽用于精加工 HORN 3D Chip breaker finishing		
	材料组 "长屑材料" Material group "long-chipping material"		
	材料组 "短屑材料" Material group "short-chipping material"		
	材料组 "软塑料" Material group "soft plastics"		
	材料组 "通用性" Material group "universal use"		

- 除非另有说明,所有尺寸均以毫米为单位。
All dimensions in mm, unless otherwise noted.
- 可根据要求订制更多尺寸和形式。
Further dimensions and versions are available on request.
- 锁紧螺扭矩规格,请见技术说明。
For torque specification of the screw, please see "Technical Instructions".
- 为了避免损坏切削刃,切削刃需光学测量! To avoid damage to the cutting edge, measure cutting edges visually only!
- 交货期 / delivery times
 - ▲ 库存 / on stock
 - △ 4周 / 4 weeks
- 根据被加工材料组 / Use for material groups
 - 推荐 / recommended
 - 次推荐 / alternative recommended
 - 不合适 / not suitable

HORN连接接口代码-需要它做什么?

连接接口代码确保您将始终找到适当的工具,并显示在刀杆和刀片上。如果代码匹配,则可以在相应的刀杆中使用该刀片。
这也适用于我们的模块化支架系统,其中连接代码表示刀柄和刀夹之间的接口。

The HORN connection interface code - what is it needed for?

The connection interface code ensures that you will always find the appropriate tools and is shown on toolholders and inserts. If the codes match, the insert can be used in the corresponding toolholder.
This also applies to our modular holder system, where the connection code indicates the interface between the holder and the cassette.

HORN连接接口代码及可能的组合:

HORN connection interface codes and possible combinations:

- HIS** = 刀片座 / Insert seat
HWS = 工件侧接口 / Interface workpiece side
HMS = 机床侧接口 / Interface machine side

HIS	↔	HWS
HMS	↔	HWS

刀片示例

Example insert

产品型号 Part number	s	f	a	r	d	D _{min}	HIS	CB10
R111.0557.03.B	3,95	5,7	9,7	0,3	8	10	308080R	▲

刀杆示例

Example toolholder

产品型号 Part number	d	l ₁	l ₂	d ₁	Form	HWS
M308.0012.01A	12	95	29	8	A	308080R • 308080L

选择正确的应用是重要的,当切削中最大发挥PCBN及金刚石切削材料的最大潜力。

高级别的金刚石硬材料,它主要有PCD,MCD,CVD-D及天然金刚石。在一些特殊要求的加工任务中,金刚石可以使用锋利的切削刃口从而代替普通的加工材料。

这类材料具有良好的抗热磨损同时保持高的硬度,这个是仅次于金刚石,PCBN(多晶立方氮化硼)是理想的淬硬钢加工材料。不同的PCBN基材在其组成以及由此产生的机械和化学性能方面有所不同。另外加工硬化钢(45-70 HRC),这种切削材料组也非常适合加工铸造材料和特殊合金--碳化物和切削陶瓷经常达到极限的一种应用。

各种超硬切削材料的组成结构可根据不同的任务进行优化。因此,选择合适的切割材料,结合合适的几何槽型是非常重要的。

推荐的切削参数是能够实现有效结果和断屑的关键数据。在每一种情况下,都需要使参数适应整体的加工情况。

为了达到尽可能好的效果,必须考虑整个加工环境,并使其达到尽可能高的稳定性。机床的结构、导轨、主轴以及工件和刀具的夹紧系统对加工效果起着至关重要的作用。

Choosing the right application is crucial when it comes to maximizing the huge potential of PCBN and diamond cutting materials in manufacturing.

The high level of hardness of diamond in its various forms such as PCD, MCD, CVD-D or natural diamond and the resulting cutting edge sharpness may mean that a different approach to the one taken with conventional cutting materials may be required depending on the machining task in question.

Its high heat resistance combined with the high level of hardness, which is second only to diamond, makes PCBN (polycrystalline cubic boron nitride) the ideal cutting material for machining hardened steels. The different PCBN substrates vary in terms of their composition and the resulting mechanical and chemical properties. In addition to the machining of hardened steels (45-70 HRC), this cutting material group is also highly suited to the machining of cast materials and special alloys – an application where carbides and cutting ceramics often reach their limits.

The composition and/or structure of the various ultra-hard cutting materials are optimized for different tasks. Therefore, it is extremely important that the right type of cutting material in combination with the right cutting geometry is selected.

The recommended cutting parameters are the key data that enable an efficient result and/or chip break to be achieved. In each case, it is necessary to adapt the parameters to the machining situation as a whole.

In order to achieve the best results possible, the entire machine environment must be taken into account and brought to the highest level of stability possible. The structure of the machine, guides, spindles and the clamping systems for the workpiece and tools play a key role with respect to the result.

超硬材料被定义为硬度超过硬质合金,金属陶瓷,切削陶瓷.根据这个定义,材料可以被分为以下两种不同的种类:

金刚石

金刚石切削材料可以被分成两个大类,单晶金刚石和多晶金刚石,而多晶金刚石可进一步分为两个子类别:

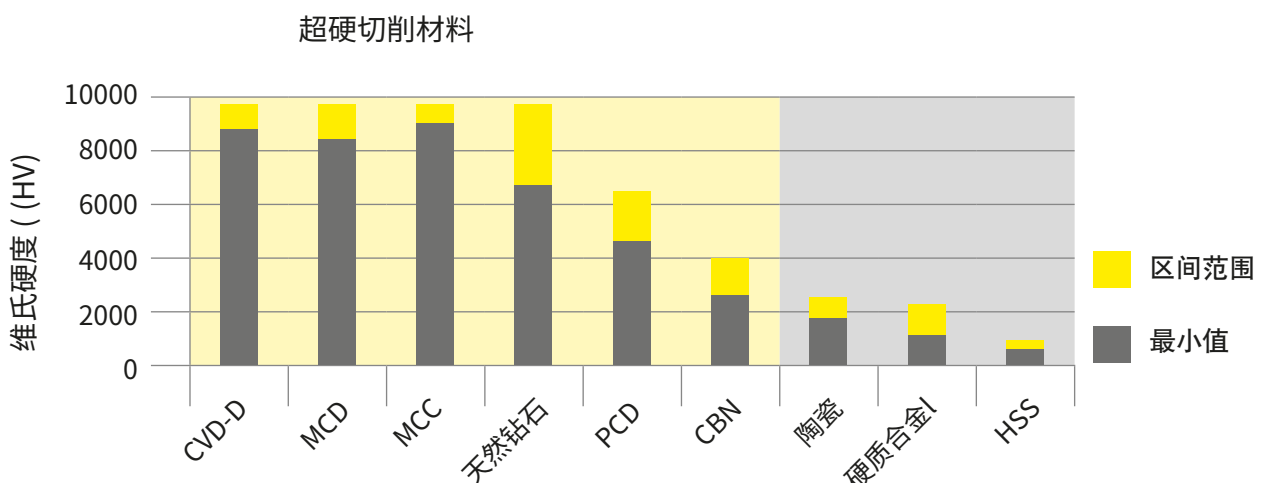
- 1.单晶金刚石,被用于精加工和超级精加工工序中.针对工件达到最佳的表面质量和最大化精准的槽型.高质量的切屑是成功的次要因素.
- 2.多晶金刚石切削材料,PCD和CVD-D两种主要的分类,不同于制造工艺及基体结构.

PCD金刚石颗粒烧结于金属材料中的一种切削材料.每一个小颗粒为单晶金刚石.不同性能被制造由于不同的颗粒.

CVD-D(化学气相沉积)是气相沉淀.后缀D表示层的厚度,被用于区别于普通的金刚石涂层.层厚(0.3-1mm)一般取决于切削材料,结合于硬质合金刀具上.

立方氮化硼

PCBN(多晶立方氮化硼)基体有着不同的性能由于不同的成分.用于不同的特殊场合.



The term **ultra hard cutting materials** describes all cutting materials that are classified above carbides, cermets and cutting ceramics on the hardness scale. Within this definition, it is possible to differentiate between two groups:

Diamond cutting materials

Diamond cutting materials can be split into two main groups, monocrystalline and polycrystalline, whereby polycrystalline is then split into a further two subgroups.

1. Monocrystalline diamonds are used in finishing and superfinishing processes. Optimum surfaces and maximum geometric accuracies for the components are the focus here. High chip volume is secondary to these criteria.

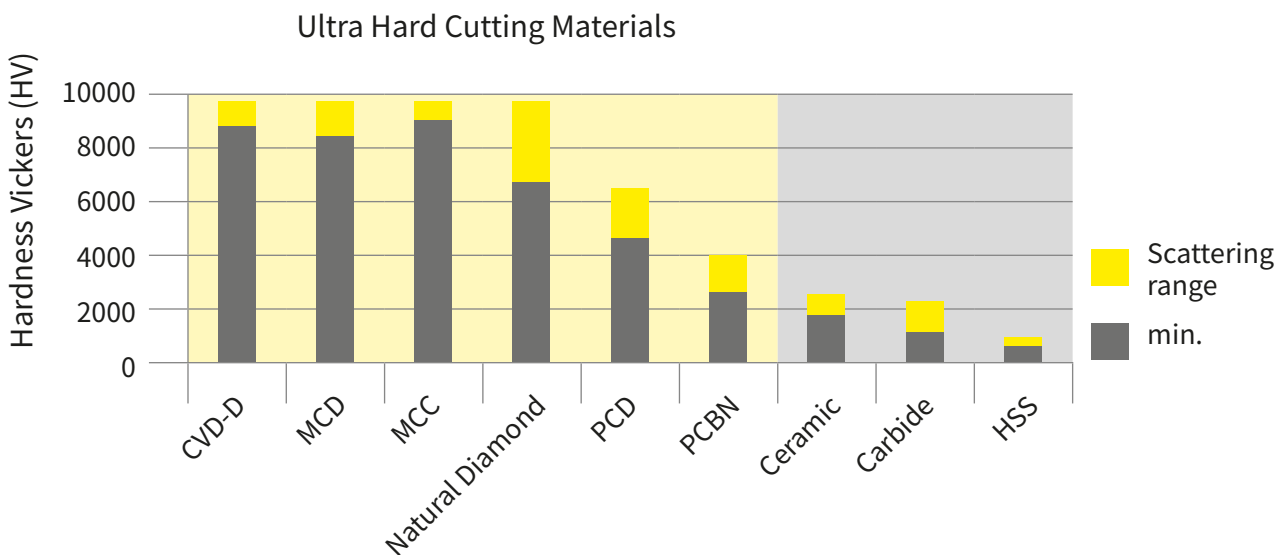
2. Polycrystalline diamond cutting materials, PCD and CVD-D differ primarily in terms of how they are manufactured and their structure.

PCD describes a cutting material group in which the diamonds are sintered as grains in a metal matrix. Each individual grain is itself monocrystalline. Different properties are produced due to the variation of the grains.

CVD-D (chemical vapour deposition) is deposited from the gas phase. The suffix "D" stands for thick film and is used to differentiate it from conventional diamond coating. Thick film describes the thickness (0.3 - 1 mm) of the cutting material that is soldered to the carbide toolholder for further processing.

PCBN substrates

PCBN (polycrystalline cubic boron nitride) substrates have different properties due to their composition. These are configured specifically for the application.



PCD是一种复合切削材料.金刚石颗粒,每一个单晶的性质,是烧结彼此在一个金属基体(一般为钴).在烧结过程中,晶粒在晶体内生长,单个晶粒在一定程度上共同生长,从而影响材料在使用过程中的磨损性能.

除了烧结工艺外,所使用的晶粒尺寸和质量也是衡量耐磨性的一个指标.可以推导出以下理论原理:"颗粒越大,耐磨性越好".然而,这损害了可以达到的尖端质量,削片和锐度.不考虑用于生产切削刃的制造技术.金属结合相的体积分数百分比也会增加,并产生负作用.

HORN高性能PCD是由复杂的混合不同的钻石颗粒大小.金刚石的体积分数增加,有效硬度、韧性和切削质量增加.毫无疑问,严格的质量标准得到了遵守和监控,确保了最高的性能.

PCD is a compound cutting material. Diamond grains, each one of a monocrystalline nature, are sintered to each other in a metal matrix, generally cobalt. During the sintering process, the grains grow within the crystals and the individual grains grow together to a limited extent, thereby affecting the wear properties during subsequent use.

In addition to the sintering technology, the size and quality of the grains used are an indicator of wear resistance. It is possible to derive the following theoretical principle: "the larger the grain, the better the abrasion resistance". However, this compromises the cutting edge quality, chipping and sharpness that can be achieved, irrespective of the manufacturing technology used to produce the cutting edges. The percentage volume fraction of the metallic binding phase also increases and has a negative effect.

HORN high-performance PCD is composed of a sophisticated mixture of different diamond grain sizes. The volume fraction of diamond increases, as do effective hardness, toughness and cutting quality. It goes without saying that strict quality standards are observed and monitored and ensure maximum performance.

CVD-D, 最大强度

CVD-D, maximum strength



CVD-D的耐磨性显著高于PCD. 其原因是, 它没有一个金属结合倒角, 而事实是, 它有一个结果钻石成分几乎百分之百. 单个的单晶金刚石颗粒从气体中沉积下来, 并一起生长, 因此它们不能被分离, 形成一个固体的聚合物金刚石层.

过程类似于金刚石涂层硬质合金工具, 但层厚度只有几 μm 厚, 因此相对较短的时间在使用后损坏

除了最大硬度, 金刚石的其他积极性能也有利于加工过程. 其特殊的导热性, 确保冷却切割. 摩擦系数低, 粘接倾向低, 可有效防止堆积物边缘形成. 即使使用关键的铝合金, 也可以在不使用冷却润滑剂的情况下进行可靠的加工.

激光技术是必不可少的, 当涉及到制造CVD-D切削刃. 如果没有这项技术, 就不可能实现高切削质量和切屑形状的槽型. 可达到的表面质量明显优于PCD生产的切削刃. 由于其物理性能的原因, 其断裂韧性较低, 在一定程度上限制了材料的使用.

可达到的刀具寿命是PCD刀具的两倍或几倍.

The wear resistance of CVD-D significantly exceeds that of PCD. The reason for this is that it does not have a metallic binding chamfer and the fact that it has a resulting diamond component of almost 100 per cent. Individual, monocrystalline diamond grains are deposited from gas and grow together so that they cannot be separated to form a solid, polymeric diamond layer.

The process is similar to the diamond coating of carbide tools but the layer thickness is just a few μm thick and is therefore worn away after a relatively short time in use.

In addition to maximum hardness, other positive properties of diamond also benefit the machining process. Its special heat conductivity ensures cool cutting. The low coefficient of friction and a low adhesive tendency reliably prevent build-up edges from forming. Reliable machining processes can be performed even with critical aluminium wrought alloys without using cooling lubricant.

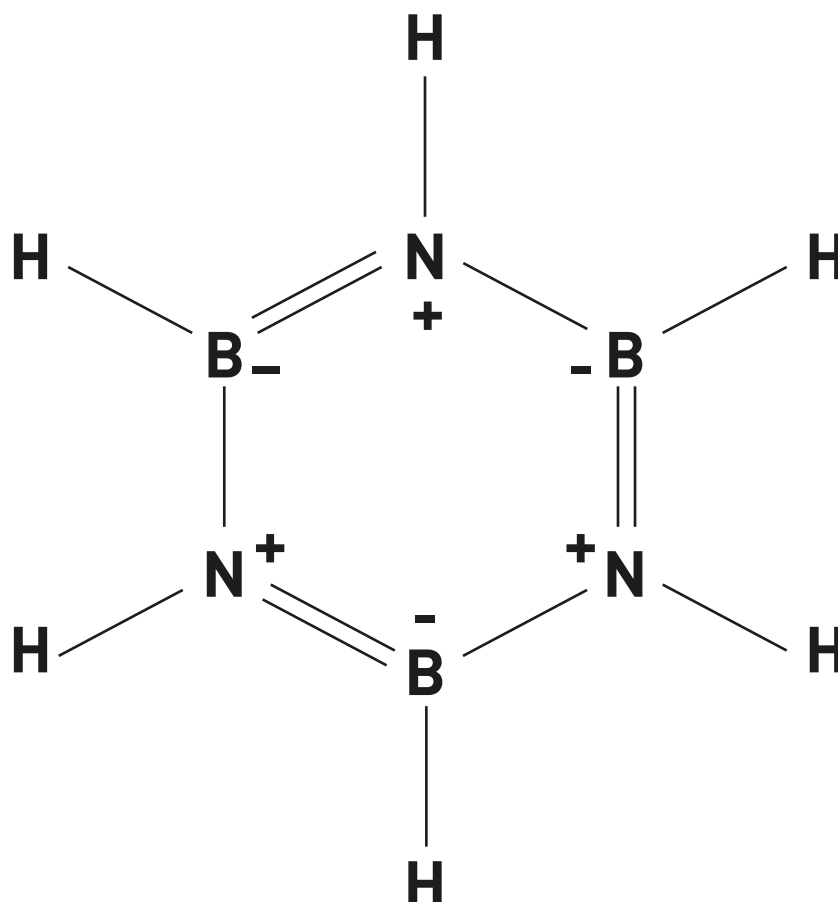
Laser technology is indispensable when it comes to manufacturing CVD-D cutting edges. It would simply be impossible to achieve the high cutting quality and apply chip shape geometries without this technology. The surface qualities that can be achieved are significantly better than those of cutting edges produced from PCD. Only its lower fracture toughness, which is due to its physical properties, limits the use of the material to some extent. The achievable tool life is double or several times that of tools manufactured from PCD.

多晶立方氮化硼 (PCBN)

CBN 是多种不同基体的总称, 这些基体的特性千差万别。不仅是氮化硼的比例, 最重要的是 CBN 晶粒的质量、尺寸和分布, 这些都是 HORN CBN 刀具性能高且稳定的原因。至少同样重要的是使切削更活跃, 主要依靠陶瓷粘结剂。这些 "填料" 的种类和效果取决于百分比范围, 从40%到接近100%。刀具切削刃的几何定义, 包括微观和宏观几何定义, 都会影响其性能和应用领域。因此, 切削材料系列具有广泛的性能和复杂性。

Polycrystalline Cubic Boron Nitride (PCBN)

CBN is an umbrella term for an extensive range of different substrates with widely varying properties. Not only the proportion of boron nitride, but above all the quality, size and distribution of the CBN grains, are responsible for the high and consistent performance of HORN CBN tools. At least as important is the actively cutting, mostly ceramic binder. The variety and effect of these „fillers“ is dependent upon the percentage range, starting at 40 percent and ending at almost 100 percent. The geometric definition of the tool cutting edge, both the micro- and macro-geometry, influences the performance and areas of application. This results in a cutting material family with a wide spectrum of performance and complexity.



HORN 3D-断屑器

HORN 3D chip breaker



规格 Specification	HORN 3D-断屑器 HORN 3D chip breaker	前角 Chip angle	性能 Properties
HF	普通 normal	25 - 30°	针对孔加工的槽型 推荐,过孔直径50%大于刀具直径 Geometry for machining of bores, Recommendation: Bore diameter 50% greater than tool diameter
HS	精加工 finishing	焊接刀尖 Edge tipped	精加工到中等加工,绝对锋利切削刃口,正前角,在加工多数脆性材料有低的切削力 Fine to medium machining, absolute sharp cutting edge, positive cut, lowest cutting force on most fragile components
HN	普通/粗工 normal/ roughing	15 - 25°	各种用途的中型加工,强壮的切削刃口,大切深和高进给率. Medium machining for all purpose, strongest cutting edge, for high depth of cut and feed rates
G.HS	精加工 finishing	PCD沿整体硬质合金刀片的切削刃 PCD along the whole cutting edge of the solid carbide insert	精加工到中等加工,绝对锋利切削刃口,正前角,在加工多数脆性材料有低的切削力 Fine to medium machining, absolute sharp cutting edge, positive cut, lowest cutting force on most fragile components
G.HN	普通/粗工 normal/ roughing	15 - 25°	各种用途的中型加工,强壮的切削刃口,大切深和高进给率. Medium machining for all purpose, strongest cutting edge, for high depth of cut and feed rates
F.HS	精加工 finishing	全贴面的 Full face	精加工到中等加工,绝对锋利切削刃口,正前角,在加工多数脆性材料有低的切削力 Fine to medium machining, absolute sharp cutting edge, positive cut, lowest cutting force on most fragile components
F.HN	普通/粗工 normal/ roughing	15 - 25°	各种用途的中型加工,强壮的切削刃口,大切深和高进给率. Medium machining for all purpose, strongest cutting edge, for high depth of cut and feed rates
W.HS	精加工 finishing	修光刃槽型 Wiper Geometries	2 - 4 倍进给率 2 - 4 times higher feed rate
W.HN	普通/粗工 normal/ roughing	15 - 25°	2 - 4 倍进给率 2 - 4 times higher feed rate

使用带HORN 3D-断屑器刀片时, 请注意以下事项:

找到切削深度和进给速度的正确组合,以获得完美的切屑控制.

内孔车削时,应只使用中置刀杆(径向角为0°的刀片). 特别是在使用HS槽型刀片时,由于槽型的设计,在某些情况下会导致切削刃的机械力过大.

对于退刀槽和底切时,当两个切削刃同时在切割时,不应使用HS. 究其原因,槽型为小切深而设计的断屑器.

When using inserts with HORN 3D chip breaker please observe the following:

Find the right combination of depth of cut and feed rate in order to obtain perfect chip control.

When turning internal, you should use only **neutral toolholder** (radial angle of the insert 0°). In particular with the chip breaker **HS** in some cases it can come to a mechanical overstress of the cutting edge because of the design of the chip breaker.

For relief grooves and undercuts, where both of the cutting edges are in cut at the same time, you should **not** use **HS**. The reason is in the geometrical design of the chip breaker for lowest depth of cuts. Chips may build up, this can lead to mechanical overstress and breakage of the cutting edge.

切削材料结合切屑槽型,是成功的关键

CVD-D和PCD是加工铝、镁合金、其他有色金属、各种塑料复合材料和硬质合金等特殊磨料的首选材料,包括

预烧结材料和终烧结材料.

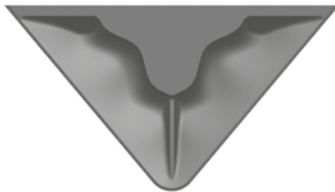
将金刚石切削刃的经济刀具寿命与HORN切屑槽型.HF, .HN 和.HS 相结合,形成一套优化的切削系统.这一发展开辟了更多的应用领域,提高了加工铝合金的可靠性、速度和精度,从而大大提高了生产效率.即使毛刺

的形成是更换刀具的主要标准, .HS槽型的锋利切削刃也能使刀具寿命延长2.5到4倍.

注意:

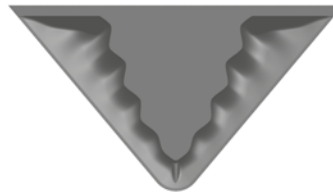
目录中规定的 l_1 长度为槽型的有效工作长度. 有关不同金刚石切割材料的说明, 请参见 "技术信息 "一章, 切削参数请参见 A 章。

槽型 .HN
Geometry



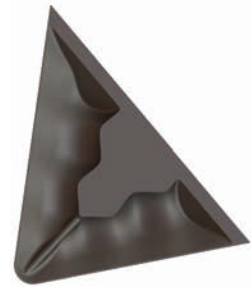
粗加工
Roughing

槽型 .HS
Geometry



精加工
Finishing

槽型 .HF
Geometry



孔加工
Bore machining

Cutting material in conjunction with chip shape geometry, the key to success

CVD-D and PCD are the materials of choice for machining aluminium and magnesium alloys, other non-ferrous metals, all plastic composite materials and abrasive special materials, such as carbides, both pre-sintered and final-sintered.

The economical tool lives of diamond cutting edges are combined with the .HF, .HN and .HS HORN chip shape geometries to form an optimum cutting system.

This development opens up additional areas of application and improves the machining of cast aluminium alloys with respect to process reliability, speed and precision, thereby significantly increasing manufacturing efficiency. Even when burr formation is the main criteria for changing a tool, the sharp cutting edges of the .HS geometry enable the tool life to be increased by between 2.5 and 4 times.

Notes:

The length l_1 specified in the catalogue is the effective length of the chip forming geometry. The description of the different diamond cutting materials can be found in chapter "Technical Informations" and for cutting data please see chapter A.



系列/System	页/Page
ISO	18
Supermini	82
Mini	92
DTM	112
DA32	128
Ds	138
DDHM / DSFF	154

概述
Overview

页/Page
20-21

刀片
Insert
CCGT/CCGW/DCGT/
DCGW/RCGT/RPGT/
RCGW/RPGW/SCGT
SCGW/TCGT/TCGW/
VBGT/VCGT/VBGW/
VCGW/CPGT

PKD
PCD

页/Page
22-63

CVD-D

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切削参数
Cutting data

页/Page
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ISO



**CVD-D 与 PCD 镶片
配 HORN 3D-槽型**

刀杆详见 Boehlerit 样本

**CVD-D and PCD tipped
with HORN 3D geometries**

For Holders please see our
catalogue Boehlerit

1

2

3

4

5

ISO设计编码

ISO-Designation-Code

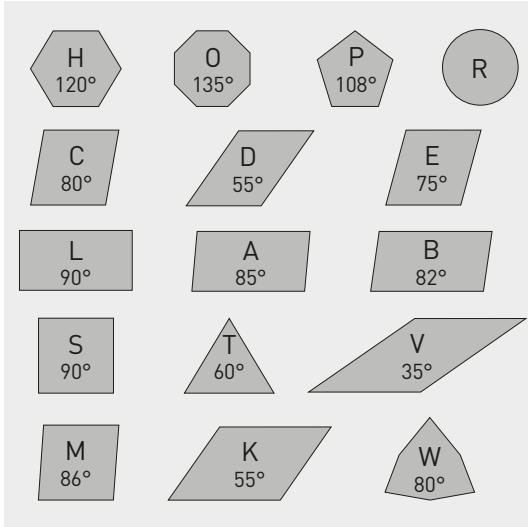
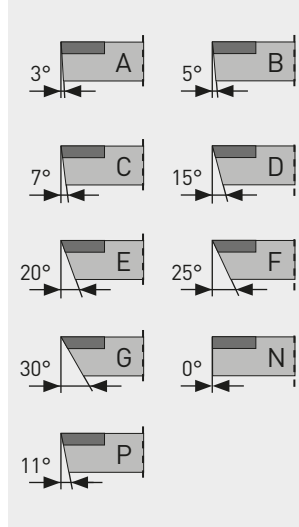
C

C

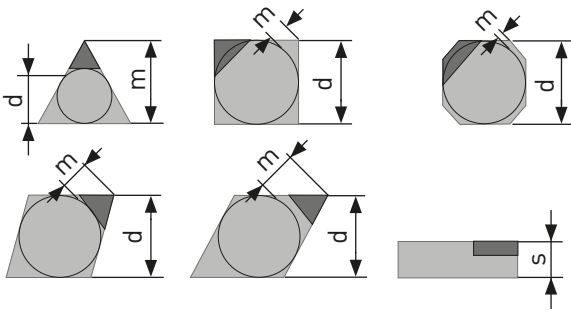
G

T

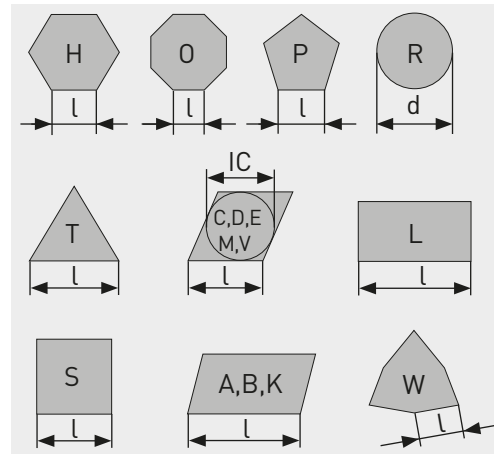
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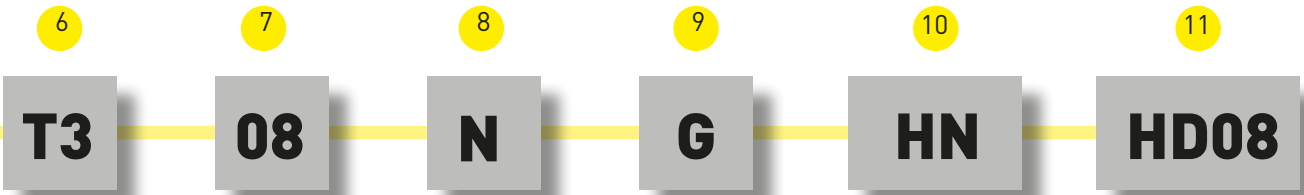
1 形状
Shape2 后角
Clearance4 刀片类型
Insert type

A	
G	
M	
N	
P	
R	
T	
W	
X	特殊 / Special

3 精度等级
Tolerance grade

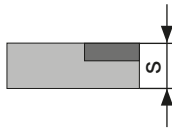
	m	s	d*
A	±0.005	±0.025	±0.025
E	±0.025	±0.025	±0.025
F	±0.005	±0.025	±0.013
G	±0.025	±0.013	±0.025
H	±0.013	±0.025	±0.013
J	±0.005	±0.025	±0.05-0.15
K	±0.013	±0.025	±0.05-0.15
L	±0.025	±0.025	±0.05-0.15
M	±0.08-0.20	±0.05-0.13	±0.05-0.15
N	±0.08-0.20	±0.025	±0.05-0.15
U	±0.13-0.38	±0.13	±0.08-0.25

公差单位 mm
Tolerance in mm* 确切公差由刀片尺寸决定
* Exact tolerance is determined by size of insert5 切削刃长度/刀片尺寸
Length of cutting edge/insert sizeIC "d" 见订货描述
IC "d" see order description



6 厚度 mm
Thickness in mm

	s
01	1.59
T1	1.98
02	2.38
03	3.18
T3	3.97
04	4.76
05	5.56
06	6.35



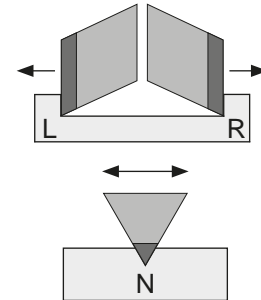
如果小于10用0代替
(例如: 3.18 mm = 03)
If less than 10 use 0 in first place
(Example: 3,18 mm = 03)

7 圆角
Corner configuration

圆弧 Radius	
00	锋利刀尖 Sharp corner
01	0.1 mm
02	0.2 mm
04	0.4 mm
08	0.8 mm
12	1.2 mm
16	1.6 mm
00	圆刀片 (英寸) Round insert (inch)
M0	圆刀片 (公制) Round insert (metr.)



8 进给方向
Feed direction



9 镶片类型
Tipping type

无 without	镶片 Edge tipped
F	整面 Full face
G	整个切削刃 Whole cutting edge
W	秀光刃 Wiper Geometries

10 断屑槽
Chipbreaker

HN	HORN 3D-槽型, 中等至粗加工 HORN 3D Geometry, medium up to roughing
HS	HORN 3D-槽型, 精加工, 脆性材料用小切深 HORN 3D Geometry, finishing, low a_p for fragile parts
H0	0°前角 Version neutral 0° Chip angle
H6	6°前角 Version positive-neutral 6° Chip angle

11 切削材料
Cutting materials

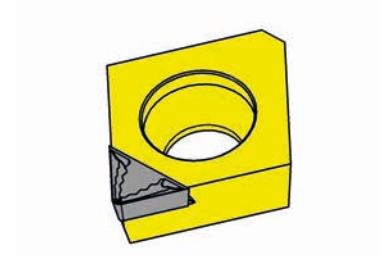
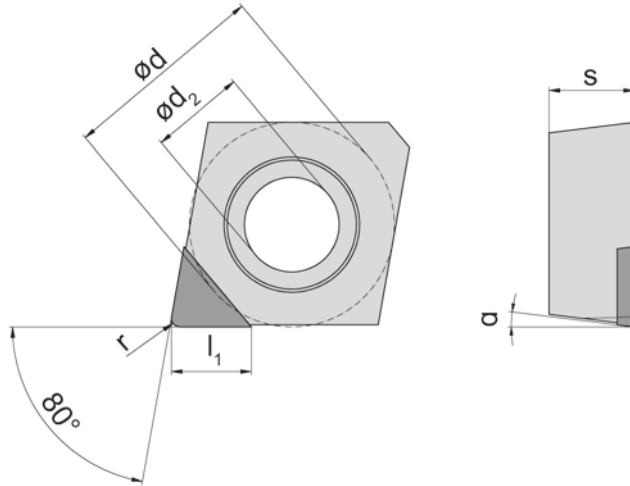
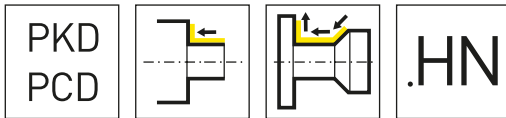
MD10	MKD / MCD
HD...	CVD-D / CVD-D
PD70	PKD / PCD
PD75	

通用螺钉孔设计
Universal screw counterbore

HORN ISO刀片可用于标准刀杆, 得益于特殊的螺钉孔设计。

HORN ISO Inserts can be clamped in all standard holder systems thanks to the special screw counterbore design.





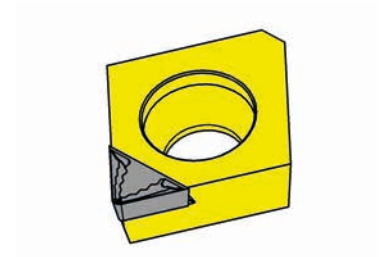
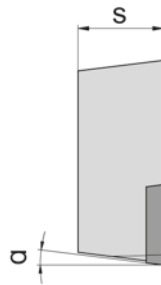
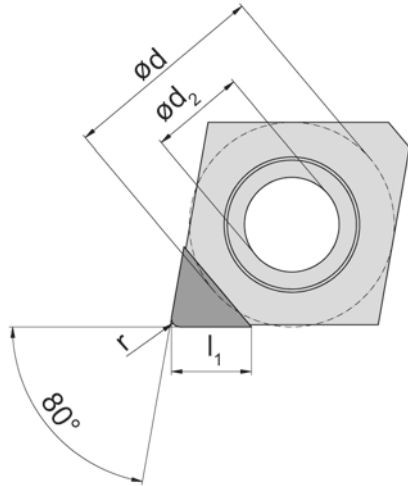
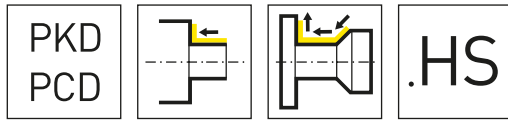
硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	α	PD70
CCGT060202N.HN	6,35	2,8	2,38	3	0,2	7°	▲
CCGT060204N.HN	6,35	2,8	2,38	3	0,4	7°	▲
CCGT09T302N.HN	9,525	4,4	3,97	3,5	0,2	7°	▲
CCGT09T304N.HN	9,525	4,4	3,97	3,5	0,4	7°	▲
CCGT09T308N.HN	9,525	4,4	3,97	3,5	0,8	7°	▲
CCGT120402N.HN	12,7	5,5	4,76	3,5	0,2	7°	▲
CCGT120404N.HN	12,7	5,5	4,76	3,5	0,4	7°	▲
CCGT120408N.HN	12,7	5,5	4,76	3,5	0,8	7°	▲

P	-
M	-
K	-
N	●
S	-
H	-



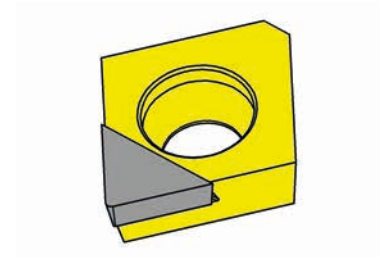
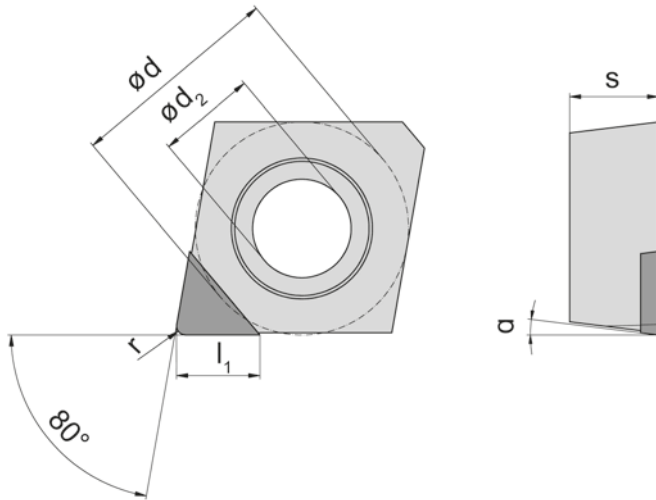
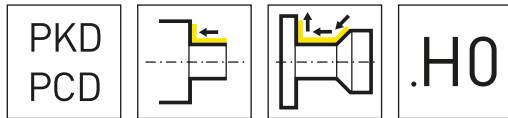
硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

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CCGT060204N.HS	6,35	2,8	2,38	3	0,4	7°	▲
CCGT060208N.HS	6,35	2,8	2,38	3	0,8	7°	▲
CCGT09T301N.HS	9,525	4,4	3,97	3,5	0,1	7°	▲
CCGT09T302N.HS	9,525	4,4	3,97	3,5	0,2	7°	▲
CCGT09T304N.HS	9,525	4,4	3,97	3,5	0,4	7°	▲
CCGT09T308N.HS	9,525	4,4	3,97	3,5	0,8	7°	▲
CCGT120404N.HS	12,7	5,5	4,76	3,5	0,4	7°	▲
CCGT120408N.HS	12,7	5,5	4,76	3,5	0,8	7°	▲

P	-
M	-
K	-
N	●
S	-
H	-

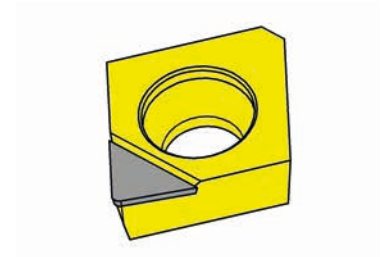
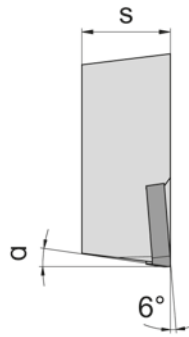
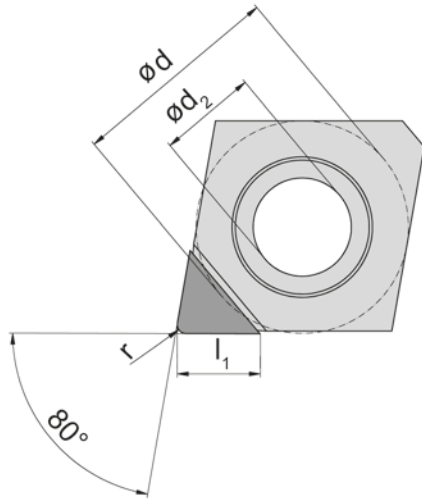
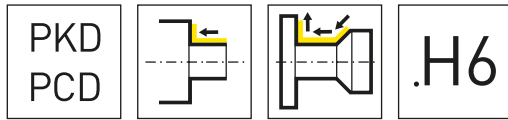


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

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CCGW060204N.H0	6,35	2,8	2,38	3,5	0,4	7°	▲
CCGW060208N.H0	6,35	2,8	2,38	3,5	0,8	7°	▲
CCGW09T301N.H0	9,525	4,4	3,97	3,5	0,1	7°	▲
CCGW09T302N.H0	9,525	4,4	3,97	4	0,2	7°	▲
CCGW09T304N.H0	9,525	4,4	3,97	4	0,4	7°	▲
CCGW09T308N.H0	9,525	4,4	3,97	4	0,8	7°	▲
CCGW120404N.H0	12,7	5,5	4,76	4	0,4	7°	▲
CCGW120408N.H0	12,7	5,5	4,76	4	0,8	7°	▲
							P -
							M -
							K -
							N ●
							S -
							H -

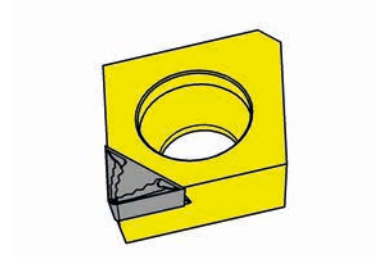
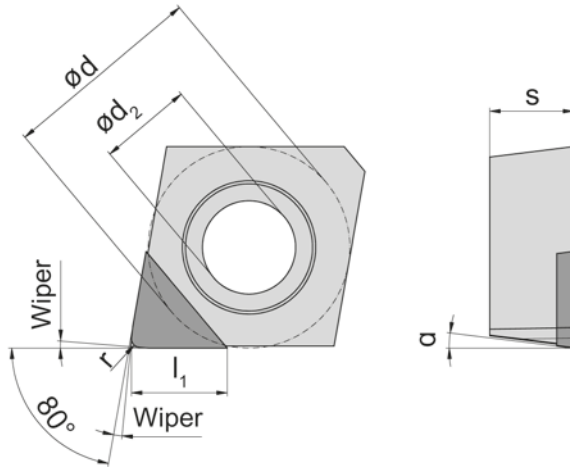
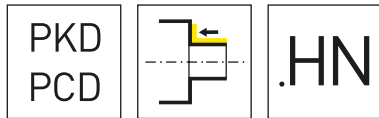


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

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CCGT060202N.H6	6,35	2,8	2,38	3,5	0,2	7°	▲
CCGT060204N.H6	6,35	2,8	2,38	3,5	0,4	7°	▲
CCGT060208N.H6	6,35	2,8	2,38	3,5	0,8	7°	▲
CCGT09T302N.H6	9,525	4,4	3,97	4	0,2	7°	▲
CCGT09T304N.H6	9,525	4,4	3,97	4	0,4	7°	▲
CCGT09T308N.H6	9,525	4,4	3,97	4	0,8	7°	▲
CCGT120402N.H6	12,7	5,5	4,76	4	0,2	7°	▲
CCGT120404N.H6	12,7	5,5	4,76	4	0,4	7°	▲
CCGT120408N.H6	12,7	5,5	4,76	4	0,8	7°	▲
P	-	-	-	-	-	-	-
M	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-
N	●	-	-	-	-	-	-
S	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-



硬质合金牌号
Carbide grades

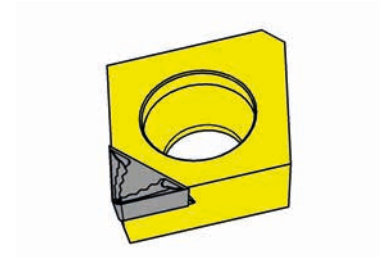
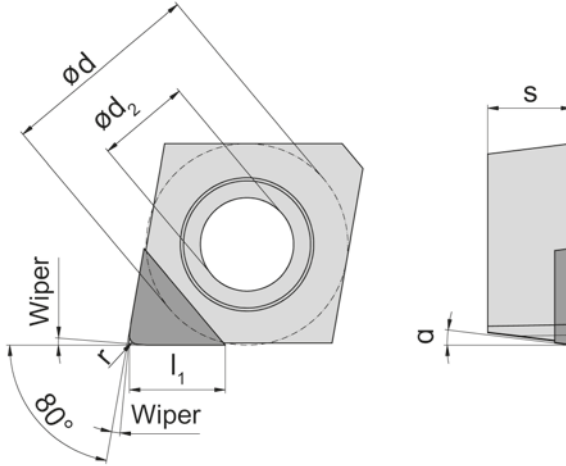
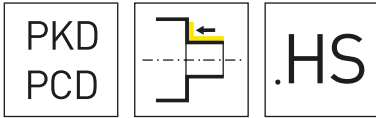
▲ 库存
on stock

△ 4周
4 weeks

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CCGT09T302N.W.HN	9,525	4,4	3,97	3,5	0,2	7°	▲
CCGT09T304N.W.HN	9,525	4,4	3,97	3,5	0,4	7°	▲

请注意主偏角!请参见章节“D”
Please note the approach angle! See chapter „D“.

P	-
M	-
K	-
N	●
S	-
H	-



硬质合金牌号
Carbide grades

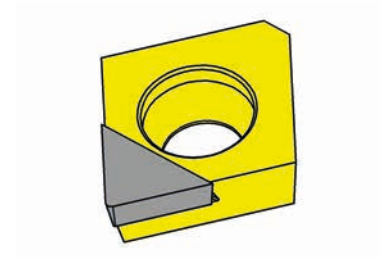
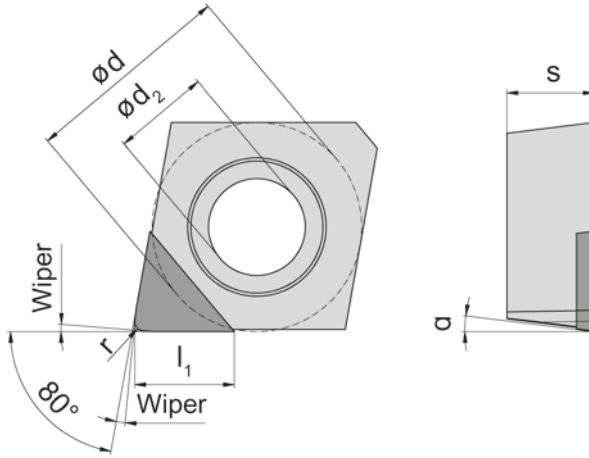
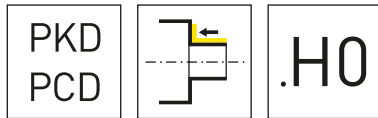
▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	α	PD70
CCGT060202N.W.HS	6,35	2,8	2,38	3	0,2	7°	▲
CCGT060204N.W.HS	6,35	2,8	2,38	3	0,4	7°	▲
CCGT09T302N.W.HS	9,525	4,4	3,97	3,5	0,2	7°	▲
CCGT09T304N.W.HS	9,525	4,4	3,97	3,5	0,4	7°	▲

请注意主偏角!请参见章节“D”
Please note the approach angle! See chapter „D“.

P	-
M	-
K	-
N	●
S	-
H	-



硬质合金牌号
Carbide grades

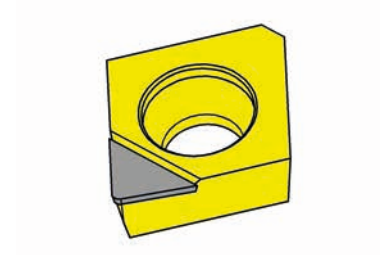
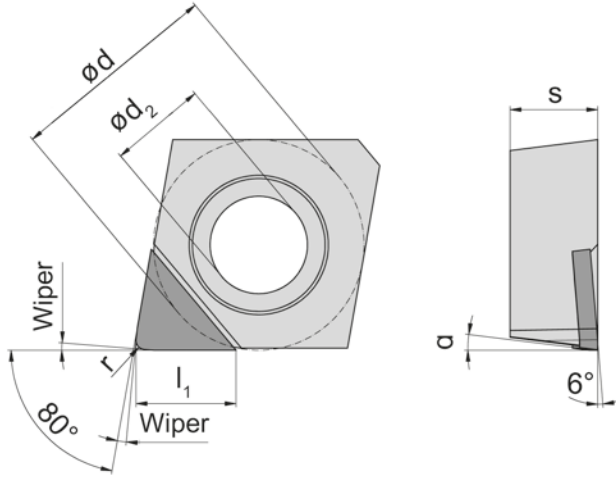
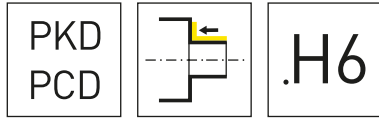
▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	α	PD70
CCGW060202N.W.HO	6,35	2,8	2,38	3,5	0,2	7°	▲
CCGW060204N.W.HO	6,35	2,8	2,38	3,5	0,4	7°	▲
CCGW09T302N.W.HO	9,525	4,4	3,97	4	0,2	7°	▲
CCGW09T304N.W.HO	9,525	4,4	3,97	4	0,4	7°	▲
CCGW120404N.W.HO	12,7	5,5	4,76	4	0,4	7°	▲

请注意主偏角!请参见章节“D”
Please note the approach angle! See chapter „D“.

P	-
M	-
K	-
N	●
S	-
H	-



硬质合金牌号
Carbide grades

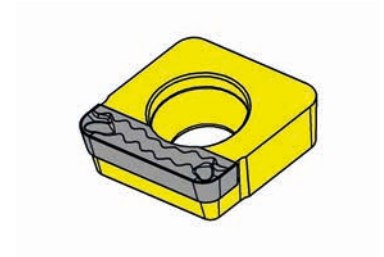
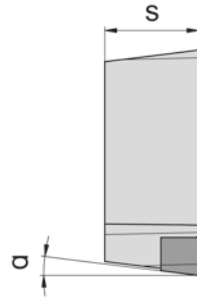
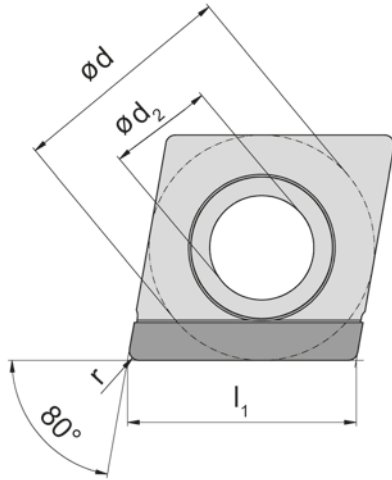
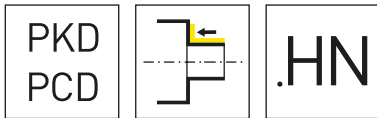
▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	α	PD70
CCGT060201N.W.H6	6,35	2,8	2,38	3	0,1	7°	▲
CCGT060202N.W.H6	6,35	2,8	2,38	3,5	0,2	7°	▲
CCGT060204N.W.H6	6,35	2,8	2,38	3,5	0,4	7°	▲
CCGT09T301N.W.H6	9,525	4,4	3,97	3,7	0,1	7°	▲
CCGT09T302N.W.H6	9,525	4,4	3,97	4	0,2	7°	▲
CCGT09T304N.W.H6	9,525	4,4	3,97	4	0,4	7°	▲
CCGT120404N.W.H6	12,7	5,5	4,76	4	0,4	7°	▲

请注意主偏角!请参见章节“D”
Please note the approach angle! See chapter „D“.

P	-
M	-
K	-
N	●
S	-
H	-

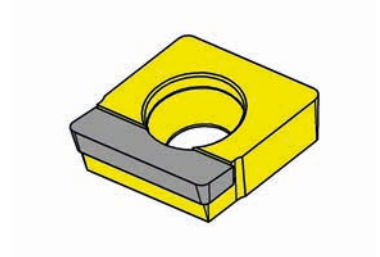
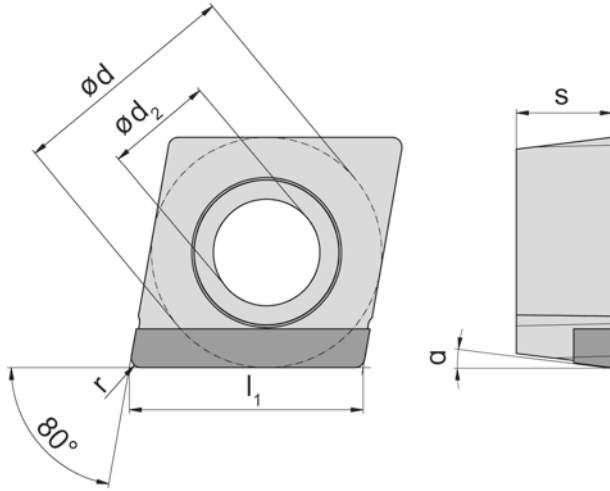
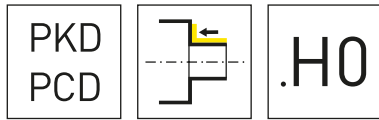


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	α	PD70
CCGT09T304L.G.HN	9.525	4.4	3.97	9.6	0.4	7°	▲
CCGT09T304R.G.HN	9.525	4.4	3.97	9.6	0.4	7°	▲
CCGT09T308L.G.HN	9.525	4.4	3.97	9.5	0.8	7°	▲
CCGT09T308R.G.HN	9.525	4.4	3.97	9.5	0.8	7°	▲
CCGT120404R.G.HN	12.7	5.5	4.76	12.8	0.4	7°	▲
CCGT120408L.G.HN	12.7	5.5	4.76	12.7	0.8	7°	▲
CCGT120408R.G.HN	12.7	5.5	4.76	12.7	0.8	7°	▲
							P -
							M -
							K -
							N ●
							S -
							H -

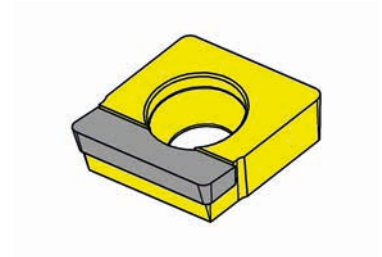
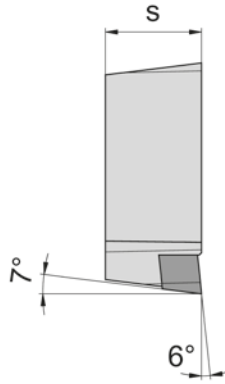
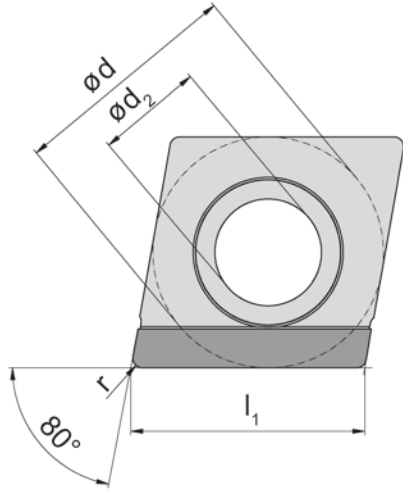
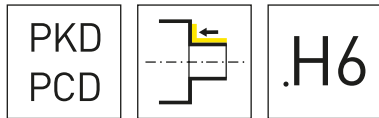


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	α	PD70
CCGW120408L.G.H0	12.7	5.5	4.76	12.7	0.8	7°	▲
CCGW120408R.G.H0	12.7	5.5	4.76	12.7	0.8	7°	▲
							P -
							M -
							K -
							N ●
							S -
							H -

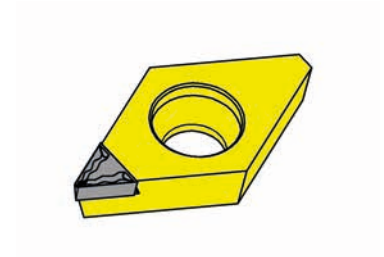
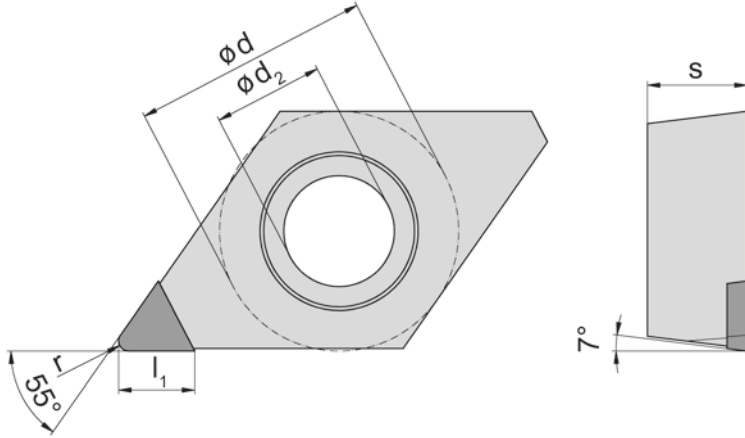
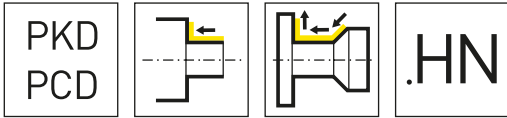


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	PD70
CCGT120412L.G.H6	12,7	5,5	4,76	12,6	1,2	▲
CCGT120412R.G.H6	12,7	5,5	4,76	12,6	1,2	▲
						P -
						M -
						K -
						N ●
						S -
						H -

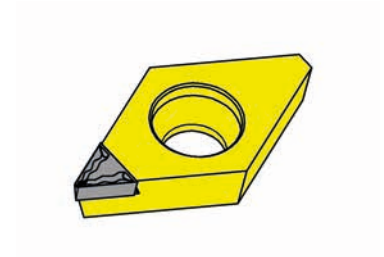
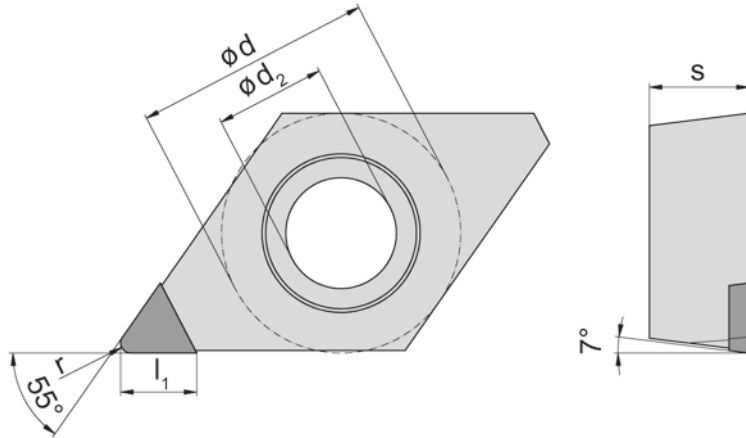
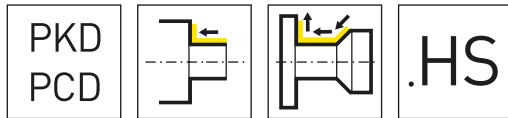


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	PD70
DCGT070202N.HN	6,35	2,8	2,38	3	0,2	▲
DCGT070204N.HN	6,35	2,8	2,38	3	0,4	▲
DCGT070208N.HN	6,35	2,8	2,38	3	0,8	▲
DCGT11T302N.HN	9,525	4,4	3,97	3,5	0,2	▲
DCGT11T304N.HN	9,525	4,4	3,97	3,5	0,4	▲
DCGT11T308N.HN	9,525	4,4	3,97	3,5	0,8	▲
DCGT11T312N.HN	9,525	4,4	3,97	3,5	1,2	▲
						P -
						M -
						K -
						N ●
						S -
						H -



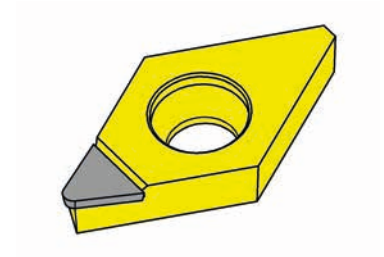
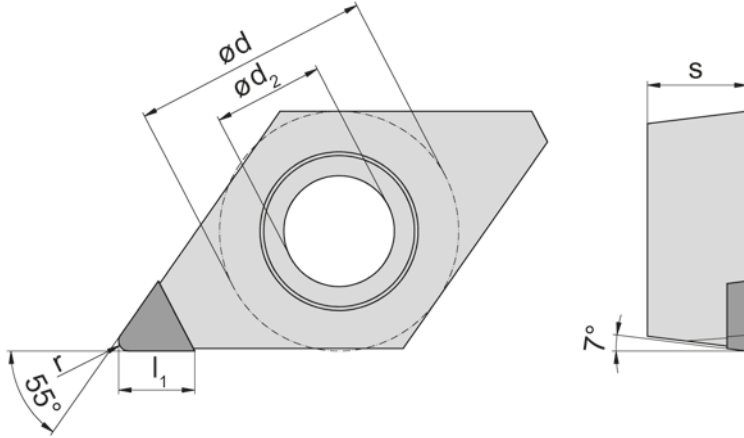
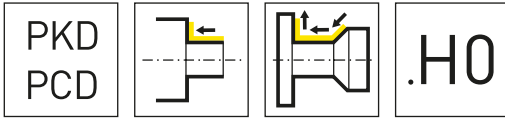
硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	PD70
DCGT070201N.HS	6,35	2,8	2,38	3	0,1	▲
DCGT070202N.HS	6,35	2,8	2,38	3	0,2	▲
DCGT070204N.HS	6,35	2,8	2,38	3	0,4	▲
DCGT070208N.HS	6,35	2,8	2,38	3	0,8	▲
DCGT11T301N.HS	9,525	4,4	3,97	3,5	0,1	▲
DCGT11T302N.HS	9,525	4,4	3,97	3,5	0,2	▲
DCGT11T304N.HS	9,525	4,4	3,97	3,5	0,4	▲
DCGT11T308N.HS	9,525	4,4	3,97	3,5	0,8	▲
DCGT11T312N.HS	9,525	4,4	3,97	3,5	1,2	▲

P	-
M	-
K	-
N	●
S	-
H	-



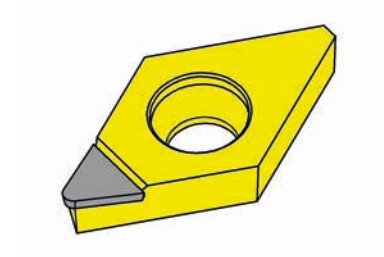
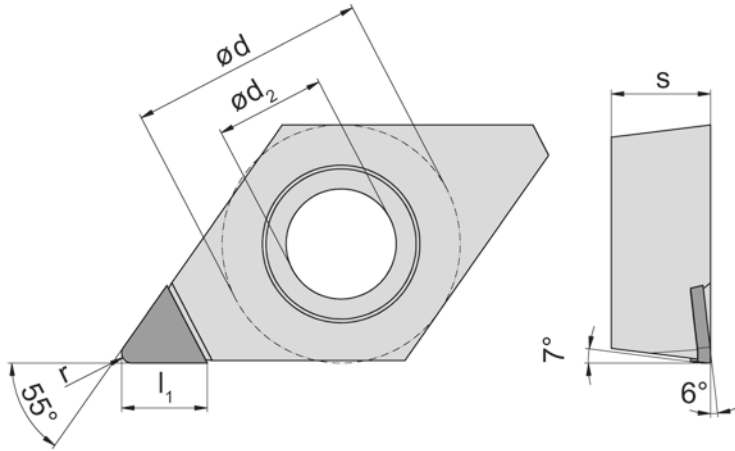
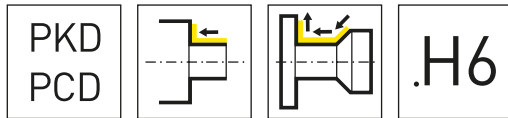
硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	PD70
DCGW070201N.H0	6,35	2,8	2,38	3,5	0,1	▲
DCGW070202N.H0	6,35	2,8	2,38	3,5	0,2	▲
DCGW070204N.H0	6,35	2,8	2,38	3,5	0,4	▲
DCGW070208N.H0	6,35	2,8	2,38	3,5	0,8	▲
DCGW11T301N.H0	9,525	4,4	3,97	4	0,1	▲
DCGW11T302N.H0	9,525	4,4	3,97	4	0,2	▲
DCGW11T304N.H0	9,525	4,4	3,97	4	0,4	▲
DCGW11T308N.H0	9,525	4,4	3,97	4	0,8	▲
DCGW11T312N.H0	9,525	4,4	3,97	4	1,2	▲

P	-
M	-
K	-
N	●
S	-
H	-

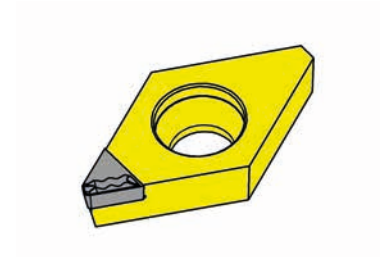
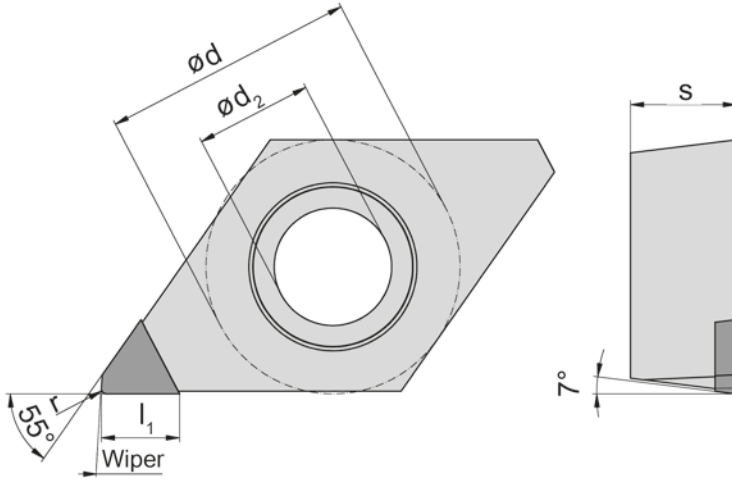
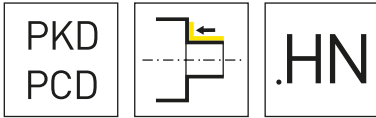


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	PD70
DCGT070201N.H6	6,35	2,8	2,38	3,5	0,1	▲
DCGT070202N.H6	6,35	2,8	2,38	3,5	0,2	▲
DCGT070204N.H6	6,35	2,8	2,38	3,5	0,4	▲
DCGT070208N.H6	6,35	2,8	2,38	3,5	0,8	△
DCGT11T301N.H6	9,525	4,4	3,97	4	0,1	▲
DCGT11T302N.H6	9,525	4,4	3,97	4	0,2	▲
DCGT11T304N.H6	9,525	4,4	3,97	4	0,4	▲
DCGT11T308N.H6	9,525	4,4	3,97	4	0,8	▲
DCGT11T312N.H6	9,525	4,4	3,97	4	1,2	▲
						P -
						M -
						K -
						N ●
						S -
						H -



硬质合金牌号
Carbide grades

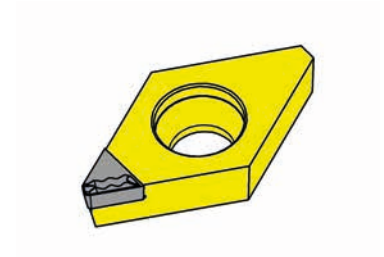
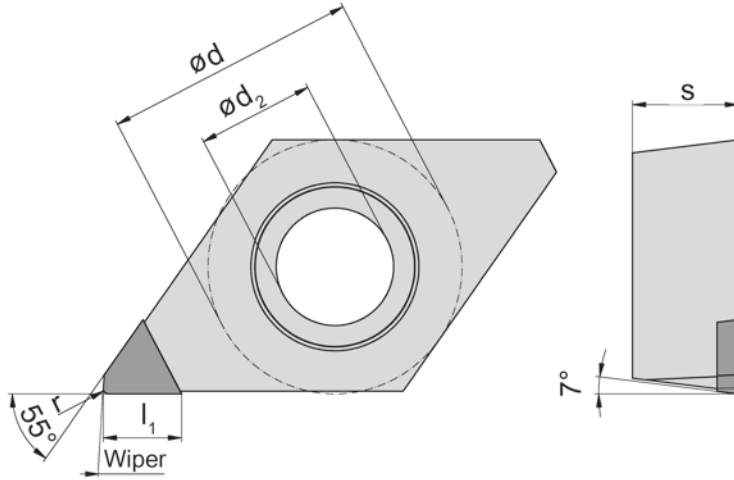
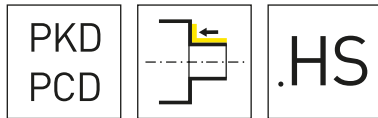
▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₁	s	l ₁	r	PD70
DCGT11T302R.W.HN	9.525	4.4	3.97	3.5	0.2	▲

请注意主偏角!请参见章节“D”
Please note the approach angle! See chapter „D“.

P	-
M	-
K	-
N	●
S	-
H	-



硬质合金牌号
Carbide grades

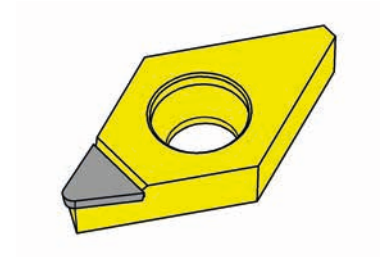
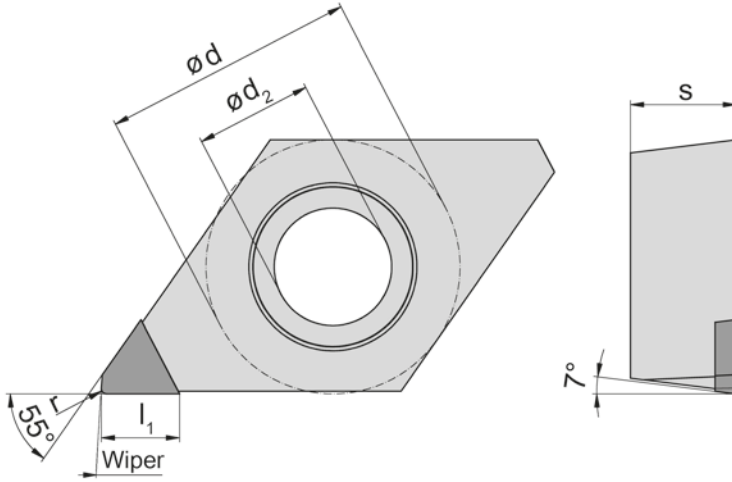
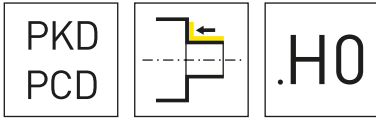
▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₁	s	l ₁	r	PD70
DCGT070202R.W.HS	6,35	2,8	2,38	3	0,2	▲
DCGT070204L.W.HS	6,35	2,8	2,38	3	0,4	▲
DCGT070204R.W.HS	6,35	2,8	2,38	3	0,4	▲
DCGT11T302R.W.HS	9,525	4,4	3,97	3,5	0,2	▲
DCGT11T304L.W.HS	9,525	4,4	3,97	3,5	0,4	▲
DCGT11T304R.W.HS	9,525	4,4	3,97	3,5	0,4	▲

请注意主偏角!请参见章节“D”
Please note the approach angle! See chapter „D“.

P	-
M	-
K	-
N	●
S	-
H	-



硬质合金牌号
Carbide grades

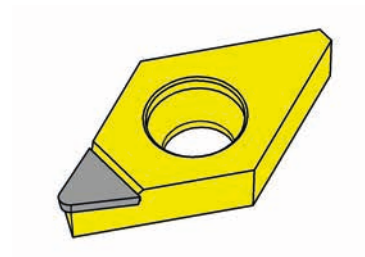
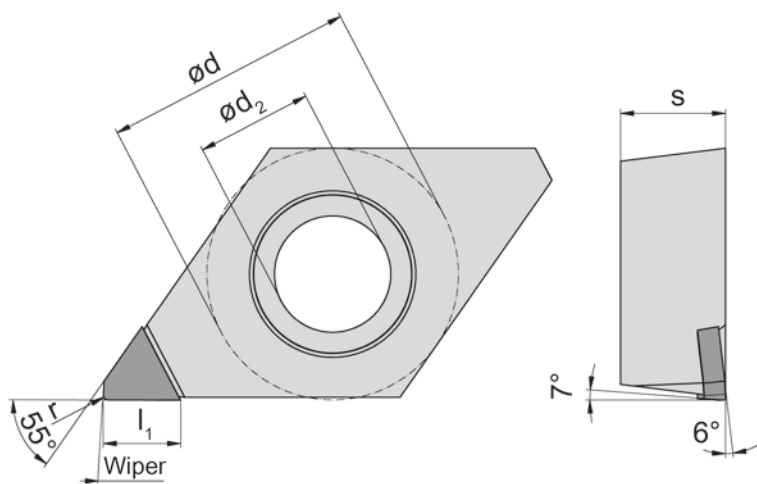
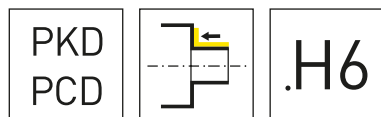
▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	PD70
DCGW070204R.W.H0	6.35	2.8	2.38	3.5	0.4	▲
DCGW11T304L.W.H0	9.525	4.4	3.97	4	0.4	▲
DCGW11T304R.W.H0	9.525	4.4	3.97	4	0.4	▲

请注意主偏角!请参见章节“D”
Please note the approach angle! See chapter „D“.

P	-
M	-
K	-
N	●
S	-
H	-



硬质合金牌号
Carbide grades

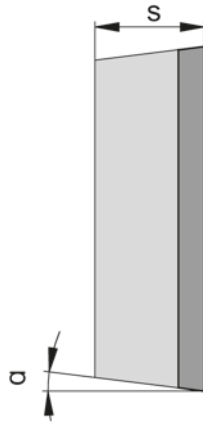
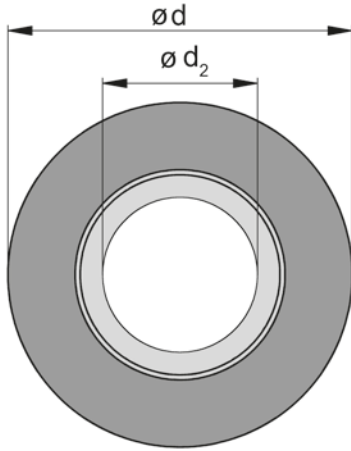
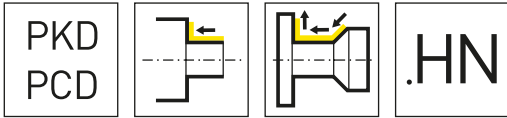
▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	PD70
DCGT11T302L.W.H6	9.525	4.4	3.97	4	0.2	▲
DCGT11T302R.W.H6	9.525	4.4	3.97	4	0.2	▲
DCGT11T304L.W.H6	9.525	4.4	3.97	3.8	0.4	▲
DCGT11T304R.W.H6	9.525	4.4	3.97	3.8	0.4	▲

请注意主偏角!请参见章节“D”
Please note the approach angle! See chapter „D“.

P	-
M	-
K	-
N	●
S	-
H	-

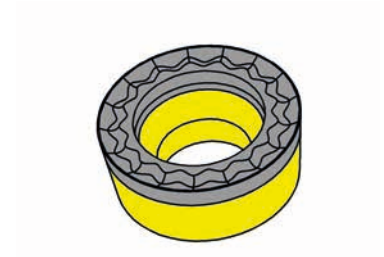
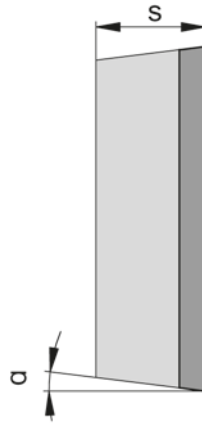
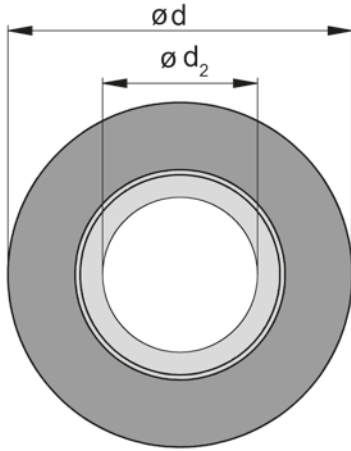
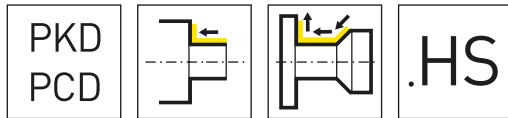


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	α	PD70
RCGT0602M0.F.HN	6	2.8	2.38	7°	▲
RCGT0803M0.F.HN	8	3.4	3.18	7°	▲
RCGT10T3M0.F.HN	10	4.4	3.97	7°	▲
RCGT1204M0.F.HN	12	4.4	4.76	7°	▲
					P -
					M -
					K -
					N ●
					S -
					H -

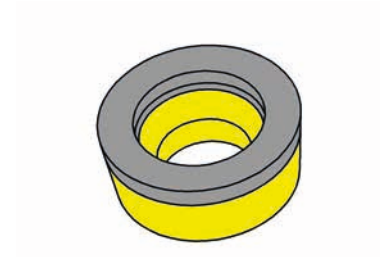
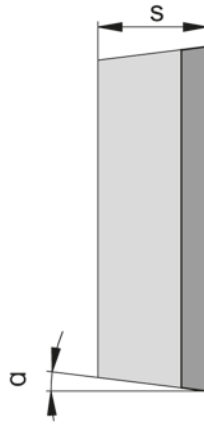
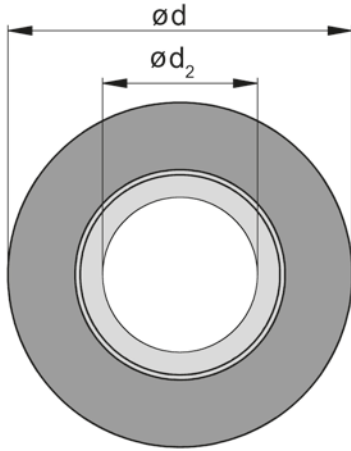
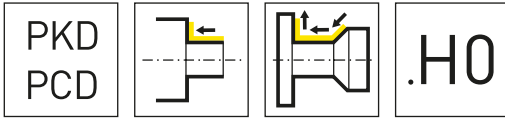


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	α	PD70
RCGT0602M0.F.HS	6	2.8	2.38	7°	▲
RCGT0803M0.F.HS	8	3.4	3.18	7°	▲
RCGT10T3M0.F.HS	10	4.4	3.97	7°	▲
RCGT1204M0.F.HS	12	4.4	4.76	7°	▲
RPGT0802M0.F.HS	8	3.4	2.38	11°	▲
					P -
					M -
					K -
					N ●
					S -
					H -

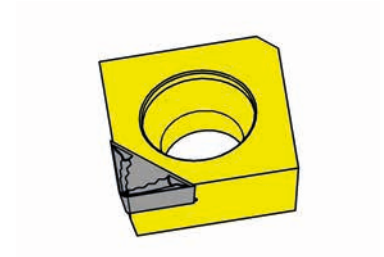
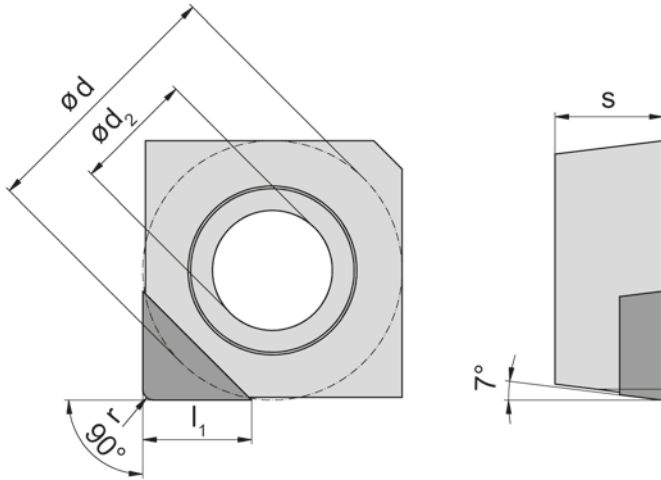
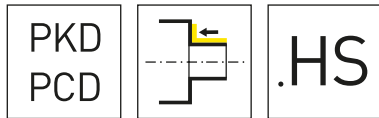


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	α	PD70
RCGW0602M0.F.H0	6	2.8	2.38	7°	▲
RCGW0803M0.F.H0	8	3.4	3.18	7°	▲
RCGW1003M0.F.H0	10	4.4	3.18	7°	▲
RCGW1204M0.F.H0	12	4.4	4.76	7°	▲
RPGW1003M0.F.H0	10	4.4	3.18	11°	▲
					P -
					M -
					K -
					N ●
					S -
					H -

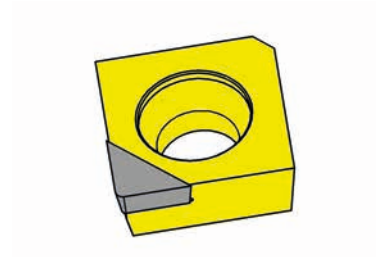
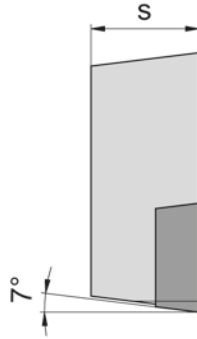
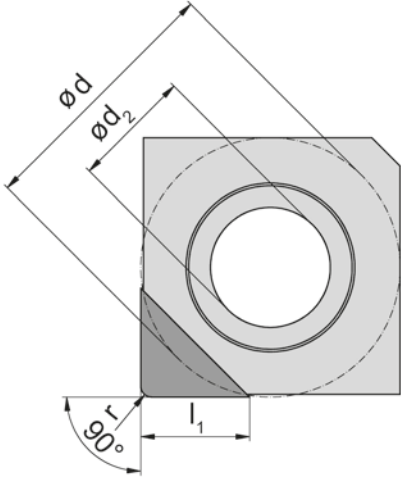
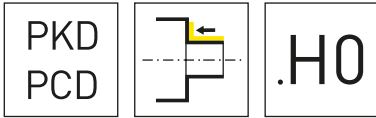


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	PD70
SCGT09T304N.HS	9.525	4.4	3.97	3.5	0.4	▲
						P -
						M -
						K -
						N ●
						S -
						H -

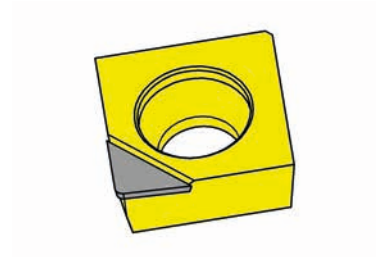
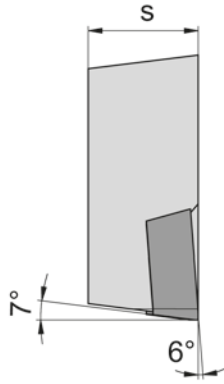
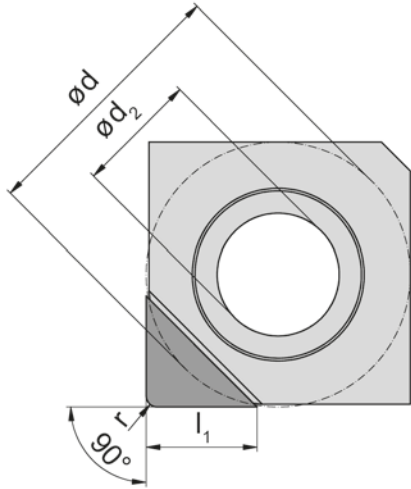
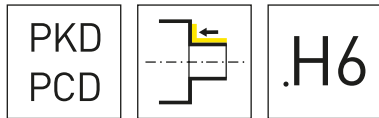


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	PD70
SCGW09T312N.H0	9.525	4.4	3.97	4	1.2	▲
						P -
						M -
						K -
						N ●
						S -
						H -

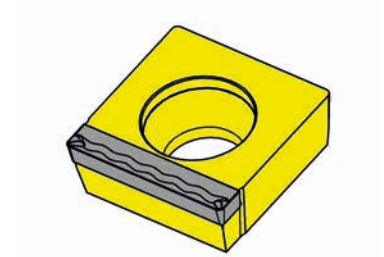
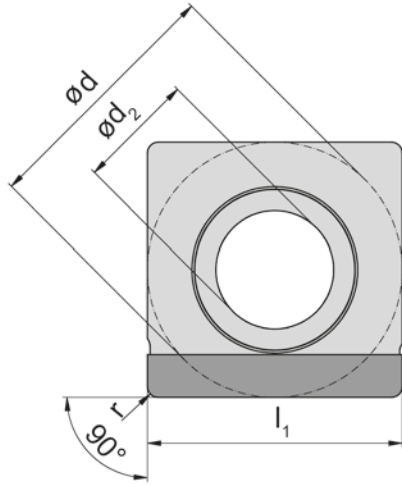
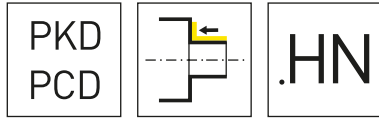


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	PD70
SCGT120412N.H6	12.7	5.5	4.76	4	1.2	▲
						P -
						M -
						K -
						N ●
						S -
						H -

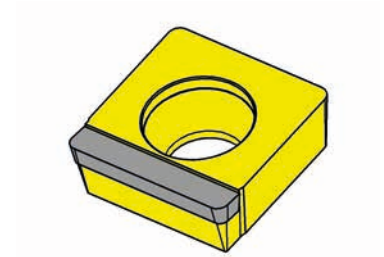
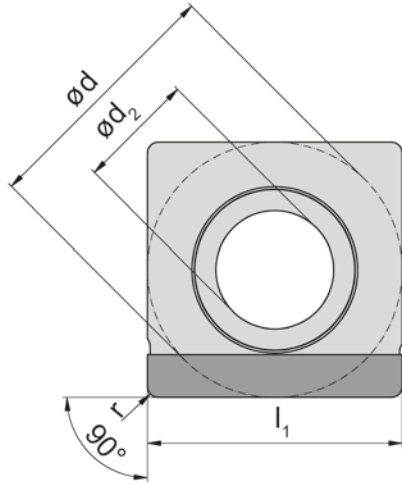
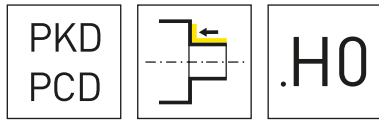


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	PD70
SCGT120408N.G.HN	12.7	5.5	4.76	12.7	0.8	▲
						P -
						M -
						K -
						N ●
						S -
						H -

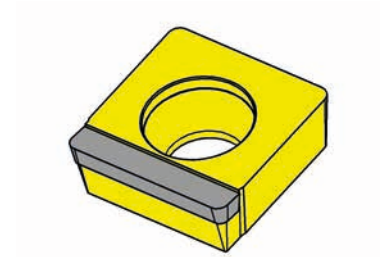
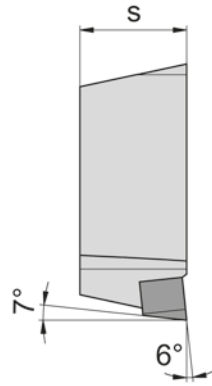
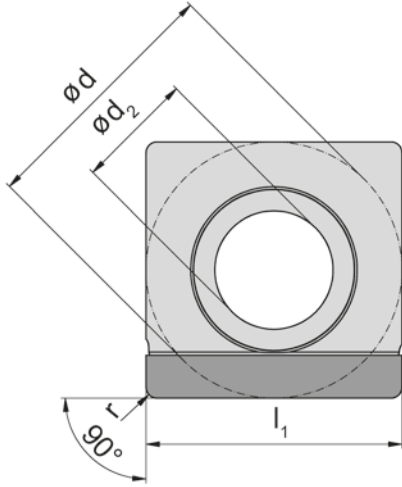
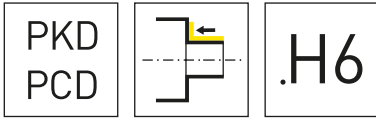


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	PD70
SCGW120404N.G.H0	12.7	5.5	4.76	12.7	0.4	▲
SCGW120412N.G.H0	12.7	5.5	4.76	12.7	1.2	▲
						P -
						M -
						K -
						N ●
						S -
						H -

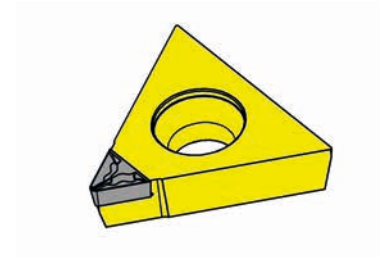
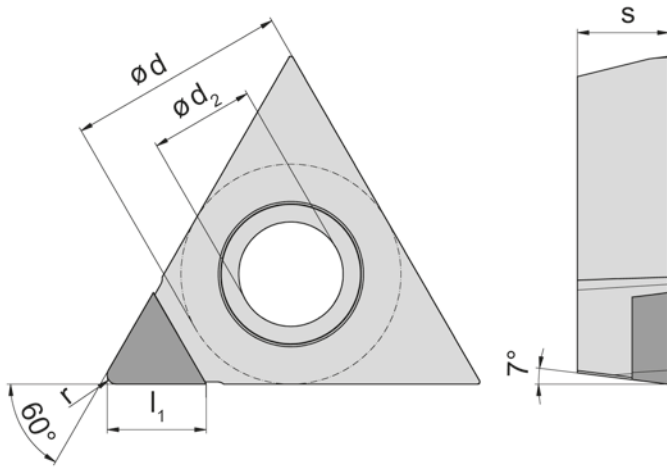
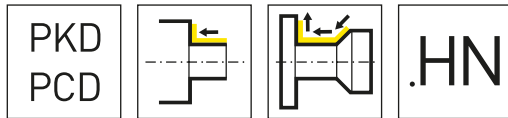


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	PD70
SCGT09T308N.G.H6	9.525	4.4	3.97	9.525	0.8	▲
						P -
						M -
						K -
						N ●
						S -
						H -

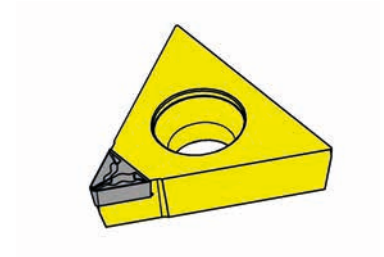
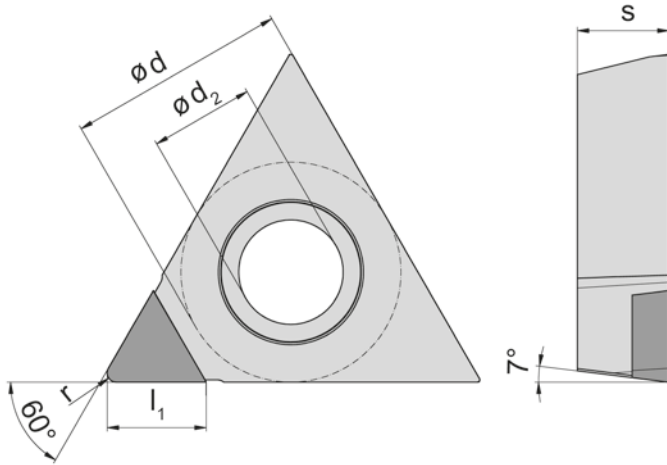
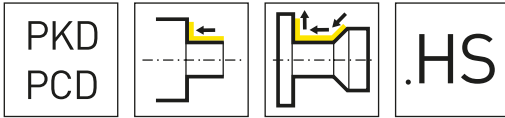


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	PD70
TCGT090204N.HN	5.56	2.5	2.38	3	0.4	▲
TCGT110202N.HN	6.35	2.8	2.38	3.5	0.2	▲
TCGT110204N.HN	6.35	2.8	2.38	3.5	0.4	▲
TCGT16T304N.HN	9.525	4.4	3.97	3.5	0.4	▲
TCGT16T308N.HN	9.525	4.4	3.97	3.5	0.8	▲
						P -
						M -
						K -
						N ●
						S -
						H -

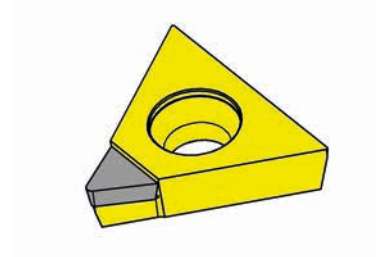
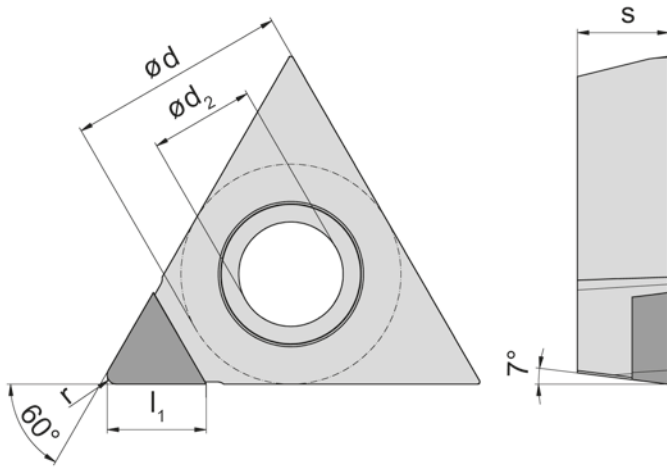
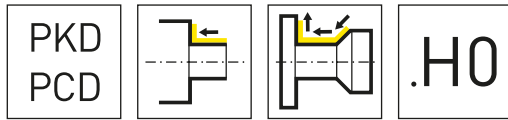


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	PD70
TCGT090202N.HS	5.56	2.5	2.38	3	0.2	▲
TCGT110202N.HS	6.35	2.8	2.38	3.5	0.2	▲
TCGT110204N.HS	6.35	2.8	2.38	3.5	0.4	▲
TCGT110208N.HS	6.35	2.8	2.38	3.5	0.8	▲
						P -
						M -
						K -
						N ●
						S -
						H -

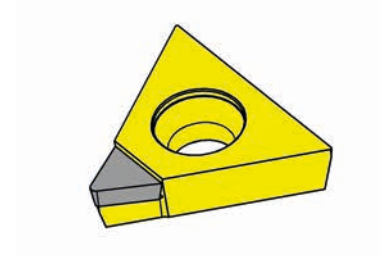
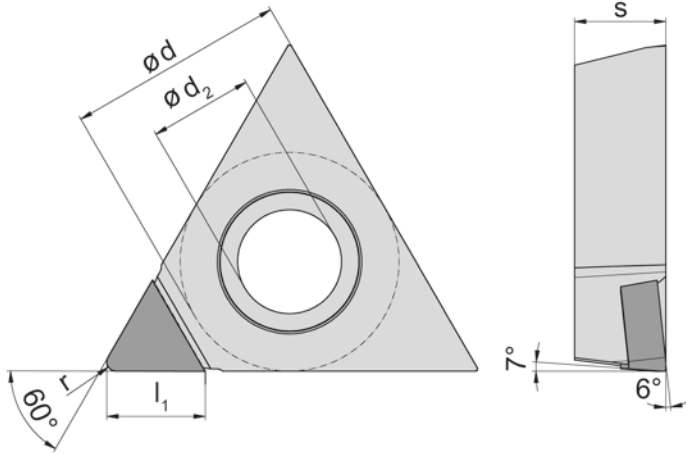
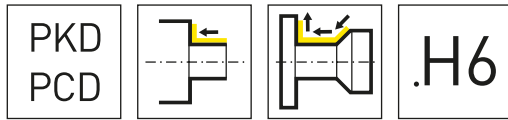


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	PD70
TCGW16T312N.H0	9.525	4.4	3.97	4	1.2	▲
						P -
						M -
						K -
						N ●
						S -
						H -

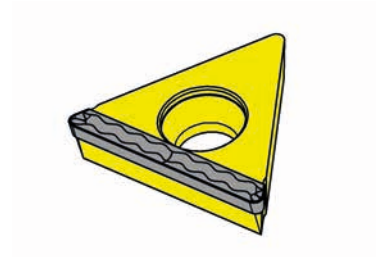
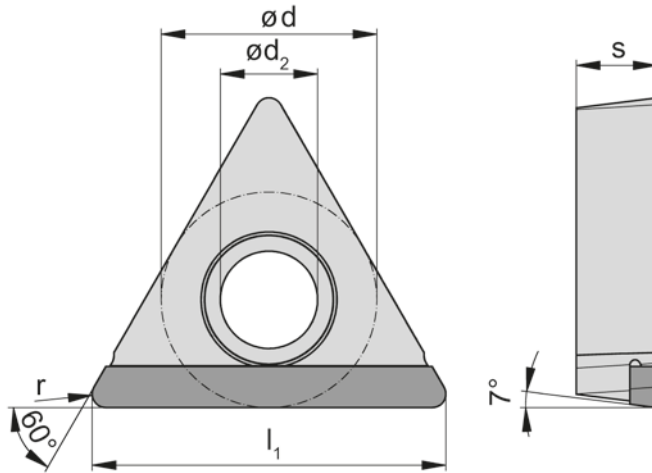
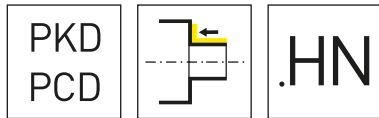


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	PD70
TCGT090202N.H6	5.56	2.5	2.38	3.5	0.2	▲
TCGT090204N.H6	5.56	2.5	2.38	3.5	0.4	▲
TCGT16T304N.H6	9.525	4.4	3.97	4	0.4	▲
						P -
						M -
						K -
						N ●
						S -
						H -

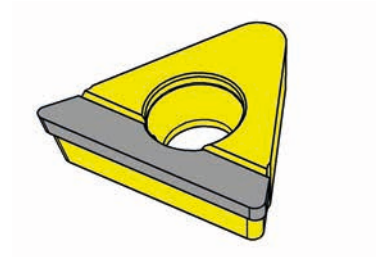
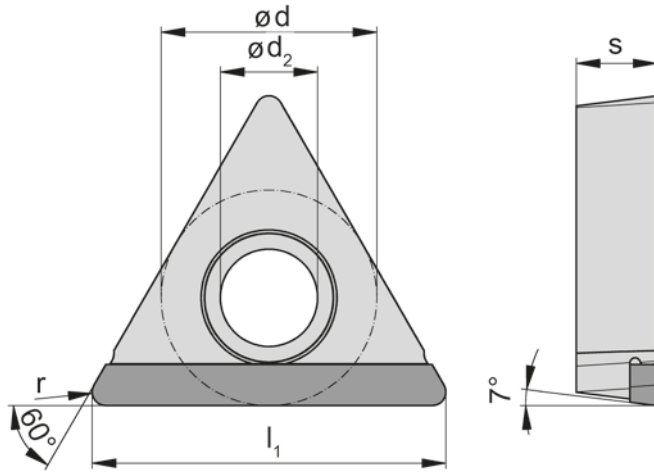
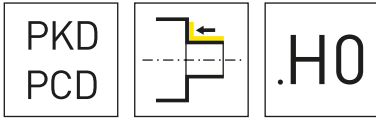


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	l ₁	r	PD70
TCGT110204N.G.HN	6.35	2.8	10.4	0.4	▲
					P -
					M -
					K -
					N ●
					S -
					H -

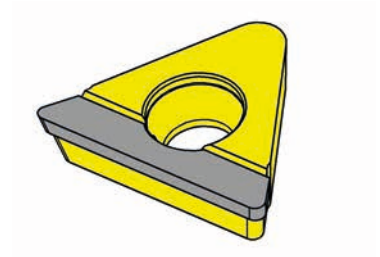
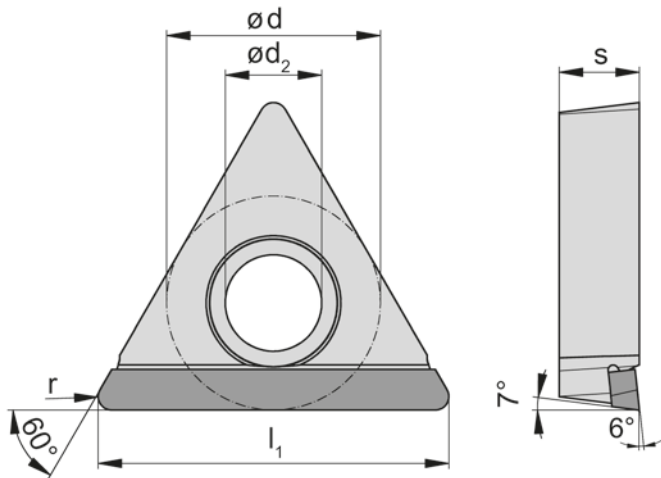
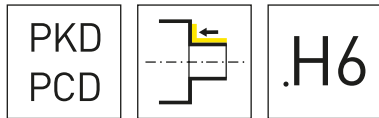


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	PD70
TCGW090204N.G.H0	5.56	2.5	2.38	9	0.4	▲
TCGW110208N.G.H0	6.35	2.8	2.38	9.8	0.8	▲
TCGW16T304N.G.H0	9.525	4.4	3.97	15.9	0.4	▲
						P -
						M -
						K -
						N ●
						S -
						H -

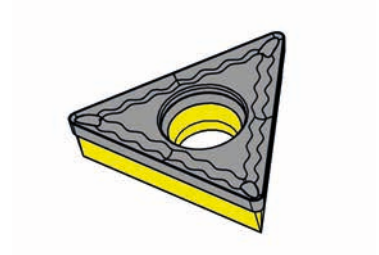
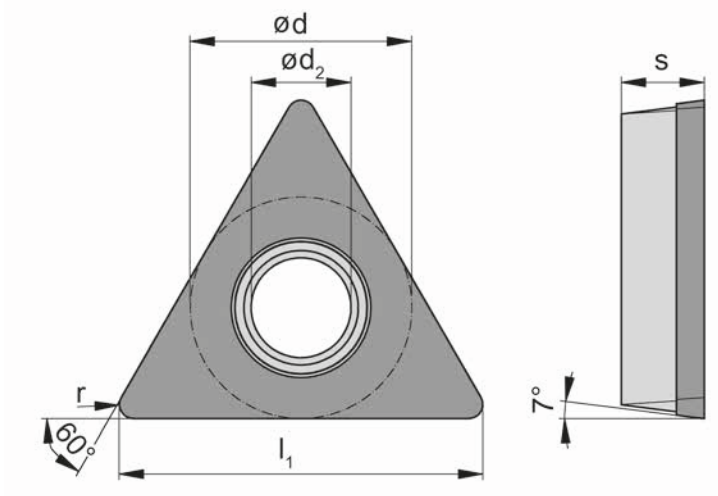
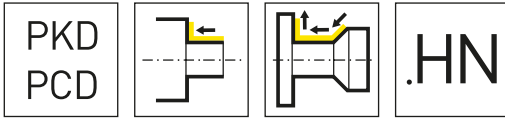


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	PD70
TCGT090204N.G.H6	5.56	2.5	2.38	9	0.4	▲
TCGT16T304N.G.H6	9.525	4.4	3.97	15.9	0.4	▲
TCGT16T308N.G.H6	9.525	4.4	3.97	15.3	0.8	▲
						P -
						M -
						K -
						N ●
						S -
						H -

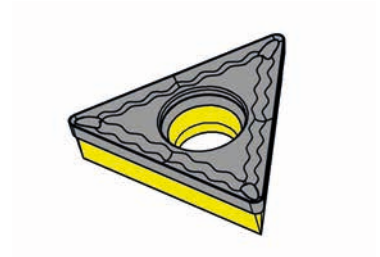
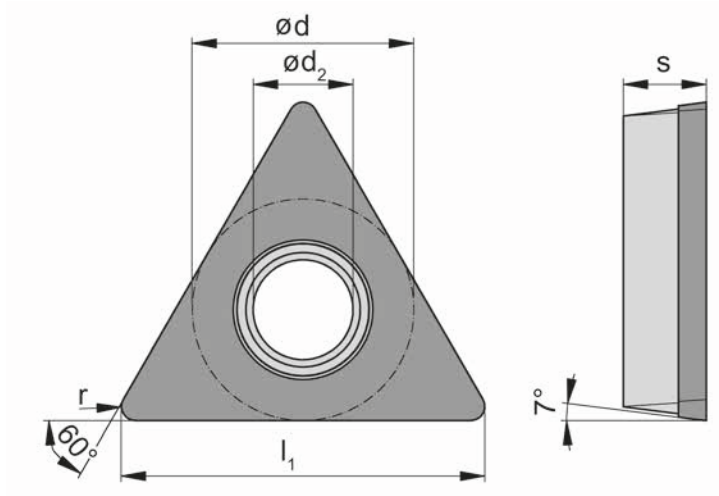
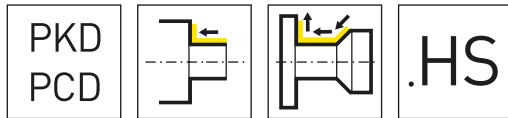


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	PD70
TCGT110202N.F.HN	6.35	2.8	2.38	10.71	0.2	△
TCGT110204N.F.HN	6.35	2.8	2.38	10.41	0.4	△
TCGT110208N.F.HN	6.35	2.8	2.38	9.83	0.8	△
						P -
						M -
						K -
						N ●
						S -
						H -

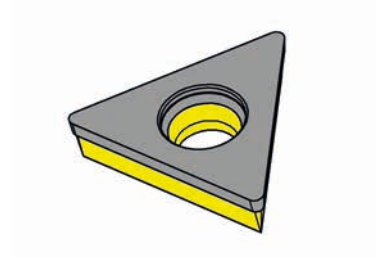
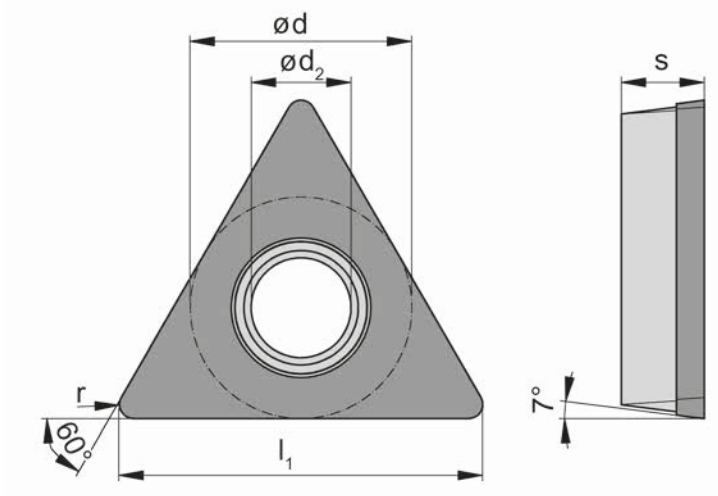
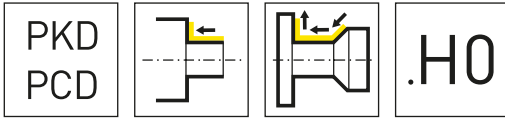


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	PD70
TCGT110204N.F.HS	6.35	2.8	2.38	10.41	0.4	△
TCGT110208N.F.HS	6.35	2.8	2.38	9.83	0.8	△
						P -
						M -
						K -
						N ●
						S -
						H -

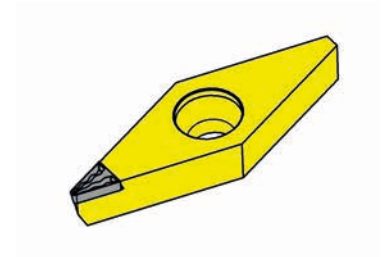
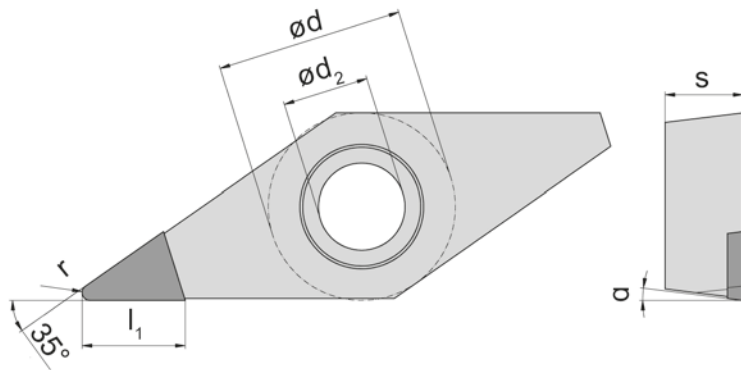
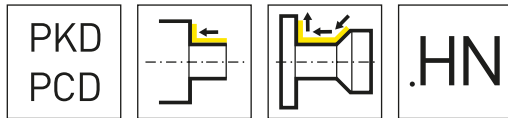


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	PD70
TCGW110204N.F.H0	6.35	2.8	2.38	10.41	0.4	△
						P -
						M -
						K -
						N ●
						S -
						H -

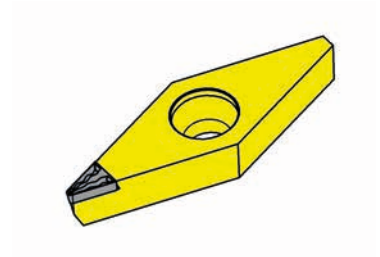
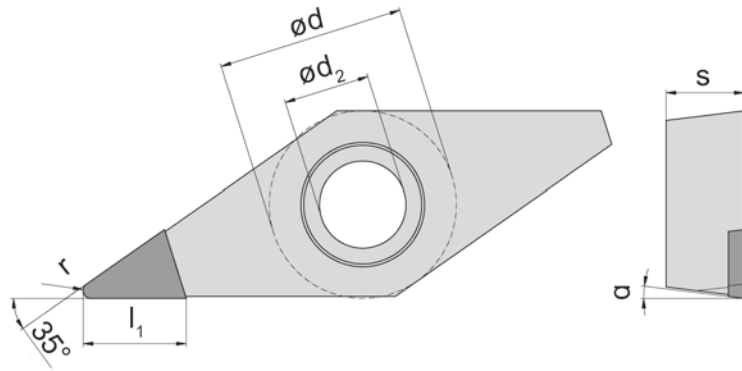
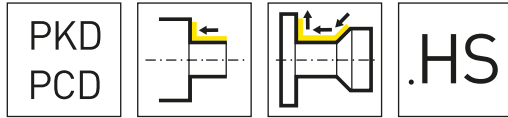


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	α	PD70
VBGT160402N.HN	9,525	4,4	4,76	4	0,2	5°	▲
VBGT160404N.HN	9,525	4,4	4,76	4	0,4	5°	▲
VBGT160408N.HN	9,525	4,4	4,76	4	0,8	5°	▲
VCGT070204N.HN	3,97	2,25	2,38	3,2	0,4	7°	▲
VCGT110302N.HN	6,35	2,8	3,18	3,2	0,2	7°	▲
VCGT110304N.HN	6,35	2,8	3,18	3,2	0,4	7°	▲
VCGT130304N.HN	7,938	3,4	3,18	4	0,4	7°	▲
VCGT160402N.HN	9,525	4,4	4,76	4	0,2	7°	▲
VCGT160404N.HN	9,525	4,4	4,76	4	0,4	7°	▲
VCGT160408N.HN	9,525	4,4	4,76	4	0,8	7°	▲
P	-						▲
M	-						▲
K	-						▲
N	●						▲
S	-						▲
H	-						▲

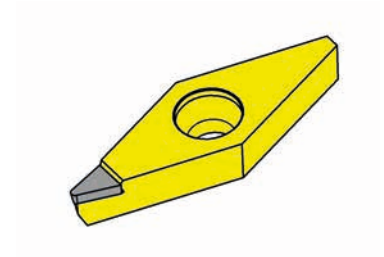
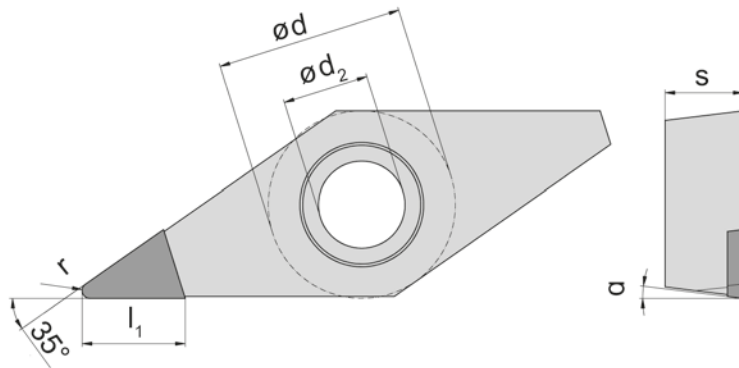
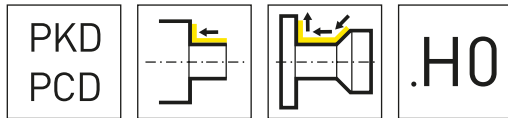


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	α	PD70
VBGT110202N.HS	6,35	2,8	2,38	3,2	0,2	5°	▲
VBGT110208N.HS	6,35	2,8	2,38	3,2	0,8	5°	▲
VBGT160402N.HS	9,525	4,4	4,76	4	0,2	5°	▲
VBGT160404N.HS	9,525	4,4	4,76	4	0,4	5°	▲
VCGT070202N.HS	3,97	2,25	2,38	3,2	0,2	7°	▲
VCGT070204N.HS	3,97	2,25	2,38	3,2	0,4	7°	▲
VCGT110301N.HS	6,35	2,8	3,18	3,2	0,1	7°	▲
VCGT110302N.HS	6,35	2,8	3,18	3,2	0,2	7°	▲
VCGT110304N.HS	6,35	2,8	3,18	3,2	0,4	7°	▲
VCGT110308N.HS	6,35	2,8	3,18	3,2	0,8	7°	▲
VCGT130302N.HS	7,938	3,4	3,18	4	0,2	7°	▲
VCGT160401N.HS	9,525	4,4	4,76	4	0,1	7°	▲
VCGT160402N.HS	9,525	4,4	4,76	4	0,2	7°	▲
VCGT160404N.HS	9,525	4,4	4,76	4	0,4	7°	▲
VCGT160408N.HS	9,525	4,4	4,76	4	0,8	7°	▲
P	-						
M	-						
K	-						
N	●						
S	-						
H	-						

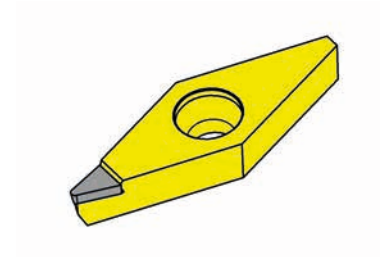
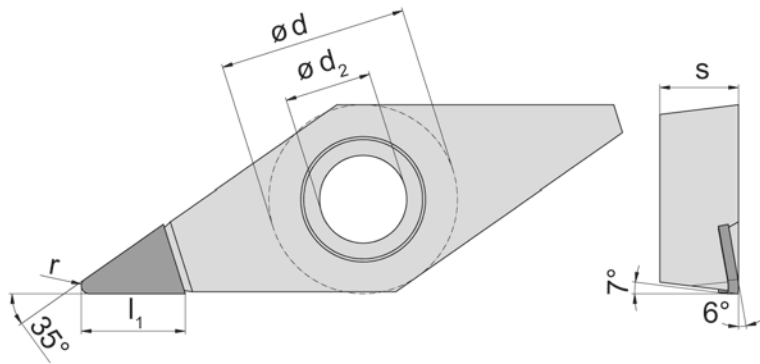
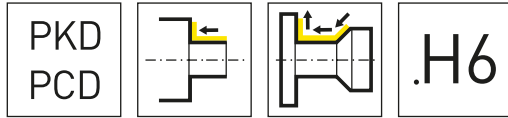


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	α	PD70
VBGW110202N.H0	6,35	2,8	2,38	3,7	0,2	5°	△
VBGW110204N.H0	6,35	2,8	2,38	3,7	0,4	5°	△
VBGW110208N.H0	6,35	2,8	2,38	3,7	0,8	5°	△
VBGW160402N.H0	9,525	4,4	4,76	4,5	0,2	5°	△
VBGW160404N.H0	9,525	4,4	4,76	4,5	0,4	5°	△
VBGW160408N.H0	9,525	4,4	4,76	4,5	0,8	5°	△
VBGW160412N.H0	9,525	4,4	4,76	4,5	1,2	5°	△
VCGW070201N.H0	3,97	2,25	2,38	3,7	0,1	7°	▲
VCGW070202N.H0	3,97	2,25	2,38	3,7	0,2	7°	▲
VCGW070204N.H0	3,97	2,25	2,38	3,7	0,4	7°	▲
VCGW110301N.H0	6,35	2,8	3,18	3,7	0,1	7°	▲
VCGW110302N.H0	6,35	2,8	3,18	3,7	0,2	7°	▲
VCGW110304N.H0	6,35	2,8	3,18	3,7	0,4	7°	▲
VCGW110308N.H0	6,35	2,8	3,18	3,7	0,8	7°	▲
VCGW130301N.H0	7,938	3,4	3,18	4,5	0,1	7°	▲
VCGW160402N.H0	9,525	4,4	4,76	4,5	0,2	7°	▲
VCGW160404N.H0	9,525	4,4	4,76	4,5	0,4	7°	▲
VCGW160408N.H0	9,525	4,4	4,76	4,5	0,8	7°	▲
P	-	-	-	-	-	-	-
M	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-
N	●	-	-	-	-	-	-
S	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-

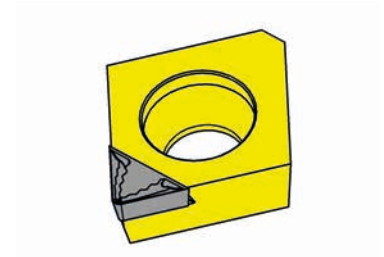
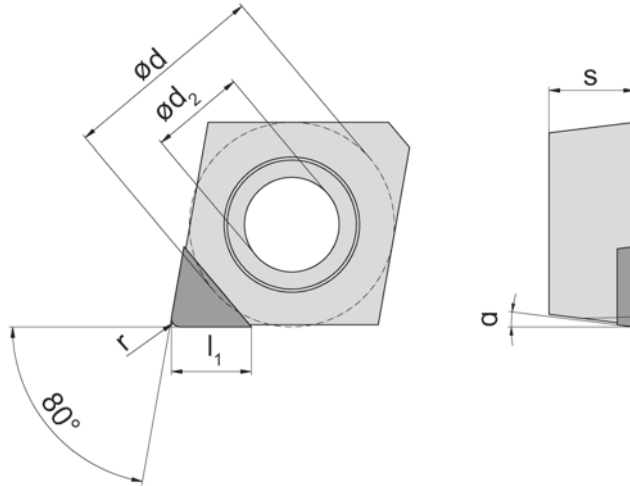
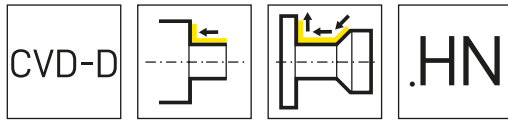


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	PD70
VCGT070201N.H6	3,97	2,25	2,38	3,7	0,1	▲
VCGT070202N.H6	3,97	2,25	2,38	3,7	0,2	▲
VCGT070204N.H6	3,97	2,25	2,38	3,7	0,4	▲
VCGT110301N.H6	6,35	2,8	3,18	3,7	0,1	▲
VCGT110302N.H6	6,35	2,8	3,18	3,7	0,2	▲
VCGT110304N.H6	6,35	2,8	3,18	3,7	0,4	▲
VCGT110308N.H6	6,35	2,8	3,18	3,7	0,8	▲
VCGT130302N.H6	7,938	3,4	3,18	4,7	0,2	▲
VCGT130304N.H6	7,938	3,4	3,18	4,7	0,4	▲
VCGT160401N.H6	9,525	4,4	4,76	4,5	0,1	▲
VCGT160402N.H6	9,525	4,4	4,76	4,5	0,2	▲
VCGT160404N.H6	9,525	4,4	4,76	4,5	0,4	▲
VCGT160408N.H6	9,525	4,4	4,76	4,5	0,8	▲
VCGT160412N.H6	9,525	4,4	4,76	4,5	1,2	▲
P	-					
M	-					
K	-					
N	●					
S	-					
H	-					

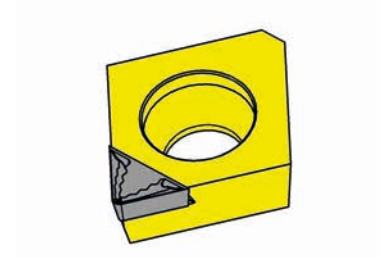
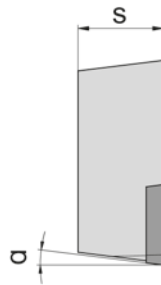
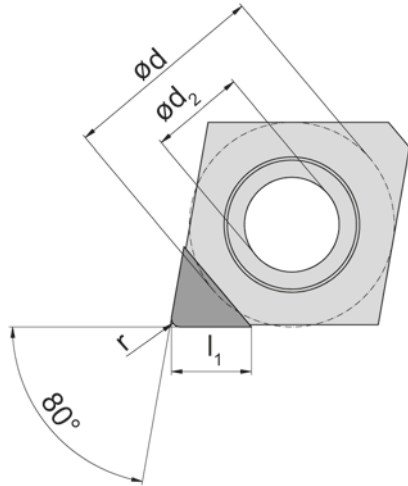
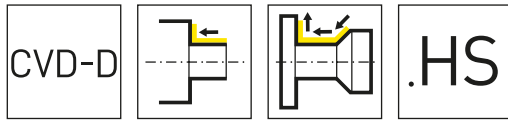


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	α	HD08
CCGT060202N.HN	6,35	2,8	2,38	2,5	0,2	7°	▲
CCGT060204N.HN	6,35	2,8	2,38	2,5	0,4	7°	▲
CCGT09T302N.HN	9,525	4,4	3,97	4	0,2	7°	▲
CCGT09T304N.HN	9,525	4,4	3,97	4	0,4	7°	▲
CCGT120404N.HN	12,7	5,5	4,76	4	0,4	7°	▲
CCGT120408N.HN	12,7	5,5	4,76	4	0,8	7°	▲
CPGT060208N.HN	6,35	2,8	2,38	2,5	0,8	11°	▲
CPGT09T312N.HN	9,525	4,4	3,97	4	1,2	11°	△
							P -
							M -
							K -
							N ●
							S -
							H -

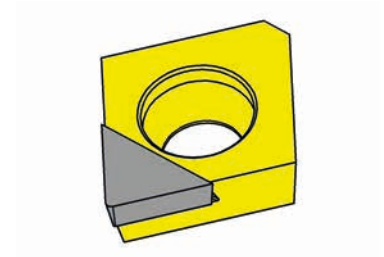
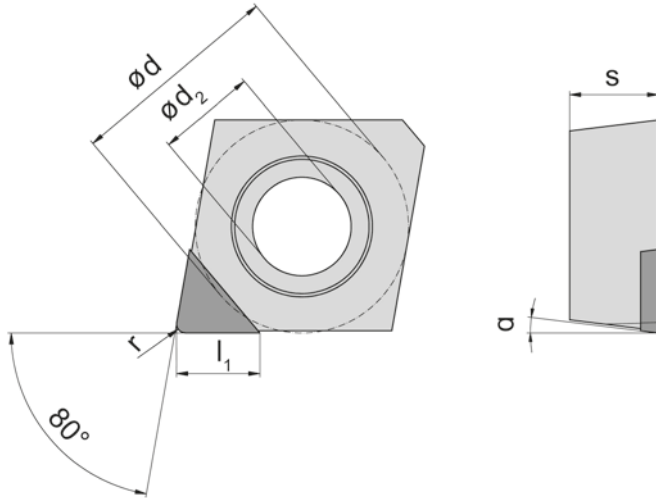
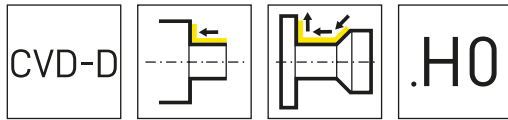


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	α	HD08
CCGT060201N.HS	6,35	2,8	2,38	2,5	0,1	7°	▲
CCGT060202N.HS	6,35	2,8	2,38	2,5	0,2	7°	▲
CCGT060204N.HS	6,35	2,8	2,38	2,5	0,4	7°	▲
CCGT060208N.HS	6,35	2,8	2,38	2,5	0,8	7°	▲
CCGT09T301N.HS	9,525	4,4	3,97	4	0,1	7°	▲
CCGT09T302N.HS	9,525	4,4	3,97	4	0,2	7°	▲
CCGT09T304N.HS	9,525	4,4	3,97	4	0,4	7°	▲
CCGT09T308N.HS	9,525	4,4	3,97	4	0,8	7°	▲
CCGT120402N.HS	12,7	5,5	4,76	4	0,2	7°	▲
CCGT120404N.HS	12,7	5,5	4,76	4	0,4	7°	▲
CPGT09T301N.HS	9,525	4,4	3,97	4	0,1	11°	△
CPGT09T302N.HS	9,525	4,4	3,97	4	0,2	11°	▲
CPGT09T304N.HS	9,525	4,4	3,97	4	0,4	11°	▲
P	-						
M	-						
K	-						
N	●						
S	-						
H	-						



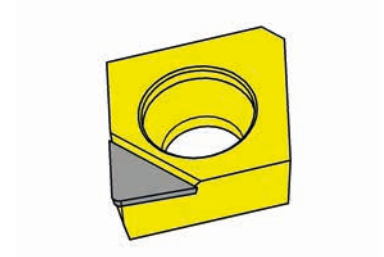
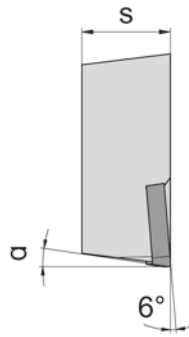
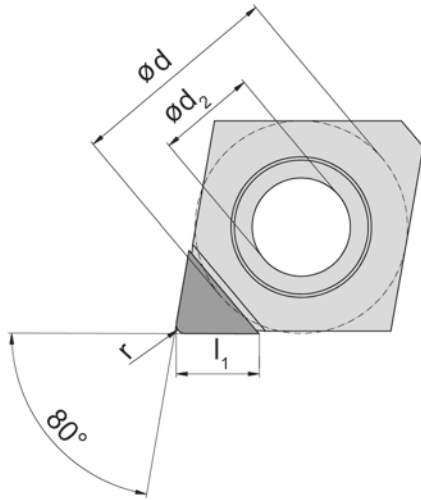
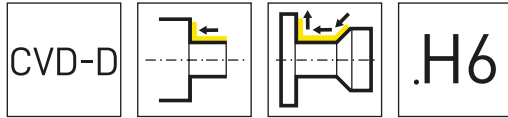
硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	α	HD08
CCGW060201N.H0	6,35	2,8	2,38	3	0,1	7°	△
CCGW060202N.H0	6,35	2,8	2,38	3	0,2	7°	▲
CCGW060204N.H0	6,35	2,8	2,38	3	0,4	7°	▲
CCGW060208N.H0	6,35	2,8	2,38	3	0,8	7°	▲
CCGW09T302N.H0	9,525	4,4	3,97	4,5	0,2	7°	▲
CCGW09T304N.H0	9,525	4,4	3,97	4,5	0,4	7°	▲
CCGW09T308N.H0	9,525	4,4	3,97	4,5	0,8	7°	▲
CCGW09T312N.H0	9,525	4,4	3,97	4,5	1,2	7°	△
CCGW120404N.H0	12,7	5,5	4,76	4,5	0,4	7°	▲
CCGW120408N.H0	12,7	5,5	4,76	4,5	0,8	7°	▲
CCGW120412N.H0	12,7	5,5	4,76	4,5	1,2	7°	▲

P	-
M	-
K	-
N	●
S	-
H	-

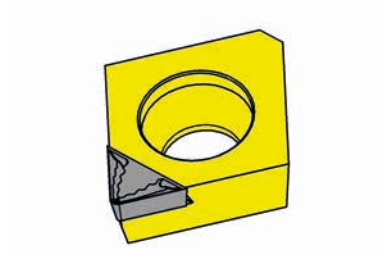
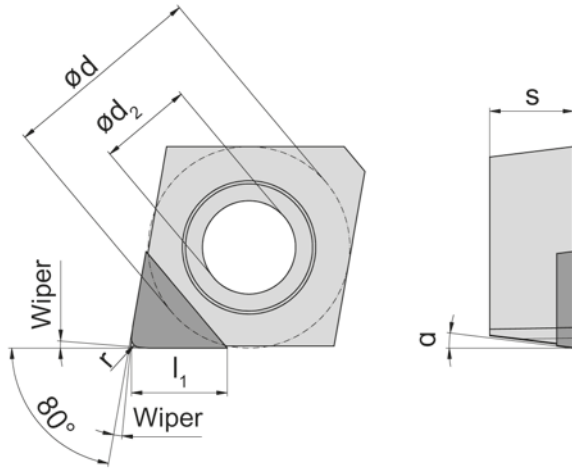
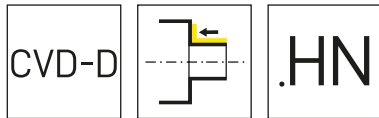


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	α	HD08
CCGT060201N.H6	6,35	2,8	2,38	3	0,1	7°	▲
CCGT060202N.H6	6,35	2,8	2,38	3	0,2	7°	▲
CCGT060204N.H6	6,35	2,8	2,38	3	0,4	7°	▲
CCGT09T301N.H6	9,525	4,4	3,97	4,5	0,1	7°	▲
CCGT09T302N.H6	9,525	4,4	3,97	4,5	0,2	7°	▲
CCGT09T304N.H6	9,525	4,4	3,97	4,5	0,4	7°	▲
CCGT09T312N.H6	9,525	4,4	3,97	4,5	1,2	7°	▲
CCGT120402N.H6	12,7	5,5	4,76	4,5	0,2	7°	▲
CCGT120404N.H6	12,7	5,5	4,76	4,5	0,4	7°	▲
CCGT120408N.H6	12,7	5,5	4,76	4,5	0,8	7°	▲
							P -
							M -
							K -
							N ●
							S -
							H -



硬质合金牌号
Carbide grades

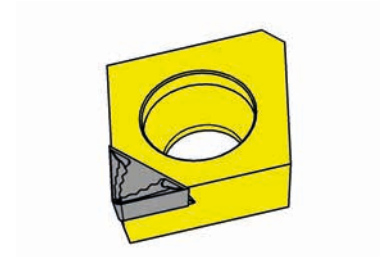
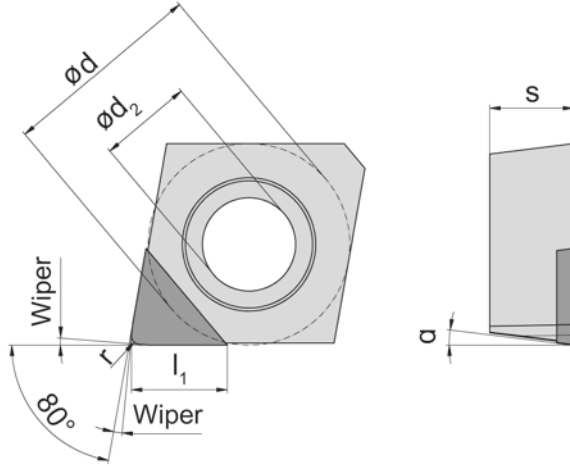
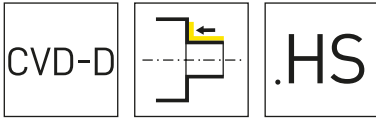
▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	α	HD08
CCGT060202N.W.HN	6,35	2,8	2,38	2,5	0,2	7°	▲

请注意主偏角!请参见章节“D”
Please note the approach angle! See chapter „D“.

P	-
M	-
K	-
N	●
S	-
H	-



硬质合金牌号
Carbide grades

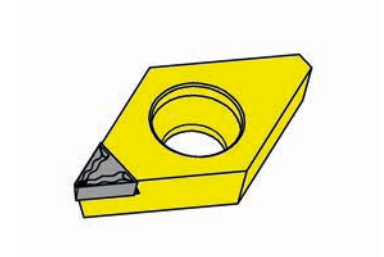
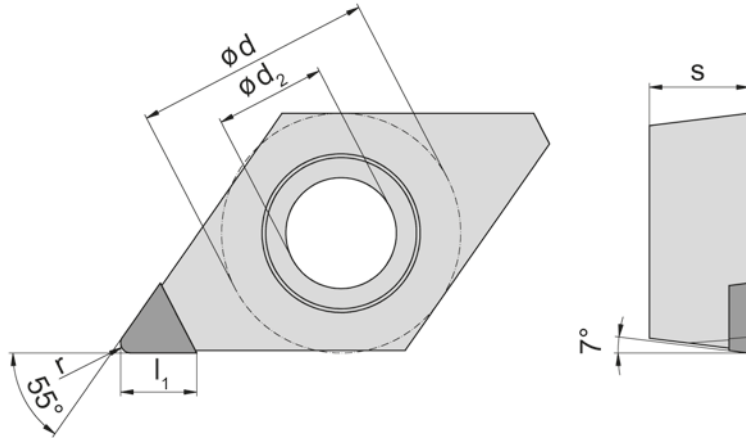
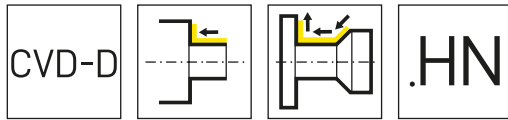
▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	α	HD08
CCGT060204N.W.HS	6,35	2,8	2,38	2,5	0,4	7°	▲
CCGT09T304N.W.HS	9,525	4,4	3,97	4	0,4	7°	▲

请注意主偏角!请参见章节“D”
Please note the approach angle! See chapter „D“.

P	-
M	-
K	-
N	●
S	-
H	-

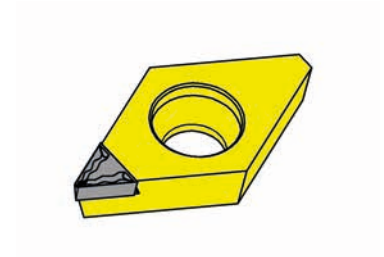
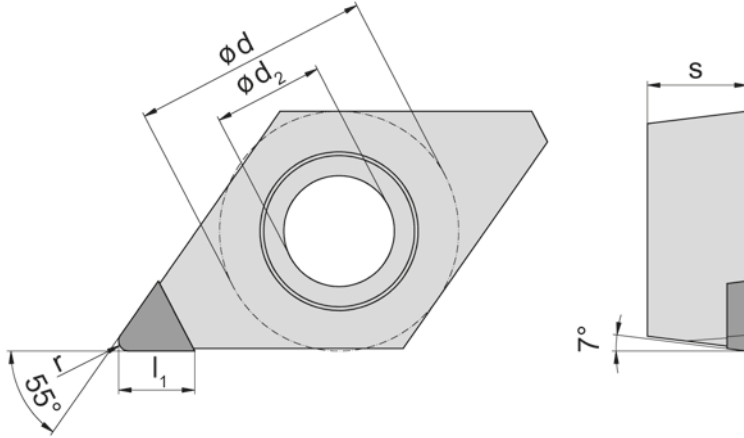
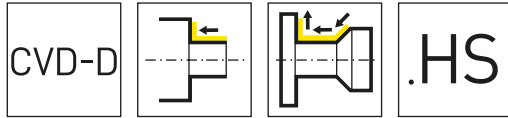


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	HD08
DCGT070202N.HN	6,35	2,8	2,38	2,5	0,2	▲
DCGT070204N.HN	6,35	2,8	2,38	2,5	0,4	▲
DCGT070208N.HN	6,35	2,8	2,38	2,5	0,8	▲
DCGT11T302N.HN	9,525	4,4	3,97	2,5	0,2	▲
DCGT11T304N.HN	9,525	4,4	3,97	2,5	0,4	▲
DCGT11T308N.HN	9,525	4,4	3,97	2,5	0,8	▲
						P -
						M -
						K -
						N ●
						S -
						H -

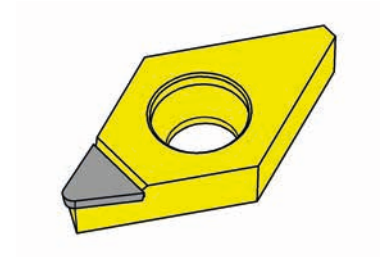
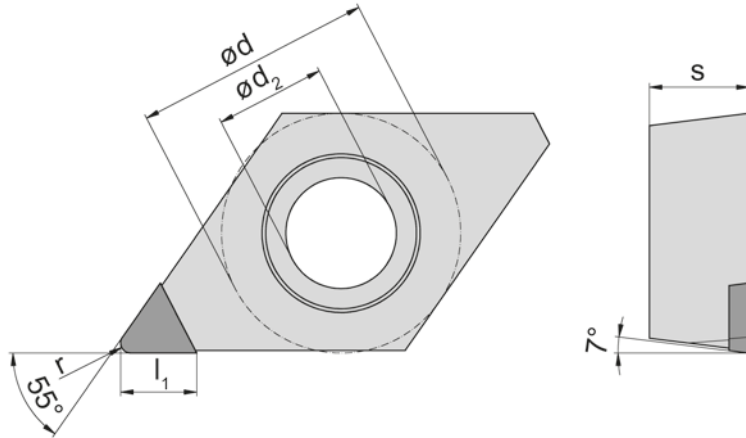
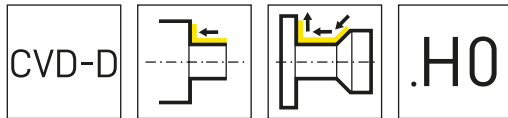


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	HD08
DCGT070201N.HS	6,35	2,8	2,38	2,5	0,1	▲
DCGT070202N.HS	6,35	2,8	2,38	2,5	0,2	▲
DCGT070204N.HS	6,35	2,8	2,38	2,5	0,4	▲
DCGT070208N.HS	6,35	2,8	2,38	2,5	0,8	▲
DCGT11T301N.HS	9,525	4,4	3,97	2,5	0,1	▲
DCGT11T302N.HS	9,525	4,4	3,97	2,5	0,2	▲
DCGT11T304N.HS	9,525	4,4	3,97	2,5	0,4	▲
DCGT11T308N.HS	9,525	4,4	3,97	2,5	0,8	▲
DCGT11T312N.HS	9,525	4,4	3,97	2,5	1,2	▲
						P -
						M -
						K -
						N ●
						S -
						H -



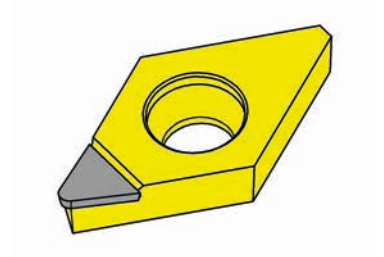
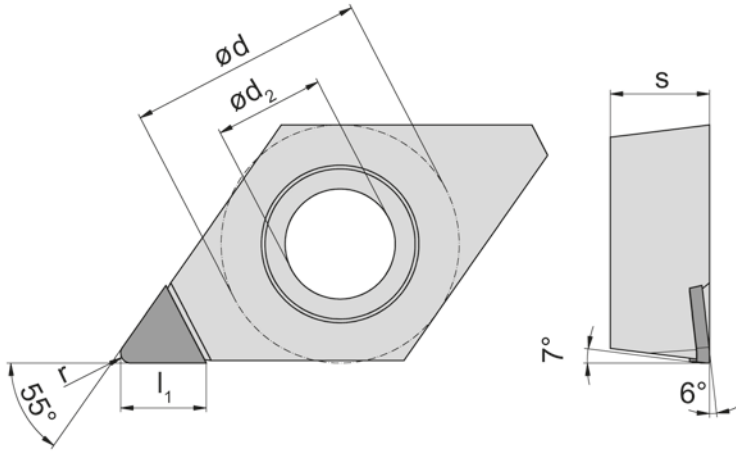
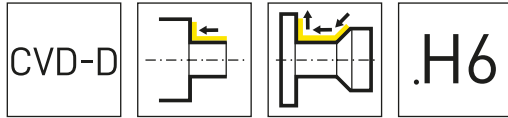
硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	HD08
DCGW070201N.H0	6,35	2,8	2,38	3	0,1	▲
DCGW070202N.H0	6,35	2,8	2,38	3	0,2	▲
DCGW070204N.H0	6,35	2,8	2,38	3	0,4	▲
DCGW070208N.H0	6,35	2,8	2,38	3	0,8	▲
DCGW11T301N.H0	9,525	4,4	3,97	3	0,1	▲
DCGW11T302N.H0	9,525	4,4	3,97	3	0,2	▲
DCGW11T304N.H0	9,525	4,4	3,97	3	0,4	▲
DCGW11T308N.H0	9,525	4,4	3,97	3	0,8	▲

P	-
M	-
K	-
N	●
S	-
H	-

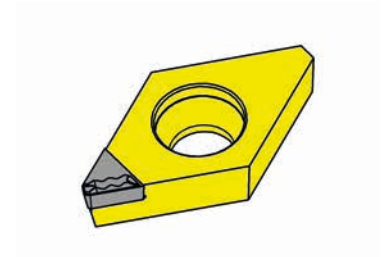
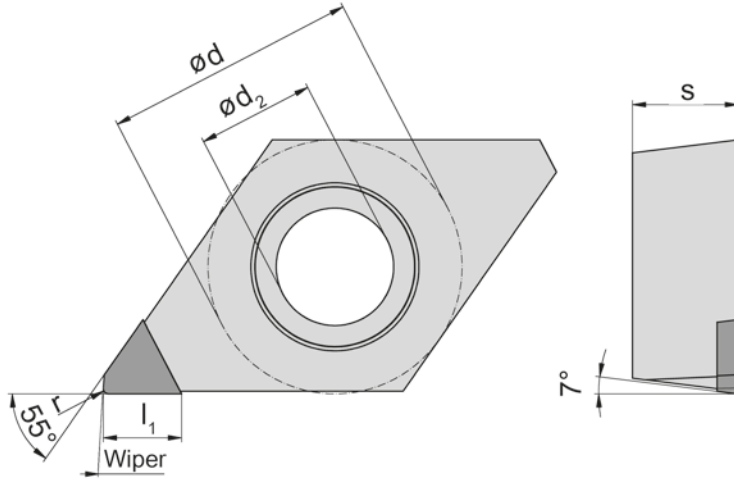
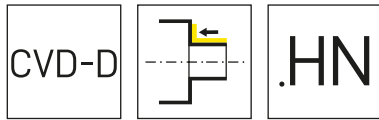


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	HD08
DCGT070201N.H6	6,35	2,8	2,38	3	0,1	▲
DCGT070202N.H6	6,35	2,8	2,38	3	0,2	▲
DCGT070204N.H6	6,35	2,8	2,38	3	0,4	▲
DCGT11T301N.H6	9,525	4,4	3,97	3	0,1	▲
DCGT11T302N.H6	9,525	4,4	3,97	3	0,2	▲
DCGT11T304N.H6	9,525	4,4	3,97	3	0,4	▲
DCGT11T308N.H6	9,525	4,4	3,97	3	0,8	▲
						P -
						M -
						K -
						N ●
						S -
						H -



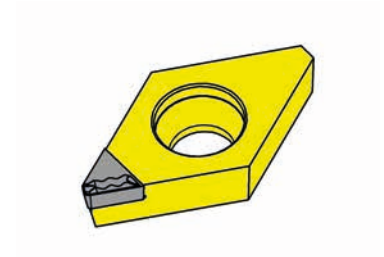
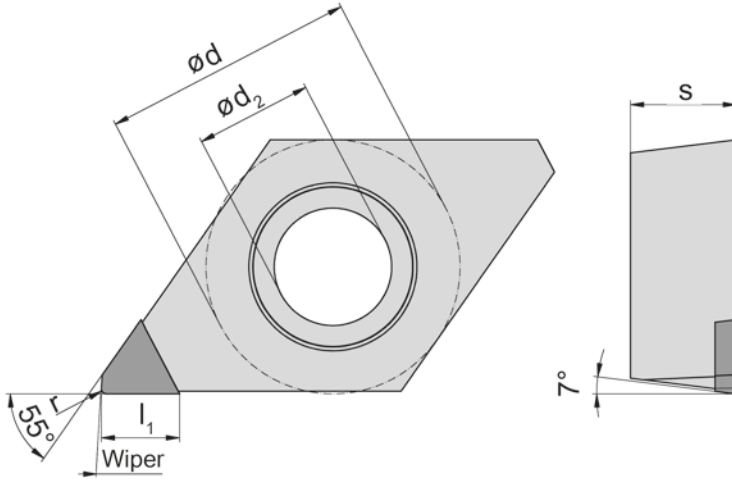
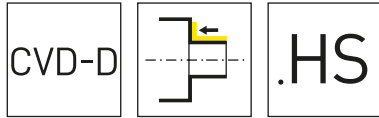
硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₁	s	l ₁	r	HD08
DCGT11T304R.W.HN	9.525	4.4	3.97	2.5	0.4	▲
						P -
						M -
						K -
						N ●
						S -
						H -

请注意主偏角!请参见章节“D”
Please note the approach angle! See chapter „D“.



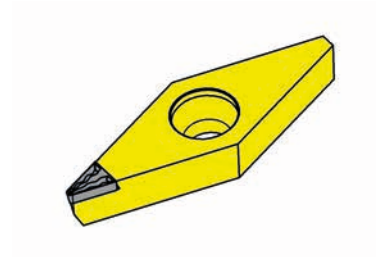
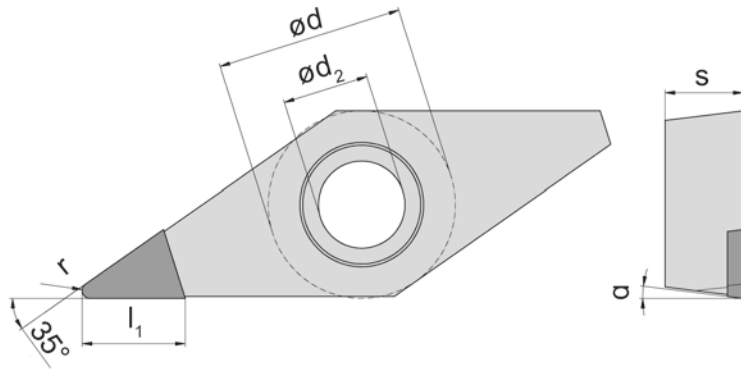
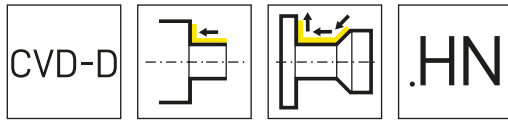
硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₁	s	l ₁	r	HD08
DCGT070202R.W.HS	6,35	2,8	2,38	2,5	0,2	▲
DCGT070204L.W.HS	6,35	2,8	2,38	2,5	0,4	▲
DCGT070204R.W.HS	6,35	2,8	2,38	2,5	0,4	▲
DCGT11T304L.W.HS	9,525	4,4	3,97	2,5	0,4	▲
DCGT11T304R.W.HS	9,525	4,4	3,97	2,5	0,4	▲
						P -
						M -
						K -
						N ●
						S -
						H -

请注意主偏角!请参见章节“D”
Please note the approach angle! See chapter „D“.

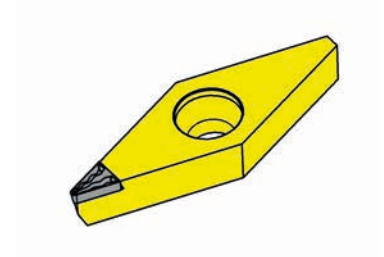
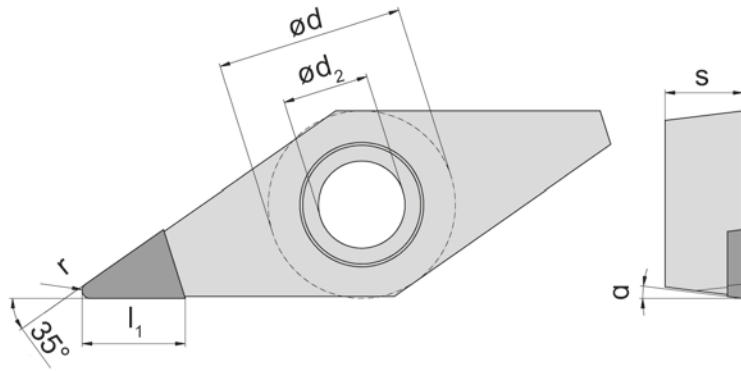
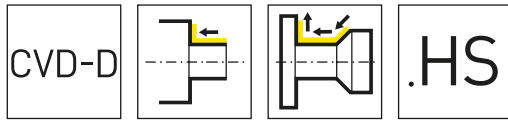


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	α	HD08
VCGT110302N.HN	6,35	2,8	3,18	2,5	0,2	7°	▲
VCGT110304N.HN	6,35	2,8	3,18	2,5	0,4	7°	▲
VCGT160404N.HN	9,525	4,4	4,76	2,5	0,4	7°	▲
VCGT160408N.HN	9,525	4,4	4,76	2,5	0,8	7°	▲
							P -
							M -
							K -
							N ●
							S -
							H -

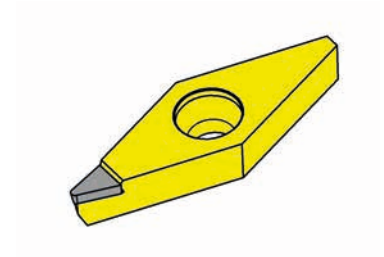
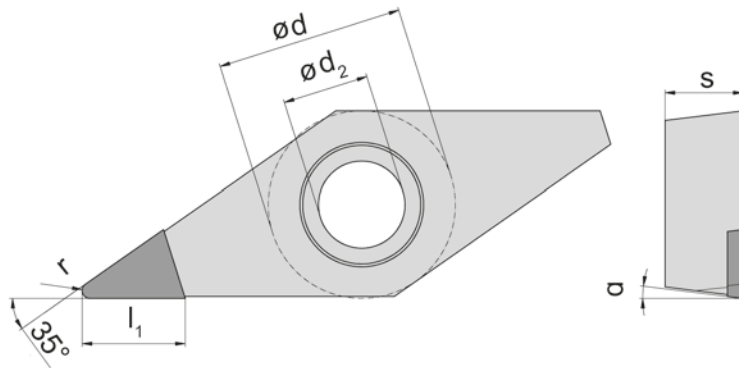
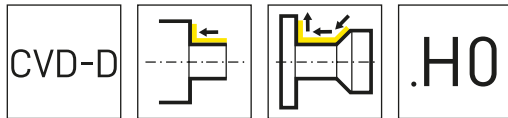


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	α	HD08
VCGT070201N.HS	3,97	2,25	2,38	2,5	0,1	7°	▲
VCGT070202N.HS	3,97	2,25	2,38	2,5	0,2	7°	▲
VCGT070204N.HS	3,97	2,25	2,38	2,5	0,4	7°	▲
VCGT110301N.HS	6,35	2,8	3,18	2,5	0,1	7°	▲
VCGT110302N.HS	6,35	2,8	3,18	2,5	0,2	7°	▲
VCGT110304N.HS	6,35	2,8	3,18	2,5	0,4	7°	▲
VCGT110308N.HS	6,35	2,8	3,18	2,5	0,8	7°	▲
VCGT160401N.HS	9,525	4,4	4,76	2,5	0,1	7°	▲
VCGT160402N.HS	9,525	4,4	4,76	2,5	0,2	7°	▲
VCGT160404N.HS	9,525	4,4	4,76	2,5	0,4	7°	▲
VCGT160408N.HS	9,525	4,4	4,76	2,5	0,8	7°	▲
							P -
							M -
							K -
							N ●
							S -
							H -

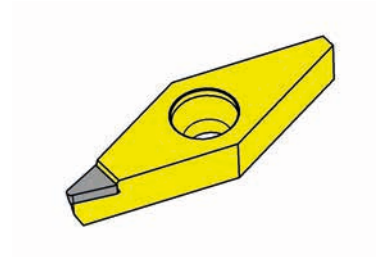
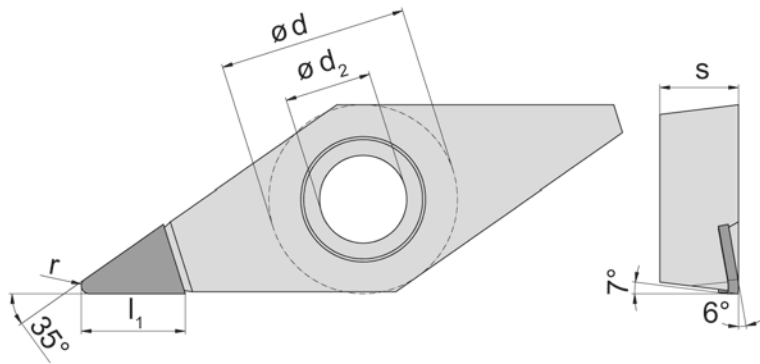
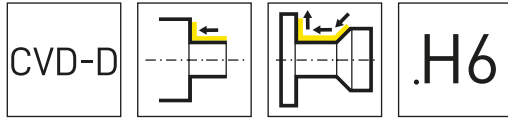


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	α	HD08
VCGW110301N.H0	6,35	2,8	3,18	3	0,1	7°	▲
VCGW110302N.H0	6,35	2,8	3,18	3	0,2	7°	▲
VCGW110304N.H0	6,35	2,8	3,18	3	0,4	7°	▲
VCGW110308N.H0	6,35	2,8	3,18	3	0,8	7°	▲
VCGW160402N.H0	9,525	4,4	4,76	3	0,2	7°	▲
VCGW160404N.H0	9,525	4,4	4,76	3	0,4	7°	▲
VCGW160408N.H0	9,525	4,4	4,76	3	0,8	7°	▲
VCGW160412N.H0	9,525	4,4	4,76	3	1,2	7°	△
							P -
							M -
							K -
							N ●
							S -
							H -



硬质合金牌号
Carbide grades

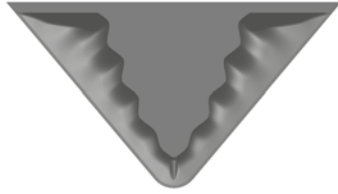
▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	HD08
VCGT110301N.H6	6,35	2,8	3,18	3	0,1	▲
VCGT110302N.H6	6,35	2,8	3,18	3	0,2	▲
VCGT110304N.H6	6,35	2,8	3,18	3	0,4	▲
VCGT160402N.H6	9,525	4,4	4,76	3	0,2	▲
VCGT160404N.H6	9,525	4,4	4,76	3	0,4	▲
VCGT160408N.H6	9,525	4,4	4,76	3	0,8	▲
VCGT160412N.H6	9,525	4,4	4,76	3	1,2	▲
						P -
						M -
						K -
						N ●
						S -
						H -

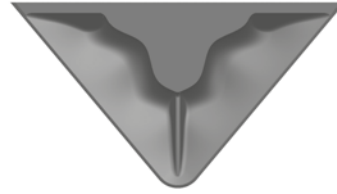
材料 Material	槽型 Version	切削速度 v_c Cutting speed v_c		推荐冷却 Recommended Coolant
		min	max	
锻造铝合金 Al-wrought alloys	.HS. / .HN	150	4500	乳化液 Emulsion
铝合金 硅含量不大于12% Aluminium alloys up to 12% Si content	.HS. / .HN	100	3500	乳化液 Emulsion
铝合金硅含量12-20% Aluminium alloys with 12-20% Si content	.HN / .H0	80	1500	乳化液 Emulsion
镁 Magnesium	.HS. / .HN	100	4000	乳化液 Emulsion
铜,青铜,不含铅黄铜 Copper, Bronze, Brass without lead	.HF / .HS	90	1600	油 Oil
OFHC铜,钨铜 OFHC Copper, Tungsten copper	.H6 / .HS	50	800	油 Oil
锌,黄铜 (MS58) Zinc, Brass (MS58)	.H0 / .HS	100	1800	油 Oil
镍银,铜镍合金 Nickel silver, Copper-nickel-alloys	.H6 / .HS	80	450	乳化液 Emulsion
钛,钼,铂,铱 Titanium, Molybdenum, Platin, Iridium	.H6 / .HS	40	250	乳化液 Emulsion
石墨 Graphite	.H0	50	1000	吹气 Air
硬质合金和陶瓷, 烧结材料 Carbide and ceramic, sintered	.H0	25	80	吹气 Air
硬质合金和陶瓷, 预烧结材料 Carbide and ceramic, presintered	.H0	40	100	吹气 Air
硬质合金和陶瓷, 预烧结材料 Synthetics, Reinforced plastics	.H6	120	1700	吹气 Air
GFRP	.H6 / .H0	100	500	吹气 Air
CFRP	.H6 / .H0	80	300	吹气 Air

槽型 .HS
Geometry



精加工
finishing

槽型 .HN
Geometry



粗加工
roughing

材料 Material	刀尖圆角 Corner radius [mm]	HORN 3D-断屑槽 HORN 3D chip breaker .HS				HORN 3D-断屑槽 HORN 3D chip breaker .HN			
		切深 Depth of cut a_p [mm]		进给 Feed rate f [mm/U] [mm/rev]		切深 Depth of cut a_p [mm]		进给 Feed rate f [mm/U] [mm/rev]	
		min	max	min	max	min	max	min	max
锻造铝合金 Aluminium, Wrought alloys	0.1	0.07	0.4	0.01	0.05	-	-	-	-
	0.2	0.08	0.9	0.02	0.1	0.2	2.2	0.05	0.15
	0.4	0.12	1.4	0.04	0.2	0.4	2.7	0.1	0.3
	0.8	0.18	1.9	0.08	0.4	0.7	3.2	0.2	0.6
	1.2	0.25	2.4	0.12	0.6	0.9	3.7	0.25	0.9

请考虑切深 a_p 这与刀具主偏角有关系. HS / HN = l_1 根据槽型的有效长度!

Please consider the a_p in relation to the approach angle of the toolholder.
HS / HN = l_1 is according to the effective length of the geometry!

刀片
Insert
105

PKD
PCD

页/Page
84-88

CVD-D

页/Page
89-91

切削参数
Cutting data

页/Page
110-111

Supermini

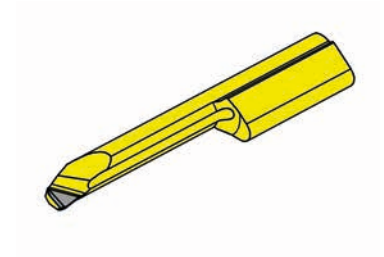
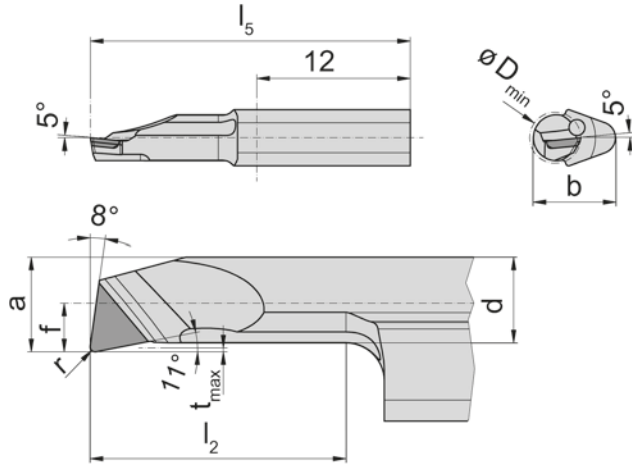
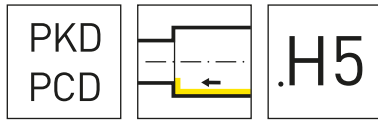


**CVD-D 与 PCD 镶片
配 HORN 3D-槽型**

刀杆详见 Supermini & Mini 样本

**CVD-D and PCD tipped
with HORN 3D geometries**

For holder please see our catalog
Supermini & Mini



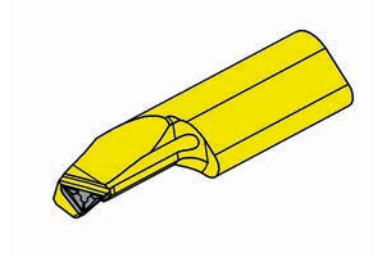
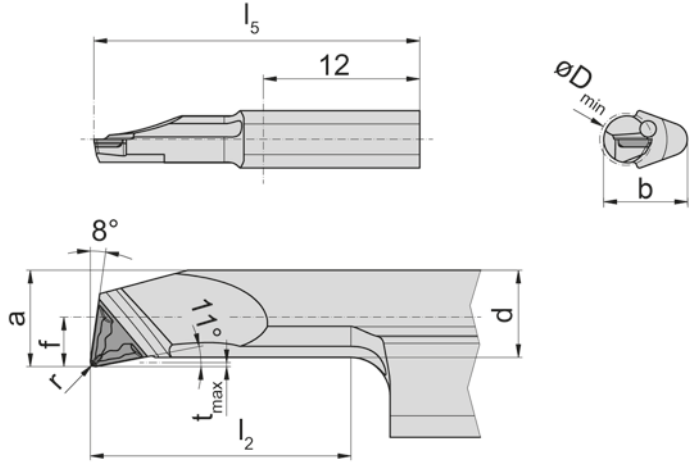
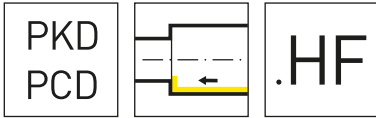
R=右手型-如图
R = right hand version shown

硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	r	f	a	d	b	l_2	l_5	t_{max}	D_{min}	HIS	PD75
R105.1002.1.3.H5.P	0.2	1.4	2.7	2.45	5.9	10	25	0.15	3	105123	▲
R105.1002.1.4.H5.P	0.2	1.9	3.7	3.35	6.4	10	25	0.15	4	105124	▲
R105.1002.1.5.H5.P	0.2	2.3	4.7	4.35	7	10	25	0.15	5	105125	▲
R105.1002.3.3.H5.P	0.2	1.4	2.7	2.45	5.9	20	35	0.15	3	105123	▲
R105.1002.3.4.H5.P	0.2	1.9	3.7	3.35	6.4	20	35	0.15	4	105124	▲
R105.1002.4.5.H5.P	0.2	2.3	4.7	4.35	7	25	40	0.15	5	105125	▲
R105.1004.1.5.H5.P	0.4	2.3	4.7	4.35	7	10	25	0.15	5	105125	▲
R105.1004.4.5.H5.P	0.4	2.3	4.7	4.35	7	25	40	0.15	5	105125	▲
											P -
											M -
											K -
											N ●
											S -
											H -



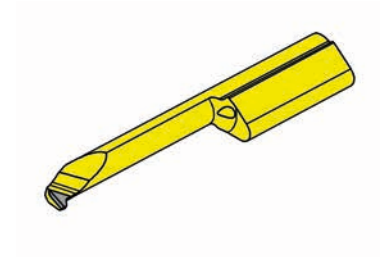
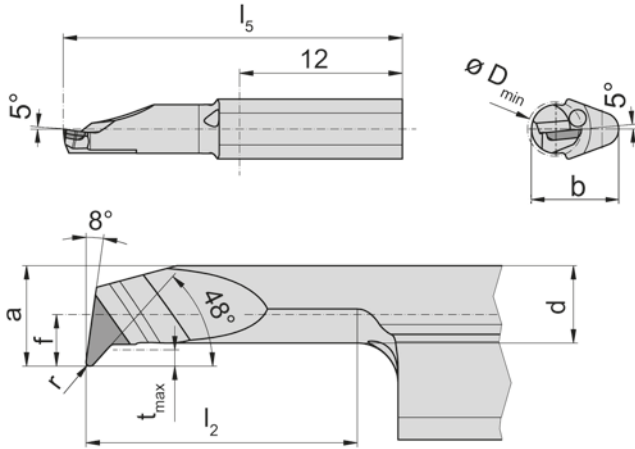
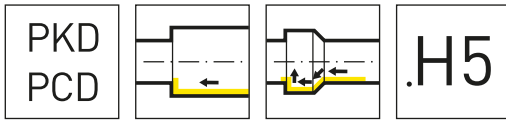
R=右手型-如图
R = right hand version shown

硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	r	f	a	d	b	l ₂	l ₅	t _{max}	D _{min}	HIS	PD75
R105.1002.1.4.HF.P	0.2	1.9	3.7	3.35	6.4	10	25	0.15	4	105124	▲
R105.1002.1.5.HF.P	0.2	2.3	4.7	4.35	7	10	25	0.15	5	105125	▲
R105.1002.3.4.HF.P	0.2	1.9	3.7	3.35	6.4	20	35	0.15	4	105124	▲
R105.1002.4.5.HF.P	0.2	2.3	4.7	4.35	7	25	40	0.15	5	105125	▲
R105.1004.1.5.HF.P	0.4	2.3	4.7	4.35	7	10	25	0.15	5	105125	▲
R105.1004.4.5.HF.P	0.4	2.3	4.7	4.35	7	25	40	0.15	5	105125	▲
											P -
											M -
											K -
											N ●
											S -
											H -



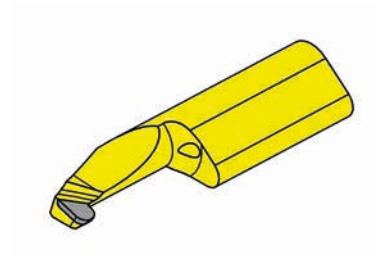
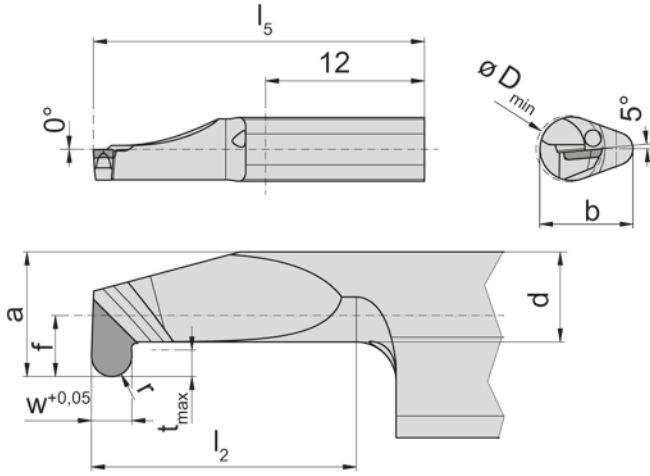
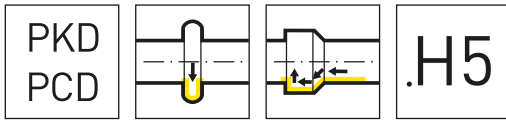
R=右手型-如图
R = right hand version shown

硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	r	f	a	d	b	l_2	l_5	t_{max}	D_{min}	HIS	PD75
R105.4701.1.4.H5.P	0.15	1.9	3.7	2.85	6.4	10	25	0.6	4	105124	▲
R105.4701.3.4.H5.P	0.15	1.9	3.7	2.85	6.4	20	35	0.6	4	105124	▲
R105.4701.3.6.H5.P	0.15	3.3	5.7	4.85	7	20	35	0.6	6	105125	▲
R105.4701.5.6.H5.P	0.15	3.3	5.7	4.85	7	30	45	0.6	6	105125	▲
											P -
											M -
											K -
											N ●
											S -
											H -



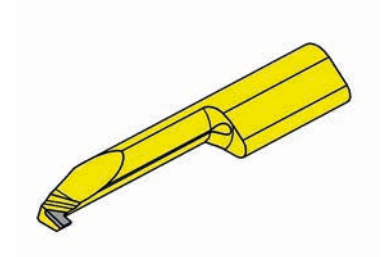
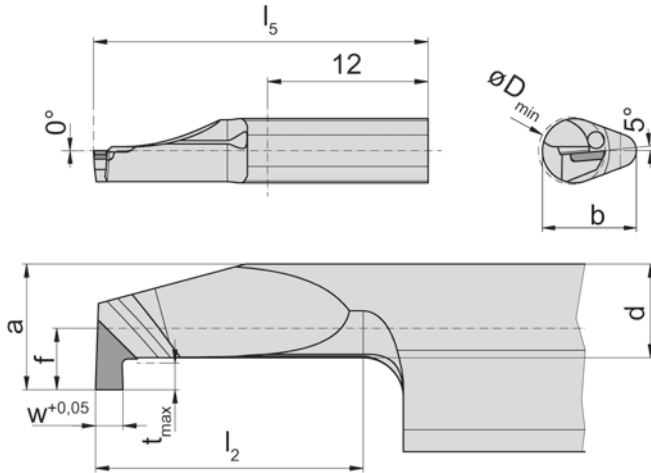
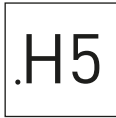
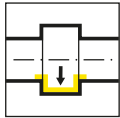
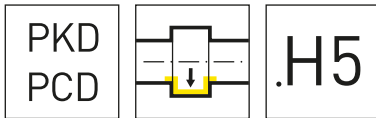
R=右手型-如图
R = right hand version shown

硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	w	r	f	a	d	b	l ₂	l ₅	t _{max}	D _{min}	HIS	PD75
R105.VR07.1.5.H5.P	1.5	0.75	2.3	4.7	3.4	7	10	25	1	5	105125	▲
												P -
												M -
												K -
												N ●
												S -
												H -



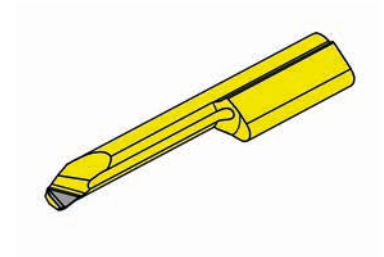
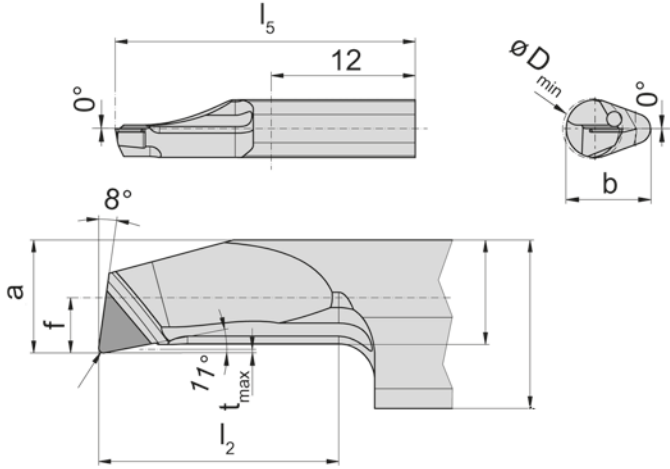
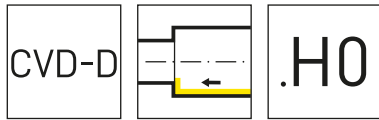
R=右手型-如图
R = right hand version shown

硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	w	f	a	d	b	l_2	l_5	t_{max}	D_{min}	HIS	PD75
R105.0100.1.5.H5.P	1	2.3	4.7	3.5	7	10	25	1	5	105125	▲
R105.0100.3.5.H5.P	1	2.3	4.7	3.5	7	20	35	1	5	105125	▲
R105.0100.5.5.H5.P	1	2.3	4.7	3.5	7	30	45	1	5	105125	▲
											P -
											M -
											K -
											N ●
											S -
											H -



R=右手型-如图
R = right hand version shown

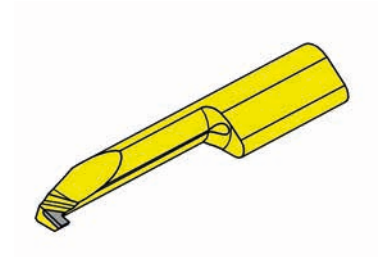
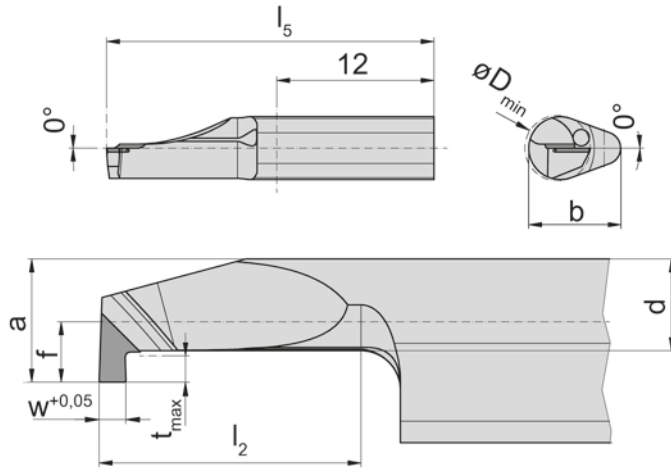
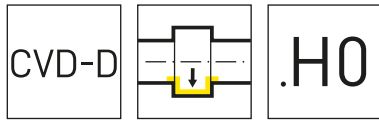
硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	r	f	a	d	b	l ₂	l ₅	t _{max}	D _{min}	HIS	HD03
R105.1001.0.15.H0.C	0.1	1.5	1.3	1.05	5.9	6	25	0.15	1.5	105123	▲
R105.1001.2.15.H0.C	0.1	1.5	1.3	1.05	5.9	12	30	0.15	1.5	105123	▲
R105.1001.0.2.H0.C	0.15	1.4	1.8	1.55	5.9	6	25	0.15	2	105123	▲
R105.1001.2.2.H0.C	0.15	1.4	1.8	1.55	5.9	12	30	0.15	2	105123	▲
R105.1002.1.3.H0.C	0.2	1.4	2.7	2.45	5.9	10	25	0.15	3	105123	▲
R105.1002.1.4.H0.C	0.2	1.9	3.7	3.35	6.4	10	25	0.15	4	105124	▲
R105.1002.1.5.H0.C	0.2	2.3	4.7	4.35	7	10	25	0.15	5	105125	▲
R105.1002.3.3.H0.C	0.2	1.4	2.7	2.45	5.9	20	35	0.15	3	105123	▲
R105.1002.3.4.H0.C	0.2	1.9	3.7	3.35	6.4	20	35	0.15	4	105124	▲
R105.1002.4.5.H0.C	0.2	2.3	4.7	4.35	7	25	40	0.15	5	105125	▲
R105.1004.1.5.H0.C	0.4	2.3	4.7	4.35	7	10	25	0.15	5	105125	▲
R105.1004.4.5.H0.C	0.4	2.3	4.7	4.35	7	25	40	0.15	5	105125	▲

P	-
M	-
K	-
N	●
S	-
H	-



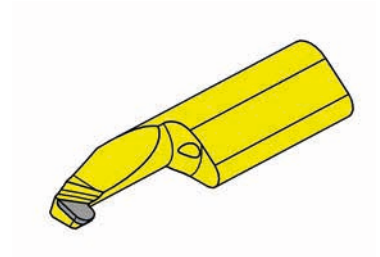
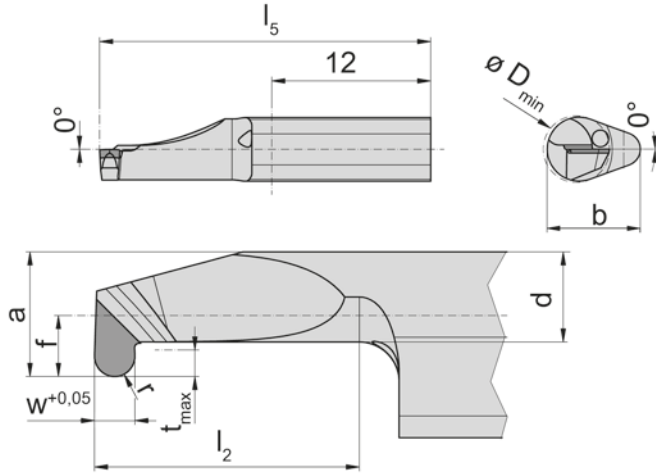
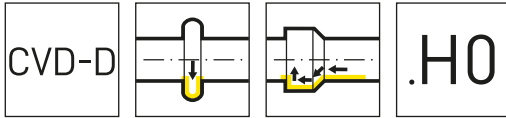
R=右手型-如图
R = right hand version shown

硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	w	f	a	d	b	l_2	l_5	t_{max}	D_{min}	HIS	HD03
R105.0100.1.5.H0.C	1	2.3	4.7	3.5	7	10	25	1	5	105125	▲
R105.0100.3.5.H0.C	1	2.3	4.7	3.5	7	20	35	1	5	105125	▲
R105.0100.5.5.H0.C	1	2.3	4.7	3.5	7	30	45	1	5	105125	▲
											P -
											M -
											K -
											N ●
											S -
											H -



R=右手型-如图
R = right hand version shown

硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	w	r	f	a	d	b	l ₂	l ₅	t _{max}	D _{min}	HIS	HD03
R105.VR07.1.5.H0.C.	1.5	0.75	2.3	4.7	3.4	7	10	25	1	5	105125	▲
												P -
												M -
												K -
												N ●
												S -
												H -

刀片
Insert
107/108/111/114

PKD
PCD

页/Page
94-95, 97-98,
100-101, 103-
106

CVD-D

页/Page
96, 99, 102, 107-
109

切削参数
Cutting data

页/Page
110-111

Mini

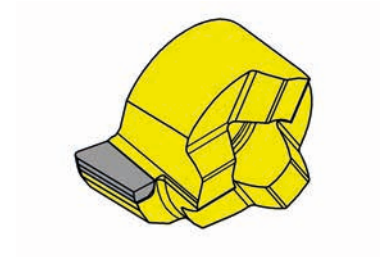
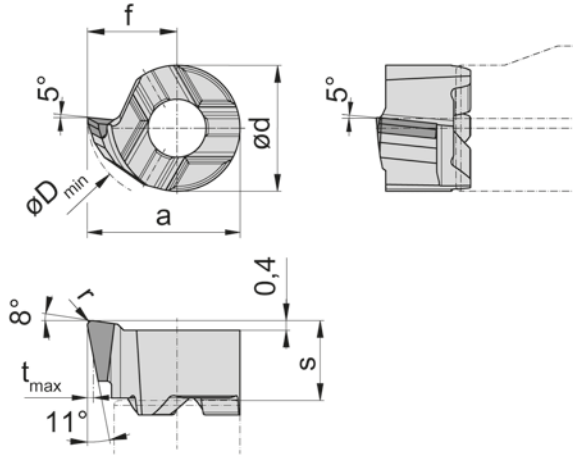
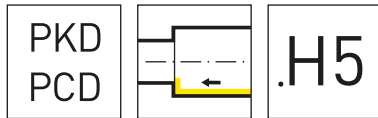


**CVD-D 与 PCD 镶片
配 HORN 3D-槽型**

刀杆详见 Supermini & Mini 样本

**CVD-D and PCD tipped
with HORN 3D geometries**

For holder please see our catalog
Supermini & Mini



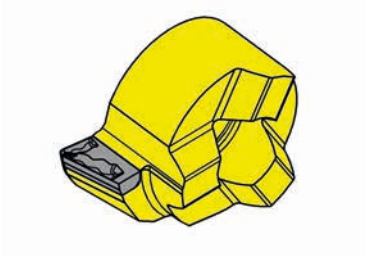
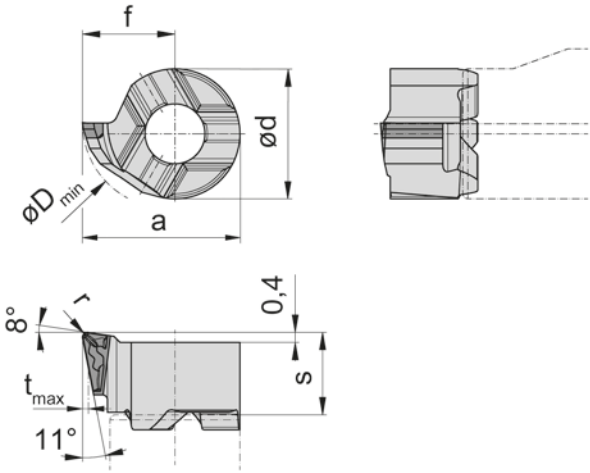
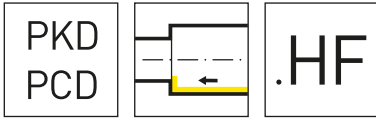
R=右手型-如图
R = right hand version shown

硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	s	f	a	r	d	t_{max}	D_{min}	HIS	PD75
R107.1002.1.H5.P	3.3	3.7	6.3	0.2	5.2	0.3	6.8	107052R	▲
R107.1004.1.H5.P	3.3	3.7	6.3	0.4	5.2	0.3	6.8	107052R	▲
									P -
									M -
									K -
									N ●
									S -
									H -



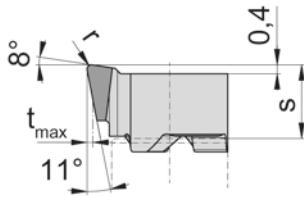
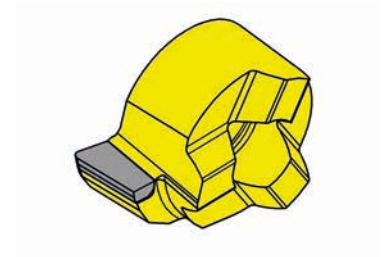
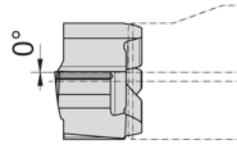
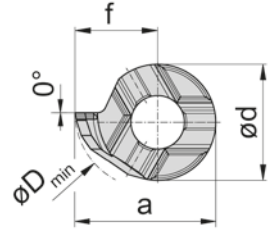
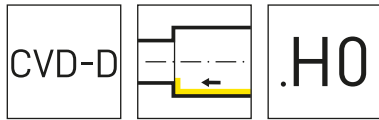
R=右手型-如图
R = right hand version shown

硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	s	f	a	r	d	t _{max}	D _{min}	HIS	PD75
R107.1002.1.HF.P	3.3	3.7	6.3	0.2	5.2	0.3	6.8	107052R	▲
									P -
									M -
									K -
									N ●
									S -
									H -



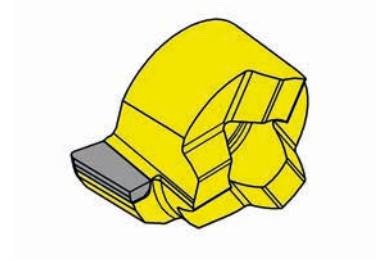
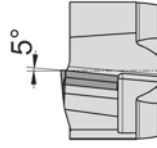
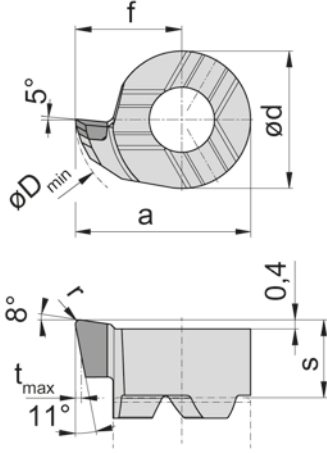
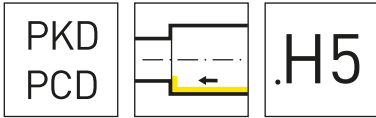
R=右手型-如图
R = right hand version shown

硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	s	f	a	r	d	t _{max}	D _{min}	HIS	HD03
R107.1002.1.H0.C	3.3	3.7	6.3	0.2	5.2	0.3	6.8	107052R	▲
R107.1004.1.H0.C	3.3	3.7	6.3	0.4	5.2	0.3	6.8	107052R	▲
									P -
									M -
									K -
									N ●
									S -
									H -



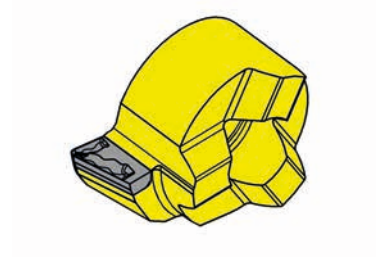
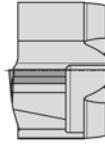
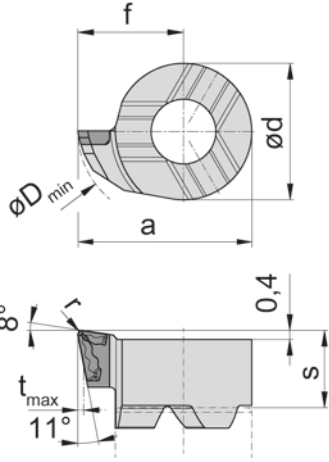
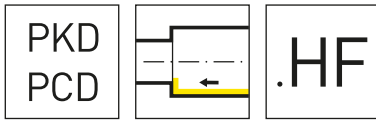
R=右手型-如图
R = right hand version shown

硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	s	f	a	r	d	t _{max}	D _{min}	HIS	PD75
R108.1002.H5.P	3.4	4.65	7.65	0.2	6	0.3	7.8	306060R	▲
R108.1004.H5.P	3.4	4.65	7.65	0.4	6	0.3	7.8	306060R	▲
									P -
									M -
									K -
									N ●
									S -
									H -



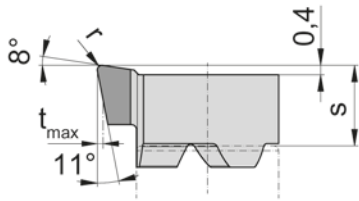
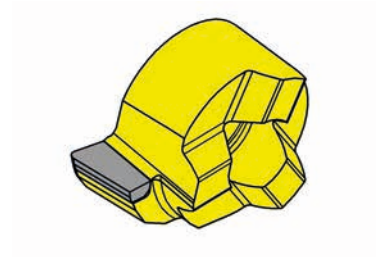
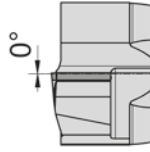
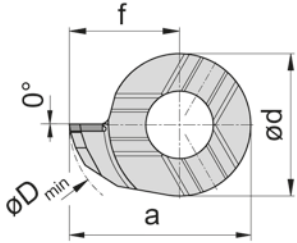
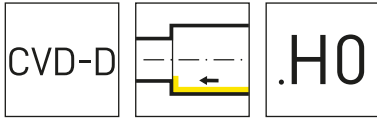
R=右手型-如图
R = right hand version shown

硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	s	f	a	r	d	t _{max}	D _{min}	HIS	PD75
R108.1002.HF.P	3.4	4.65	7.65	0.2	6	0.3	7.8	306060R	▲
R108.1004.HF.P	3.4	4.65	7.65	0.4	6	0.3	7.8	306060R	▲
									P -
									M -
									K -
									N ●
									S -
									H -



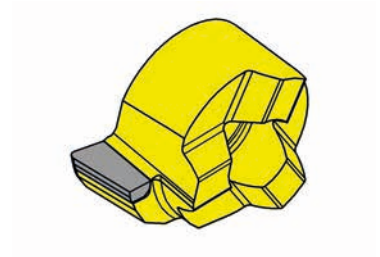
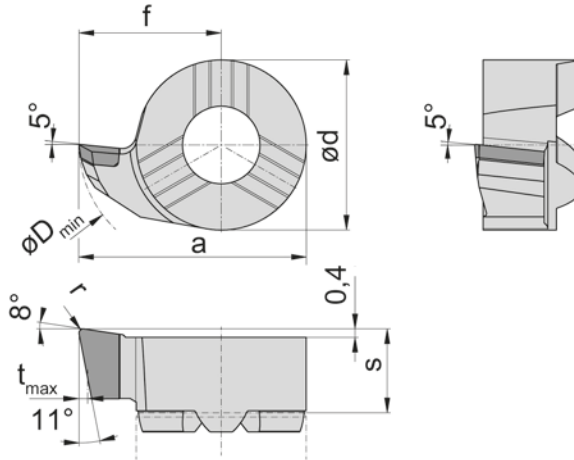
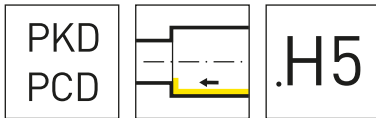
R=右手型-如图
R = right hand version shown

硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	s	f	a	r	d	t _{max}	D _{min}	HIS	HD03
R108.1002.H0.C	3.4	4.65	7.65	0.2	6	0.3	7.8	306060R	▲
R108.1004.H0.C	3.4	4.65	7.65	0.4	6	0.3	7.8	306060R	▲
									P -
									M -
									K -
									N ●
									S -
									H -



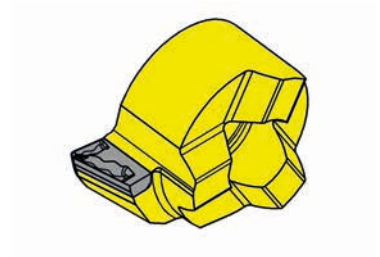
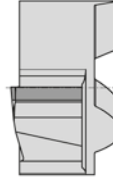
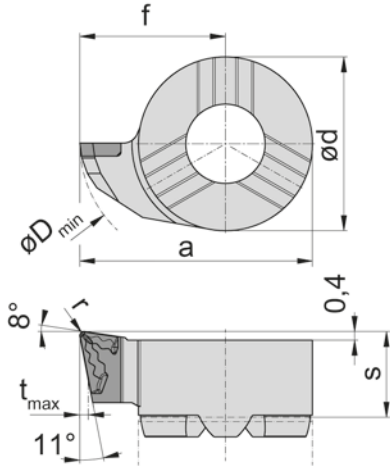
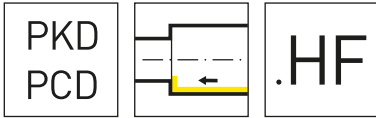
R=右手型-如图
R = right hand version shown

硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	s	f	a	r	d	t _{max}	D _{min}	HIS	PD75
R111.1002.H5.P	3.95	6.7	10.7	0.2	8	0.4	11	308080R	▲
R111.1004.H5.P	3.95	6.7	10.7	0.4	8	0.4	11	308080R	▲
									P -
									M -
									K -
									N ●
									S -
									H -



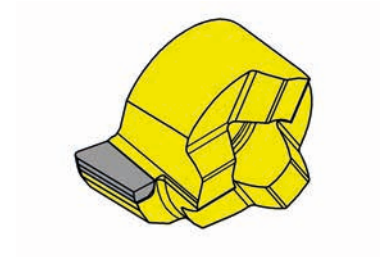
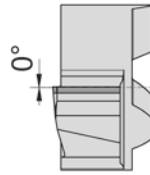
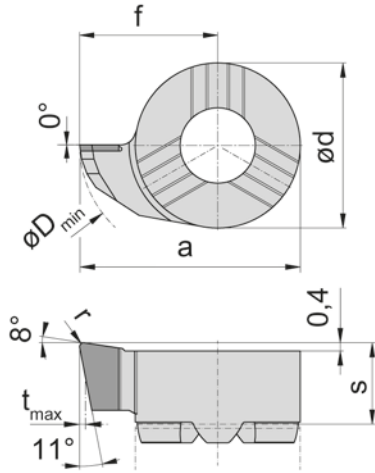
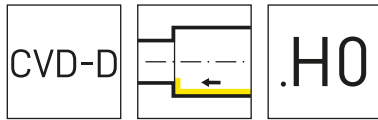
R=右手型-如图
R = right hand version shown

硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	s	f	a	r	d	t _{max}	D _{min}	HIS	PD75
R111.1002.HF.P	3.95	6.7	10.7	0.2	8	0.4	11	308080R	▲
R111.1004.HF.P	3.95	6.7	10.7	0.4	8	0.4	11	308080R	▲
									P -
									M -
									K -
									N ●
									S -
									H -



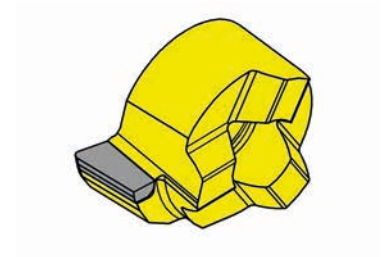
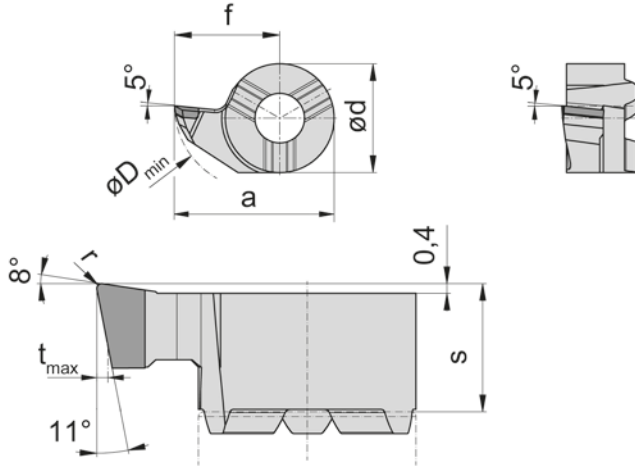
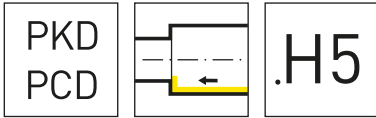
R=右手型-如图
R = right hand version shown

硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	s	f	a	r	d	t _{max}	D _{min}	HIS	HD03
R111.1002.H0.C	3.95	6.7	10.7	0.2	8	0.4	11	308080R	▲
R111.1004.H0.C	3.95	6.7	10.7	0.4	8	0.4	11	308080R	▲
									P -
									M -
									K -
									N ●
									S -
									H -



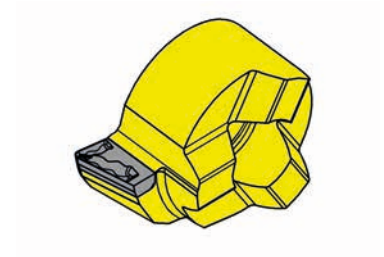
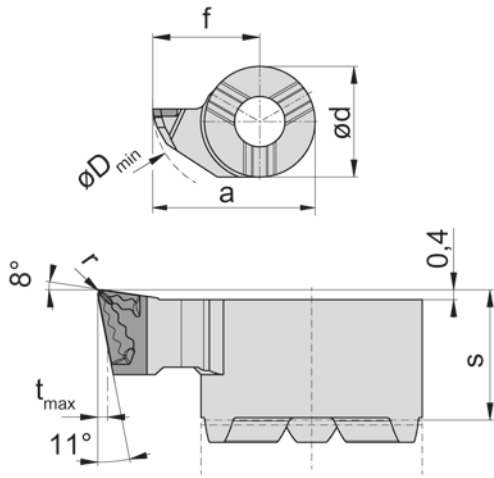
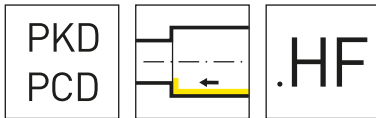
R=右手型-如图
R = right hand version shown

硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	s	f	a	r	d	t _{max}	D _{min}	HIS	PD75
R114.1002.H5.P	5.3	8.7	13.2	0.2	9	0.4	13.8	311090R	▲
R114.1004.H5.P	5.3	8.7	13.2	0.4	9	0.4	13.8	311090R	▲
R114.1008.H5.P	5.3	8.7	13.2	0.8	9	0.4	13.8	311090R	▲
									P -
									M -
									K -
									N ●
									S -
									H -



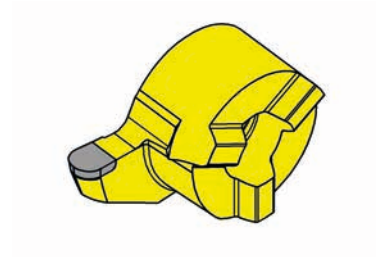
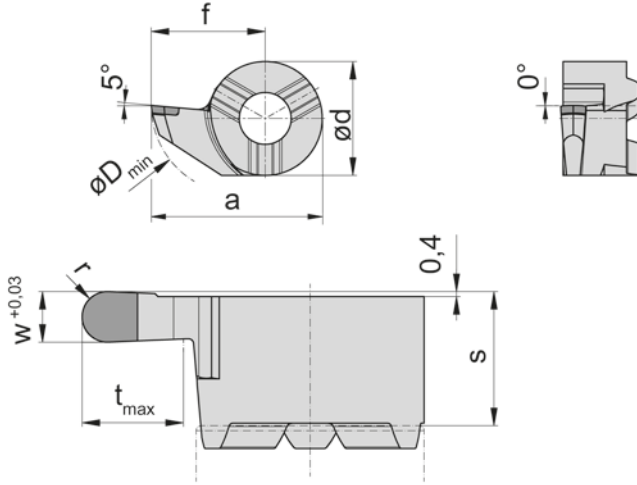
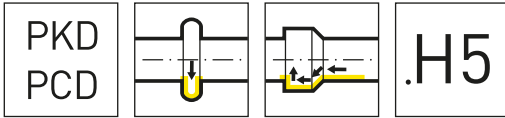
R=右手型-如图
R = right hand version shown

硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	s	f	a	r	d	t _{max}	D _{min}	HIS	PD75
R114.1002.HF.P	5.3	8.7	13.2	0.2	9	0.4	13.8	311090R	▲
R114.1004.HF.P	5.3	8.7	13.2	0.4	9	0.4	13.8	311090R	▲
R114.1008.HF.P	5.3	8.7	13.2	0.8	9	0.4	13.8	311090R	▲
									P -
									M -
									K -
									N ●
									S -
									H -



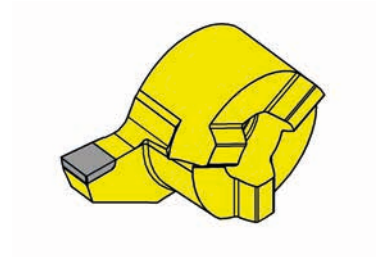
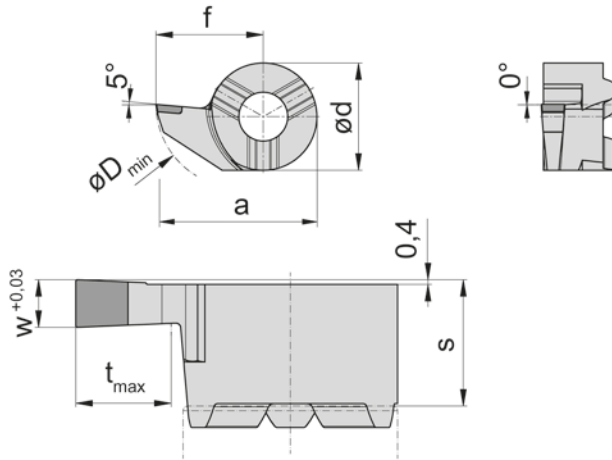
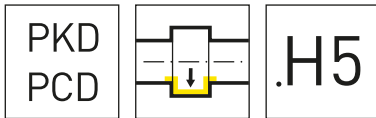
R=右手型-如图
R = right hand version shown

硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	w	s	f	a	r	d	t _{max}	D _{min}	HIS	PD75
R114.VR20.H5.P	2	5.3	9	13.5	1	9	4	14	311090R	▲
R114.VR30.H5.P	3	5.3	9	13.5	1.5	9	4	14	311090R	▲
										P -
										M -
										K -
										N ●
										S -
										H -



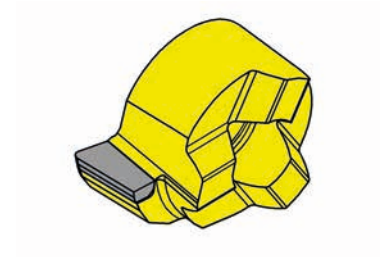
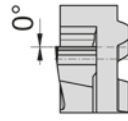
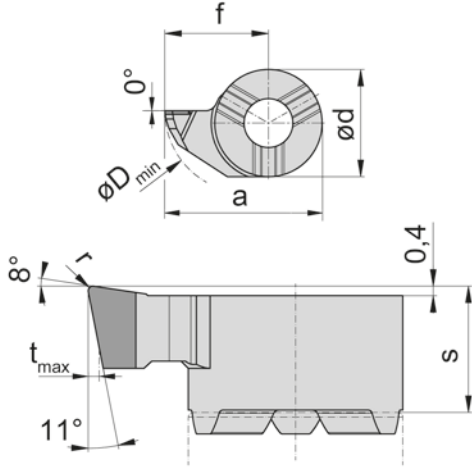
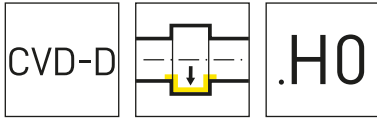
R=右手型-如图
R = right hand version shown

硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	w	s	f	a	d	t _{max}	D _{min}	HIS	PD75
R114.0100.H5.P	1	5.3	9	13.5	9	4	14	311090R	▲
R114.0200.H5.P	2	5.3	9	13.5	9	4	14	311090R	▲
R114.0300.H5.P	3	5.3	9	13.5	9	4	14	311090R	▲
									P -
									M -
									K -
									N ●
									S -
									H -



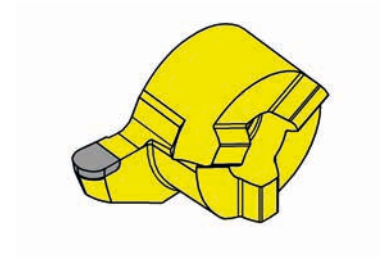
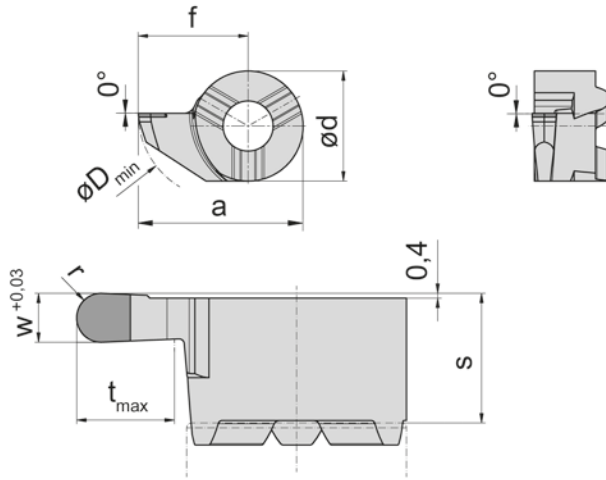
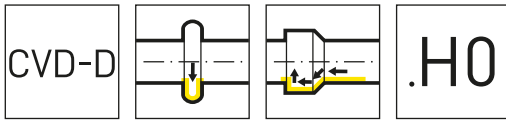
R=右手型-如图
R = right hand version shown

硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	s	f	a	r	d	t _{max}	D _{min}	HIS	HD03
R114.1002.H0.C	5.3	8.7	13.2	0.2	9	0.4	13.8	311090R	▲
R114.1004.H0.C	5.3	8.7	13.2	0.4	9	0.4	13.8	311090R	▲
R114.1008.H0.C	5.3	8.7	13.2	0.8	9	0.4	13.8	311090R	▲
									P -
									M -
									K -
									N ●
									S -
									H -



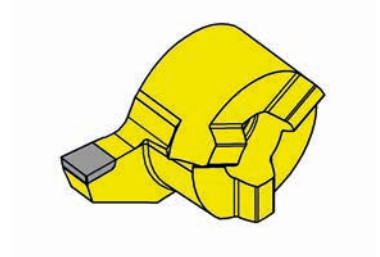
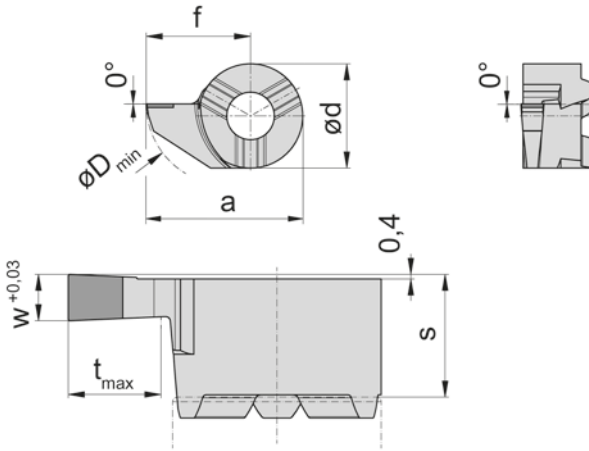
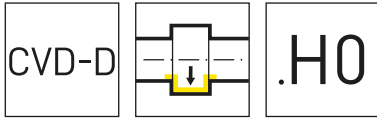
R=右手型-如图
R = right hand version shown

硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	w	s	f	a	r	d	t _{max}	D _{min}	HIS	HD03
R114.VR20.H0.C	2	5.3	9	13.5	1	9	4	14	311090R	▲
R114.VR30.H0.C	3	5.3	9	13.5	1.5	9	4	14	311090R	▲
										P -
										M -
										K -
										N ●
										S -
										H -



R=右手型-如图
R = right hand version shown

硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	w	s	f	a	d	t _{max}	D _{min}	HIS	HD03
R114.0100.H0.C	1	5.3	9	13.5	9	4	14	311090R	▲
R114.0200.H0.C	2	5.3	9	13.5	9	4	14	311090R	▲
R114.0300.H0.C	3	5.3	9	13.5	9	4	14	311090R	▲
									P -
									M -
									K -
									N ●
									S -
									H -

切削参数 Supermini / Mini

Cutting data Supermini / Mini



材料 Material	槽型 Version	切削速度 v_c Cutting speed v_c		推荐冷却 Recommended Coolant
		min	max	
锻造铝合金 Al-wrought alloys	.HF	150	4500	乳化液 Emulsion
铝合金 硅含量不大于12% Aluminium alloys up to 12% Si content	.HF	100	3500	乳化液 Emulsion
铝合金硅含量12-20% Aluminium alloys with 12-20% Si content	.HF	80	1500	乳化液 Emulsion
镁 Magnesium	.H5 / .HF	100	4000	乳化液 Emulsion
铜,青铜,不含铅黄铜 Copper, Bronze, Brass without lead	.H5 / .HF	90	1600	油 Oil
OFHC铜,钨铜 OFHC Copper, Tungsten copper	.H5	50	800	油 Oil
锌,黄铜 (MS58) Zinc, Brass (MS58)	.H5 / .HF	100	1800	油 Oil
镍银,铜镍合金 Nickel silver, Copper-nickel-alloys	.H5	80	450	乳化液 Emulsion
钛,钼,铂,铱 Titanium, Molybdenum, Platin, Iridium	.H5	40	250	乳化液 Emulsion
石墨 Graphite	.H0	50	1000	吹气 Air
硬质合金和陶瓷, 烧结材料 Carbide and ceramik, sintered	.H0	25	80	吹气 Air
硬质合金和陶瓷, 预烧结材料 Carbide and ceramik, presintered	.H0	40	100	吹气 Air
硬质合金和陶瓷, 预烧结材料 Synthetics, Reinforced plastics	.H5	120	1700	吹气 Air
GFRP	.H5 / .H0	100	500	吹气 Air
CFRP	.H5 / .H0	80	300	吹气 Air

槽型 .HF
Geometry



镗孔
bore machining

材料 Material	刀尖圆角 Corner radius [mm]	HORN 3D-断屑槽 HORN 3D chip breaker .HF			
		切深 a_p [mm] Depth of cut a_p [mm]		进给 f [mm/U] Feed rate f [mm/rev]	
		min	max	min	max
锻造铝合金 Aluminium. Wrought alloys	0.2	0.05	1.1	0.05	0.10
	0.4	0.07	1.2	0.06	0.15
无铅黄铜 Brass without lead	0.2	0.05	1.0	0.05	0.10
	0.4	0.1	1.2	0.08	0.15

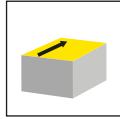
请根据主偏角考虑切深 a_p .

Please consider the a_p in relation to the approach angle of the toolholder.

指定的 D_{min} 值可能会受到材料属性的影响。

The specified D_{min} value may be affected by material properties.

芯轴刀柄式铣刀
Arbour Mounted Cutter
DTM



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页/Page
115

刀片
Insert
DTS



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芯轴刀柄
Arbor

页/Page
122-123

切削参数
Cutting data

页/Page
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技术说明
Technical Informations

页/Page
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DTM

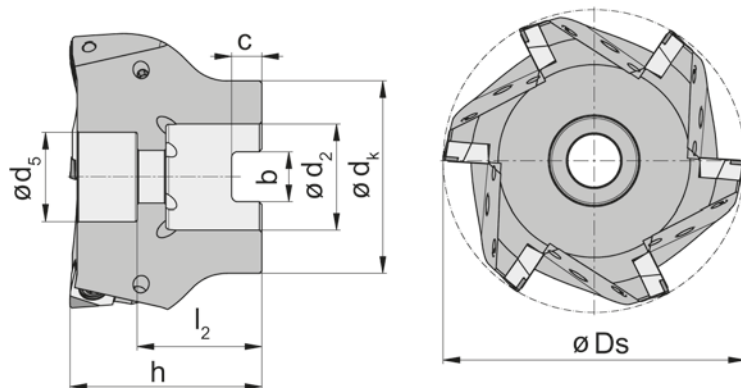


PCD / CVD
面铣刀具
系列 DTM

面铣 μ 级可调为优化表面设计

PCD / CVD
Face milling tool
System DTM

Face milling with μ -precise
adjustment for optimum
surface



图示=右手型

Picture = right hand cutting version

产品型号 Part number	Z	Ds	h	d ₅	d _k	d ₂	l ₂	b	C	n _{max}
DTM.CX09.040.A16.04	4	40	40	13.5	32	16	31	8.4	5.6	26000
DTM.CX09.050.A22.05	5	50	40	18.5	40	22	26	10.4	6.3	24000
DTM.CX09.063.A22.06	6	63	40	18.5	40	22	26	10.4	6.3	20000
DTM.CX09.080.A27.06	6	80	50	22	48	27	33	12.4	7	18000
DTM.CX09.100.A32.07	7	100	63	33	58	32	48	14.4	8	15000
DTM.CX09.125.A40.08	8	125	63	39	70	40	46	16.4	9	12000

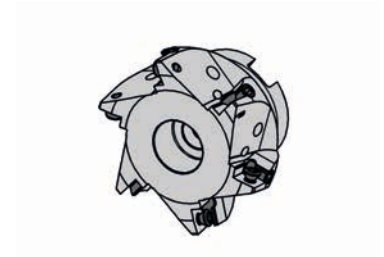
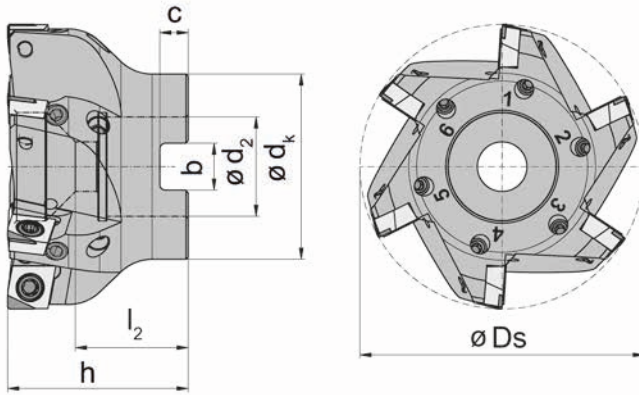
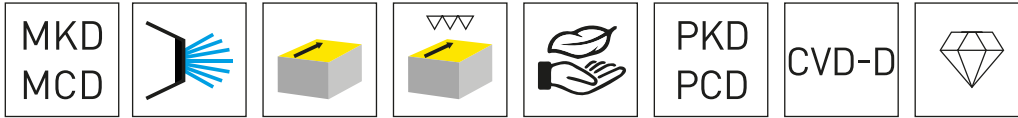
可调轴向跳动
with plan setting

钢制刀体
Steel base body

配件

Spare Parts

芯轴刀柄式铣刀 Arbour Mounted Cutter	TORX PLUS®扳手 TORX PLUS® Wrench	TORX 扳手 Torx Wrench
DTM...	T15PQ	T15Q



图示=右手型
Picture = right hand cutting version

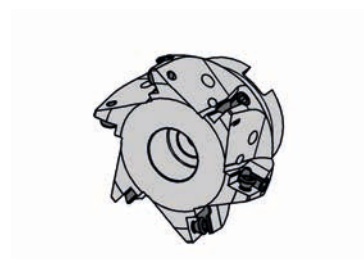
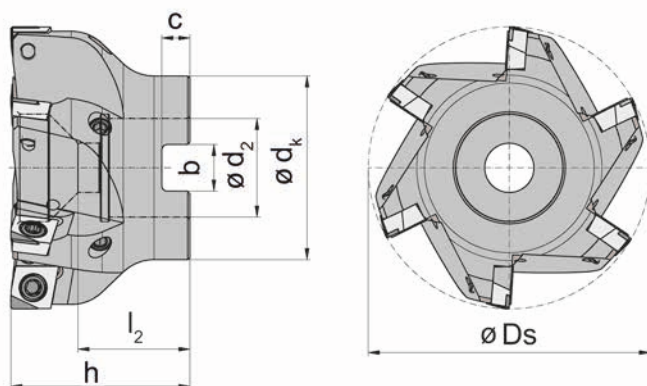
产品型号 Part number	Z	Ds	h	dk	d ₂	l ₂	b	C	n _{max}
DTM.CX09.040.A16.04.AL.F	4	40	40	32	16	31	8.4	5.6	26000
DTM.CX09.050.A22.05.AL.F	5	50	40	40	22	26	10.4	6.3	24000
DTM.CX09.063.A22.06.AL.F	6	63	40	40	22	26	10.4	6.3	20000
DTM.CX09.080.A27.06.AL.F	6	80	50	48	27	33	12.4	7	18000
DTM.CX09.100.A32.07.AL.F	7	100	63	58	32	48	14.4	8	15000
DTM.CX09.125.A40.08.AL.F	8	125	63	70	40	46	16.4	9	12000

带 μ 级精确平面调整
with μ-precise plan setting

铝制刀体
Aluminium base body

配件
Spare Parts

芯轴刀柄式铣刀 Arbour Mounted Cutter	锁紧螺钉 Clamping Screw	TORX PLUS®扳手 TORX PLUS® Wrench
DTM.CX09.040-063...	030.350P.0853	T15PQ
DTM.CX09.080-125...	030.3509.T15P	T15PQ



图示=右手型

Picture = right hand cutting version

产品型号 Part number	Z	Ds	h	dk	d ₂	l ₂	b	C	n _{max}
DTM.CX09.040.A16.04.AL.R	4	40	40	32	16	31	8.4	5.6	26000
DTM.CX09.050.A22.05.AL.R	5	50	40	40	22	26	10.4	6.3	24000
DTM.CX09.063.A22.06.AL.R	6	63	40	40	22	26	10.4	6.3	20000
DTM.CX09.080.A27.06.AL.R	6	80	50	48	27	33	12.4	7	18000
DTM.CX09.100.A32.07.AL.R	7	100	63	58	32	48	14.4	8	15000
DTM.CX09.125.A40.08.AL.R	8	125	63	70	40	46	16.4	9	12000

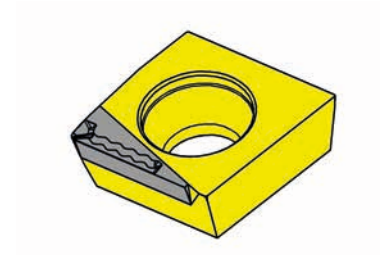
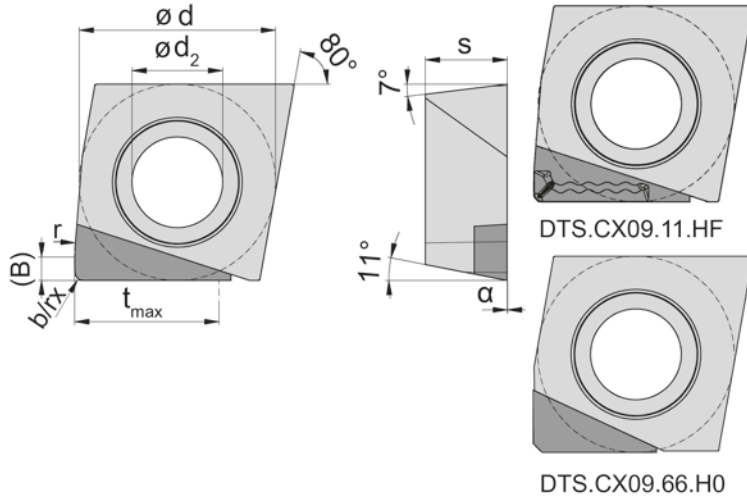
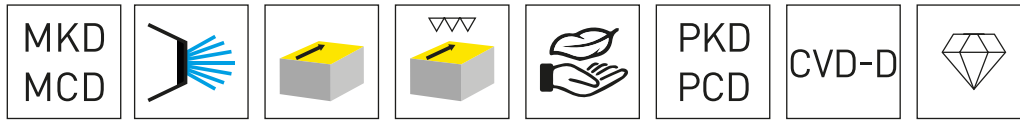
不可调轴向跳动
without plan setting

铝制刀体
Aluminium base body

配件

Spare Parts

芯轴刀柄式铣刀 Arbour Mounted Cutter	锁紧螺钉 Clamping Screw	TORX PLUS®扳手 TORX PLUS® Wrench
DTM.CX09.040-063...	030.350P.0853	T15PQ
DTM.CX09.080-125...	030.3509.T15P	T15PQ



硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

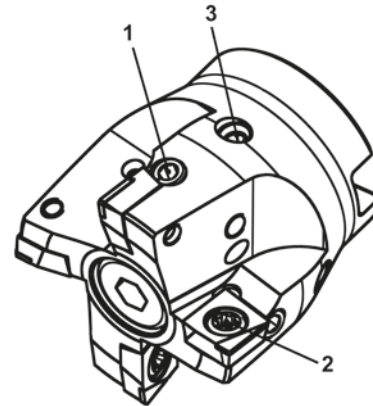
产品型号 Part number	d	d ₂	α	s	t _{max}	r 修光刃	(B)	r _x	b x 45°	HD08	PD70	PD75
DTS.CX09.11.H0	9.525	4.4	0°	3.97	7	12.5	0.9	0.4	-		▲	▲
DTS.CX09.11.H5	9.525	4.4	5°	3.97	7	12.5	0.9	0.4	-		▲	▲
DTS.CX09.11.HF	9.525	4.4	-	3.97	7	12.5	0.9	0.4	-			▲
DTS.CX09.33.H0	9.525	4.4	0°	3.97	7	12.5	0.9	0.4	-	▲		
DTS.CX09.33.H5	9.525	4.4	5°	3.97	7	12.5	0.9	0.4	-	▲		
DTS.CX09.66.H0	9.525	4.4	0°	3.97	5.5	100	1.7	-	0.45	▲		
注意事项: DTS.CX09.MD... MD10 请见章节B Note: DTS.CX09.MD... MD10 see chapter B										P	-	-
										M	-	-
										K	-	-
										N	●	●
										S	-	-
										H	-	-

材料 Material	槽型 Geometry	切削材料 Cutting material	切削速度 Cutting speed v_c [m/min]		进给 Feed rate f_z		max. 切深 Depth of cut a_p		推荐冷却 Recommended Coolant	
			粗加工 roughing	精加工 finishing	粗加工 roughing	精加工 finishing	粗加工 roughing	精加工 finishing		
铝合金 Al alloys	Si <12%	H5	HD08	250 - 3500	250 - 5000	0.05 - 0.25	0.02 - 0.10	3.50	0.50	油. 乳化液. 微量润滑. Oil. Emulsion. MQS
		H5	PD70	200 - 3000	200 - 4000	0.05 - 0.25	0.02 - 0.10	5.50	0.50	
		H5	PD75	150 - 2500	150 - 3500	0.05 - 0.25	0.02 - 0.10	5.50	0.50	
		HF	PD75	180 - 2500	180 - 3500	0.10 - 0.50	0.02 - 0.10	5.00	0.50	
		H0	HD08	200 - 1200	200 - 2000	0.03 - 0.20	0.02 - 0.10	2.50	0.30	
	Si >12%	H5	PD70	180 - 1000	180 - 1500	0.03 - 0.20	0.02 - 0.10	3.50	0.30	
		H5	PD75	120 - 800	120 - 1000	0.03 - 0.20	0.02 - 0.10	3.50	0.30	
		H0	HD08	200 - 1500	200 - 2000	0.03 - 0.20	0.02 - 0.10	3.50	0.50	
		H5	PD70	150 - 1350	150 - 1800	0.03 - 0.20	0.02 - 0.10	5.50	0.50	
		H5	PD75	150 - 1200	150 - 1750	0.03 - 0.20	0.02 - 0.10	5.50	0.50	
铜合金 Copper alloys	CuSn	HF	PD75	150 - 1200	150 - 1750	0.05 - 0.30	0.02 - 0.10	4.50	0.50	油. 乳化液. 微量润滑. Oil. Emulsion. MQS
		H0	HD08	200 - 1800	200 - 2200	0.05 - 0.25	0.02 - 0.10	2.50	0.30	
		H5	PD70	175 - 1500	175 - 2000	0.05 - 0.25	0.02 - 0.10	3.50	0.30	
		H5	PD75	150 - 1350	150 - 1850	0.05 - 0.30	0.02 - 0.10	3.50	0.30	
		HF	PD75	150 - 1350	150 - 1850	0.03 - 0.16	0.02 - 0.10	4.50	0.30	
	CuZn	H0	HD08	200 - 1800	200 - 2200	0.03 - 0.16	0.01 - 0.08	2.50	0.30	
		H5	PD70	175 - 1500	175 - 1800	0.03 - 0.16	0.01 - 0.08	3.50	0.30	
		H5	PD75	150 - 1350	150 - 2000	0.03 - 0.25	0.01 - 0.08	3.50	0.30	
		H5	PD70	175 - 1500	175 - 1800	0.03 - 0.16	0.01 - 0.08	3.50	0.30	
		HF	PD75	150 - 1350	150 - 2000	0.07 - 0.30	0.01 - 0.08	4.00	0.30	
铜 Copper	Cu	H0	HD08	200 - 1800	200 - 2200	0.03 - 0.16	0.01 - 0.08	2.50	0.30	
		H5	PD70	175 - 1500	175 - 1800	0.03 - 0.16	0.01 - 0.08	3.50	0.30	
		H5	PD75	150 - 1350	150 - 2000	0.03 - 0.25	0.01 - 0.08	3.50	0.30	
		H5	PD70	175 - 1500	175 - 1800	0.03 - 0.16	0.01 - 0.08	3.50	0.30	
		HF	PD75	150 - 1350	150 - 2000	0.07 - 0.30	0.01 - 0.08	4.00	0.30	
玻璃纤维 Fiberglass	GFK GFRP	H0	HD08	100 - 500	100 - 800	0.07 - 0.30	0.05 - 0.2	6.50	1.00	空气. 压力(干) Air pressure (dry)
		H5 / H0	PD70	100 - 400	100 - 700	0.07 - 0.30	0.05 - 0.2	6.50	1.00	
碳纤维 Carbon fiber	CFK CFRP	H0	HD08	100 - 400	100 - 600	0.05 - 0.25	0.03 - 0.12	6.50	1.00	
		H5 / H0	PD70	80 - 300	80 - 500	0.05 - 0.25	0.03 - 0.12	6.50	1.00	

精密磨削端面刃口

(调整范围 max. +/- 0,05)

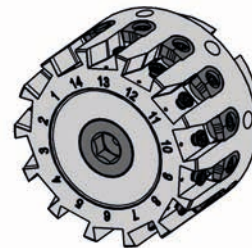
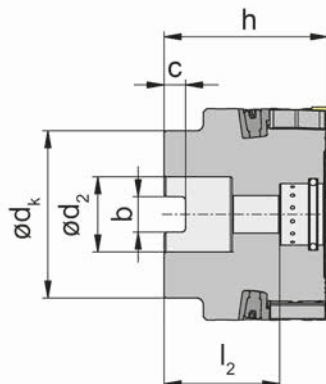
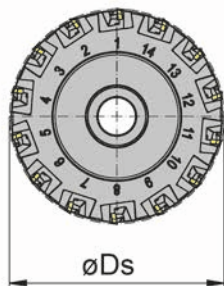
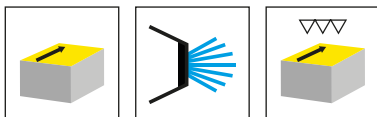
- 去除调整键(位置.1)至最初位置
→ 标记槽大约在11点钟方向
- 安装刀片DTS... 至刀片座,使用 Torx-Plus 扳手 T15 (位置.2)
→ 将调节销(位置1)前后转动,并以最小扭矩同步插入刀片座同时压住刀片.
那么就可以找到最大的调整范围。
→ 使用 Torx-Plus 扳手 T15PQ (位置.2) 夹紧扭矩 2.5 Nm.
- 检查并调整所有切削刃的轴向跳动
→ 确定最高切削刃. 顺时针旋转调节销(位置1)至+0.01mm (这就是最高切削刃).
→ 调整其余切削刃直到满足轴向跳动。
→ 调整: $10^\circ = 0.01 \text{ mm}$
- **请不要回退调整键**, 这意味着刀片离开了下方的夹具, 在这种情况下可能重复调整的步骤
- 检查所有切削刃的轴向跳动
- 如有必要, 使用M6螺丝对系统进行精密平衡 (位置.3)



Precision machining face cutting edges

(Max. adjustment range +/- 0,05 mm)

- Move the adjusting pins (item 1) to the initial position
→ Marking groove at approx. „ 11 clock“
- Install the inserts DTS... in the insert seat using a Torx screw (item 2)
→ Turn the adjusting pin (item 1) to and fro and synchronous press the insert with minimal torque into the insert seat. So the maximum adjusting range will be found.
→ Tighten the Torx screw T15PQ with torque of 2,5 Nm
- Check and adjust the axial runout of all cutting edges
→ Determine the highest cutting edge. Turn the adjusting pin (item1) clockwise up to 0,01mm (so it is the highest cutting edge)
→ Adjust the remaining cutting edges until the required axial runout is achieved
→ Adjustment: $10^\circ = 0,01 \text{ mm}$
- **Don't turn back the adjusting pins**, it means the insert leave below the fixture, in the case maybe repeat the procedure of adjustment
- Check the axial runout of all cutting edges
- If necessary, fine balance the system using the M6 screw (item3)



产品型号 Part number	Z	Ds	h	d _k	d ₂	l ₂	b	C	n _{max}	HWS
DTM.1710.050.A22.10.AL.F	10	50	48	41	22	33.9	10.4	6.3	18000	171001
DTM.1710.063.A22.14.AL.F	14	63	48	49	22	33.9	10.4	6.3	16000	171001
DTM.1710.080.A27.18.AL.F	18	80	50	59	27	33.9	12.4	7	14200	171001
DTM.1710.100.A32.24.AL.F	24	100	50	80	32	30.9	14.4	8	12700	171001
DTM.1710.125.A40.30.AL.F	30	125	63	89	40	38.9	16.4	9	11300	171001

带 μ 级精确平面调整
with μ -precise axial adjustment

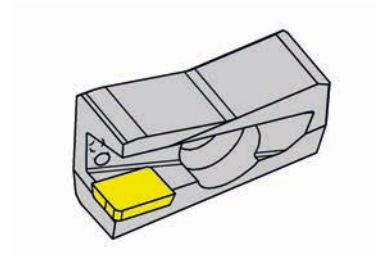
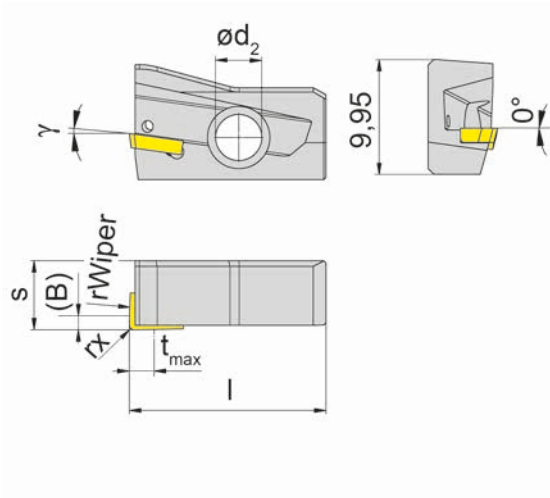
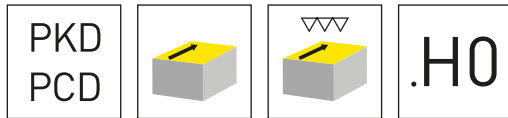
按照 DIN 8030 标准安装的芯轴刀柄式铣刀，材料：高强度铝，涂层
Arbour mounted cutter as per DIN 8030, material: high-strength aluminium, coated

螺钉030.3576.T10P的扭矩规格=3Nm。
Torque specification of the screw 030.3576.T10P = 3,0 Nm.

配件

Spare Parts

芯轴刀柄式铣刀 Arbour Mounted Cutter	锁紧螺钉 Clamping Screw	TORX PLUS®扳手 TORX PLUS® Wrench	锁紧栓 Tightening Bolt	调整模块 Adjusting wedge
DTM.1710....	030.3576.T10P	T10PL	030.1047.1254	070.5080.0180
DTM.1710.080.A27.18.AL.F	030.3576.T10P	T10PL	030.1249.1256	070.5080.0180
DTM.1710.100.A32.24.AL.F	030.3576.T10P	T10PL	030.1649.1257	070.5080.0180
DTM.1710.125.A40.30.AL.F	030.3576.T10P	T10PL	030.2062.1258	070.5080.0180

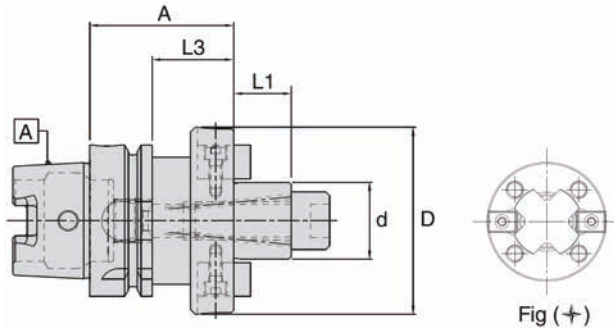
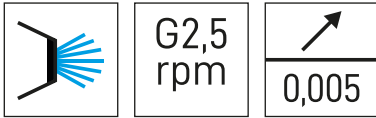


硬质合金牌号
Carbide grades

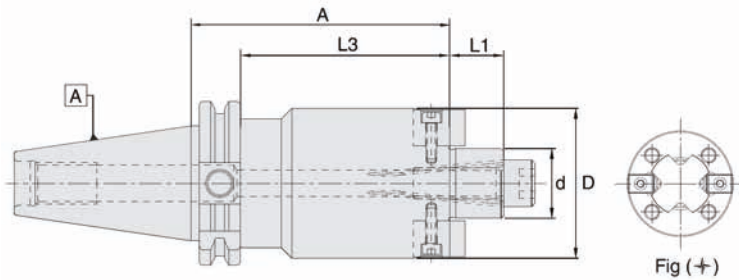
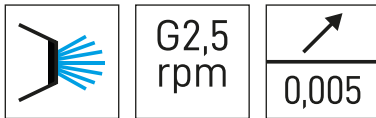
▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d_2	γ	s	t_{max}	r Wiper	(B)	r_x	l	HIS		PD70	PD75
DTS.1710.11.H0	4	8°	5.99	2	12.5	0.9	0.4	17	171001		▲	▲
											P	-
											M	-
											K	-
											N	●
											S	-
											H	-



产品型号 Part number	描述 Designation	d	D	A	L ₁	L ₂	冷却液供应 Coolant supply	N/W kg
5103448	WSMH/16-50/HSK-A50	16	38	50	17	24	FORM AD	0,75
5103450	WSMH/22-60/HSK-A50	22	48	60	19	34	FORM AD	1,05
5103452	WSMH/27-60/HSK-A50	27	48	60	21	34	FORM AD	1,30
5103454	WSMH/32-60/HSK-A50	32	78	60	24	34	FORM AD	1,60
5103457	WSMH/16-100/HSK-A50	16	38	100	17	74	FORM AD	1,25
5103459	WSMH/22-100/HSK-A50	22	48	100	19	74	FORM AD	1,60
5103461	WSMH/27-100/HSK-A50	27	58	100	21	74	FORM AD	2,00
5103462	WSMH/32-100/HSK-A50	32	75	100	24	74	FORM AD	2,40
4601763	WSMH/16-50/HSK-A63	16	38	50	17	24	FORM AD	1,05
4601765	WSMH/22-50/HSK-A63	22	48	50	19	24	FORM AD	1,20
4601767	WSMH/27-60/HSK-A63	27	58	60	21	34	FORM AD	1,60
4601769	WSMH/32-60/HSK-A63	32	78	60	24	34	FORM AD	1,90
4601771	WSMH/40-60/HSK-A63 x*	40	88	60	27	34	FORM AD	2,40
4601764	WSMH/16-100/HSK-A63	16	38	100	17	74	FORM AD	1,50
4601766	WSMH/22-100/HSK-A63	22	48	100	19	74	FORM AD	1,90
4601768	WSMH/27-100/HSK-A63	27	58	100	21	74	FORM AD	2,40
4601770	WSMH/32-100/HSK-A63	32	78	100	24	74	FORM AD	3,30
4601772	WSMH/40-100/HSK-A63 x*	40	88	100	27	74	FORM AD	4,00
5056120	WSMH/16-50/HSK-A100	16	38	50	17	21	FORM AD	2,35
4601663	WSMH/22-50/HSK-A100	22	48	50	19	21	FORM AD	2,50
4601664	WSMH/27-50/HSK-A100	27	58	50	21	21	FORM AD	2,80
4601665	WSMH/32-50/HSK-A100	32	78	50	24	21	FORM AD	3,10
4601666	WSMH/40-60/HSK-A100 x*	40	88	60	27	31	FORM AD	4,00
5056122	WSMH/60-70/HSK-A100 x	60	129	70	40	41	FORM AD	6,15



产品型号 Part number	描述 Designation	d	D	A	L ₁	L ₂	冷却液供应 Coolant supply	N/W kg
4600822	WSMH/16-35/SK40	16	38	35	17	15,9	FORM A/D B	1,10
4600823	WSMH/22-35/SK40	22	48	35	19	15,9	FORM A/D B	1,25
4600824	WSMH/27-40/SK40	27	58	40	21	20,9	FORM A/D B	1,45
4600825	WSMH/32-50/SK40	32	78	50	24	30,9	FORM A/D B	2,00
4600826	WSMH/40-50/SK40 x*	40	88	50	27	30,9	FORM A/D B	2,30
5055095	WSMH/22-100/SK40	16	38	100	17	80,9	FORM A/D B	1,70
5055102	WSMH/22-100/SK40	22	48	100	19	80,9	FORM A/D B	2,20
5055104	WSMH/27-100/SK40	27	58	100	21	80,9	FORM A/D B	2,70
5055105	WSMH/32-100/SK40	32	78	100	24	80,9	FORM A/D B	3,80
5055106	WSMH/40-100/SK40 x*	40	88	100	27	80,9	FORM A/D B	4,50
5055107	WSMH/16-160/SK40	16	38	160	17	140,9	FORM A/D B	2,20
5055108	WSMH/22-160/SK40	22	48	160	19	140,9	FORM A/D B	3,00
5055109	WSMH/27-160/SK40	27	58	160	21	140,9	FORM A/D B	3,85
5055110	WSMH/32-160/SK40	32	78	160	24	140,9	FORM A/D B	5,90
5055111	WSMH/40-160/SK40 x*	40	88	160	27	140,9	FORM A/D B	7,30
5055112	WSMH/16-44/SK50	16	38	44	17	24,9	FORM A/D B	2,95
4601356	WSMH/22-44/SK50	22	48	44	19	24,9	FORM A/D B	3,10
4601357	WSMH/27-44/SK50	27	58	44	21	24,9	FORM A/D B	3,35
4601358	WSMH/32-40/SK50	32	78	40	24	20,9	FORM A/D B	3,65
4601359	WSMH/40-50/SK50 x*	40	88	50	27	30,9	FORM A/D B	5,70
4601360	WSMH/60-70/SK50 x	60	129	70	40	50,9	FORM A/D B	7,80
5055123	WSMH/16-100/SK50	16	38	100	17	80,9	FORM A/D B	3,50
5055125	WSMH/22-100/SK50	22	48	100	19	80,9	FORM A/D B	3,85
5055126	WSMH/27-100/SK50	27	58	100	21	80,9	FORM A/D B	4,90
5055127	WSMH/32-100/SK50	32	78	100	24	80,9	FORM A/D B	5,80
5055128	WSMH/40-100/SK50 x*	40	88	100	27	80,9	FORM A/D B	6,70
5055130	WSMH/16-160/SK50	16	38	160	17	140,9	FORM A/D B	3,95
5055131	WSMH/22-160/SK50	22	48	160	19	140,9	FORM A/D B	4,70
5055132	WSMH/27-160/SK50	27	58	160	21	140,9	FORM A/D B	5,85
5055133	WSMH/32-160/SK50	32	78	160	24	140,9	FORM A/D B	8,00
5055134	WSMH/40-160/SK50 x*	40	88	160	27	140,9	FORM A/D B	9,50

技术信息:

- 所有刀柄的标准孔径 (10 毫米)
- 所有刀柄都标配表面冷却孔 (带 "AD/B" 形式的刀柄)
- $d = \varnothing 40$, $d = \varnothing 60$ s 附加 4 个螺纹孔, 符合 DIN 2079 标准
- 交货包括: 传动块、紧固螺钉和夹紧螺钉 (DIN 912)
- 请单独订购夹紧螺钉 (DIN 6367)
- 交货包括: 夹紧螺钉 (均符合 DIN 912 和 DIN 6367 标准)

Technical information:

- Bore (10 mm) standard for all holders
- Coolant hole on the face (holder with Form „AD/B”) as standard for all holders
- $d = \varnothing 40$, $d = \varnothing 60$ with additional 4 threaded holes to DIN 2079
- Delivery includes: Drive blocks, tightening screw and clamping screw (DIN 912)
- Please order clamping screw (DIN 6367) separately
- Delivery includes: Clamping screw (both DIN 912 & DIN 6367)

用于 HSK 卡盘的冷却管

Coolant tube for HSK chuck

产品型号 Part number	描述 Designation	尺寸规格 Size
5025376	UE4/HSK63	HSK63
5028428	UE4/HSK100	HSK100

冷却管安装扳手

Installation wrench for coolant pipe

产品型号 Part number	尺寸规格 Size
6738421	HSK63
6738303	HSK100

扳手 DIN 6368

Wrench to DIN 6368

产品型号 Part number	描述 Designation
5056946	DIN6368-16
6942963	DIN6368-22
6942916	DIN6368-27
6942917	DIN6368-32
6950689	DIN6368-40

扳手

Wrench

产品型号 Part number	描述 Designation
6737650	SW6
6737651	SW8
6737652	SW10
6737654	SW14
6737655	SW17

螺纹销 DIN 913

Thread Pin to DIN 913

产品型号 Part number	描述 Designation	尺寸规格 Size
6914425	DIN913-M3x3	16
6951794	DIN913-M3x5	22,27,32
5056913	DIN913-M3x7	40

锁紧栓 DIN 6367

Tightening Screw to DIN 6367

产品型号 Part number	描述 Designation	尺寸规格 Size
6934073	DIN6367-M8	16
6940383	DIN6367-M10	22
6941541	DIN6367-M12	27
6942757	DIN6367-M16	32
6943111	DIN6367-M20	40

滑键 DIN 6885

Feather Key to DIN 6885

产品型号 Part number	描述 Designation	尺寸规格 Size
5056905	DIN6885-C4x4x20	16
5056909	DIN6885-C6x6x25	22
5056610	DIN6885-C7x7x25	27
5056911	DIN6885-C8x7x28	32
5056912	DIN6885-C10x8x32	40

滑键

Feather Key

产品型号 Part number	描述 Designation	尺寸规格 Size
5057289	Dia16-8x8x14	16
5057293	Dia22-10x10x17	22
5057293	Dia22-10x10x17	27
5057293	Dia22-10x10x17	32
5057294	Dia22-10x10x17	40

内六角螺钉 DIN 912

Hexagon Socket Screw to DIN 912

产品型号 Part number	描述 Designation	尺寸规格 Size
6914489	DIN912-M3x8	16
6918335	DIN912-M4x8	22
6941122	DIN912-M5x13	27
5056916	DIN912-M5x13	32
6900224	DIN912-M6x16	40

DIN 69872 A+B 紧固螺栓，带通孔，不带 O 形圈

Tightening Bolt DIN 69872 A+B, with through hole, without o-ring

产品型号 Part number	描述 Designation	øD1	øD2	øD3	L	L1	ø	尺寸规格 Size
6733614	BN 164-SK30	13	9	13	44	24	15°	M12
6733615	BN 164-SK40	19	14	17	54	26	15°	M16
6733616	BN 164-SK50	28	21	25	74	34	15°	M24

DIN 69872 A+B 拉钉，无通孔，带 O 形圈

Pull Stud DIN 69872 A+B, without through hole, with o-ring

产品型号 Part number	描述 Designation	øD1	øD2	øD3	L	L1	ø	尺寸规格 Size
6733614	BN 164-SK30	13	9	13	44	24	15°	M12
6733615	BN 164-SK40	19	14	17	54	26	15°	M16

材料 Material		槽型 Geometry	切削材料 Cutting material	切削速度 Cutting speed vc [m/min]	进给 Feed rate fz [mm]	max. 切深 Max depth of cut ap [mm]	推荐冷却 Recommended coolant
N	铝合金 Al alloys	Si < 12%	PD70	200-4000	0,02-0,10	2	油,乳化液 Oil, Emulsion
			PD75	150-3500			
		Si > 12%	PD70	180-1500			
			PD75	120-1000			

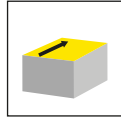
刀具安装的基本信息:

- 为了在平面铣削过程中获得最佳的表面质量，所有切削刃必须相互轴向对齐。
- 通过使用高精度的 HORN 楔块调整装置，可将轴向跳动设定在所需的 μm 范围内。
- 精度高、操作简便是该系统的显著特点。
- 为实现简单、方便、快速和精确的调节，建议使用调节装置。
- 用清洁剂清洁 PCD 刀夹的所有切削刃，以避免测量误差。

Basic information on tool setting:

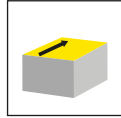
- To achieve optimum surface quality during face milling, it is essential that all cutting edges are axially aligned with each other.
- By using the high-precision HORN wedge adjustment, the axial run-out can be set to the required μm range.
- The accuracy that can be achieved combined with easy handling distinguishes this system.
- For easy, convenient, quick and precise adjustment, the use of setting device is recommended.
- Clean all cutting edges of the PCD cassettes with cleaning compound to avoid measuring inaccuracies.

芯轴刀柄式铣刀
Arbour Mounted Cutter
DAM32



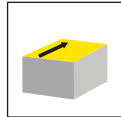
页/Page
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立铣刀
End Mill
DAM32



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刀片
Insert
DA32



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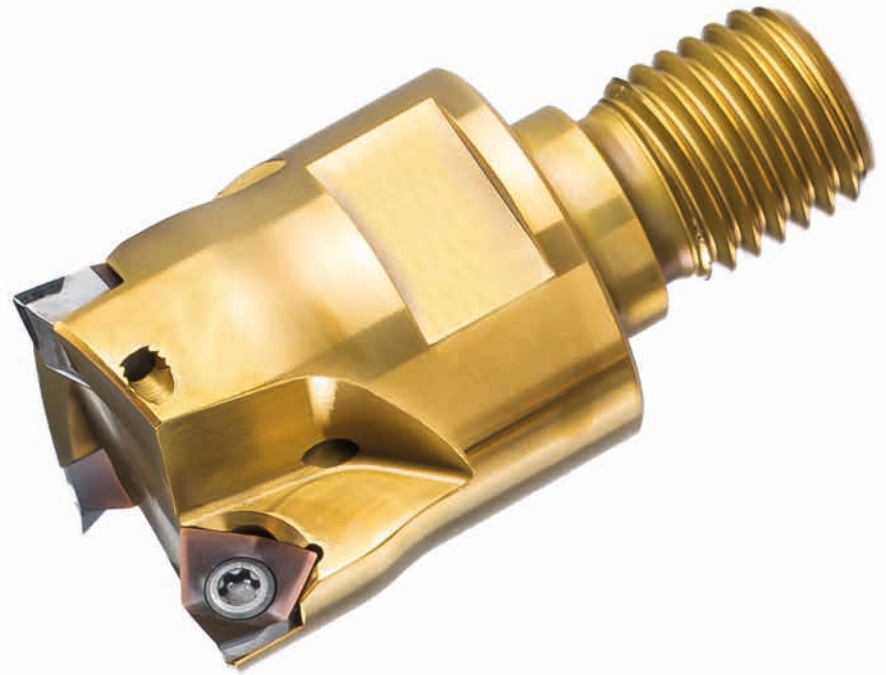
切削参数
Cutting data

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134, 136

计算公式
Formulas

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135

DA32



CVD-D 与 PCD 镶片
配 HORN 3D-槽型

CVD-D and PCD tipped
with HORN 3D geometries

精钢石镶片的DA32刀片

DA32 insert with diamond tip



HORN的DA32铣削系统首次扩展了精钢石镶片刀片。当进行方肩铣,面铣,破走铣和仿形铣时,这特点使刀具能实得到出色的结果。

大正前角槽型刀片确保了特别平滑的切削。这使得施加在工件和刀具上的应力最小,因此,长刀具寿命和几乎无毛刺的加工是有保证的,特别是在长切削材料。底部大圆弧精加工修光刃创造了最好的表面质量标准,即使在高进给率下。冷却剂供应可靠地确保对准切削刃冷却,以及安全去除的切屑离开工作区域。

得益于对纤维增强塑料的特殊槽型,结合CVD厚贴片的金刚石刀具材质的硬度和耐磨性,取得了杰出的成绩。经过试验和测试的HORN金刚石基体,确保使用最先进的激光技术生产的切屑刃口能够有效地工作吗??

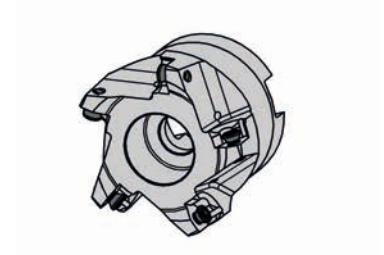
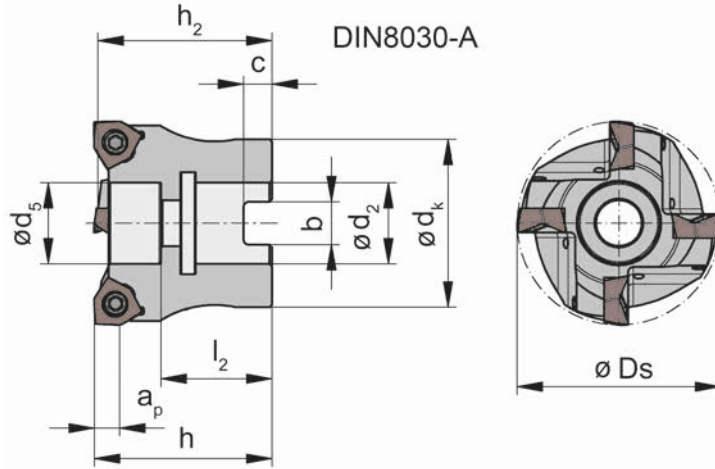
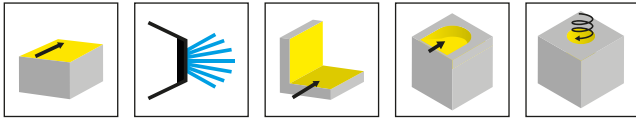
所有这一切,结合淬火和回火高硬度钢的TiN涂层抗磨刀杆。各类TiN涂层的刀杆,是DA系统真正发挥作用的地方。DA32系统中的刀头、螺纹端铣刀和立铣刀的直径从20毫米到63毫米不等,并有2到6个切削刃。

HORN's proven DA32 Milling system is extended for the first time with diamond-tipped inserts. This feature allows the tools to achieve outstanding results during shoulder milling, face milling, plunge milling and circular milling.

The highly positive geometry of the inserts ensures a particularly smooth cut. This keeps the stress exerted on the workpiece and the tool to a minimum. As a result, a long tool life and virtually burr-free machining are guaranteed – particularly when it comes to long-chipping materials. The wide finishing radius creates the very best standards of surface quality, even at high feed rates. The coolant supply reliably ensures targeted cooling of the cutting edges as well as safe removal of the chips away from the working zone.

Thanks to the special geometry for fibre-reinforced plastics, combined with the hardness and wear resistance of the CVD thick-film diamond cutting material, outstanding levels of performance are achieved. Tried-and-tested HORN diamond substrates guarantee that the cutting edges – produced using state-of-the-art laser technology – are able to work efficiently.

All this, combined with the exceptional rigidity of the quenched and tempered steel as well as the wear-resistant TiN coating of the various tool holders, is what really makes the benefits of the DA system come into their own. The arbour mounted cutter, screwed milling cutter and the milling shanks in the DA32 system are available in cutting edge diameters from 20 mm to 63 mm and with between two and six DA32 inserts.

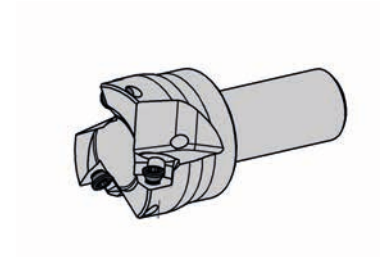
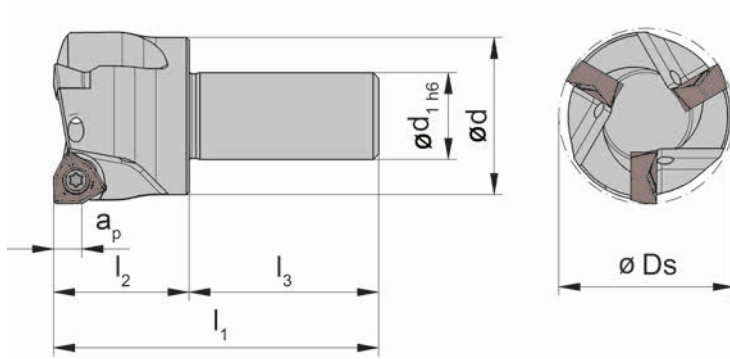
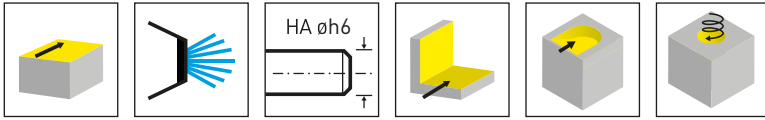


图示=右手型
Picture = right hand cutting version

产品型号 Part number	Z	Ds	ap	h ₂	h	d _s	d ₂	l ₂	b	C	d _k	HWS
DAM32.040.A1635.04	4	40	4.8	34.4	35	16	16	22	8.4	5.6	33	DA3232
DAM32.050.A2240.05	5	50	4.8	39.4	40	19.5	22	24	10.4	6.3	41	DA3232
DAM32.063.A2745.06	6	63	4.8	44.4	45	21.5	27	27	12.4	7	49	DA3232

配件
Spare Parts

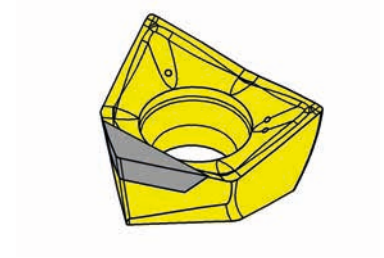
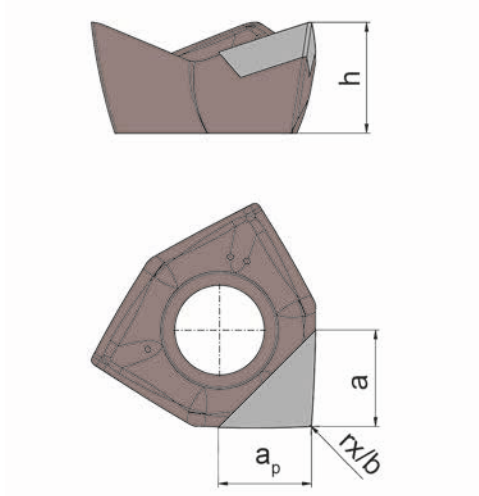
芯轴刀柄式铣刀 Arbour Mounted Cutter	锁紧螺钉 Clamping Screw	TORX PLUS®扳手 TORX PLUS® Wrench
DAM32...	030.3576.T10P	T10PL



产品型号 Part number	Z	Ds	d	l ₁	l ₂	d ₁	l ₃	a _p	HWS
DAM32.020.D160.02A	2	20	19	52	17	16	35	4.5	DA3220
DAM32.025.D161.03A	3	25	24	55	20	16	35	4.5	DA3225
DAM32.032.D162.03A	3	32	31	60	25	16	35	4.5	DA3232

配件 Spare Parts

立铣刀 End Mill	锁紧螺钉 Clamping Screw	TORX PLUS®扳手 TORX PLUS® Wrench
DAM32.020.D160.02A	030.3562.T10P	T10PL
DAM32.025.D161.03A	030.3569.T10P	T10PL
DAM32.032.D162.03A	030.3576.T10P	T10PL



硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	Ds	a _p	a	h	r _x	b x 45°	HIS	HD05	PD75	
DA32.020.25.02.C	20	3.8	3.5	4.7	0.2	-	DA3220	▲	-	
DA32.020.25.X2.C	20	3.8	3.5	4.7	-	0.2	DA3220	△	-	
DA32.025.25.02.C	25	3.8	3.5	4.7	0.2	-	DA3225	▲	-	
DA32.025.25.02.P	25	3.8	3.5	4.7	0.2	-	DA3225	-	▲	
DA32.025.25.X2.C	25	3.8	3.5	4.7	-	0.2	DA3225	△	-	
DA32.032.25.02.C	32	3.8	3.5	4.7	0.2	-	DA3232	▲	-	
DA32.032.25.02.P	32	3.8	3.5	4.7	0.2	-	DA3232	-	▲	
DA32.032.25.X2.C	32	3.8	3.5	4.7	-	0.2	DA3232	▲	-	
DA32.020.25.02.P	20	3.8	3.5	4.7	0.2	-	DA3220	-	▲	
								P	-	-
								M	-	-
								K	-	-
								N	●	●
								S	-	-
								H	-	-

切削参数系列 DA32-DIA

Cutting Data System DA32-DIA

材料 Material	推荐刀片 recommended insert		V _{min}	V _{max}	f _z		a _p		推荐冷却 Recommended Coolant
	粗加工 roughing	精加工 finishing			粗加工 roughing	精加工 finishing	粗加工 roughing	精加工 finishing	
锻造铝合金 Al-wrought alloys	DA32.xx.25.02.C HD05	DA32.xx.25.02.C HD05	200	5000	0.05-0.35	0.02-0.15	a _p max	0.5	乳化液 Emulsion
铝合金硅含量不大于12% Aluminium alloys up to 12% Si content	DA32.xx.25.02.P PD75	DA32.xx.25.02.C HD05	150	4500	0.05-0.30	0.02-0.12	a _p max	0.4	乳化液 Emulsion
铝合金硅含量>12% Aluminium alloys with >12% Si content	DA32.xx.25.02.P PD75	DA32.xx.25.02.C HD05	100	2000	0.05-0.25	0.02-0.10	a _p max	0.3	乳化液 Emulsion
镁 Magnesium	DA32.xx.25.02.P PD75	DA32.xx.25.02.C HD05	150	4500	0.05-0.30	0.02-0.12	a _p max	0.4	乳化液 Emulsion
铜, 青铜, 不含铅黄铜 Copper, Bronze, lead-free Brass	DA32.xx.25.02.P PD75	DA32.xx.25.02.C HD05	100	2000	0.05-0.20	0.02-0.12	max 3	0.2	油 / Oil
OFHC铜, 铍铜 Copper OFHC, Tungsten copper	DA32.xx.25.02.C HD05	DA32.xx.25.02.C HD05	70	1000	0.04-0.15	0.02-0.10	max 3	0.2	油 / Oil
黄铜, 锌 Brass, zinc	DA32.xx.25.02.P PD75	DA32.xx.25.02.C HD05	120	2000	0.05-0.30	0.02-0.12	a _p max	0.3	油 / Oil
镍银, CuNi Nickel silver, CuNi	DA32.xx.25.02.P PD75	DA32.xx.25.02.C HD05	80	600	0.04-0.15	0.02-0.10	max 2.5	0.2	乳化液 Emulsion
钛, 铂, 铱 Titanium, Platin, Iridium	DA32.xx.25.02.P PD75	DA32.xx.25.02.C HD05	50	300	0.03-0.10	0.02-0.06	max 2	0.1	乳化液 Emulsion
石墨 Graphite	DA32.xx.25.02.C HD05	DA32.xx.25.02.C HD05	80	1400	0.05-0.20	0.02-0.12	a _p max	0.3	气冷 / Air
硬质合金/陶瓷(预烧结) Carbide and Ceramtk (presintered)	DA32.xx.25.X2.C HD05	DA32.xx.25.X2.C HD05	50	150	0.06-0.25	0.05-0.15	a _p max	0.4	气冷 / Air
人工合成材料, 增强塑料 Synthetics, Reinforced plastics	DA32.xx.25.X2.C HD05	DA32.xx.25.X2.C HD05	150	2500	0.1-0.5	0.05-0.25	a _p max	0.5	气冷 / Air
GFRP	DA32.xx.25.X2.C HD05	DA32.xx.25.X2.C HD05	120	800	0.05-0.35	0.04-0.25	a _p max	0.2	气冷 / Air
CFRP	DA32.xx.25.X2.C HD05	DA32.xx.25.X2.C HD05	90	450	0.05-0.25	0.04-0.25	a _p max	0.2	气冷 / Air

xx = 刀杆直径
xx = place holder for cutting diameter

Z = 齿数
Number of teeth

d = 直径-Ø
Cutting edge Ø

n = 转速
Revolutions

$$n = \frac{v_c \cdot 1000}{d \cdot \pi} \text{ [1/min]}$$

v_c = 切削速度
Cutting speed

$$v_c = \frac{d \cdot \pi \cdot n}{1000} \text{ [m/min]}$$

f_z = 进给/齿
Feed/tooth

$$f_z = \frac{v_f}{Z \cdot n} \text{ [mm]}$$

v_f = 进给率
Feed rate

$$v_f = f_z \cdot Z \cdot n \text{ [mm/min]}$$

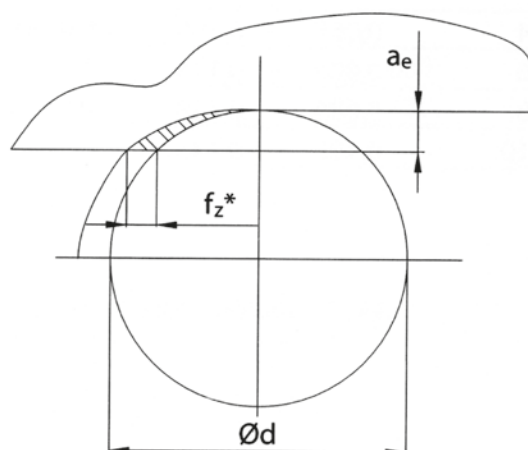
Q = 金属去除率
Material removal rate

$$Q = \frac{a_e \cdot a_p \cdot v_f}{1000} \text{ (cm}^3\text{/min)}$$

小切削深度的肩铣需要根据以下公式对进刀速度 f'_z 进行补偿。
根据切削深度和刀具直径的不同, 该值往往比常规进刀率高得多。

Shoulder milling with a small depth of cut requires a compensation of the feed rate f'_z according to the following formula.
This value is often much higher than the regular feed rate depending on the depth of cut and the cutter diameter.

f'_z = 有效 a_e 侧边铣 (至多 $0.25 \cdot d$):
effective for side Milling with small a_e (up to $0,25 \cdot d$):

$$f'_z = f_z \sqrt{\frac{d}{a_e}} \text{ [mm]}$$


破走角及插削 90°刀盘

Ramp angle and plunging with a 90° Milling cutter

Ø (mm) 刀片尺寸 / Insert size	32 DA32	25 DA32	20 DA32
破走角 (°) Diving angle (°)	3.5°	3.5°	3.5°
满刀下切最大距离 (mm) vertical full diving max. (mm)	0.8	0.4	0.3
插削最大切宽 a_e (mm) vertical side diving a_e max. (mm)	3.8	3.8	3.8
预钻最小直径 D_b (mm) Predrilling D_b min. (mm)	22.8	15.8	10.8

斜坡角及插削 45°刀盘

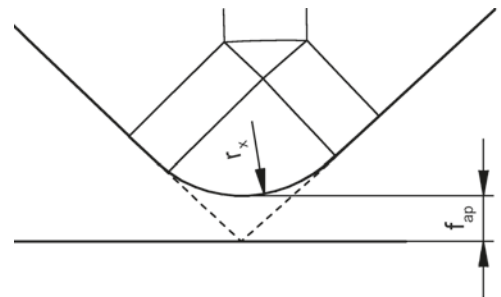
Ramp angle and plunging with a 45° Milling cutter

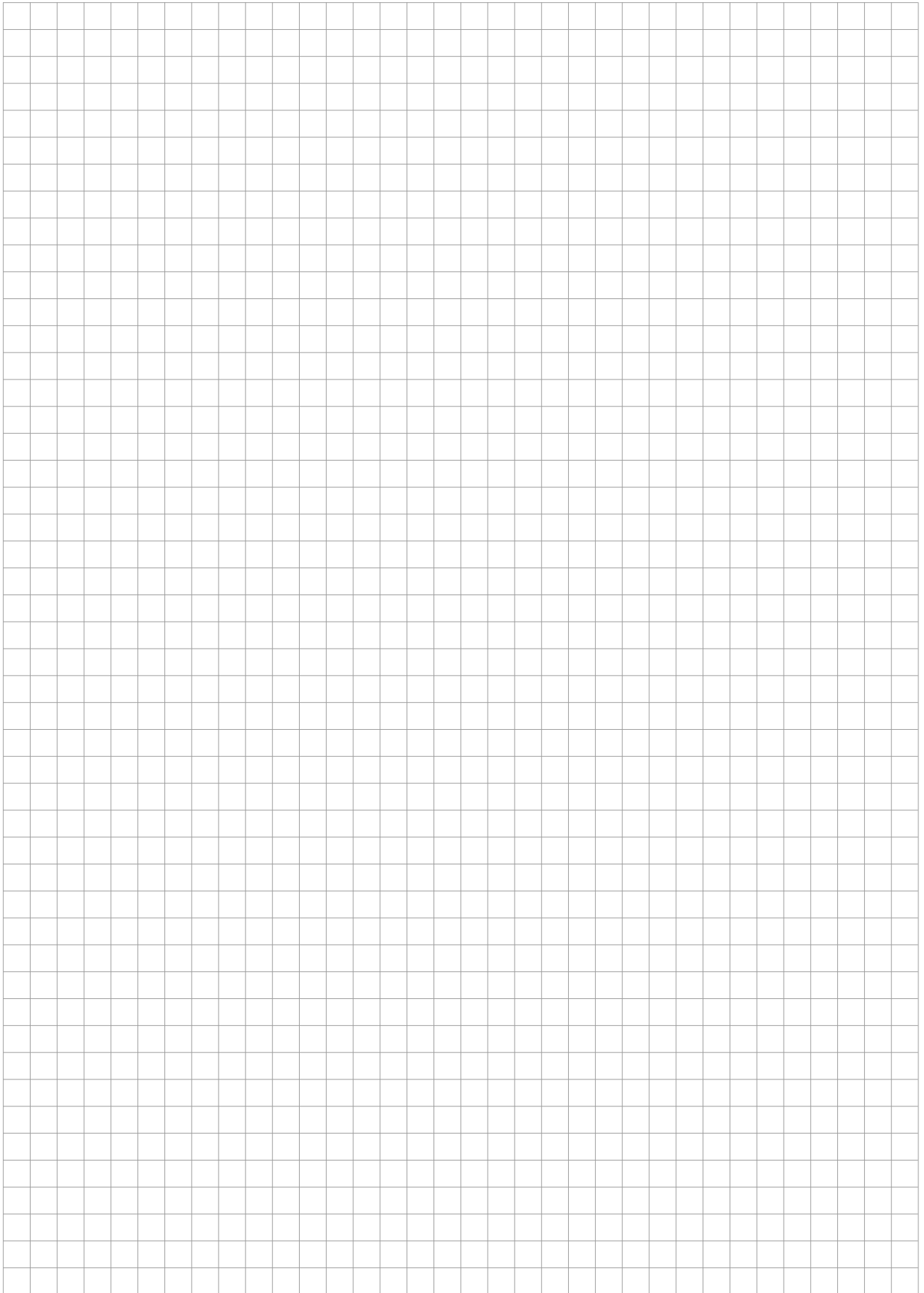
Ø (mm) 刀片尺寸 / Insert size	17 DA32
斜坡角 (°) Diving angle (°)	11°
满刀下切最大距离 (mm) vertical full diving max. (mm)	3.2

考虑到45°铣削刀尖半径切削深度降低的修正系数

Correction factor for reduced cutting depth in consideration to the corner radius when 45° Milling.

刀尖圆角 r_x (mm) Corner radius r_x (mm)	修正系数 f_{ap} (mm) Correction factor f_{ap} (mm)
0	0
0.2	0.078
0.4	0.17
0.8	0.33
1.0	0.41





立铣刀
End Mill
DSKM.HM/DSK/
DSTM.HM/DST.HM/
DST/DSTV.HM/DSUD/
DSFN/DSFU/DSFD

CVD-D

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切削参数
Cutting data

页/Page
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DS

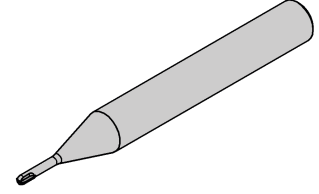
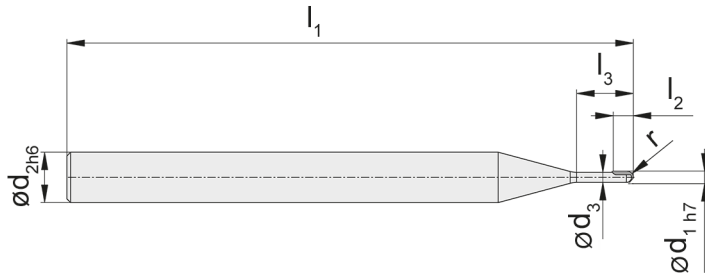
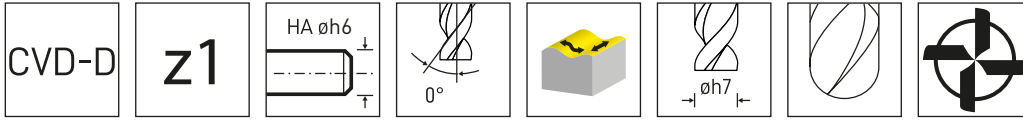


CVD-D 铣刀

直径 0.2 - 16 mm

CVD-D milling tool

Diameter 0,2 - 16 mm

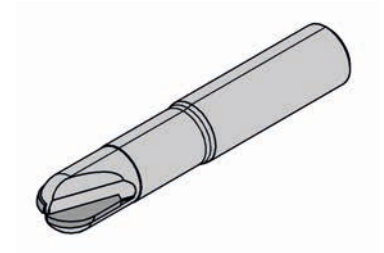
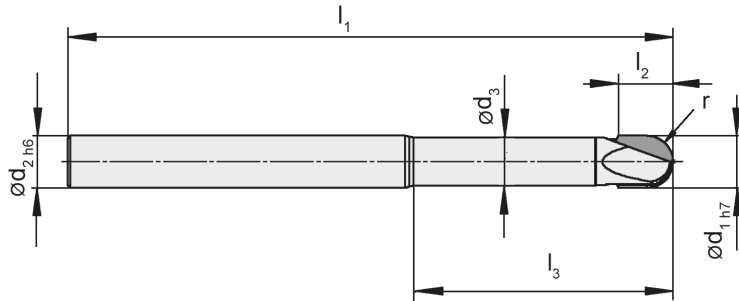
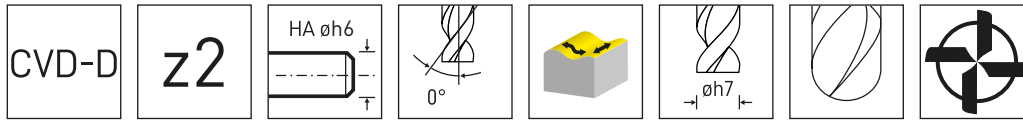


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d ₁	r	l ₂	l ₃	d ₃	d ₂	l ₁	Z	HD03
DSKM.HM.020.03.100	0.2	0.1	0.2	0.3	0.2	4	45	1	▲
DSKM.HM.030.04.150	0.3	0.15	0.3	0.4	0.3	4	45	1	▲
DSKM.HM.050.06.250	0.5	0.25	0.5	0.6	0.5	4	45	1	▲
DSKM.HM.080.09.400	0.8	0.4	0.8	0.9	0.8	4	45	1	▲
DSKM.HM.100.25.500	1	0.5	1.5	2.5	0.8	4	45	1	▲
DSKM.HM.100.35.500	1	0.5	1.5	3.5	0.8	4	45	1	△
DSKM.HM.100.45.500	1	0.5	1.5	4.5	0.8	4	45	1	△
DSKM.HM.150.30.750	1.5	0.75	2	3	1.3	4	45	1	▲
DSKM.HM.150.40.750	1.5	0.75	2	4	1.3	4	45	1	△
DSKM.HM.150.50.750	1.5	0.75	2	5	1.3	4	45	1	△
									P -
									M -
									K -
									N ●
									S -
									H -

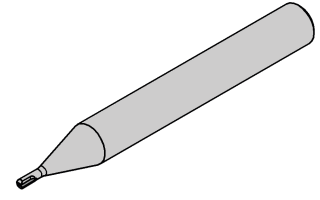
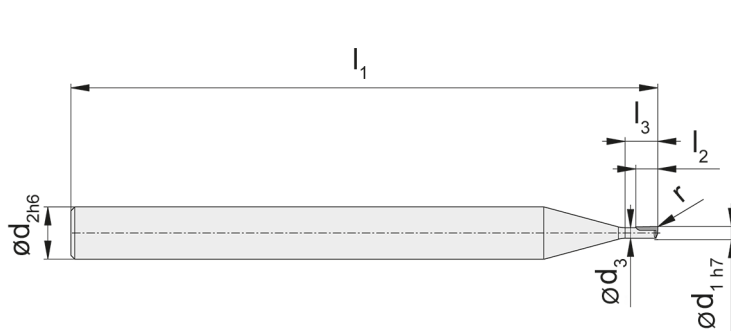
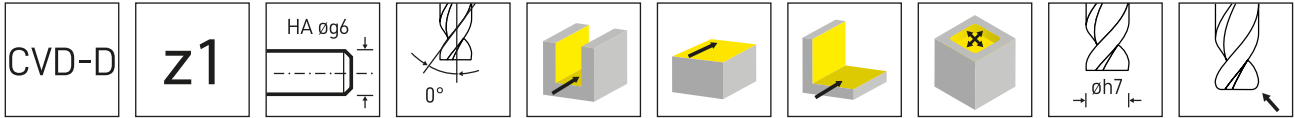


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d ₁	r	l ₂	l ₃	d ₃	d ₂	l ₁	Z	HD03	HD05	HD08
DSK.2.02.08.04.00	2	1	2.5	8	1.95	6	45	2	▲		
DSK.2.03.09.06.00	3	1.5	3	9	2.85	6	55	2	▲		
DSK.2.03.12.06.00	3	1.5	3	12	2.85	6	55	2	▲		
DSK.2.04.10.06.00	4	2	4	10	3.9	6	60	2		▲	
DSK.2.04.15.06.00	4	2	4	15	3.9	6	60	2		▲	
DSK.2.04.20.06.00	4	2	4	20	3.9	6	60	2		▲	
DSK.2.06.20.06.00	6	3	6	20	5.6	6	70	2			▲
DSK.2.06.25.06.00	6	3	6	25	5.6	6	70	2			▲
DSK.2.06.30.06.00	6	3	6	30	5.6	6	70	2			△
DSK.2.08.25.08.00	8	4	7	25	7.5	8	65	2			▲
DSK.2.08.40.08.00	8	4	7	40	7.5	8	80	2			▲
DSK.2.10.30.10.00	10	5	8	30	9.3	10	70	2			▲
DSK.2.10.50.10.00	10	5	8	50	9.3	10	90	2			▲
DSK.2.12.30.12.00	12	6	9	30	11.3	12	75	2			▲
DSK.2.12.60.12.00	12	6	9	60	11.3	12	105	2			▲
P	-	-	-	-	-	-	-	-	-	-	-
M	-	-	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-
N	●	●	●	●	●	●	●	●	●	●	●
S	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-

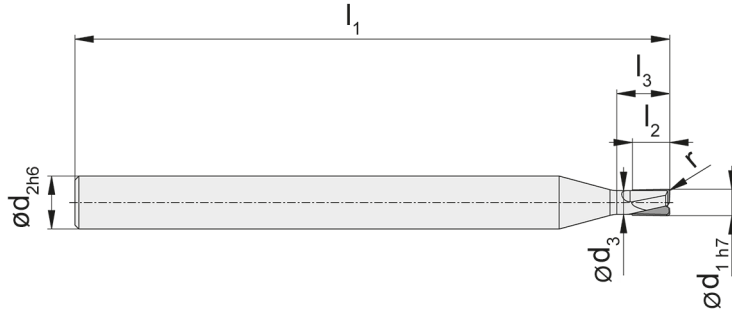
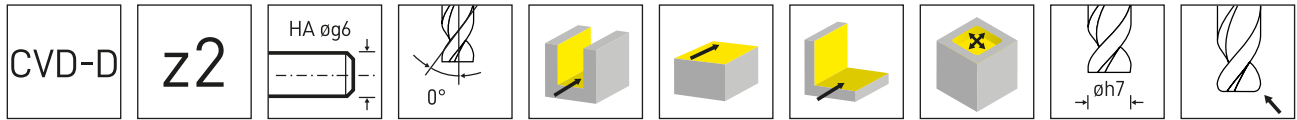


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d ₁	r	l ₂	l ₃	d ₃	d ₂	l ₁	Z	HD03
DSTM.HM.100.25.005	1	0.05	1.5	2.5	0.8	4	45	1	▲
DSTM.HM.100.25.010	1	0.1	1.5	2.5	0.8	4	45	1	▲
DSTM.HM.100.35.005	1	0.05	1.5	3.5	0.8	4	45	1	△
DSTM.HM.100.35.010	1	0.1	1.5	3.5	0.8	4	45	1	△
DSTM.HM.100.45.005	1	0.05	1.5	4.5	0.8	4	45	1	△
DSTM.HM.100.45.010	1	0.1	1.5	4.5	0.8	4	45	1	△
DSTM.HM.150.30.005	1.5	0.05	2	3	1.3	4	45	1	▲
DSTM.HM.150.30.010	1.5	0.1	2	3	1.3	4	45	1	▲
DSTM.HM.150.40.005	1.5	0.05	2	4	1.3	4	45	1	△
DSTM.HM.150.40.010	1.5	0.1	2	4	1.3	4	45	1	△
DSTM.HM.150.50.005	1.5	0.05	2	5	1.3	4	45	1	△
DSTM.HM.150.50.010	1.5	0.1	2	5	1.3	4	45	1	△
									P -
									M -
									K -
									N ●
									S -
									H -

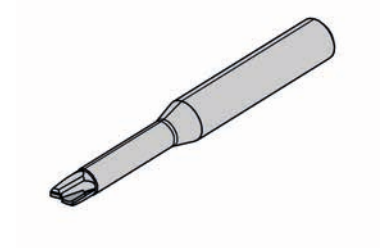
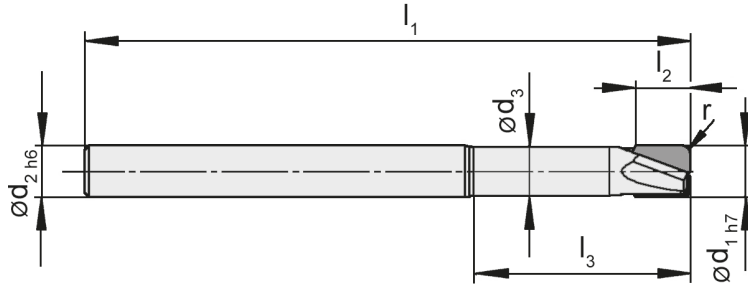
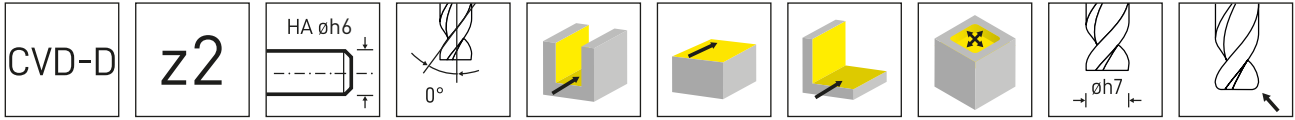


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d ₁	r	l ₂	l ₃	d ₃	d ₂	l ₁	Z	HD03	HD05	HD08
DST.HM.02.040.020	2	0.2	2.5	4	1.95	4	45	2	▲		
DST.HM.03.090.020	3	0.2	2.5	9	2.85	6	55	2	▲		
DST.HM.03.090.030	3	0.3	2.5	9	2.85	6	55	2	▲		
DST.HM.04.100.020	4	0.2	2.5	10	3.9	6	60	2		▲	
DST.HM.04.100.030	4	0.3	2.5	10	3.9	6	60	2		▲	
DST.HM.05.150.030	5	0.3	3	15	4.7	6	65	2		▲	
DST.HM.05.150.050	5	0.5	3	15	4.7	6	65	2		▲	
DST.HM.06.200.020	6	0.2	6	20	5.6	6	65	2			▲
DST.HM.06.200.030	6	0.3	6	20	5.6	6	65	2			▲
DST.HM.06.200.050	6	0.5	6	20	5.6	6	65	2			▲
P	-	-	-	-	-	-	-	-	-	-	-
M	-	-	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-
N	●	●	●	●	●	●	●	●	●	●	●
S	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-

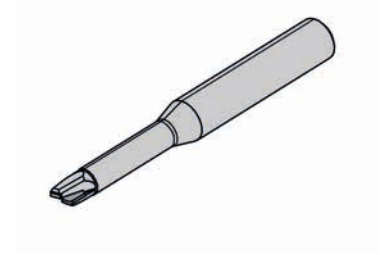
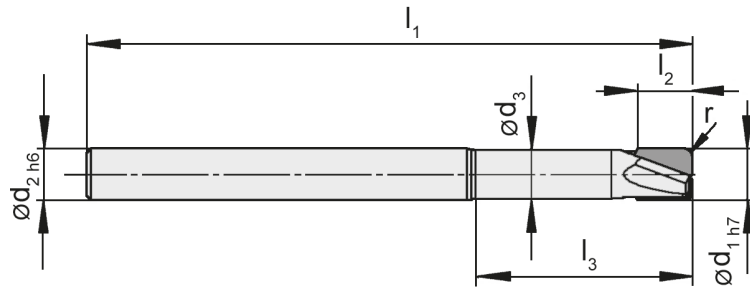
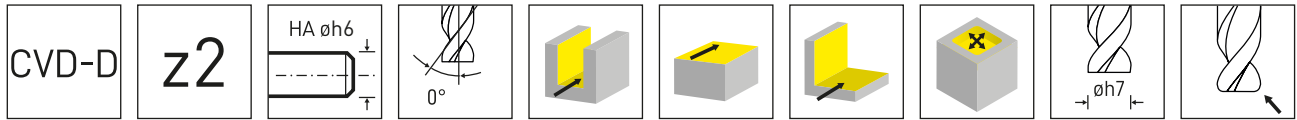


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d ₁	r	l ₂	l ₃	d ₃	d ₂	l ₁	Z	HD03	HD05	HD08
DST.2.02.0425.02.04	2	0.2	2.5	4	1.95	4	45	2	▲		
DST.2.02.0825.02.04	2	0.2	2.5	8	1.95	4	45	2	▲		
DST.2.03.0925.03.06	3	0.3	2.5	9	2.85	6	55	2	▲		
DST.2.03.0925.05.06	3	0.5	2.5	9	2.85	6	55	2	▲		
DST.2.03.1225.03.06	3	0.3	2.5	12	2.85	6	55	2	▲		
DST.2.03.1525.03.06	3	0.3	2.5	15	2.85	6	55	2	▲		
DST.2.04.1025.03.06	4	0.3	2.5	10	3.9	6	60	2		▲	
DST.2.04.2025.05.06	4	0.5	2.5	20	3.9	6	60	2		▲	
DST.2.06.2060.03.06	6	0.3	6	20	5.6	6	70	2			▲
DST.2.06.2060.05.06	6	0.5	6	20	5.6	6	70	2			▲
DST.2.06.2060.10.06	6	1	6	20	5.6	6	70	2			▲
DST.2.06.2560.03.06	6	0.3	6	25	5.6	6	70	2			△
DST.2.06.2560.05.06	6	0.5	6	25	5.6	6	70	2			△
DST.2.06.2560.10.06	6	1	6	25	5.6	6	70	2			△
DST.2.06.3060.03.06	6	0.3	6	30	5.6	6	70	2			▲
DST.2.06.3060.05.06	6	0.5	6	30	5.6	6	70	2			▲
DST.2.06.3060.10.06	6	1	6	30	5.6	6	70	2			▲
P	-	-	-	-	-	-	-	-	-	-	-
M	-	-	-	-	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-	-	-	-	-
N	●	●	●	●	●	●	●	●	●	●	●
S	-	-	-	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-	-	-	-



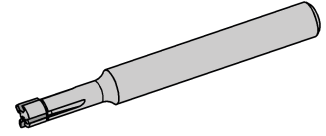
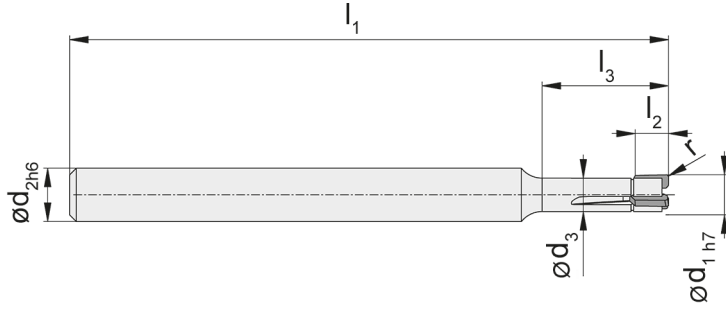
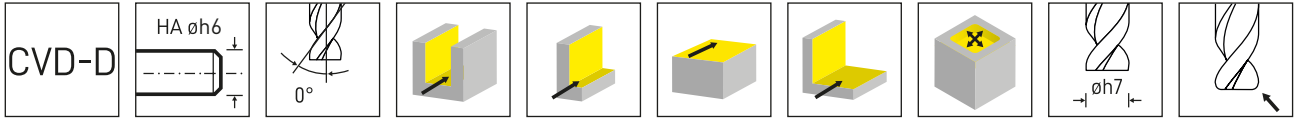
硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d ₁	r	l ₂	l ₃	d ₃	d ₂	l ₁	Z	HD08
DST.2.08.2570.03.08	8	0.3	7	25	7.5	8	65	2	▲
DST.2.08.2570.05.08	8	0.5	7	25	7.5	8	65	2	▲
DST.2.08.2570.10.08	8	1	7	25	7.5	8	65	2	▲
DST.2.08.4070.05.08	8	0.5	7	40	7.5	8	80	2	△
DST.2.10.3080.05.10	10	0.5	8	30	9.3	10	70	2	▲
DST.2.10.3080.10.10	10	1	8	30	9.3	10	70	2	△
DST.2.10.5080.10.10	10	1	8	50	9.3	10	90	2	△
DST.2.12.3090.05.12	12	0.5	9	30	11.3	12	75	2	▲
DST.2.12.3090.10.12	12	1	9	30	11.3	12	75	2	△

P	-
M	-
K	-
N	●
S	-
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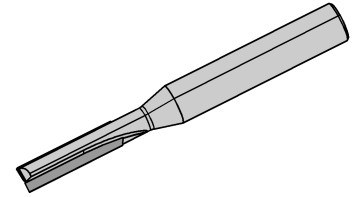
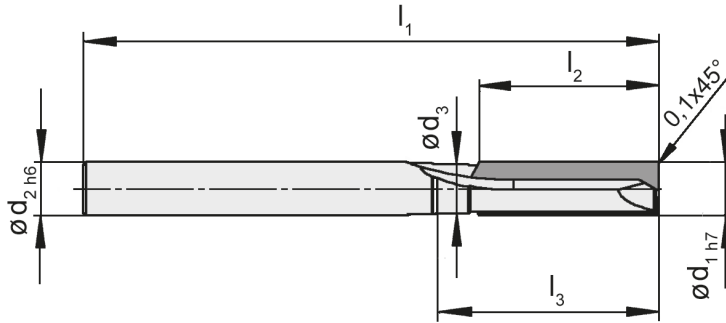
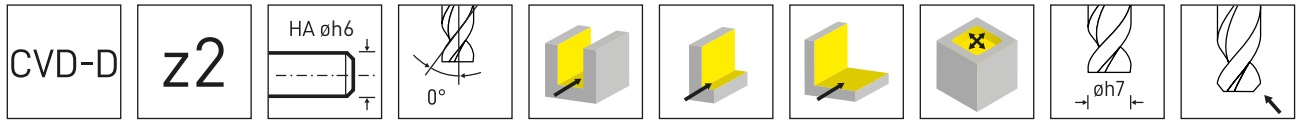
硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d ₁	r	l ₂	l ₃	d ₃	d ₂	l ₁	Z	HD05
DSTV.HM.03.09.02.03	3	0.2	2	9	2.5	4	45	3	▲
DSTV.HM.03.09.03.03	3	0.3	2	9	2.5	4	45	3	▲
DSTV.HM.04.10.02.05	4	0.2	2	10	3.5	4	45	5	▲
DSTV.HM.04.10.03.05	4	0.3	2	10	3.5	4	45	5	▲
DSTV.HM.05.13.03.06	5	0.3	3	13	4.4	6	55	6	▲
DSTV.HM.05.13.05.06	5	0.5	3	13	4.4	6	55	6	▲
DSTV.HM.06.15.02.07	6	0.2	3.5	15	5	6	55	7	▲
DSTV.HM.06.15.03.07	6	0.3	3.5	15	5	6	55	7	▲
DSTV.HM.06.15.05.07	6	0.5	3.5	15	5	6	55	7	▲
DSTV.HM.08.20.03.11	8	0.3	3	20	7	8	60	11	▲
DSTV.HM.08.20.05.11	8	0.5	3	20	7	8	60	11	▲
DSTV.HM.10.25.03.15	10	0.3	3	25	9	10	70	15	▲
DSTV.HM.10.25.05.15	10	0.5	3	25	9	10	70	15	▲
DSTV.HM.10.25.10.15	10	1	3.5	25	9	10	70	15	▲

P	-
M	-
K	-
N	●
S	-
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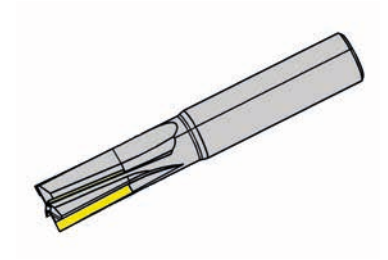
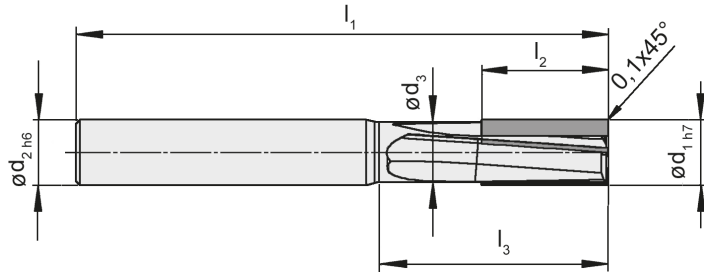
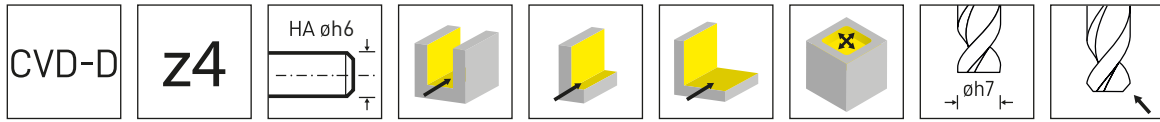


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d ₁	l ₂	l ₃	d ₃	d ₂	l ₁	Z	HD05	HD08	
DST.2.04.1008.03.06	4	8	10	3.9	6	60	2	▲		
DST.2.04.2015.03.06	4	15	20	3.9	6	60	2	▲		
DST.2.06.1510.04.06	6	10	15	5.8	6	60	2		▲	
DST.2.06.2015.04.06	6	15	20	5.8	6	60	2		▲	
DST.2.06.2520.04.06	6	20	25	5.8	6	65	2		▲	
DST.2.08.1510.06.08	8	10	15	7.8	8	60	2		▲	
DST.2.08.3020.06.08	8	20	30	7.8	8	70	2		△	
DST.2.12.2010.10.12	12	10	20	11.7	12	70	2		▲	
DST.2.16.2510.20.16	16	10	25	15.6	16	80	2		△	
DST.2.16.3015.20.16	16	15	30	15.6	16	80	2		△	
DST.2.16.3520.20.16	16	20	35	15.6	16	90	2		△	
								P	-	-
								M	-	-
								K	-	-
								N	●	●
								S	-	-
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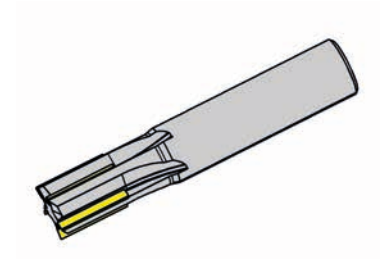
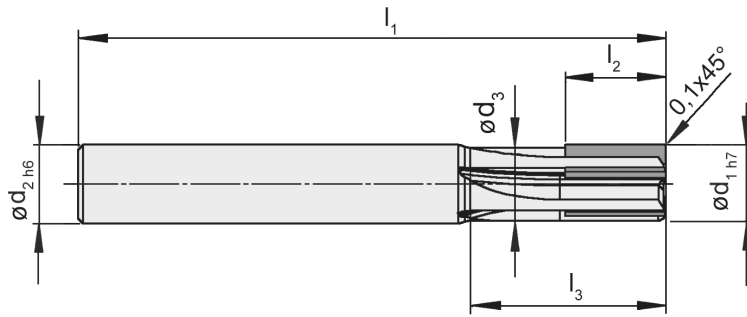
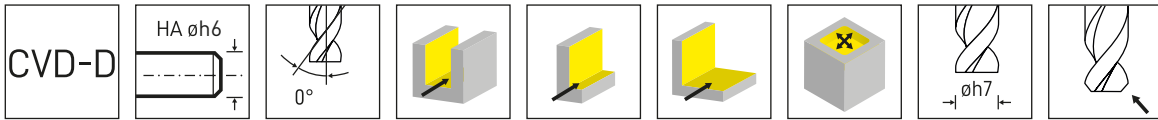
硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d ₁	l ₂	l ₃	d ₃	d ₂	l ₁	Z	HD05
DSUD.4.08.24.22.08	8	24	40	7.5	8	80	4	△
DSUD.4.10.15.44.10	10	15	30	9.3	10	75	4	△
DSUD.4.10.24.22.10	10	24	40	9.3	10	85	4	△
DSUD.4.12.15.44.12	12	15	30	11.3	12	80	4	△

P	-
M	-
K	-
N	●
S	-
H	-

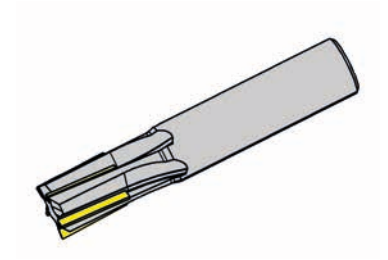
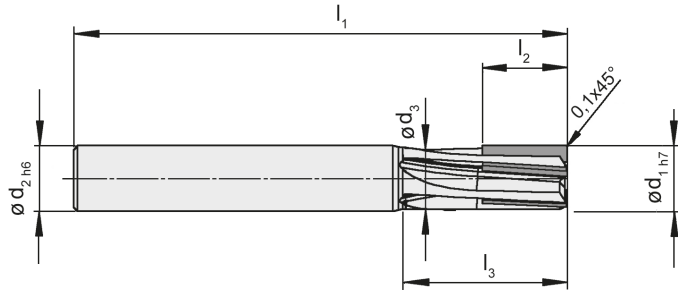
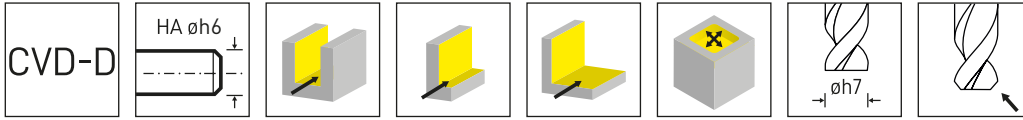


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d ₁	l ₂	l ₃	d ₃	d ₂	l ₁	Z	HD05
DSFN.5.10.12.60.0.10	10	12	20	9.3	10	65	5	△
DSFN.7.12.24.77.0.12	12	24	35	11.3	12	85	7	△
DSFN.7.16.24.80.0.16	16	24	35	15.3	16	85	7	△
DSFN.9.16.24.80.0.16	16	24	35	15.3	16	85	9	△
								P -
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								K -
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								S -
								H -

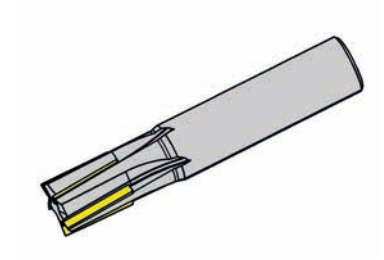
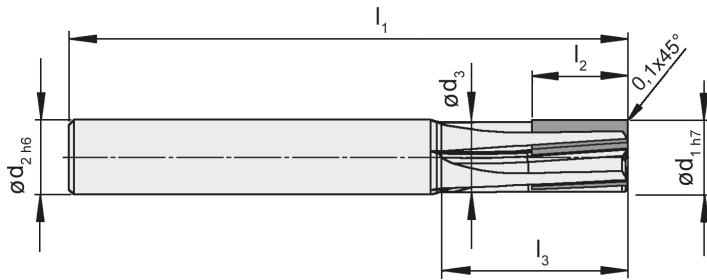
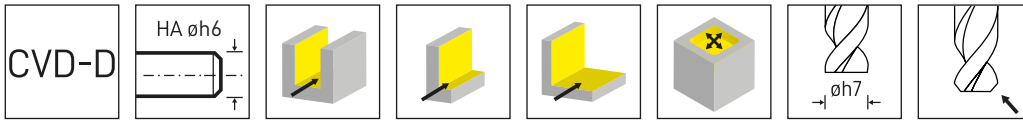


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d ₁	l ₂	l ₃	d ₃	d ₂	l ₁	Z	HD05
DSFU.5.08.10.54.4.08	8	10	20	7.5	8	60	5	▲
DSFU.5.08.20.64.3.08	8	20	30	7.5	8	70	5	△
DSFU.5.10.12.60.4.10	10	12	20	9.3	10	65	5	△
DSFU.7.12.24.77.3.12	12	24	35	11.3	12	85	7	△
DSFU.9.16.24.80.4.16	16	24	35	15.3	16	85	9	△
								P -
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								K -
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								S -
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硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d ₁	l ₂	l ₃	d ₃	d ₂	l ₁	Z	HD05
DSFD.5.08.20.64.3.08	8	20	30	7.5	8	70	5	△
DSFD.5.10.12.60.4.10	10	12	20	9.3	10	65	5	△
DSFD.7.12.24.77.3.12	12	24	35	11.3	12	85	7	△
DSFD.7.16.24.80.4.16	16	24	35	15.3	16	85	7	△
DSFD.9.16.24.80.4.16	16	24	35	15.3	16	85	9	△
								P -
								M -
								K -
								N ●
								S -
								H -

方肩铣

Shoulder Milling

材料 Material	v_c (m/min)	$a_p \times \varnothing$ (mm)	$a_e \times \varnothing$ (mm)	进给 / Feed rate f_z (mm)									进给方向 Feed rate direction	推荐冷却 recommended cooling
				$\varnothing 2$	$\varnothing 3$	$\varnothing 4$	$\varnothing 6$	$\varnothing 8$	$\varnothing 10$	$\varnothing 12$	$\varnothing 16$	$\varnothing 20$		
AlSi (<6%)	3000	0.65	0.40	0.02	0.02	0.03	0.05	0.10	0.10	0.12	0.15	0.20	顺铣 Climbing	乳化液 MMS Emulsion MMS
AlSi (>6 - 12%)	1800	0.60	0.30	0.01	0.02	0.02	0.04	0.10	0.08	0.10	0.13	0.18	顺铣 Climbing	
AlSi (>12%)	800	0.50	0.25	0.01	0.01	0.02	0.03	0	0.06	0.08	0.10	0.15	顺铣 Climbing	
PMMA (Acryl)	1100	0.50	0.50	0.01	0.015	0.02	0.03	0.05	0.07	0.09	0.12	0.15	顺铣 Climbing	乳化液 Emulsion
PA66 - CF/GF 30	700	0.50	0.30	0.008	0.01	0.015	0.025	0.04	0.06	0.08	0.10	0.12	逆铣 Conventional	
PEEK - CF/GF30	700	0.50	0.25	0.007	0.008	0.01	0.02	0.03	0.05	0.07	0.08	0.10	逆铣 Conventional	
POM - CF/GF30	800	0.50	0.50	0.008	0.01	0.015	0.025	0.04	0.06	0.08	0.10	0.12	逆铣 Conventional	
PTFE - CF/GF30	700	0.50	0.30	0.01	0.015	0.02	0.03	0.05	0.07	0.09	0.12	0.15	逆铣 Conventional	
GFK	500	0.50	0.30	0.01	0.015	0.02	0.03	0.05	0.07	0.09	0.12	0.15	逆铣 Conventional	空气压力(干) 去除铁屑 dry / Air pressure to remove chips
CFK	250	0.40	0.25	0.008	0.01	0.015	0.025	0.04	0.06	0.08	0.10	0.12	逆铣 Conventional	
SFK/AFK (Armid)	300	0.45	0.30	0.01	0.015	0.02	0.03	0.05	0.07	0.09	0.12	0.14	逆铣 Conventional	
Zirkonium	150	0.50	0.40	0.01	0.02	0.02	0.04	0.10	0.08	0.10	0.13	0.18	顺铣 Climbing	

仿形铣

Copy Milling

材料 Material	v_c (m/min)	$a_p \times \varnothing$ (mm)	$a_e \times \varnothing$ (mm)	进给 / Feed rate f_z (mm)									进给方向 Feed rate direction	推荐冷却 recommended cooling
				$\varnothing 2$	$\varnothing 3$	$\varnothing 4$	$\varnothing 6$	$\varnothing 8$	$\varnothing 10$	$\varnothing 12$	$\varnothing 16$	$\varnothing 20$		
AlSi (<6%)	3000	0.25	0.15	0.02	0.02	0.03	0.05	0.10	0.10	0.12	0.10	0.20	顺铣 Climbing	乳化液 MMS Emulsion MMS
AlSi (>6 - 12%)	1800	0.20	0.10	0.001	0.002	0.002	0.004	0.10	0.08	0.10	0.13	0.18	顺铣 Climbing	
AlSi (>12%)	1100	0.15	0.10	0.01	0.01	0.02	0.03	0.10	0.06	0.08	0.10	0.15	顺铣 Climbing	
PMMA (Acryl)	1100	0.15	0.15	0.01	0.015	0.02	0.03	0.05	0.07	0.09	0.12	0.15	顺铣 Climbing	乳化液 Emulsion
PA66 - CF/GF 30	700	0.15	0.10	0.008	0.01	0.015	0.025	0.04	0.06	0.08	0.10	0.12	逆铣 Conventional	
PEEK - CF/GF30	700	0.15	0.10	0.007	0.008	0.01	0.02	0.03	0.05	0.07	0.08	0.10	逆铣 Conventional	
POM - CF/GF30	800	0.15	0.015	0.008	0.01	0.015	0.025	0.04	0.06	0.08	0.10	0.12	逆铣 Conventional	
PTFE - CF/GF30	700	0.15	0.10	0.001	0.015	0.02	0.03	0.05	0.07	0.09	0.12	0.15	逆铣 Conventional	
GFK	500	0.15	0.10	0.01	0.015	0.02	0.03	0.05	0.07	0.09	0.12	0.15	逆铣 Conventional	空气压力(干) 去除铁屑 dry / Air pressure to remove chips
CFK	250	0.15	0.10	0.008	0.01	0.015	0.025	0.04	0.06	0.08	0.10	0.12	逆铣 Conventional	
SFK/AFK (Armid)	300	0.15	0.10	0.01	0.015	0.02	0.03	0.05	0.07	0.09	0.12	0.14	逆铣 Conventional	
Zirkonium	300	0.15	0.15	0.01	0.02	0.02	0.04	0.10	0.08	0.10	0.13	0.18	顺铣 Climbing	

CVD - 铣削硬质合金
CVD - Milling of carbide

圆角立铣刀 Torus End Mill DSTM / DST

材料 Material		硬度HV Hardness	v _c	a _p mm	a _e	进给f _z (μm) Feedrate										进给方向 Feed rate direction	推荐冷却 recoended cooling	
WC%	Co%					d0.2-	d0.8	d1-	d2	d3	d4	d5	d6	d8	d10			d12
90	10	1825	25-180	0.1-1	2/3d1	0.5	2-8	2-10	2-10	2-12	2-12	2-12	5-17	5-25	5-25	5-25	5-25	-/ 气冷 no/air
90	10	1350	25-180	0.1-1	2/3d1	1-5	2-8	2-10	2-12	2-12	2-12	2-12	5-17	5-25	5-25	5-25	5-25	
88	12	1275	25-180	0.1-1	2/3d1	1-5	2-8	2-10	2-12	2-12	2-12	2-12	5-17	5-25	5-25	5-25	5-25	
85	15	1075	30-180	0.1-1	2/3d1	1-5	2-8	2-10	2-12	2-12	2-12	2-12	5-17	5-25	5-25	5-25	5-25	
80	20	1025	30-180	0.1-1	2/3d1	1-5	2-8	2-10	2-12	2-12	2-12	2-12	5-17	5-25	5-25	5-25	5-25	
15	25	88	45-180	0.1-1	2/3d1	1-5	2-8	2-10	2-12	2-12	2-12	2-12	5-17	5-25	5-25	5-25	5-25	
74	26	810	45-180	0.1-1	2/3d1	1-5	2-8	2-10	2-12	2-12	2-12	2-12	5-17	5-25	5-25	5-25	5-25	

圆角立铣刀 Ball Nose End Mill DSKM / DSK

材料 Material		硬度HV Hardness	v _c	a _p mm	a _e	进给f _z (μm) Feedrate										进给方向 Feed rate direction	推荐冷却 recoended cooling	
WC%	Co%					d0.2-	d0.8	d1-	d2	d3	d4	d5	d6	d8	d10			d12
90	10	1825	25-180	0.1-1	2/3d1	0.5	2-8	2-10	2-12	2-12	2-12	2-12	5-17	5-25	5-25	5-25	5-25	-/ 气冷 no/air
90	10	1350	25-180	0.1-1	2/3d1	1-5	2-8	2-10	2-12	2-12	2-12	2-12	5-17	5-25	5-25	5-25	5-25	
88	12	1275	25-180	0.1-1	2/3d1	1-5	2-8	2-10	2-12	2-12	2-12	2-12	5-17	5-25	5-25	5-25	5-25	
85	15	1075	30-180	0.1-1	2/3d1	1-5	2-8	2-10	2-12	2-12	2-12	2-12	5-17	5-25	5-25	5-25	5-25	
80	20	1025	30-180	0.1-1	2/3d1	1-5	2-8	2-10	2-12	2-12	2-12	2-12	5-17	5-25	5-25	5-25	5-25	
15	25	88	45-180	0.1-1	2/3d1	1-5	2-8	2-10	2-12	2-12	2-12	2-12	5-17	5-25	5-25	5-25	5-25	
74	26	810	45-180	0.1-1	2/3d1	1-5	2-8	2-10	2-12	2-12	2-12	2-12	5-17	5-25	5-25	5-25	5-25	

多用途立铣刀 Multiple End Mill DSTV

材料 Material		硬度HV Hardness	v _c	a _p mm	a _e	进给f _z (μm) Feedrate										进给方向 Feed rate direction	推荐冷却 recoended cooling	
WC%	Co%					d0.2-	d0.8	d1-	d2	d3	d4	d5	d6	d8	d10			d12
90	10	1825	25-180	0.1-1	2/3d1	1-4	2-4	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	-/ 气冷 no/air
90	10	1350	25-180	0.1-1	2/3d1	1-4	2-4	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	
88	12	1275	25-180	0.1-1	2/3d1	1-4	2-4	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	
85	15	1075	30-180	0.1-1	2/3d1	1-4	2-4	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	
80	20	1025	30-180	0.1-1	2/3d1	1-4	2-4	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	
15	25	88	45-180	0.1-1	2/3d1	1-4	2-4	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	
74	26	810	45-180	0.1-1	2/3d1	1-4	2-4	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	

钻孔刀具
Drilling Tool
DDHM

CVD-D

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铣削倒角刀
Chamfer Milling Cutter
DSFF.HM

CVD-D

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切削参数
Cutting data

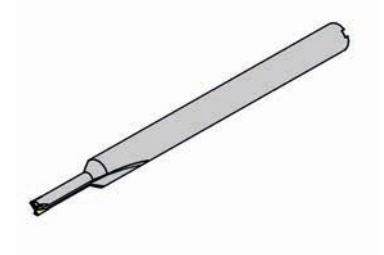
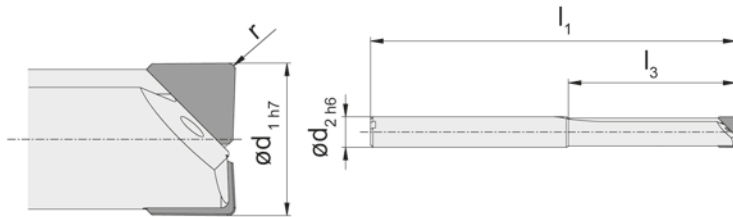
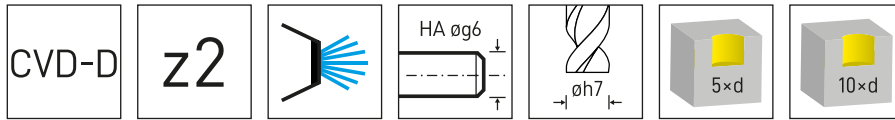
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DDHM / DSFF



加工硬质合金钻孔和沉孔刀具

Tools for drilling
and sinking carbide



图示=右手型

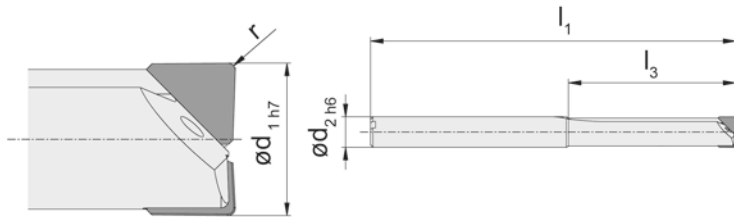
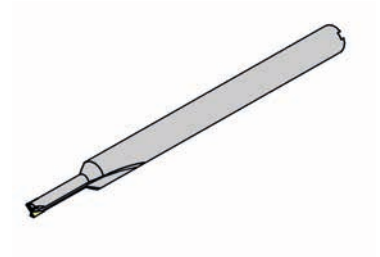
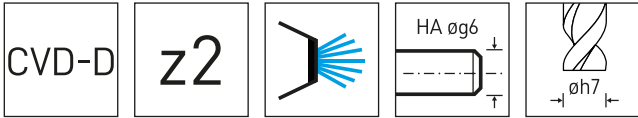
Picture = right hand cutting version

硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

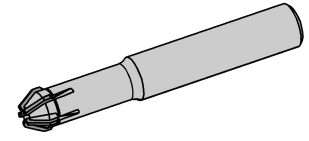
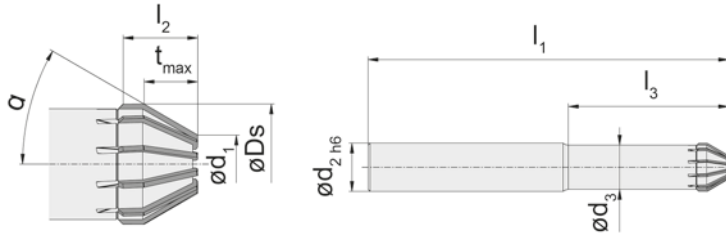
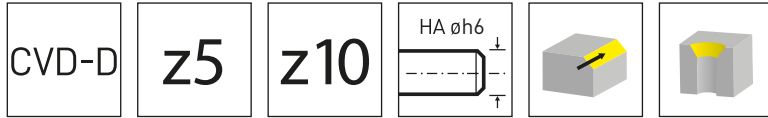
产品型号 Part number	d ₁	d ₂	l ₁	l ₃	r	Z	HD03	HD05
DDHM.020.011.04.02	2	4	63	11	0.2	2	▲	
DDHM.020.021.04.02	2	4	63	21	0.2	2	▲	
DDHM.030.017.04.02	3	4	63	17	0.2	2	▲	
DDHM.030.032.04.02	3	4	72	32	0.2	2	▲	
DDHM.040.022.06.03	4	6	72	22	0.3	2		▲
DDHM.040.042.06.03	4	6	92	42	0.3	2		▲
DDHM.050.028.06.03	5	6	72	28	0.3	2		▲
DDHM.050.053.06.03	5	6	102	53	0.3	2		▲
DDHM.060.033.06.03	6	6	72	33	0.3	2		▲
DDHM.060.063.06.03	6	6	102	63	0.3	2		▲
DDHM.070.040.08.05	7	8	92	40	0.5	2		▲
DDHM.080.044.08.05	8	8	92	44	0.5	2		▲
DDHM.080.084.08.05	8	8	130	84	0.5	2		▲
DDHM.100.055.10.05	10	10	103	55	0.5	2		▲
DDHM.100.105.10.05	10	10	152	105	0.5	2		▲
							P	-
							M	-
							K	-
							N	●
							S	-
							H	-



图示=右手型
Picture = right hand cutting version

硬质合金牌号
Carbide grades
▲ 库存
on stock
△ 4周
4 weeks

产品型号 Part number	d ₁	d ₂	l ₁	l ₃	r	Z		HD03	HD05
DDHM.M4.008.04.02	3.4	4	63	8	0.2	2		▲	
DDHM.M5.011.06.03	4.3	6	72	11	0.5	2			▲
DDHM.M6.013.06.03	5.2	6	72	13	0.3	2			▲
DDHM.M8.018.08.05	7	8	92	18	0.5	2			▲
DDHM.M10.022.10.05	8.7	10	92	22	0.5	2			▲
							P	-	-
							M	-	-
							K	-	-
							N	●	●
							S	-	-
							H	-	-



硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d_1	D_s	α	l_2	l_3	d_3	d_2	t_{max}	l_1	Z	HD05
DSFF.HM.05.03.06.60	3	6	30°	3.5	15	5	6	2.6	55	5	▲
DSFF.HM.05.03.06.90	3	6	45°	2.5	15	5	6	1.5	55	5	▲
DSFF.HM.10.06.09.30	6	9	15°	7.5	40	8	12	5.6	90	10	△
DSFF.HM.10.06.12.60	6	12	30°	7.4	40	11	12	5.2	90	10	▲
DSFF.HM.10.06.12.90	6	12	45°	4.5	40	11	12	3	90	10	▲
											P -
											M -
											K -
											N ●
											S -
											H -

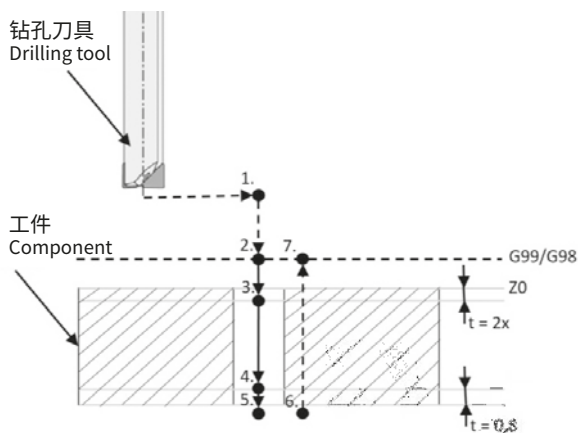
CVD - 钻孔硬质合金

CVD - Drilling of carbide

钻头刀具 Drilling tool	加工参数 Cutting data					推荐冷却 recommended cooling		预钻孔 Pilot bore		
	v_c (m/min)		f_z (mm/U)(mm/rev)			镗 Boring		$t = 2x r$		
\varnothing	min	max	起始 start	主进给率 main feed rate	降低 reduced	v_{c+}	f_{z+}	$l_3 = 5x\varnothing$	$l_3 = 10x\varnothing$	
2	35	40	0.001	0.0015	0.0005	40 %	40 %	吹气/air (6Bar) 油/oil (10Bar)	是/Yes	是/Yes
3	35	40	0.001	0.0015	0.0005	40%	40 %	吹气/air (6Bar) 油/oil (10Bar)	是/Yes	是/Yes
4	40	45	0.0015	0.002	0.001	40 %	40 %	吹气/air (6Bar) 油/oil (10Bar)	否/No	是/Yes
5	40	45	0.0015	0.002	0.001	40%	40 %	吹气/air (6Bar) 油/oil (10Bar)	否/No	是/Yes
6	40	45	0.0015	0.002	0.001	40 %	40 %	吹气/air (6Bar) 油/oil (10Bar)	否/No	是/Yes
7	40	50	0.0015	0.002	0.001	40%	40 %	吹气/air (6Bar) 油/oil (10Bar)	是/Yes	是/Yes
8	45	55	0.0015	0.002	0.001	40%	40 %	吹气/air (6Bar) 油/oil (10Bar)	是/Yes	是/Yes
9	45	55	0.0015	0.002	0.001	40 %	40 %	吹气/air (6Bar) 油/oil (10Bar)	是/Yes	是/Yes
10	45	55	0.0015	0.002	0.001	40%	40 %	吹气/air (6Bar) 油/oil (10Bar)	是/Yes	是/Yes

- 适用所有硬质合金材质钻孔, 预钻孔使用DST...HD(见超硬切削刀具样本)切削参数见钻孔.
- 推荐测试整个系统的同轴度, <5 μ m使用3倍进给率退刀, 否则退刀进给率 100 mm/min.
- 降低fz(见表) 大约 t=0.8mm 在破孔前.

- Valid for all carbide substrates, drilling into the solid, pilot hole drilling with end mill DST... HD, cutting data as for drilling
- Concentricity testing of the entire system is recommended, < 5 μ m extraction 3x main feed rate, but max retraction feed rate 100 mm/min
- Reduce fz (see table) approx. t = 0.8 mm before breakthrough



G98 循环起始平面/starting plane for drilling cycles
 G99 循环回退平面/retraction plane for drilling cycle
 G98+G99 可分别定义钻孔点/
 can be redefined for each individual drilling point

1. 起始/start point
- 1.-2. G0 定义平面位置/positioning on defined plane
- 2.-3. G01 fz = 0.0005/0.001 mm/U - 起始进给率 / start feed rate
- 3.-4. G01 fz = 0.002/0.004 mm/U - 主进给率 / main feed rate
- 4.-5. G01 fz = 0.002/0.004 mm/U - 退刀进给率 / reduced feed rate
6. 结束点 / end point
- 6.-7. 退回最大进给率 100 mm/min 和 G99 起始点 / retraction with max feed rate 100 mm/min to G99 start point

使用铰孔或深孔循环编程.
 勿使用传统钻孔循环(断屑或清理铁屑).
 Use a reaming cycle or deep hole drilling cycle when programming.
 Do not use a classic drilling cycle (chip breaking or chip removal).

钻头测量:
 在刀尖圆弧上方 0.01 mm 处设置测量点, 测量刀具的直径.
 如测量直径值大于名义直径超过 5 μ m, 则需要检查同轴度误差.
 Measuring the drills:
 Set the measuring point for the diameter approx. 0.01 mm beyond the radius in order to define the diameter of the tool.
 If the measured \varnothing value is 5 μ m larger than the nominal \varnothing , this indicates concentricity errors.

CVD - 倒角和面铣硬质合金

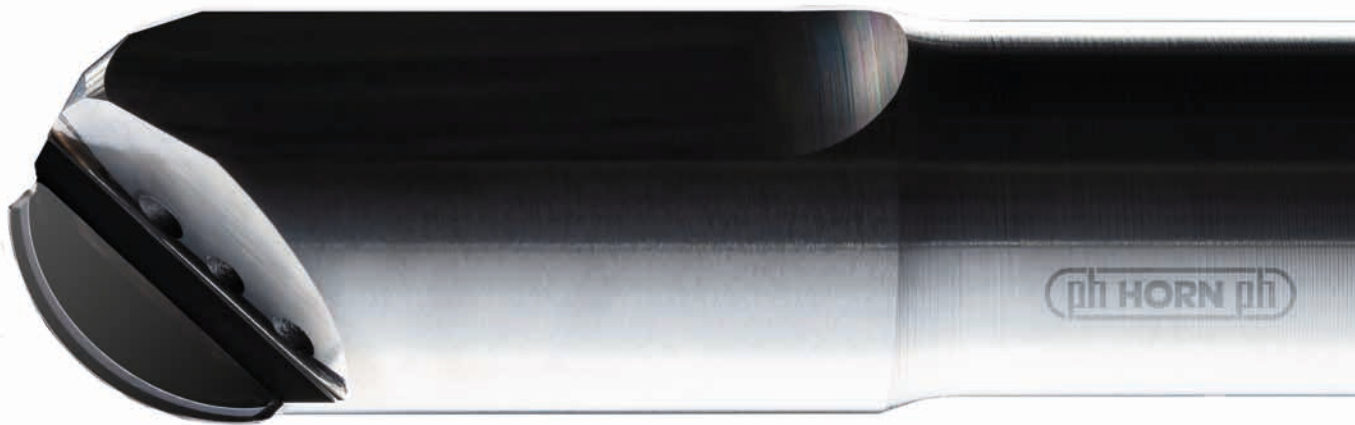
CVD - Chamfering and face milling of carbide

铣刀 Milling tool	硬度 Hardness HV30	切削参数 Cutting data					推荐冷却 recommended cooling
		v_c (m/min)		f_z (mm/U) (mm/rev)		a_p (mm/U) (mm/rev)	
		min	max	min	max	v_{c+}	
Ø							
3 - 6	1350 - 1825	50	120	0.003	0.01	0.1	吹气 / 油 air/oil
3 - 6	810 - 1275	50	220	0.003	0.01	0.1	吹气 / 油 air/oil

适合各种硬质合金材质。
顺铣,逆铣用于圆弧倒角。
刀具也适合面铣

Valid for all carbide substrates .
Down milling, up milling with smooth circular chamfer.
Tool also suitable for face milling.

MCD



系列/System	页/Page
高抛光车削	164
高抛光铣削	180

一流的刀具刃口

除了单晶金刚石所表现出的高硬度外,非晶结构是几何决定切削刃的超精密和高精度加工的基本要求。极其锋利和完美的切削刃允许 $< Rz\ 0.02\ \mu\text{m}$ 的表面质量。切削刃的质量完美地反映了所能达到的表面质量。

当谈到制造工具时,特别注意的是单晶金刚石的晶体系统的基体及方向相的硬度值。这是确保实现最大刀具寿命的唯一方法。对切削刃的几何设计进行了优化,以适应加工材料的要求。MCD工具适用于有色金属及其合金、贵金属(如金和铂)或透明塑料(如PMMA和PC)的精加工。

黑色金属和纤维增强塑料一般不适合用单晶金刚石加工。

大量标准范围的库存MCD刀具,用于车削和铣削。

Top-class cutting edges

In addition to the high level of hardness demonstrated by monocrystalline diamonds, the pure and homogeneous structure in particular is a basic requirement for ultra- and high-precision machining with geometrically determined cutting edges. The extremely sharp cutting edges allow for surface accuracies of $< Rz\ 0.02\ \mu\text{m}$. The quality of the cutting edge perfectly reflects the surface quality that can be achieved. When it comes to manufacturing tools, particular attention is paid to the crystal-system-based, direction-dependent hardness values of monocrystalline diamonds. This is the only way of ensuring that the maximum tool life is achieved. The geometric design of the cutting edge is optimised for the materials to be machined.

MCD tools are ideally suited to finishing processes for non-ferrous metals and their alloys, precious metals such as gold and platinum or transparent plastics such as PMMA and PC.

Ferrous metals and fibre-reinforced plastics are generally not suitable for machining with monocrystalline diamond.

An extensive standard range of MCD tools for turning and milling are available from stock.

槽型 Geometriy	金属 Metal		合成物 Syntetic	
	长屑材料 long chipping	短屑材料 short chipping	透明的 transparent	软质 soft
.A0	X			
.K0			X	
.M0		X		
.W0				X

切削刃需光学测量!

MCD-根据要求重磨

搭配的标准刀杆，请参见样本 **切槽和拉削**。

Cutting edges must be measured optically!

MCD - Regrind upon request.

For standard holder please see our catalog **GROOVING AND BROACHING**.

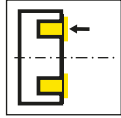
B

刀片
Insert
CCGT/CCGW/
DCGW/DCGT/
VCGW/VCGT/
108/114/S117/105

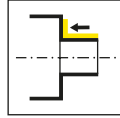


页/Page
166-169, 171, 173,
175, 177-178

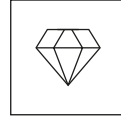
刀杆
Toolholder
HC114/H117/HC105



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170



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174

刀夹
Cassette
NH105



页/Page
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切削参数
Cutting data

页/Page
179

高抛光车削

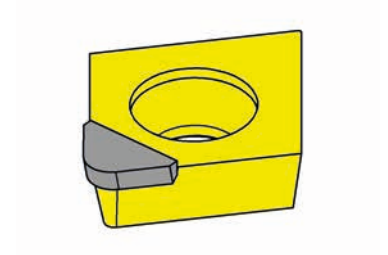
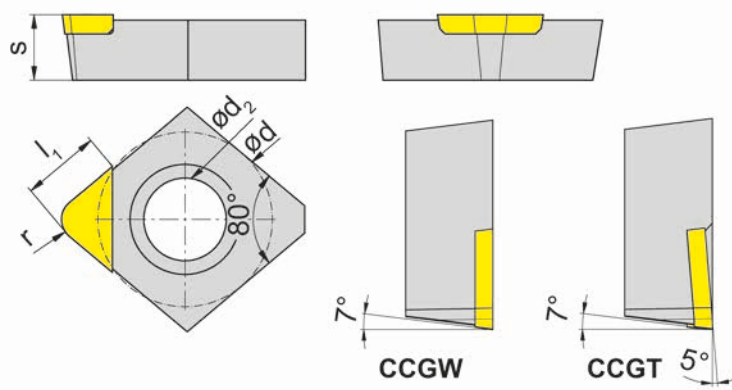
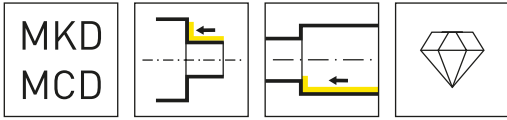
High polish turning



MCD刀具高抛光车削

High polish turning
with MCD

B



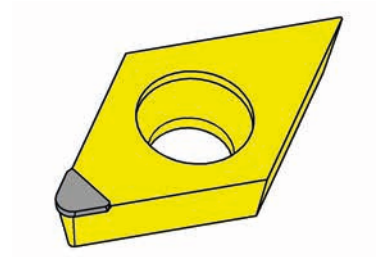
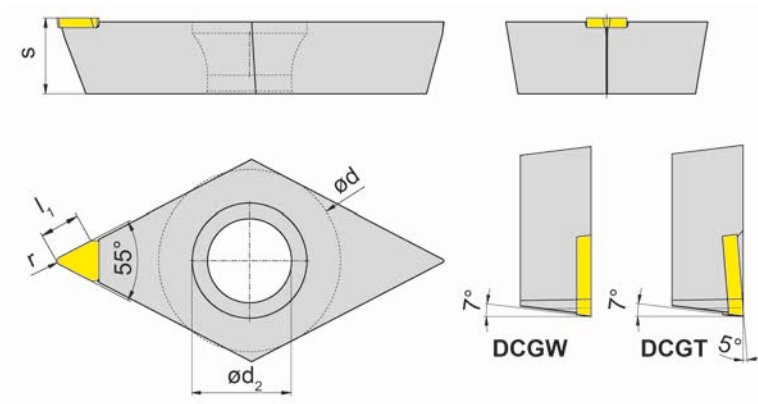
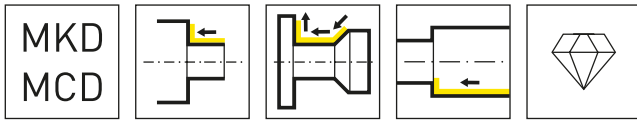
硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	MD10
CCGT060202.MD.W0	6.35	2.8	2.38	2	0.2	▲
CCGW060202.MD.A0	6.35	2.8	2.38	2	0.2	▲
CCGW060202.MD.K0	6.35	2.8	2.38	2	0.2	▲
CCGW060202.MD.M0	6.35	2.8	2.38	2	0.2	▲
CCGT060208.MD.W0	6.35	2.8	2.38	2	0.8	▲
CCGW060208.MD.A0	6.35	2.8	2.38	2	0.8	▲
CCGW060208.MD.K0	6.35	2.8	2.38	2	0.8	▲
CCGW060208.MD.M0	6.35	2.8	2.38	2	0.8	▲

P	-
M	-
K	-
N	●
S	-
H	-



硬质合金牌号
Carbide grades

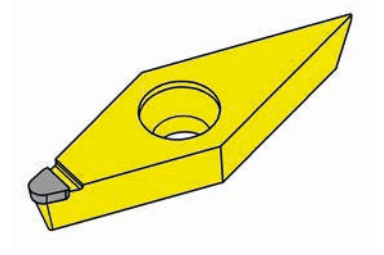
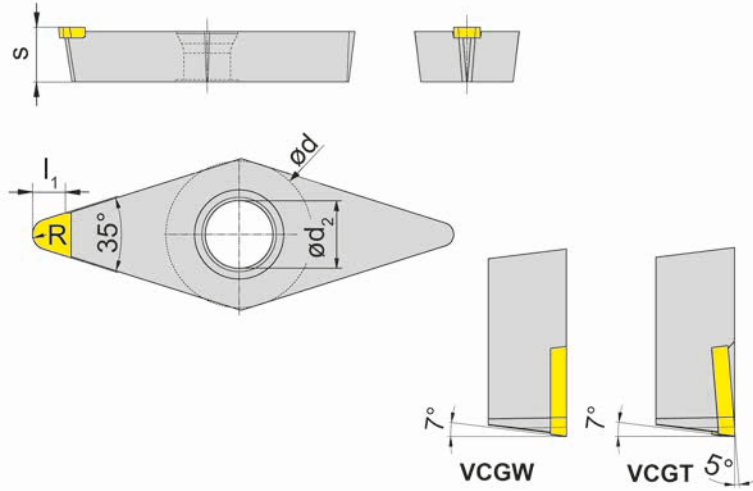
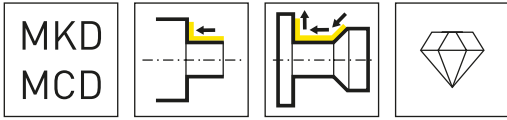
▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	MD10
DCGW11T302.MD.A0	9.525	4.4	3.97	2	0.2	▲
DCGW11T302.MD.K0	9.525	4.4	3.97	2	0.2	▲
DCGW11T302.MD.M0	9.525	4.4	3.97	2	0.2	▲
DCGT11T302.MD.W0	9.525	4.4	3.97	2	0.2	▲
DCGW11T308.MD.A0	9.525	4.4	3.97	2	0.8	▲
DCGW11T308.MD.K0	9.525	4.4	3.97	2	0.8	▲
DCGW11T308.MD.M0	9.525	4.4	3.97	2	0.8	▲
DCGT11T308.MD.W0	9.525	4.4	3.97	2	0.8	▲

P	-
M	-
K	-
N	●
S	-
H	-

B

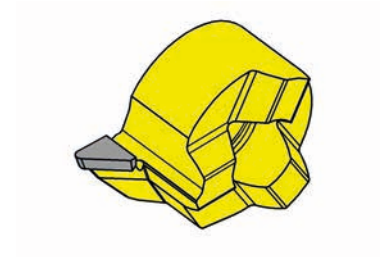
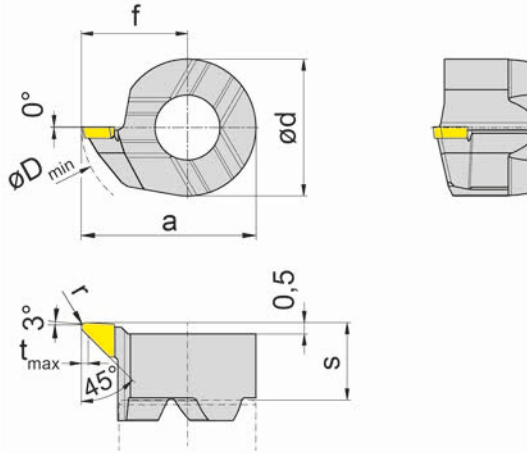
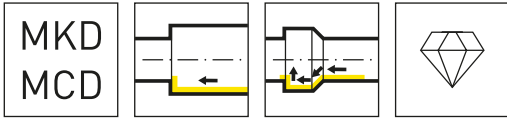


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	MD10
VCGW160410.MD.A0	9.525	4.4	4.76	2.5	1	▲
VCGW160410.MD.K0	9.525	4.4	4.76	2.5	1	▲
VCGW160410.MD.M0	9.525	4.4	4.76	2.5	1	▲
VCGT160410.MD.W0	9.525	4.4	4.76	2.5	1	▲
						P -
						M -
						K -
						N ●
						S -
						H -



R=右手型-如图
R = right hand version shown

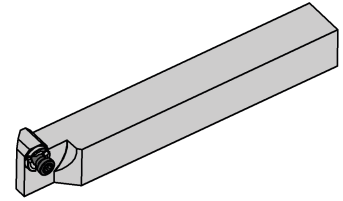
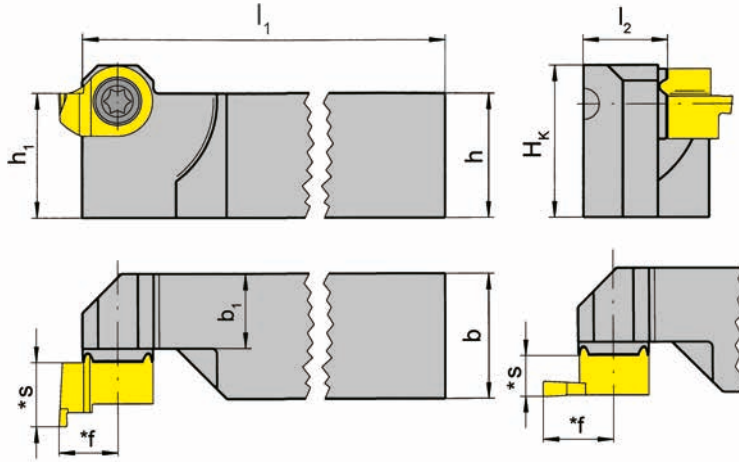
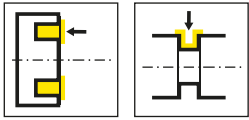
硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	s	f	a	r	d	t _{max}	D _{min}	HIS	MD10
R108.MDA0.02	3.4	4.65	7.65	0.2	6	0.3	7.8	306060R	▲
R108.MDK0.02	3.4	4.65	7.65	0.2	6	0.3	7.8	306060R	▲
R108.MDM0.02	3.4	4.65	7.65	0.2	6	0.3	7.8	306060R	▲
R108.MDA0.08	3.4	4.65	7.65	0.8	6	0.3	7.8	306060R	▲
R108.MDK0.08	3.4	4.65	7.65	0.8	6	0.3	7.8	306060R	▲
R108.MDM0.08	3.4	4.65	7.65	0.8	6	0.3	7.8	306060R	▲
									P -
									M -
									K -
									N ●
									S -
									H -

B



R=右手型-如图
R = right hand version shown

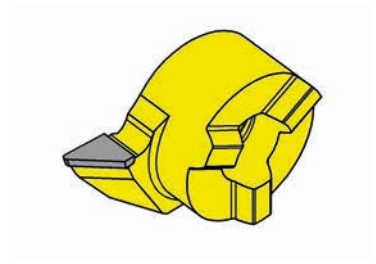
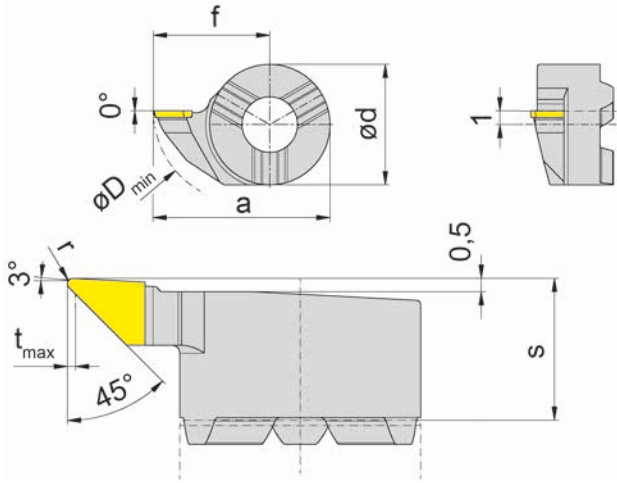
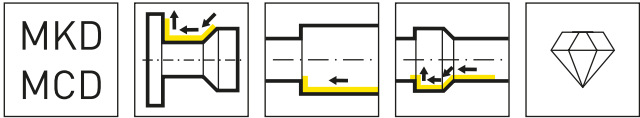
L=左手型
L = left hand version

产品型号 Part number	h	b	l ₁	l ₂	h ₁	b ₁	H _k	HWS
RHC114.1212.01	12	12	122	11.2	12	9.5	15.6	311090R • 311090L
RHC114.1616.01	16	16	122	11.2	16	9.5	19.6	311090R • 311090L
RHC114.2020.01	20	20	122	15.2	20	13.5	23.6	311090R • 311090L
RHC114.2525.01	25	25	147	20.2	25	18.5	28.6	311090R • 311090L
LHC114.1212.01	12	12	122	11.2	12	9.5	15.6	311090R • 311090L
LHC114.1616.01	16	16	122	11.2	16	9.5	19.6	311090R • 311090L
LHC114.2020.01	20	20	122	15.2	20	13.5	23.6	311090R • 311090L
LHC114.2525.01	25	25	147	20.2	25	18.5	28.6	311090R • 311090L

*见刀片
* see inserts

配件
Spare Parts

刀杆 Toolholder	锁紧螺钉 Clamping Screw	TORX PLUS®扳手 TORX PLUS® Wrench
R/LHC114...	4.12T15EP	T15PQ



硬质合金牌号
Carbide grades

▲ 库存
on stock

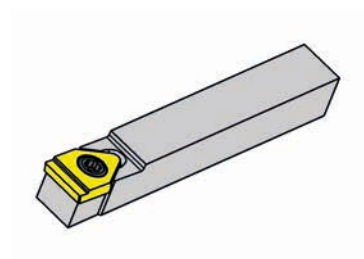
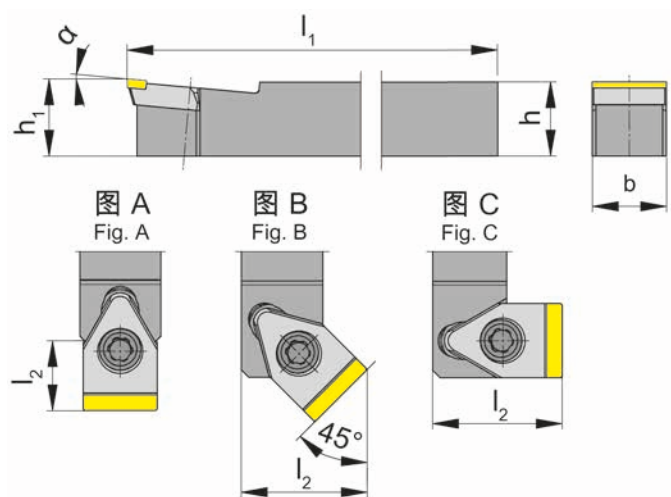
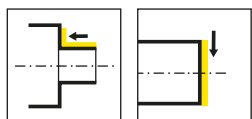
△ 4周
4 weeks

产品型号 Part number	s	f	a	r	d	t _{max}	D _{min}	HIS	MD10
R114.MDA0.02	5.3	8.7	13.5	0.2	9	0.3	13.8	311090R	▲
R114.MDK0.02	5.3	8.7	13.5	0.2	9	0.3	13.8	311090R	▲
R114.MDM0.02	5.3	8.7	13.5	0.2	9	0.3	13.8	311090R	▲
R114.MDA0.08	5.3	8.7	13.5	0.8	9	0.3	13.8	311090R	▲
R114.MDK0.08	5.3	8.7	13.5	0.8	9	0.3	13.8	311090R	▲
R114.MDM0.08	5.3	8.7	13.5	0.8	9	0.3	13.8	311090R	▲

使用 HC 刀杆时，也可用于外径加工。
Can also be used for external machining when using HC holders.

P	-
M	-
K	-
N	●
S	-
H	-

B



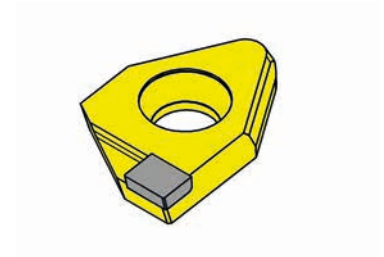
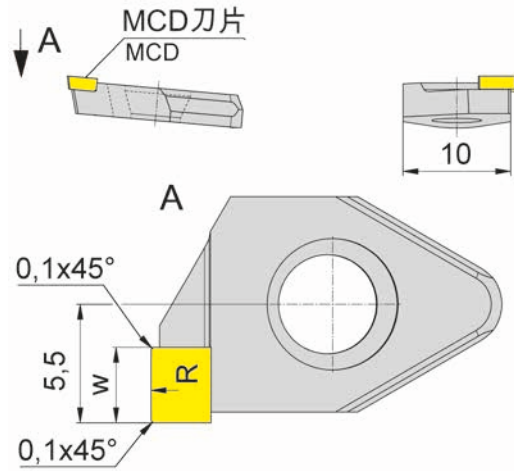
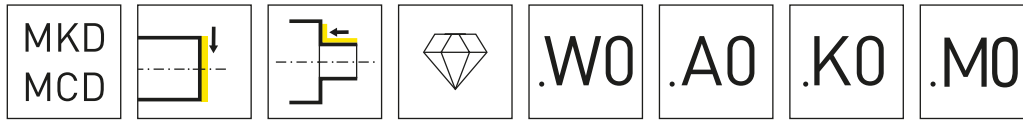
R=右手型-如图
R = right hand version shown

L=左手型
L = left hand version

产品型号 Part number	h	b	l ₁	h ₁	α	图 Figur	l ₂
RH117.MD10.45.5.10	10	11	100	10.4	5°	C	17
RH117.MD10.90.5.10	10	10	100	10.4	5°	d	17.5
LH117.MD10.45.5.10	10	11	100	10.4	5°	C	17
LH117.MD10.90.5.10	10	10	100	10.4	5°	d	17.5
H117.MD10.00.5.10	10	10	100	10.4	5°	A	-

配件
Spare Parts

刀杆 Toolholder	锁紧螺钉 Clamping Screw	TORX PLUS®扳手 TORX PLUS® Wrench
H117.MD10.00.5.10	030.400P.0227	T15PQ
R/LH117.MD10...	030.400P.0227	T15PQ



R=右手型-如图
R = right hand version shown

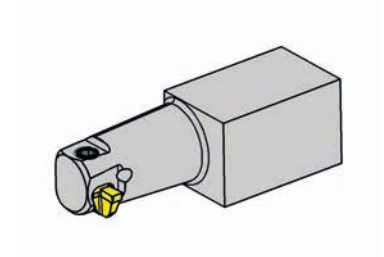
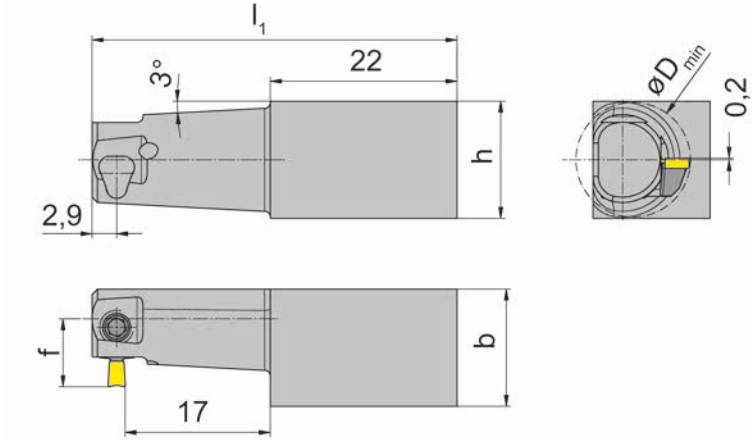
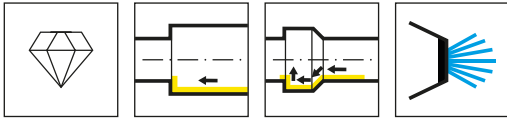
L=左手型
L = left hand version

▲ 库存
on stock

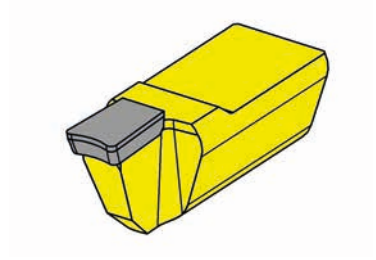
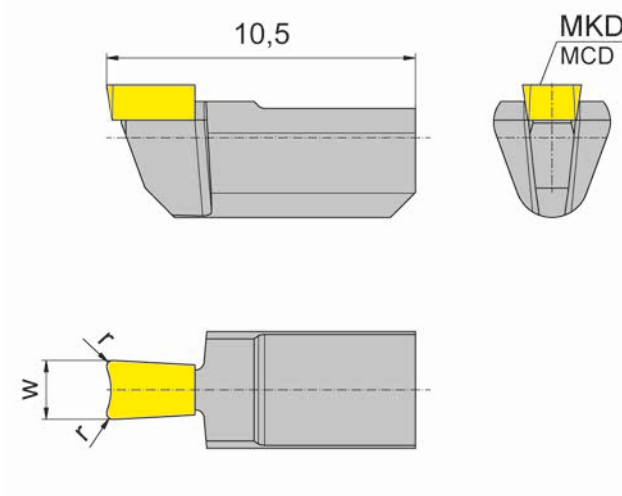
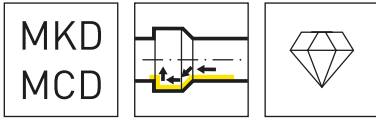
硬质合金牌号
Carbide grades
△ 4周
4 weeks

产品型号 Part number	R	w	HIS	MD10
RS117.100.00.W0.10	100	3.5	1171005	▲
RS117.300.00.A0.10	300	3.5	1171005	△
RS117.300.00.K0.10	300	3.5	1171005	△
RS117.300.00.M0.10	300	3.5	1171005	△
LS117.100.00.W0.10	100	3.5	1171005	△
LS117.300.00.A0.10	300	3.5	1171005	△
LS117.300.00.K0.10	300	3.5	1171005	△
LS117.300.00.M0.10	300	3.5	1171005	△
				P -
				M -
				K -
				N ●
				S -
				H -

B



产品型号 Part number	h	b	l_1	f	D_{min}
RHC105.MD1414.2.10	13.8	13.8	42	8	13.5



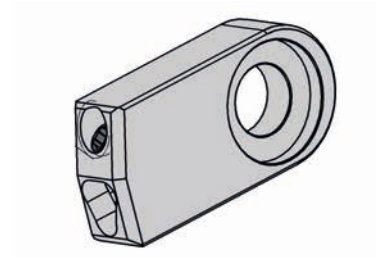
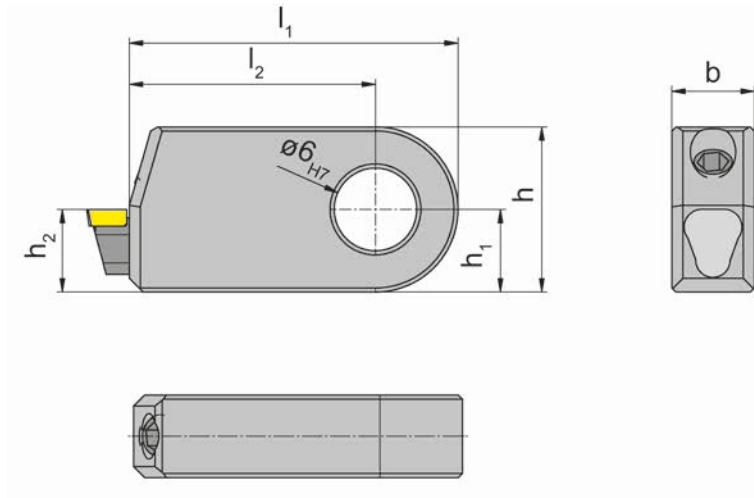
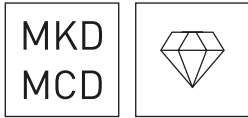
硬质合金牌号
Carbide grades

▲ 库存
on stock

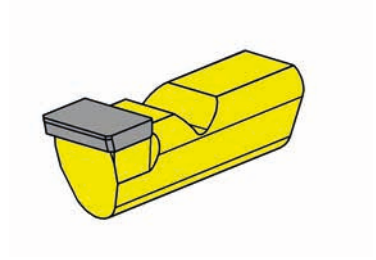
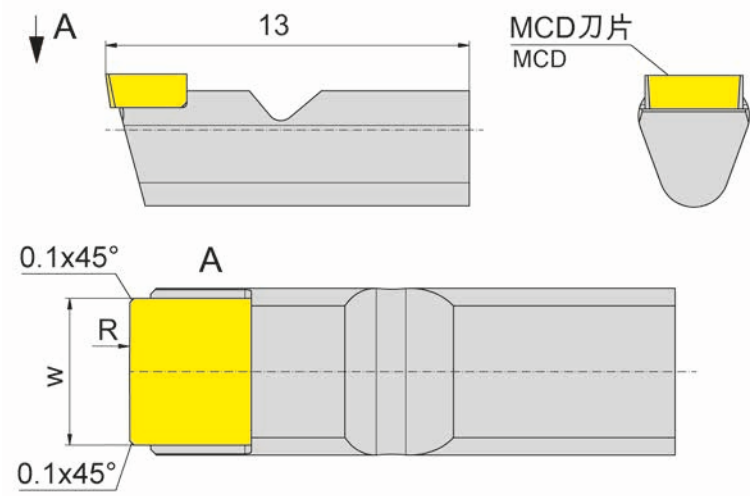
△ 4周
4 weeks

产品型号 Part number	r	w	HIS	MD10
105.2020.MD.10	0.2	2	105MD01	▲
				P -
				M -
				K -
				N ●
				S -
				H -

B



产品型号 Part number	b	h	h ₂	l ₂	h ₁	l ₁	HWS
NH105.MD06.3.01	6	12	6	17.9	6	23.9	105MD02
NH105.MD06.4.01	6	12	6	17.9	6	24.8	105MD02
NH105.MD06.5.01	6	12	6	19.4	6	23.9	105MD02



硬质合金牌号
Carbide grades

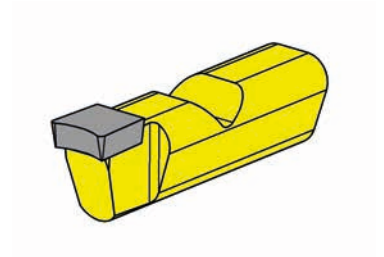
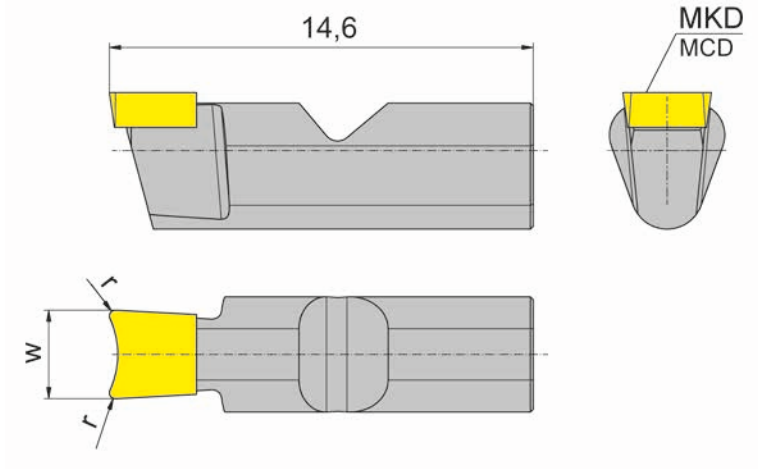
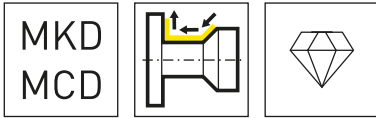
▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	R	w	HIS	MD10
105.300.AD.06	300	3.5	105MD02	▲
105.300.KD.06	300	3.5	105MD02	▲
105.300.MD.06	300	3.5	105MD02	▲
105.100.WD.06	100	3.5	105MD02	▲

P	-
M	-
K	-
N	●
S	-
H	-

B



硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	r	w	HIS	MD10
105.3030.MD.06	0.2	3.05	105MD02	▲
				P -
				M -
				K -
				N ●
				S -
				H -

抛光车削加工参数

Cutting data High Polish Turning



材料 Material	v_c		f_n / f_z (mm/U) (mm/rev)	a_p (mm)	槽型 Geometry	推荐冷却方式 Recommended Coolant
	min	max				
Ag	50	300	0.010 - 0.06	0.005 - 0.05	M	油 Oil
Al / Mg	100	2,500	0.005 - 0.15	0.005 - 0.05	A	乳化液 Emulsion
Au	50	300	0.005 - 0.06	0.005 - 0.05	M	油 Oil
Cu	50	500	0.005 - 0.08	0.005 - 0.04	A	油 Oil
CuNi	40	250	0.010 - 0.06	0.005 - 0.04	M / A	乳化液 Emulsion
CuSn	50	300	0.005 - 0.08	0.005 - 0.04	A	油 Oil
CuW	40	250	0.010 - 0.07	0.005 - 0.04	A	油 Oil
CuZn	50	450	0.005 - 0.10	0.005 - 0.05	M	油 Oil
CuZn 低铅/无铅 lead-free/low-lead	50	350	0.005 - 0.10	0.005 - 0.05	A	油 Oil
Ir / Pd / Pt	30	100	0.005 - 0.05	0.005 - 0.03	A	乳化液 Emulsion
Mo	35	120	0.010 - 0.05	0.005 - 0.03	A	乳化液 Emulsion
Ni	40	200	0.010 - 0.06	0.005 - 0.03	M / A	乳化液 Emulsion
Ti	40	200	0.010 - 0.06	0.005 - 0.03	K	乳化液 Emulsion
Zn	80	350	0.005 - 0.12	0.005 - 0.05	A	Emulsion Emulsion
PA	60	220	0.010 - 0.25	0.010 - 0.10	W	乳化液 Emulsion
PC	50	200	0.005 - 0.20	0.010 - 0.10	K	乳化液 / 吹气 Emulsion / Air
PE	80	350	0.010 - 0.25	0.010 - 0.10	W	乳化液 Emulsion
PEEK	60	250	0.010 - 0.25	0.010 - 0.10	W	乳化液 Emulsion
PMMA	80	300	0.005 - 0.20	0.010 - 0.10	K	乳化液 / 吹气 Emulsion / Air
POM	80	350	0.010 - 0.25	0.010 - 0.10	K	乳化液 Emulsion
PTFE	70	300	0.01 - 0.25	0.010 - 0.10	W	乳化液 Emulsion
PVC	60	250	0.01 - 0.25	0.010 - 0.10	W	乳化液 Emulsion

B

线轨铣刀
Stitch Milling Cutter
DSFF.MD/DST.MD

MKD
MCD

技术说明,附加设备
Technical Instructions/
Accessories

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小型球头立铣刀
Micro End Mill Ball Nose
DSK.MD

MKD
MCD

切削参数
Cutting data

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球头立铣刀
Ball Nose End Mill
DSK.MD

MKD
MCD

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端面和周边立铣刀
Face and Peripheral End
Mill
DST.MD

MKD
MCD

页/Page
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芯轴刀柄式铣刀
Arbour Mounted Cutter
DTM

MKD
MCD

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刀片
Insert
DTS/105

MKD
MCD

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平衡块
Balancing Insert
DTS

MKD
MCD

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盘铣刀柄
Shell Mill Holder
HSK/SK



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高抛光铣削

High polish milling



MCD刀具高抛光铣削

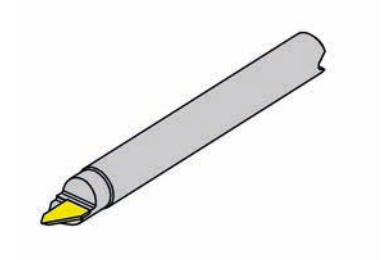
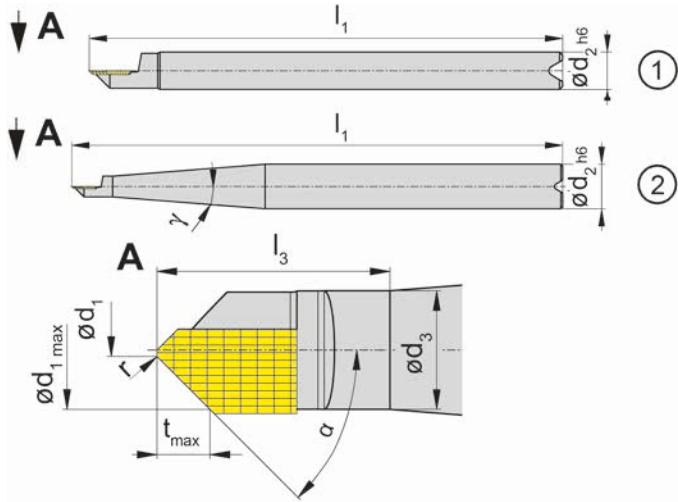
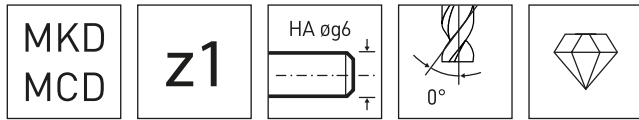
High polish milling
with MCD

线轨铣刀 Stitch Milling Cutter

DSFF.MD



B



硬质合金牌号
Carbide grades

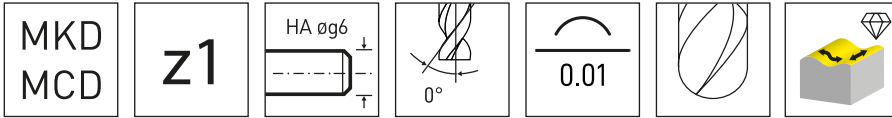
▲ 库存
on stock

△ 4周
4 weeks

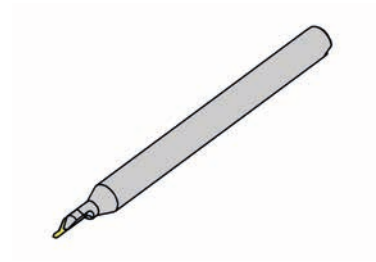
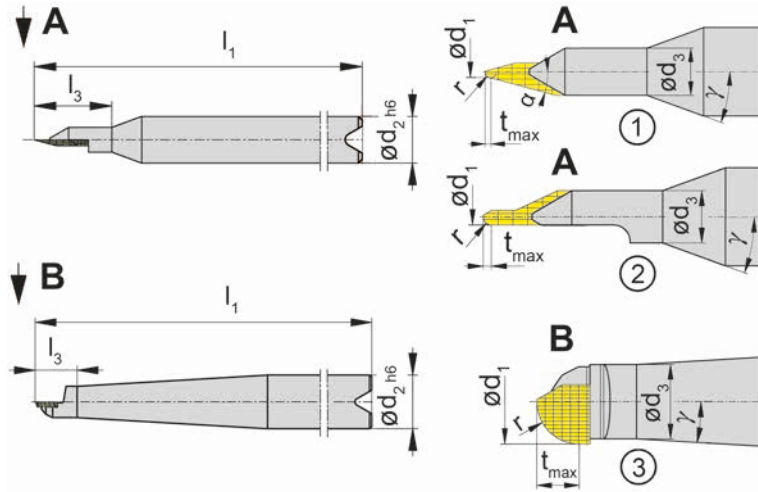
产品型号 Part number	d_1	D_s	r	α	l_3	d_3	d_2	t_{max}	l_1	γ	类型 Type	MD10
DSFF.MD.30.38.3	0.3	2	0.05	30°	5.5	2.8	3	1.5	38	-	1	△
DSFF.MD.30.66.6	0.3	2	0.05	30°	5.5	2.8	6	1.5	66	4°	2	△
DSFF.MD.45.38.3	0.3	2.8	0.05	45°	5.5	2.8	3	1.25	38	-	1	▲
DSFF.MD.60.38.3	0.3	2.8	0.05	60°	5.5	2.8	3	0.72	38	-	1	△
DSFF.MD.60.66.6	0.3	2.8	0.05	60°	5.5	2.8	6	0.72	66	4°	2	△
												P -
												M -
												K -
												N ●
												S -
												H -

小型球头立铣刀 Micro End Mill Ball Nose

DSK.MD



B



硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

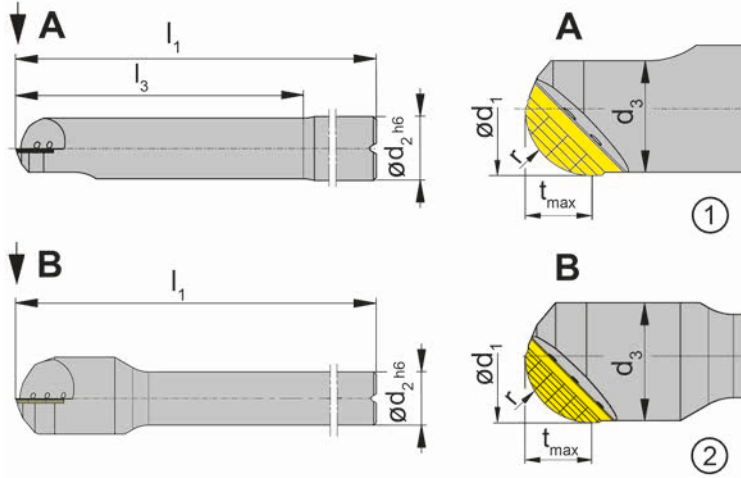
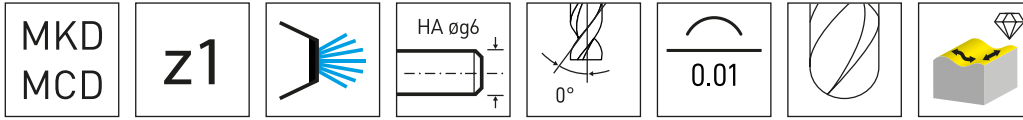
产品型号 Part number	d ₁	r	α	l ₃	d ₃	d ₂	t _{max}	l ₁	γ	类型 Type	MD10
DSK.MD.010.38.3	0.1	0.05	20°	5.5	1.6	3	0.05	38	20°	1	▲
DSK.MD.020.38.3	0.2	0.1	20°	5.5	1.6	3	0.1	38	20°	1	▲
DSK.MD.030.38.3	0.3	0.15	20°	5.5	1.6	3	0.15	38	20°	1	▲
DSK.MD.040.38.3	0.4	0.2	15°	5.5	1.6	3	0.2	38	20°	1	▲
DSK.MD.050.38.3	0.5	0.25	-	5.5	1.6	3	0.25	38	20°	2	▲
DSK.MD.080.38.3	0.8	0.4	-	5.5	1.6	3	0.4	38	20°	2	▲
DSK.MD.100.38.3	1	0.5	-	5.5	1.6	3	0.5	38	20°	2	▲
DSK.MD.150.38.3	1.5	0.75	-	5.5	1.6	3	0.75	38	20°	2	▲
DSK.MD.200.38.3	2	1	-	5.5	1.6	3	1	38	20°	3	▲
DSK.MD.200.66.6	2	1	-	5.5	1.6	6	1	66	6°	3	▲
DSK.MD.300.66.6	3	1.5	-	-	2.6	6	1.5	66	4.5°	3	▲
DSK.MD.400.66.6	4	2	-	-	3.5	6	2	66	3.5°	3	▲
DSK.MD.500.66.6	5	2.5	-	-	4.5	6	2.5	66	2°	3	▲
DSK.MD.600.66.6	6	3	-	-	4.5	6	3	66	2°	3	▲
										P -	
										M -	
										K -	
										N ●	
										S -	
										H -	

球头立铣刀 Ball Nose End Mill

DSK.MD



B



硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d_1	r	l_3	d_3	d_2	t_{max}	l_1	类型 Type	MD10
DSK.MD.800.80.8	8	4	35	7.5	8	4	80	1	▲
DSK.MD.1000.90.10	10	5	45	9.5	10	5	90	1	▲
DSK.MD.1200.90.10	12	6	-	11.5	10	6	90	2	▲
DSK.MD.1600.90.10	16	8	-	15.5	10	8	90	2	▲
									P -
									M -
									K -
									N ●
									S -
									H -

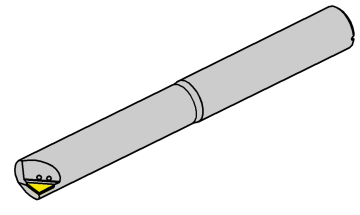
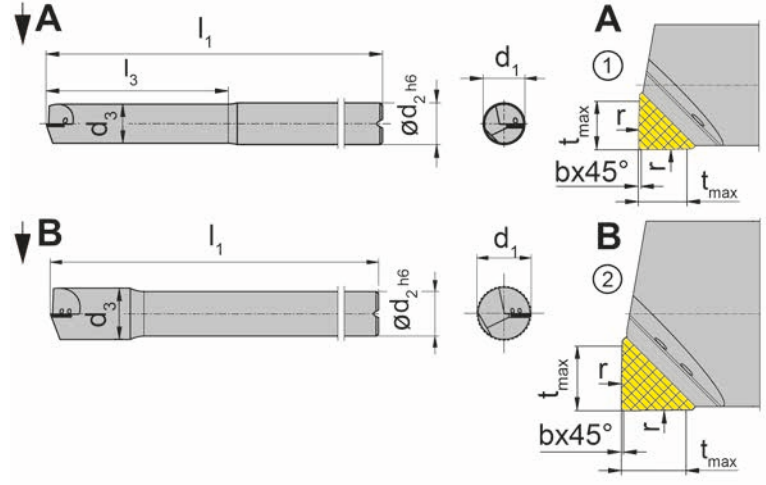
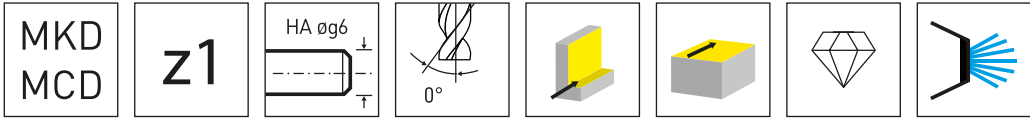
端面 and 周边立铣刀

Face and Peripheral End Mill

DST.MD



B



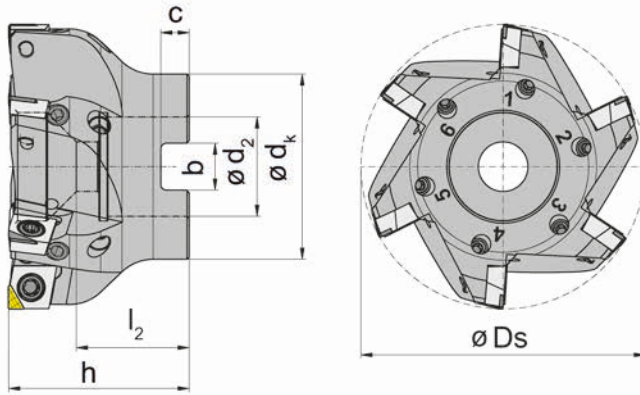
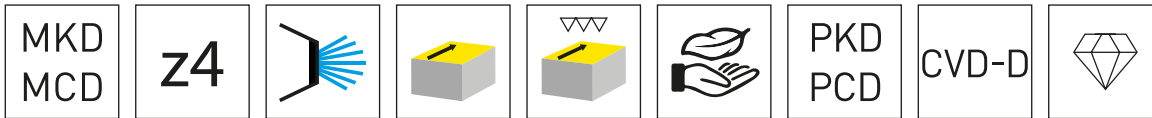
硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d_1	r	$b \times 45^\circ$	l_3	d_3	d_2	t_{max}	l_1	类型 Type	MD10
DST.MD.600.66.6	6	50	0.1	25	5.5	6	2	66	1	▲
DST.MD.800.80.8	8	50	0.15	35	7.5	8	3	80	1	▲
DST.MD.1000.90.10	10	100	0.15	45	9.5	10	4	90	1	▲
DST.MD.1200.90.10	12	100	0.15	-	11.5	10	4	90	2	▲
DST.MD.1600.90.10	16	100	0.15	-	15	10	4	90	2	▲
										P -
										M -
										K -
										N ●
										S -
										H -

B



图示=右手型
Picture = right hand cutting version

产品型号 Part number	Z	Ds	h	dk	d ₂	l ₂	b	C	n _{max}
DTM.CX09.040.A16.04.AL.F	4	40	40	32	16	31	8.4	5.6	26000
DTM.CX09.050.A22.05.AL.F	5	50	40	40	22	26	10.4	6.3	24000
DTM.CX09.063.A22.06.AL.F	6	63	40	40	22	26	10.4	6.3	20000
DTM.CX09.080.A27.06.AL.F	6	80	50	48	27	33	12.4	7	18000
DTM.CX09.100.A32.07.AL.F	7	100	63	58	32	48	14.4	8	15000
DTM.CX09.125.A40.08.AL.F	8	125	63	70	40	46	16.4	9	12000

采用 μ 级精确计划设置
with μ-precise plan setting

推荐:

使用刀片 DTS.CX09.11.H5 PD75 (A 章) 作为预切削。注意平衡质量。
如果切削刃数量不均匀, 则占用所有刀片座。

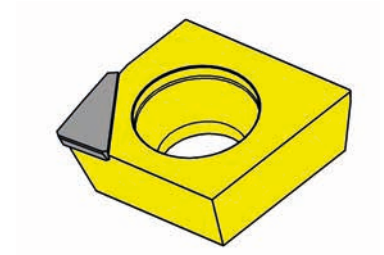
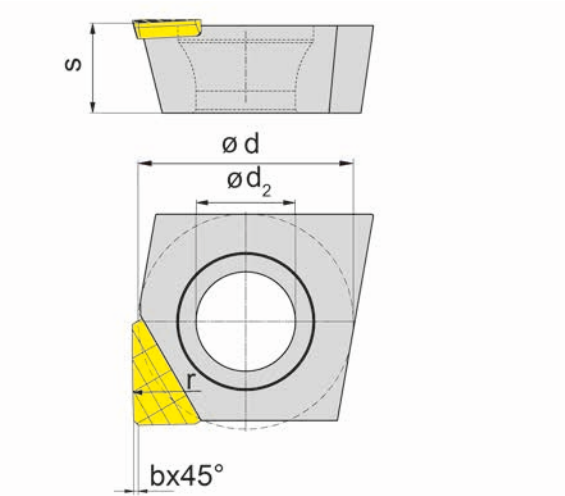
Recommendation:

Use insert DTS.CX09.11.H5 PD75 (chapter A) as a pre-cutter. Pay attention to balance quality.
If the number of cutting edges is uneven, occupy all insert seats.

配件

Spare Parts

芯轴刀柄式铣刀 Arbour Mounted Cutter	锁紧螺钉 Clamping Screw	TORX PLUS®扳手 TORX PLUS® Wrench
DTM.CX09....A16/A22	030.350P.0853	T15PQ
DTM.CX09...	030.3509.T15P	T15PQ



硬质合金牌号
Carbide grades

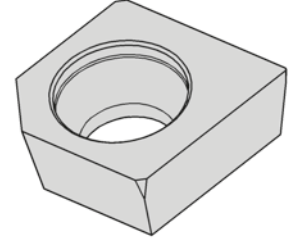
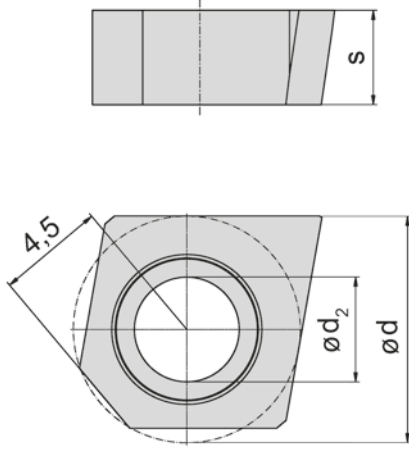
▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	r	b x 45°	MD10
DTS.CX09.MD.M0	9.525	4.4	3.97	100	0.2	▲
DTS.CX09.MD.W0	9.525	4.4	3.97	50	0.2	▲
DTS.CX09.MD.X0	9.525	4.4	3.97	100	0.2	▲
						P -
						M -
						K -
						N ●
						S -
						H -

B

MKD
MCD

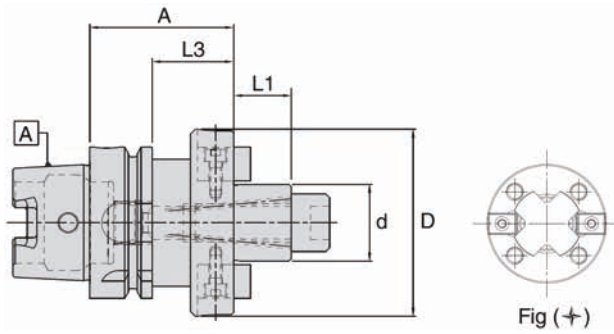
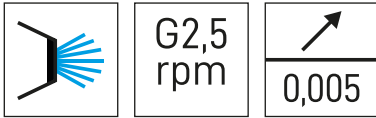


硬质合金牌号
Carbide grades

▲ 库存
on stock

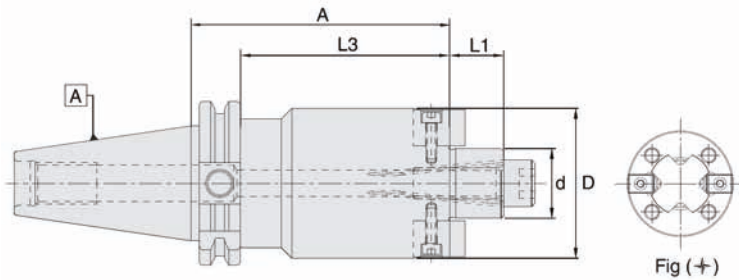
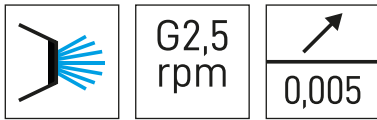
△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	MG12
DTS.CX09.AT.HM	9.525	4.4	3.97	▲
				P o
				M -
				K -
				N -
				S -
				H -



产品型号 Part number	描述 Designation	d	D	A	L ₁	L ₂	冷却液供应 Coolant supply	N/W kg
5103448	WSMH/16-50/HSK-A50	16	38	50	17	24	FORM AD	0.75
5103450	WSMH/22-60/HSK-A50	22	48	60	19	34	FORM AD	1.05
5103452	WSMH/27-60/HSK-A50	27	48	60	21	34	FORM AD	1.30
5103454	WSMH/32-60/HSK-A50	32	78	60	24	34	FORM AD	1.60
5103457	WSMH/16-100/HSK-A50	16	38	100	17	74	FORM AD	1.25
5103459	WSMH/22-100/HSK-A50	22	48	100	19	74	FORM AD	1.60
5103461	WSMH/27-100/HSK-A50	27	58	100	21	74	FORM AD	2.00
5103462	WSMH/32-100/HSK-A50	32	75	100	24	74	FORM AD	2.40
4601763	WSMH/16-50/HSK-A63	16	38	50	17	24	FORM AD	1.05
4601765	WSMH/22-50/HSK-A63	22	48	50	19	24	FORM AD	1.20
4601767	WSMH/27-60/HSK-A63	27	58	60	21	34	FORM AD	1.60
4601769	WSMH/32-60/HSK-A63	32	78	60	24	34	FORM AD	1.90
4601771	WSMH/40-60/HSK-A63 x*	40	88	60	27	34	FORM AD	2.40
4601764	WSMH/16-100/HSK-A63	16	38	100	17	74	FORM AD	1.50
4601766	WSMH/22-100/HSK-A63	22	48	100	19	74	FORM AD	1.90
4601768	WSMH/27-100/HSK-A63	27	58	100	21	74	FORM AD	2.40
4601770	WSMH/32-100/HSK-A63	32	78	100	24	74	FORM AD	3.30
4601772	WSMH/40-100/HSK-A63 x*	40	88	100	27	74	FORM AD	4.00
5056120	WSMH/16-50/HSK-A100	16	38	50	17	21	FORM AD	2.35
4601663	WSMH/22-50/HSK-A100	22	48	50	19	21	FORM AD	2.50
4601664	WSMH/27-50/HSK-A100	27	58	50	21	21	FORM AD	2.80
4601665	WSMH/32-50/HSK-A100	32	78	50	24	21	FORM AD	3.10
4601666	WSMH/40-60/HSK-A100 x*	40	88	60	27	31	FORM AD	4.00
5056122	WSMH/60-70/HSK-A100 x	60	129	70	40	41	FORM AD	6.15

B



产品型号 Part number	描述 Designation	d	D	A	L ₁	L ₂	冷却液供应 Coolant supply	N/W kg
4600822	WSMH/16-35/SK40	16	38	35	17	15.9	FORM A/D B	1.10
4600823	WSMH/22-35/SK40	22	48	35	19	15.9	FORM A/D B	1.25
4600824	WSMH/27-40/SK40	27	58	40	21	20.9	FORM A/D B	1.45
4600825	WSMH/32-50/SK40	32	78	50	24	30.9	FORM A/D B	2.00
4600826	WSMH/40-50/SK40 x*	40	88	50	27	30.9	FORM A/D B	2.30
5055095	WSMH/22-100/SK40	16	38	100	17	80.9	FORM A/D B	1.70
5055102	WSMH/22-100/SK40	22	48	100	19	80.9	FORM A/D B	2.20
5055104	WSMH/27-100/SK40	27	58	100	21	80.9	FORM A/D B	2.70
5055105	WSMH/32-100/SK40	32	78	100	24	80.9	FORM A/D B	3.80
5055106	WSMH/40-100/SK40 x*	40	88	100	27	80.9	FORM A/D B	4.50
5055107	WSMH/16-160/SK40	16	38	160	17	140.9	FORM A/D B	2.20
5055108	WSMH/22-160/SK40	22	48	160	19	140.9	FORM A/D B	3.00
5055109	WSMH/27-160/SK40	27	58	160	21	140.9	FORM A/D B	3.85
5055110	WSMH/32-160/SK40	32	78	160	24	140.9	FORM A/D B	5.90
5055111	WSMH/40-160/SK40 x*	40	88	160	27	140.9	FORM A/D B	7.30
5055112	WSMH/16-44/SK50	16	38	44	17	24.9	FORM A/D B	2.95
4601356	WSMH/22-44/SK50	22	48	44	19	24.9	FORM A/D B	3.10
4601357	WSMH/27-44/SK50	27	58	44	21	24.9	FORM A/D B	3.35
4601358	WSMH/32-40/SK50	32	78	40	24	20.9	FORM A/D B	3.65
4601359	WSMH/40-50/SK50 x*	40	88	50	27	30.9	FORM A/D B	5.70
4601360	WSMH/60-70/SK50 x	60	129	70	40	50.9	FORM A/D B	7.80
5055123	WSMH/16-100/SK50	16	38	100	17	80.9	FORM A/D B	3.50
5055125	WSMH/22-100/SK50	22	48	100	19	80.9	FORM A/D B	3.85
5055126	WSMH/27-100/SK50	27	58	100	21	80.9	FORM A/D B	4.90
5055127	WSMH/32-100/SK50	32	78	100	24	80.9	FORM A/D B	5.80
5055128	WSMH/40-100/SK50 x*	40	88	100	27	80.9	FORM A/D B	6.70
5055130	WSMH/16-160/SK50	16	38	160	17	140.9	FORM A/D B	3.95
5055131	WSMH/22-160/SK50	22	48	160	19	140.9	FORM A/D B	4.70
5055132	WSMH/27-160/SK50	27	58	160	21	140.9	FORM A/D B	5.85
5055133	WSMH/32-160/SK50	32	78	160	24	140.9	FORM A/D B	8.00
5055134	WSMH/40-160/SK50 x*	40	88	160	27	140.9	FORM A/D B	9.50

技术说明:

- 所有刀柄的标准孔径 (10 毫米)
- 所有刀柄都标配表面冷却孔 (带 "AD/B" 形式的刀柄)
- $d = \varnothing 40$, $d = \varnothing 60$ s 附加 4 个螺纹孔, 符合 DIN 2079 标准
- 交货包括: 传动块、紧固螺钉和夹紧螺钉 (DIN 912)
- 请单独订购夹紧螺钉 (DIN 6367)
- 交货包括: 夹紧螺钉 (均符合 DIN 912 和 DIN 6367 标准)

Technical Instructions:

- Bore (10 mm) standard for all holders
- Coolant hole on the face (holder with Form „AD/B”) as standard for all holders
- $d = \varnothing 40$, $d = \varnothing 60$ with additional 4 threaded holes to DIN 2079
- Delivery includes: Drive blocks, tightening screw and clamping screw (DIN 912)
- Please order clamping screw (DIN 6367) separately
- Delivery includes: Clamping screw (both DIN 912 & DIN 6367)

用于 HSK 卡盘的冷却管

Coolant tube for HSK chuck

产品型号 Part number	描述 Designation	尺寸规格 Size
5025376	UE4/HSK63	HSK63
5028428	UE4/HSK100	HSK100

冷却管安装扳手

Installation wrench for coolant pipe

产品型号 Part number	尺寸规格 Size
6738421	HSK63
6738303	HSK100

扳手 DIN 6368

Wrench to DIN 6368

产品型号 Part number	描述 Designation
5056946	DIN6368-16
6942963	DIN6368-22
6942916	DIN6368-27
6942917	DIN6368-32
6950689	DIN6368-40

扳手

Wrench

产品型号 Part number	描述 Designation
6737650	SW6
6737651	SW8
6737652	SW10
6737654	SW14
6737655	SW17

销螺纹 DIN 913

Thread Pinto DIN 913

产品型号 Part number	描述 Designation	尺寸规格 Size
6914425	DIN913-M3x3	16
6951794	DIN913-M3x5	22,27,32
5056913	DIN913-M3x7	40

锁紧螺钉 DIN 6367 Tightening Screw to DIN 6367

产品型号 Part number	描述 Designation	尺寸规格 Size
6934073	DIN6367-M8	16
6940383	DIN6367-M10	22
6941541	DIN6367-M12	27
6942757	DIN6367-M16	32
6943111	DIN6367-M20	40

滑键 DIN 6885 Feather Key to DIN 6885

产品型号 Part number	描述 Designation	尺寸规格 Size
5056905	DIN6885-C4x4x20	16
5056909	DIN6885-C6x6x25	22
5056610	DIN6885-C7x7x25	27
5056911	DIN6885-C8x7x28	32
5056912	DIN6885-C10x8x32	40

滑键 Feather Key

产品型号 Part number	描述 Designation	尺寸规格 Size
5057289	Dia16-8x8x14	16
5057293	Dia22-10x10x17	22
5057293	Dia22-10x10x17	27
5057293	Dia22-10x10x17	32
5057294	Dia22-10x10x17	40

内六角螺钉 DIN 912 Hexagon Socket Screw to DIN 912

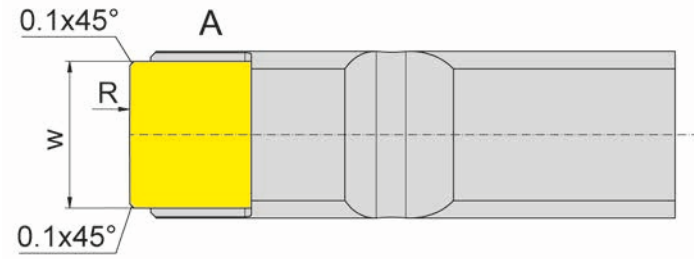
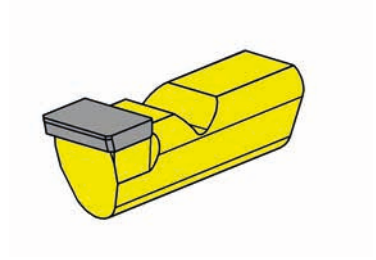
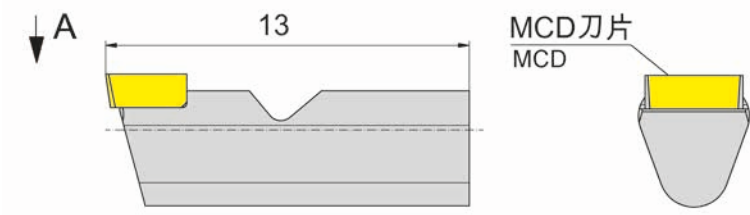
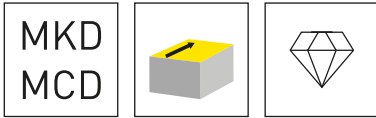
产品型号 Part number	描述 Designation	尺寸规格 Size
6914489	DIN912-M3x8	16
6918335	DIN912-M4x8	22
6941122	DIN912-M5x13	27
5056916	DIN912-M5x13	32
6900224	DIN912-M6x16	40

DIN 69872 A+B 紧固螺栓，带通孔，不带 O 形圈 Tightening Bolt DIN 69872 A+B, with through hole, without o-ring

产品型号 Part number	描述 Designation	øD1	øD2	øD3	L	L1	ø	尺寸规格 Size
6733614	BN 164-SK30	13	9	13	44	24	15°	M12
6733615	BN 164-SK40	19	14	17	54	26	15°	M16
6733616	BN 164-SK50	28	21	25	74	34	15°	M24

DIN 69872 A+B 拉钉，无通孔，带 O 形圈 Pull Stud DIN 69872 A+B, without through hole, with o-ring

产品型号 Part number	描述 Designation	øD1	øD2	øD3	L	L1	ø	尺寸规格 Size
6733614	BN 164-SK30	13	9	13	44	24	15°	M12
6733615	BN 164-SK40	19	14	17	54	26	15°	M16



硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	r	w	HIS	MD10
105.300.AF.06	300	3.5	105MD02	▲
105.300.KF.06	300	3.5	105MD02	▲
105.300.MF.06	300	3.5	105MD02	▲
105.100.WF.06	100	3.5	105MD02	▲

注意:
可用刀杆见第 176 页。
Note:
Usable toolholder can be found on page 176.

P	-
M	-
K	-
N	●
S	-
H	-

B

材料 Material	v_c		f_n / f_z (mm/U) (mm/rev)	a_p (mm)	推荐冷却方式 Recommended Coolant
	min	max			
Ag	50	300	0.010 - 0.06	0.005 - 0.05	油 Oil
Al / Mg	100	2,500	0.005 - 0.15	0.005 - 0.05	乳化液 Emulsion
Au	50	300	0.005 - 0.06	0.005 - 0.05	油 Oil
Cu	50	500	0.005 - 0.08	0.005 - 0.04	油 Oil
CuNi	40	250	0.010 - 0.06	0.005 - 0.04	乳化液 Emulsion
CuSn	50	300	0.005 - 0.08	0.005 - 0.04	油 Oil
CuW	40	250	0.010 - 0.07	0.005 - 0.04	油 Oil
CuZn	50	450	0.005 - 0.10	0.005 - 0.05	油 Oil
CuZn 低铅/无铅 lead-free/low-lead	50	350	0.005 - 0.10	0.005 - 0.05	油 Oil
Ir / Pd / Pt	30	100	0.005 - 0.05	0.005 - 0.03	乳化液 Emulsion
Mo	35	120	0.010 - 0.05	0.005 - 0.03	乳化液 Emulsion
Ni	40	200	0.010 - 0.06	0.005 - 0.03	乳化液 Emulsion
Ti	40	200	0.010 - 0.06	0.005 - 0.03	乳化液 Emulsion
Zn	80	350	0.005 - 0.12	0.005 - 0.05	乳化液 Emulsion
PA	60	220	0.010 - 0.25	0.010 - 0.10	乳化液 Emulsion
PC	50	200	0.005 - 0.20	0.010 - 0.10	乳化液 / 吹气 Emulsion / Air
PE	80	350	0.010 - 0.25	0.010 - 0.10	乳化液 Emulsion
PEEK	60	250	0.010 - 0.25	0.010 - 0.10	乳化液 Emulsion
PMMA	80	300	0.005 - 0.20	0.010 - 0.10	乳化液 / 吹气 Emulsion / Air
POM	80	350	0.010 - 0.25	0.010 - 0.10	乳化液 Emulsion
PTFE	70	300	0.01 - 0.25	0.010 - 0.10	乳化液 Emulsion
PVC	60	250	0.01 - 0.25	0.010 - 0.10	乳化液 Emulsion



系列/System	页/Page
Supermini	198
Mini	204
229	208
315	212
ISO	218

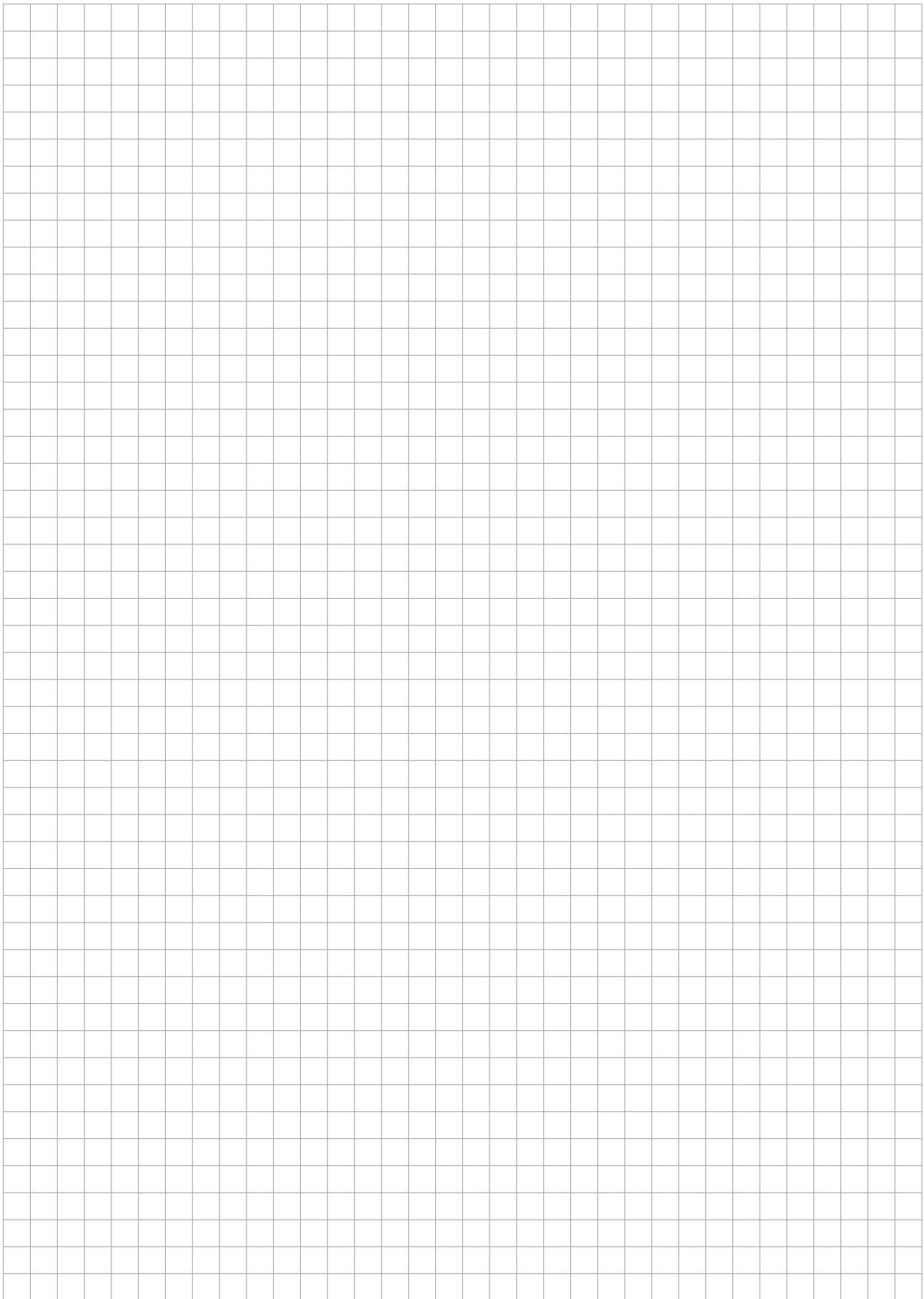
聚晶立方氮化硼是仅次于金刚石的第二硬材料，其物理、机械和化学性质的独特结合是其特点。刀片的高耐热性和硬度能达到最大效率，特别是当加工淬硬钢时并配合具有槽型的切削刃。然而加工中，工件与刀具中的金刚石或碳化硅产生化学反应，让刀具受到钝化的影响。这一特性使得除淬火钢外的各种材料也可以加工。因此，PCBN被认为是一种经济的切削材料，可以成功地用于加工铸铁、白铁和烧结材料以及精密加工高温合金。

PCBN基材被用于切削复合体系的材料。不同的体积分数、晶粒尺寸和结合剂，体系中导致了非常不同的性能，这些性能可以根据不同的应用而得到很大的利用。通常根据其体积分数来区分PCBN基材。这是最重要的指标，也可以在ISO标准513中找到。PCBN基材的相互作用、切削刃的槽型设计、优化切削值和稳定的刀具系统使得材料去除率、精度和高表面质量优于磨削技术。在极少的情况下，需要专用的机床。

Polycrystalline cubic boron nitride, the second hardest material after diamond, is characterised by a unique combination of physical, mechanical and chemical properties. Its high thermal resistance and hardness in particular enable maximum efficiency when machining hardened steel with geometrically determined cutting edges. Yet its chemical interaction with metals is also influenced by passivity, which is in contrast to diamond or silicon carbide. This property allows a wide range of materials other than hardened steel to also be machined. As a result, PCBN is regarded as an economical cutting material that can successfully be used in machining cast iron, white iron and sintered materials and in precision machining superalloys.

PCBN substrates are used as cutting material composite systems. The variation in their volume fraction, grain size and binder system results in very different properties, which can be used to great advantage depending on the application in question. PCBN substrates are generally differentiated based on their volume fraction. This is the most important index and can also be found in ISO standard 513. The interaction of PCBN substrate, geometric design of the cutting edge, optimum cutting values and a stable tool system allow material removal rates, accuracies and high surface qualities to be achieved that are superior to grinding technology. In very rare cases, special machines will be required.

CB07	稳定和轻断续工况下,加工(45-70HRC)淬硬钢
CB10	Hard machining of steel (45-70 HRC) with a smooth and lightly interrupted cut
CB35	重断续工况下,加工(45-70HRC)淬硬钢
CB50	Hard machining of steel (45-70 HRC) with a heavily interrupted cut
CB60	铸铁加工 Cast iron machining
CH1G	烧结材料,高温合金精加工 Sintered materials, precision machining of superalloys



刀片
Insert
105

CBN
PCBN

页/Page
200-203

切削参数
Cutting data

页/Page
216

C

Supermini

C



镗孔和仿形加工 使用 CBN- 硬材料车削

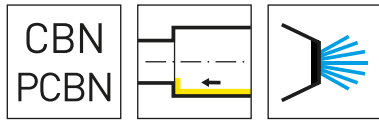
- 硬材料车削
- 铸造材料加工
- 烧结钢和超级合金

刀杆详见SUPERMINI & MINI
样本, 章节 A

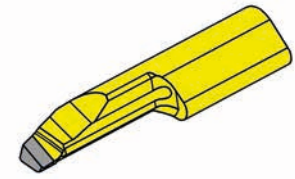
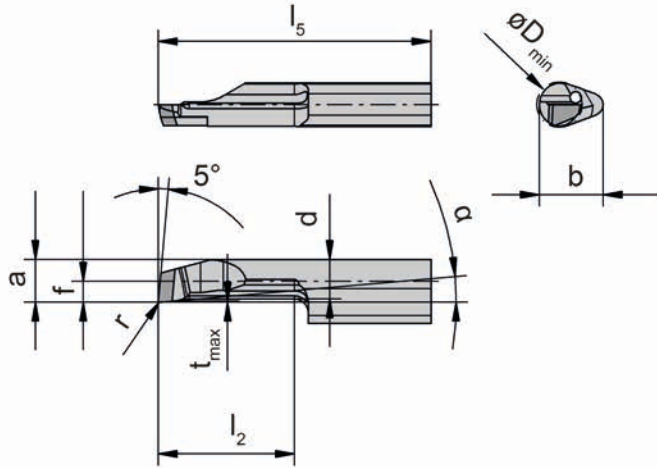
Boring and Profiling with PCBN

- Hard Turning
- Machining castings
- Sintered steel and Superalloys

For toolholder see our catalogue
SUPERMINI & MINI, chapter A



C



ISO 材料代码
ISO Mat. Code

H K

硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

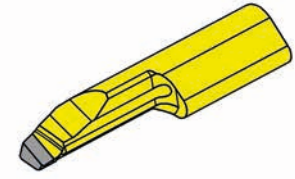
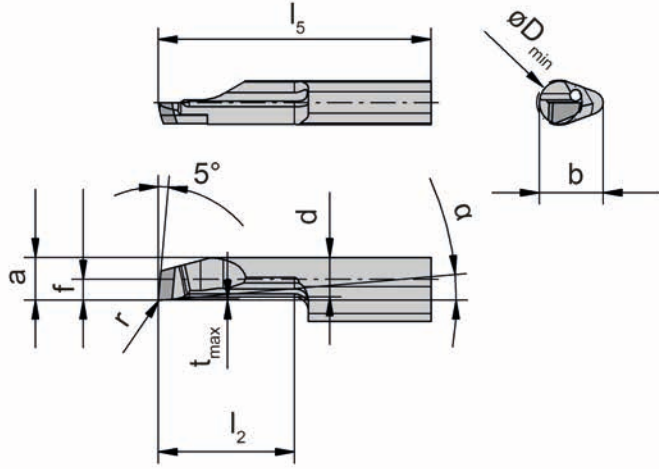
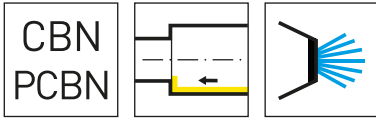
R=右手型-如图

R = right hand version shown

L=左手型

L = left hand version

产品型号 Part number	r	f	a	d	b	l ₂	l ₅	t _{max}	D _{min}	α	HIS	CB10	CB35
R105.1813.00.1.2.B	0.05	1.3	1.7	1.4	7	5	25	0.2	2	18°	105125	▲	▲
R105.1813.01.1.2.B	0.1	1.3	1.7	1.4	7	5	25	0.2	2	18°	105125	▲	▲
R105.0513.0.3.B	0.15	1.3	2.7	2.5	7	7	25	0.1	3	5°	105125	▲	
R105.1813.01.0.3.B	0.1	1.3	2.7	2.4	7	7	25	0.2	3	18°	105125	▲	▲
R105.1813.01.1.3.B	0.1	1.3	2.7	2.4	7	12	30	0.2	3	18°	105125	▲	▲
R105.1813.02.0.3.B	0.2	1.3	2.7	2.4	7	7	25	0.2	3	18°	105125	▲	▲
R105.1813.02.1.3.B	0.2	1.3	2.7	2.4	7	12	30	0.2	3	18°	105125	▲	▲
R105.0519.1.4.B	0.2	1.5	3.7	3.4	7	10	25	0.1	4	5°	105125	▲	
R105.1815.01.1.4.B	0.1	1.5	3.7	3.4	7	10	25	0.2	4	18°	105125	▲	▲
R105.1815.02.1.4.B	0.2	1.5	3.7	3.4	7	10	25	0.2	4	18°	105125	▲	▲
R105.1815.01.2.4.B	0.1	1.5	3.7	3.4	7	15	30	0.2	4	18°	105125	▲	▲
L105.1813.00.1.2.B	0.05	1.3	1.7	1.4	7	5	25	0.2	2	18°	105125	△	△
L105.1813.01.1.2.B	0.1	1.3	1.7	1.4	7	5	25	0.2	2	18°	105125	△	△
L105.1813.01.0.3.B	0.1	1.3	2.7	2.4	7	7	25	0.2	3	18°	105125	△	△
L105.1813.01.1.3.B	0.1	1.3	2.7	2.4	7	12	30	0.2	3	18°	105125	△	△
L105.1813.02.0.3.B	0.2	1.3	2.7	2.4	7	7	25	0.2	3	18°	105125	△	△
L105.1813.02.1.3.B	0.2	1.3	2.7	2.4	7	12	30	0.2	3	18°	105125	△	△
L105.1815.01.1.4.B	0.1	1.5	3.7	3.4	7	10	25	0.2	4	18°	105125	△	△
L105.1815.02.1.4.B	0.2	1.5	3.7	3.4	7	10	25	0.2	4	18°	105125	△	△
L105.1815.01.2.4.B	0.1	1.5	3.7	3.4	7	15	30	0.2	4	18°	105125	△	△



ISO 材料代码
ISO Mat. Code

H K

硬质合金牌号
Carbide grades

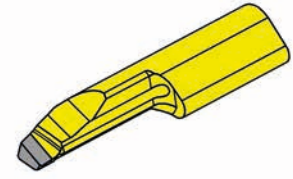
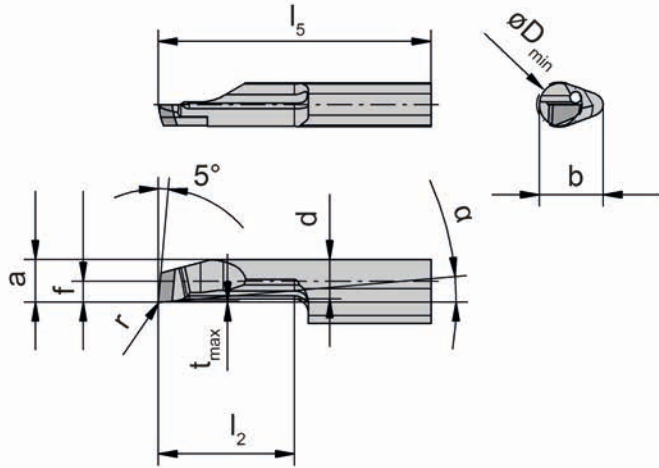
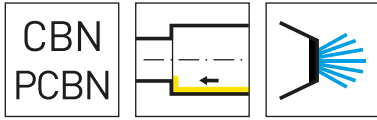
▲ 库存
on stock

△ 4周
4 weeks

R=右手型-如图
R = right hand version shown

L=左手型
L = left hand version

产品型号 Part number	r	f	a	d	b	l ₂	l ₅	t _{max}	D _{min}	α	HIS	CB10	CB35
R105.0523.2.5.B	0.2	2.3	4.7	4.4	7	15	30	0.1	5	5°	105125	▲	
R105.1823.01.1.5.B	0.1	2.3	4.4	4.4	7	10	25	0.2	5	18°	105125	▲	▲
R105.1823.01.2.5.B	0.1	2.3	4.4	4.4	7	15	30	0.2	5	18°	105125	▲	▲
R105.1823.02.1.5.B	0.2	2.3	4.4	4.4	7	10	25	0.2	5	18°	105125	▲	▲
R105.1823.02.2.5.B	0.2	2.3	4.4	4.4	7	15	30	0.2	5	18°	105125	▲	▲
R105.1823.15.3.5.B	0.15	2.3	4.4	4.4	7	20	35	0.3	5	18°	105125	▲	▲
R105.0533.2.6.B	0.2	3.3	5.7	5.3	7	15	30	0.15	6	5°	105125	▲	
R105.1833.01.2.6.B	0.1	3.3	5.7	5.3	7	15	30	0.2	6	18°	105125	▲	▲
R105.1833.02.2.6.B	0.2	3.3	5.7	5.3	7	15	30	0.3	6	18°	105125	▲	▲
R105.0533.3.6.B	0.2	3.3	5.7	5.3	7	20	35	0.15	6	5°	105125	▲	
R105.0540.2.7.B	0.2	4	6.4	6	7	15	30	0.15	6.8	5°	105125	▲	
R105.1840.02.2.7.B	0.2	4	6.4	6	7	15	30	0.3	6.8	18°	105125	▲	▲
R105.1840.02.3.7.B	0.2	4	6.4	6	7	20	35	0.3	6.8	18°	105125	▲	▲
R105.1840.15.4.7.B	0.15	4	6.4	6	7	25	40	0.3	6.8	18°	105125	▲	▲
L105.1823.01.1.5.B	0.1	2.3	4.4	4.4	7	10	25	0.2	5	18°	105125	△	△
L105.1823.01.2.5.B	0.1	2.3	4.4	4.4	7	15	30	0.2	5	18°	105125	△	△
L105.1823.02.1.5.B	0.2	2.3	4.4	4.4	7	10	25	0.2	5	18°	105125	△	△
L105.1823.02.2.5.B	0.2	2.3	4.4	4.4	7	15	30	0.2	5	18°	105125	△	△
L105.1823.15.3.5.B	0.15	2.3	4.4	4.4	7	20	35	0.3	5	18°	105125	△	△
L105.1833.01.2.6.B	0.1	3.3	5.7	5.3	7	15	30	0.2	6	18°	105125	△	△
L105.1833.02.2.6.B	0.2	3.3	5.7	5.3	7	15	30	0.3	6	18°	105125	△	△
L105.0533.3.6.B	0.2	3.3	5.7	5.3	7	20	35	0.15	6	5°	105125	▲	
L105.1840.02.2.7.B	0.2	4	6.4	6	7	15	30	0.3	6.8	18°	105125	△	△
L105.1840.02.3.7.B	0.2	4	6.4	6	7	20	35	0.3	6.8	18°	105125	△	△
L105.1840.15.4.7.B	0.15	4	6.4	6	7	25	40	0.3	6.8	18°	105125	△	△



ISO 材料代码
ISO Mat. Code



硬质合金牌号
Carbide grades

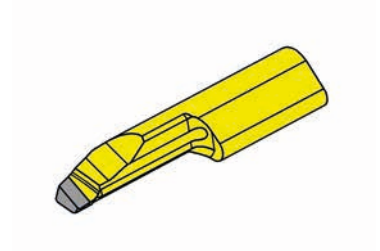
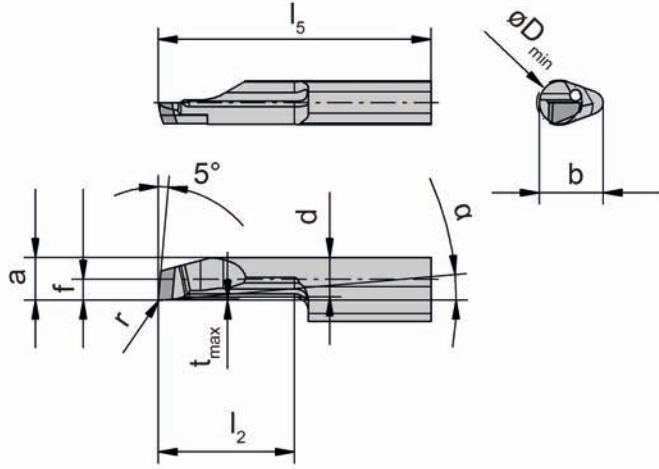
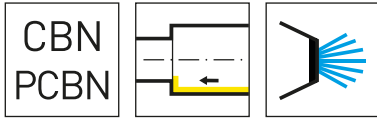
▲ 库存
on stock

△ 4周
4 weeks

R=右手型-如图
R = right hand version shown

L=左手型
L = left hand version

产品型号 Part number	r	f	a	d	b	l ₂	l ₅	t _{max}	D _{min}	α	HIS	CHIG
R105.1813.00.1.2.BA	0.05	1.3	1.7	1.4	7	5	25	0.2	2	18°	105125	▲
R105.1813.01.1.2.BA	0.1	1.3	1.7	1.4	7	5	25	0.2	2	18°	105125	▲
R105.1813.01.0.3.BA	0.1	1.3	2.7	2.4	7	7	25	0.2	3	18°	105125	▲
R105.1813.01.1.3.BA	0.1	1.3	2.7	2.4	7	12	30	0.2	3	18°	105125	▲
R105.1813.02.0.3.BA	0.2	1.3	2.7	2.4	7	7	25	0.2	3	18°	105125	▲
R105.1813.02.1.3.BA	0.2	1.3	2.7	2.4	7	12	30	0.2	3	18°	105125	▲
R105.1815.01.1.4.BA	0.1	1.5	3.7	3.4	7	10	25	0.2	4	18°	105125	▲
R105.1815.01.2.4.BA	0.1	1.5	3.7	3.4	7	15	30	0.2	4	18°	105125	▲
R105.1815.02.1.4.BA	0.2	1.5	3.7	3.4	7	10	25	0.2	4	18°	105125	▲
R105.1815.02.2.4.BA	0.2	1.5	3.7	3.4	7	15	30	0.2	4	18°	105125	▲
L105.1813.00.1.2.BA	0.05	1.3	1.7	1.4	7	5	25	0.2	2	18°	105125	△
L105.1813.01.1.2.BA	0.1	1.3	1.7	1.4	7	5	25	0.2	2	18°	105125	△
L105.1813.01.0.3.BA	0.1	1.3	2.7	2.4	7	7	25	0.2	3	18°	105125	△
L105.1813.01.1.3.BA	0.1	1.3	2.7	2.4	7	12	30	0.2	3	18°	105125	△
L105.1813.02.0.3.BA	0.2	1.3	2.7	2.4	7	7	25	0.2	3	18°	105125	△
L105.1813.02.1.3.BA	0.2	1.3	2.7	2.4	7	12	30	0.2	3	18°	105125	△
L105.1815.01.1.4.BA	0.1	1.5	3.7	3.4	7	10	25	0.2	4	18°	105125	△
L105.1815.01.2.4.BA	0.1	1.5	3.7	3.4	7	15	30	0.2	4	18°	105125	△
L105.1815.02.1.4.BA	0.2	1.5	3.7	3.4	7	10	25	0.2	4	18°	105125	△
L105.1815.02.2.4.BA	0.2	1.5	3.7	3.4	7	15	30	0.2	4	18°	105125	△



ISO 材料代码
ISO Mat. Code



R=右手型-如图
R = right hand version shown

L=左手型
L = left hand version

▲ 库存
on stock

硬质合金牌号
Carbide grades
▲ 4周
4 weeks

产品型号 Part number	r	f	a	d	b	l ₂	l ₅	t _{max}	D _{min}	α	HIS	CHIG
R105.1823.01.1.5.BA	0.1	2.3	4.4	4.4	7	10	25	0.2	5	18°	105125	▲
R105.1823.01.2.5.BA	0.1	2.3	4.4	4.4	7	15	30	0.2	5	18°	105125	▲
R105.1823.02.1.5.BA	0.2	2.3	4.4	4.4	7	10	25	0.2	5	18°	105125	▲
R105.1823.02.2.5.BA	0.2	2.3	4.4	4.4	7	15	30	0.2	5	18°	105125	▲
R105.1823.15.3.5.BA	0.15	2.3	4.4	4.4	7	20	35	0.3	5	18°	105125	▲
R105.1833.01.2.6.BA	0.1	3.3	5.7	5.3	7	15	30	0.3	6	18°	105125	▲
R105.1840.02.2.7.BA	0.2	4	6.4	6	7	15	30	0.2	6.8	18°	105125	▲
R105.1840.02.3.7.BA	0.2	4	6.4	6	7	20	35	0.3	6.8	18°	105125	▲
R105.1840.15.4.7.BA	0.15	4	6.4	6	7	25	40	0.3	6.8	18°	105125	▲
L105.1823.01.1.5.BA	0.1	2.3	4.4	4.4	7	10	25	0.2	5	18°	105125	△
L105.1823.01.2.5.BA	0.1	2.3	4.4	4.4	7	15	30	0.2	5	18°	105125	△
L105.1823.02.1.5.BA	0.2	2.3	4.4	4.4	7	10	25	0.2	5	18°	105125	△
L105.1823.02.2.5.BA	0.2	2.3	4.4	4.4	7	15	30	0.2	5	18°	105125	△
L105.1823.15.3.5.BA	0.15	2.3	4.4	4.4	7	20	35	0.3	5	18°	105125	△
L105.1833.01.2.6.BA	0.1	3.3	5.7	5.3	7	15	30	0.3	6	18°	105125	△
L105.1840.02.2.7.BA	0.2	4	6.4	6	7	15	30	0.2	6.8	18°	105125	△
L105.1840.02.3.7.BA	0.2	4	6.4	6	7	20	35	0.3	6.8	18°	105125	△
L105.1840.15.4.7.BA	0.15	4	6.4	6	7	25	40	0.3	6.8	18°	105125	△

C

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Mini



C

镗孔和仿形加工 使用 CBN

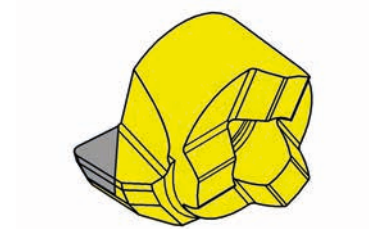
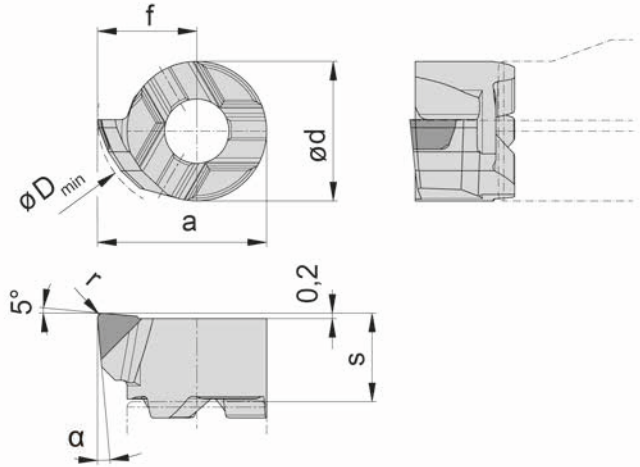
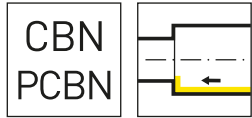
- 硬材料车削
- 铸造材料加工
- 烧结钢和超级合金

刀杆详见SUPERMINI & MINI
样本

Boring and Profiling with PCBN

- Hard Turning
- Machining castings
- Sintered steel and Superalloys

For toolholder see our catalogue
SUPERMINI & MINI



ISO 材料代码
ISO Mat. Code



硬质合金牌号
Carbide grades

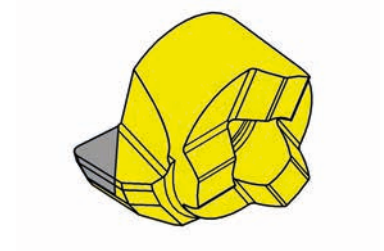
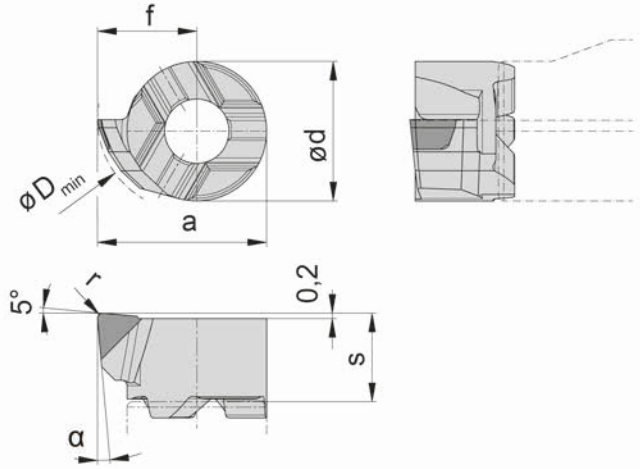
▲ 库存
on stock

△ 4周
4 weeks

R=右手型-如图
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L=左手型
L = left hand version

产品型号 Part number	s	f	a	r	d	D _{min}	α	HIS	CB10	CB35
R107.0537.02.B	3.3	3.7	6.3	0.2	5.2	6.8	5°	107052R	▲	
R107.1837.01.B	3.3	3.7	6.3	0.1	5.2	6.8	18°	107052R	▲	▲
R107.1837.02.B	3.3	3.7	6.3	0.2	5.2	6.8	18°	107052R	▲	▲
R108.0547.03.B	3.5	4.65	7.65	0.3	6	7.8	5°	306060R	▲	
R108.1847.03.B	3.5	4.65	7.65	0.3	6	7.8	18°	306060R	▲	▲
R108.1847.15.B	3.5	4.65	7.65	0.15	6	7.8	18°	306060R	▲	▲
R11P.1859.03.B	4.2	5.9	9.4	0.3	7	9.8	18°	11P070R	▲	▲
R11P.1859.15.B	4.2	5.9	9.4	0.15	7	9.8	18°	11P070R	▲	▲
R111.0557.03.B	3.95	5.7	9.7	0.3	8	10	5°	308080R	▲	
R111.0567.03.B	3.95	6.7	10.7	0.3	8	11	5°	308080R	▲	
R114.0572.04.B	5.3	7.25	11.75	0.4	9	12.5	5°	311090R	▲	
R114.1872.02.B	5.3	7.25	11.75	0.2	9	12.5	18°	311090R	▲	▲
R114.1872.04.B	5.3	7.25	11.75	0.4	9	12.5	18°	311090R	▲	▲
R116.0582.04.B	5.3	8.2	13.7	0.4	11	14	5°	116110R	▲	
L107.1837.01.B	3.3	3.7	6.3	0.1	5.2	6.8	18°	107052L	△	△
L107.1837.02.B	3.3	3.7	6.3	0.2	5.2	6.8	18°	107052L	△	△
L108.1847.03.B	3.5	4.65	7.65	0.3	6	7.8	18°	306060L	△	△
L108.1847.15.B	3.5	4.65	7.65	0.15	6	7.8	18°	306060L	△	△
L11P.1859.03.B	4.2	5.9	9.4	0.3	7	9.8	18°	11P070L	△	
L11P.1859.15.B	4.2	5.9	9.4	0.15	7	9.8	18°	11P070L	△	△
L114.1872.02.B	5.3	7.25	11.75	0.2	9	12.5	18°	311090L	▲	▲
L114.1872.04.B	5.3	7.25	11.75	0.4	9	12.5	18°	311090L	▲	▲



ISO 材料代码
ISO Mat. Code



R=右手型-如图
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L = left hand version

▲ 库存
on stock

硬质合金牌号
Carbide grades
▲ 4周
4 weeks

产品型号 Part number	s	f	a	r	d	D _{min}	α	HIS	CHIG
R107.1837.01.BA	3.3	3.7	6.3	0.1	5.2	6.8	18°	107052R	▲
R107.1837.02.BA	3.3	3.7	6.3	0.2	5.2	6.8	18°	107052R	▲
R108.1847.03.BA	3.5	4.65	7.65	0.3	6	7.8	18°	306060R	▲
R108.1847.15.BA	3.5	4.65	7.65	0.15	6	7.8	18°	306060R	▲
R11P.1859.03.BA	4.2	5.9	9.4	0.3	7	9.8	18°	11P070R	▲
R11P.1859.15.BA	4.2	5.9	9.4	0.15	7	9.8	18°	11P070R	▲
R114.1872.02.BA	5.3	7.25	11.75	0.2	9	12.5	18°	311090R	▲
R114.1872.04.BA	5.3	7.25	11.75	0.4	9	12.5	18°	311090R	▲
L107.1837.01.BA	3.3	3.7	6.3	0.1	5.2	6.8	18°	107052L	△
L107.1837.02.BA	3.3	3.7	6.3	0.2	5.2	6.8	18°	107052L	△
L108.1847.03.BA	3.5	4.65	7.65	0.3	6	7.8	18°	306060L	△
L108.1847.15.BA	3.5	4.65	7.65	0.15	6	7.8	18°	306060L	△
L11P.1859.03.BA	4.2	5.9	9.4	0.3	7	9.8	18°	11P070L	△
L11P.1859.15.BA	4.2	5.9	9.4	0.15	7	9.8	18°	11P070L	△
L114.1872.02.BA	5.3	7.25	11.75	0.2	9	12.5	18°	311090L	▲
L114.1872.04.BA	5.3	7.25	11.75	0.4	9	12.5	18°	311090L	▲



刀片
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PCBN

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C



切槽 使用 CBN

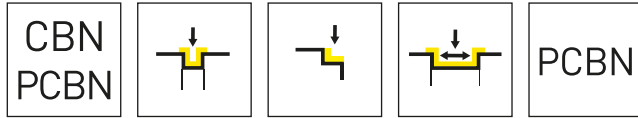
- 硬材料车削
- 铸造材料加工
- 烧结钢和超级合金

刀杆详见 槽加工和插削
样本, 章节 H

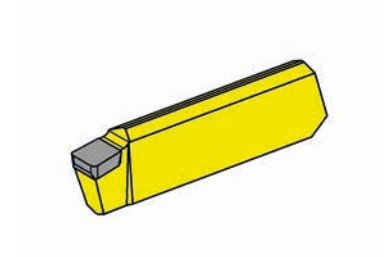
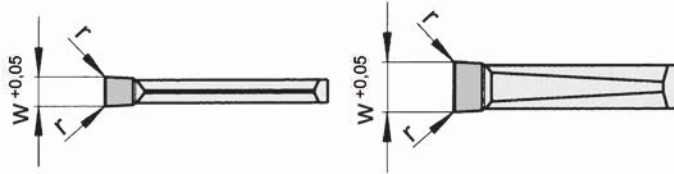
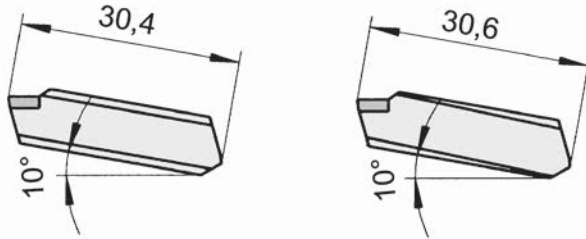
Turning with PCBN

- Hard Turning
- Machining castings
- Sintered steel and Superalloys

For toolholder see our catalogue
GROOVING AND BROACHING,
chapter H



C



ISO 材料代码
ISO Mat. Code



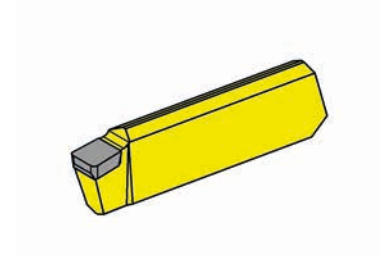
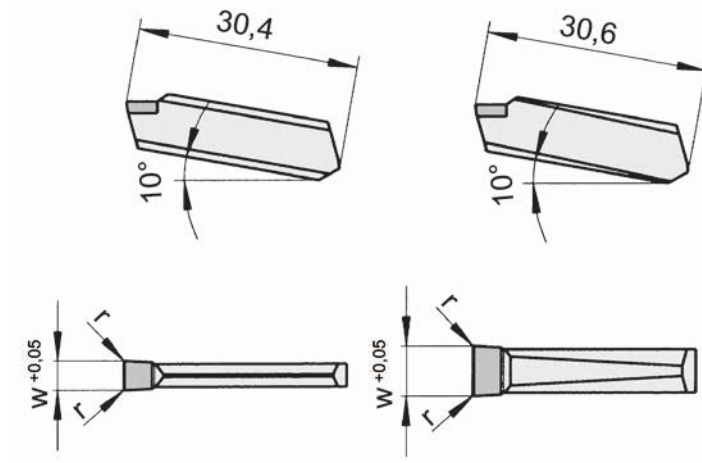
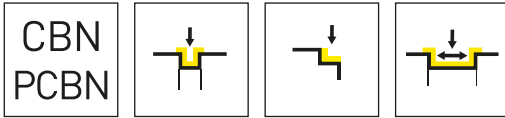
宽度 3 - 5 mm
Width 3 - 5 mm

宽度 6 mm
Width 6 mm

▲ 库存
on stock

硬质合金牌号
Carbide grades
△ 4周
4 weeks

产品型号 Part number	w	r	HIS	CB10
229.0300.22.B	3	0.2	229030	▲
229.0300.24.B	3	0.4	229030	▲
229.0400.22.B	4	0.2	229040	▲
229.0400.24.B	4	0.4	229040	▲
229.0500.22.B	5	0.2	229040	△
229.0500.24.B	5	0.4	229040	▲
229.0600.24.B	6	0.4	229050	△
229.0600.26.B	6	0.6	229050	△



ISO 材料代码
ISO Mat. Code



宽度 3 - 5 mm
Width 3 - 5 mm

宽度 6 mm
Width 6 mm

▲ 库存
on stock

硬质合金牌号
Carbide grades
△ 4周
4 weeks

产品型号 Part number	w	r	HIS	CH1G
229.0300.22.BA	3	0.2	229030	△
229.0300.24.BA	3	0.4	229030	△
229.0400.22.BA	4	0.2	229040	△
229.0400.24.BA	4	0.4	229040	△
229.0500.22.BA	5	0.2	229050	△
229.0500.24.BA	5	0.4	229050	△
229.0600.24.BA	6	0.4	229060	△
229.0600.26.BA	6	0.6	229060	△





刀片
Insert
315

CBN
PCBN

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切削参数
Cutting data

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切槽 使用 PCBN

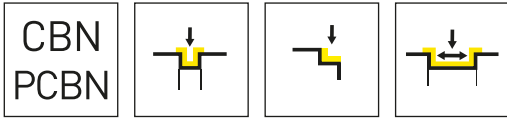
- 硬材料车削
- 铸造材料加工
- 烧结钢和超级合金

刀杆详见 槽加工和插削
样本, 章节 P

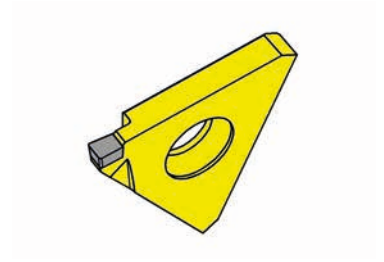
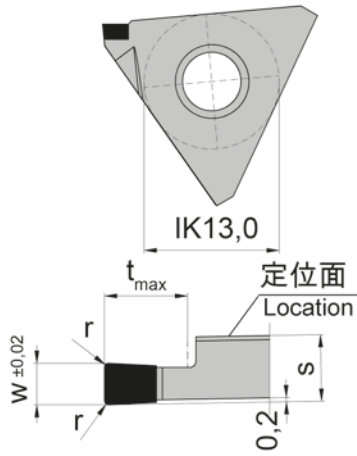
Turning with PCBN

- Hard Turning
- Machining castings
- Sintered steel and Superalloys

For toolholder see our catalogue
GROOVING AND BROACHING,
chapter P



C



ISO 材料代码
ISO Mat. Code



硬质合金牌号
Carbide grades

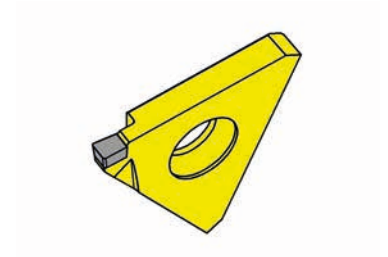
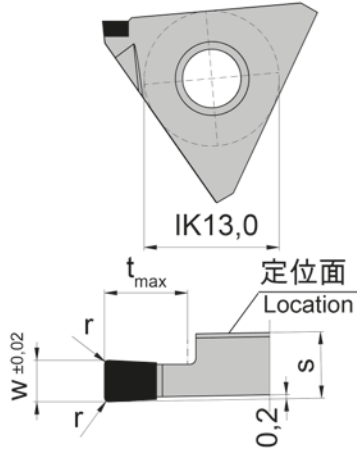
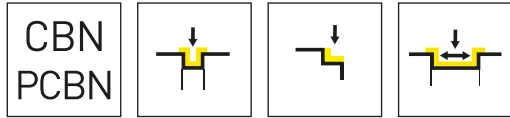
▲ 库存
on stock

△ 4周
4 weeks

R=右手型-如图
R = right hand version shown

L=左手型
L = left hand version

产品型号 Part number	w	r	t _{max}	s	HIS	CB10	CB35
R315.0532.01.B	0.5	0.1	1.1	3.2	31503R	▲	▲
R315.1032.01.B	1	0.1	2	3.2	31503R	▲	▲
R315.1532.15.B	1.5	0.15	3	3.2	31503R	▲	▲
R315.2032.02.B	2	0.2	4	3.2	31503R	▲	▲
R315.2532.02.B	2.5	0.2	5	3.2	31503R	▲	▲
R315.3032.02.B	3	0.2	5	3.2	31503R	▲	▲
R315.4054.02.B	4	0.2	5	3.2	31503R	▲	▲
L315.0532.01.B	0.5	0.1	1.1	3.2	31503L	▲	▲
L315.1032.01.B	1	0.1	2	3.2	31503L	▲	▲
L315.1532.15.B	1.5	0.15	3	3.2	31503L	▲	▲
L315.2032.02.B	2	0.2	4	3.2	31503L	▲	▲
L315.2532.02.B	2.5	0.2	5	3.2	31503L	▲	▲
L315.3032.02.B	3	0.2	5	3.2	31503L	▲	▲
L315.4054.02.B	4	0.2	5	3.2	31503L	▲	▲



ISO 材料代码
ISO Mat. Code



硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

R=右手型-如图
R = right hand version shown

L=左手型
L = left hand version

产品型号 Part number	w	r	t _{max}	s	HIS	CH1G
R315.0532.01.BA	0.5	0.1	1.1	3.2	31503R	▲
R315.1032.01.BA	1	0.1	2	3.2	31503R	▲
R315.1532.15.BA	1.5	0.15	3	3.2	31503R	▲
R315.2032.02.BA	2	0.2	4	3.2	31503R	▲
R315.2532.02.BA	2.5	0.2	5	3.2	31503R	▲
R315.3032.02.BA	3	0.2	5	3.2	31503R	▲
R315.4054.02.BA	4	0.2	5	3.2	31503R	▲
L315.0532.01.BA	0.5	0.1	1.1	3.2	31503L	▲
L315.1032.01.BA	1	0.1	2	3.2	31503L	▲
L315.1532.15.BA	1.5	0.15	3	3.2	31503L	▲
L315.2032.02.BA	2	0.2	4	3.2	31503L	▲
L315.2532.02.BA	2.5	0.2	5	3.2	31503L	▲
L315.3032.02.BA	3	0.2	5	3.2	31503L	▲
L315.4054.02.BA	4	0.2	5	3.2	31503L	▲



切削参数 Supermini 和 Mini

Cutting Data Supermini and Mini



材料 Material	材质 Substrate	应用 Application	v_c m/min	f_n (mm/U) (mm/rev)	a_p (mm)	冷却 Coolant	
H	淬硬钢 - 连续切削 Hardened Steel - <u>without</u> interrupted cut 45-65 HRC	Ø 2-4	80-140	0.01-0.03	0.01-0.05	吹气/ 乳化液 Air/Emulsion	
		> Ø 4	90-150	0.02-0.05	0.02-0.15		
	淬硬钢 - 断续切削 Hardened Steel - <u>with</u> interrupted cut 45-65 HRC	Ø 2-4	90-150	0.01-0.03	0.01-0.05	吹气 Air	
		> Ø 4	100-160	0.02-0.05	0.02-0.15		
P	烧结, 软 (例如: Sint D11) Sintered steel, soft (e.g.: Sint D11) < 220 HB	Ø 2-4	80-280	0.02-0.10	0.02-0.12	乳化液 Emulsion	
		> Ø 4	100-390	0.02-0.18	0.02-0.40		
K	灰铁 "GG" (GJL) Grey cast iron < 240 HB	Ø 2-4	300-1000	0.02-0.10	0.02-0.15	切削液/ 吹气 Emulsion/Air	
		> Ø 4	400-1200	0.03-0.18	0.02-0.40		
	灰铁 „GGV“ (GJV) Grey cast iron 220-300 HB	Ø 2-4	150-650	0.02-0.07	0.02-0.12	乳化液/ 吹气 Emulsion/Air	
		> Ø 4	200-700	0.02-0.13	0.02-0.35		
	灰铁 „GGG“ (GJS) Grey cast iron 220-300 HB	Ø 2-4	140-400	0.01-0.05	0.01-0.25	乳化液/ 吹气 Emulsion/Air	
		> Ø 4	180-550	0.02-0.11	0.02-0.32		
ADI (硬化 / hardened)	CH1G	Ø 2-4	50-110	0.01-0.025	0.01-0.05	乳化液 Emulsion	
		> Ø 4	80-130	0.01-0.06	0.015-0.25		
S	镍基合金和超级合金的 Nickel based and Superalloys 精加工 / Finishing	Ø 2-4	140-250	0.01-0.03	0.01-0.06	乳化液 (高压) Emulsion (High pressure)	
		> Ø 4	180-350	0.01-0.045	0.01-0.18		
	钛 (纯), 钛合金 Titanium (pure), Titanium alloys	CH1G	Ø 2-4	60-200	0.01-0.025	0.01-0.04	乳化液 (高压) Emulsion (High pressure)
			> Ø 4	100-300	0.01-0.05	0.01-0.08	

切削参数系列 229 和 315

Cutting Data Systems 229 and 315



材料 Material	材质 Substrate	应用 Application	v_c m/min	f_n (mm/U) (mm/rev)	a_p (mm)	冷却 Coolant	
H	淬硬钢 - 连续切削 Hardened Steel - without interrupted cut 45-65 HRC	切槽用于所有材料 Grooving in solid	80-140	0.02-0.06	-	吹气/ 乳化液 Air/Emulsion	
		局部切削, 侧面加工 Partial cut. Side turning	90-150	0.03-0.08	0.10-0.25		
	淬硬钢 - 断续切削 Hardened Steel - with interrupted cut 45-65 HRC	切槽用于所有材料 Grooving in solid	90-150	0.02-0.06	-	吹气 Air	
		局部切削, 侧面加工 Partial cut. Side turning	100-160	0.03-0.08	0.10-0.25		
P	烧结. 软 (例如: Sint D11) Sintered steel. soft (e.g.: Sint D11) < 220 HB	切槽用于所有材料 Grooving in solid	100-280	0.03-0.15	-	乳化液 Emulsion	
		局部切削, 侧面加工 Partial cut. Side turning	100-390	0.03-0.20	0.10-0.65		
K	灰铁 "GG" (GJL) Grey cast iron < 240 HB	切槽用于所有材料 Grooving in solid	400-1000	0.05-0.30	-	乳化液/ 吹气 Emulsion/Air	
		局部切削, 侧面加工 Partial cut. Side turning	400-1200	0.05-0.45	0.10-1.0		
	灰铁 „GGV“ (GJV) Grey cast iron 220-300 HB	切槽用于所有材料 Grooving in solid	200-650	0.03-0.15	-	乳化液/ 吹气 Emulsion/Air	
		局部切削, 侧面加工 Partial cut. Side turning	200-700	0.03-0.20	0.05-0.75		
	灰铁 „GGG“ (GJS) Grey cast iron 220-300 HB	切槽用于所有材料 Grooving in solid	180-450	0.03-0.15	-	乳化液/ 吹气 Emulsion/Air	
		局部切削, 侧面加工 Partial cut. Side turning	180-600	0.03-0.20	0.05-0.70		
ADI (硬化 / hardened)	CH1G	切槽用于所有材料 Grooving in solid	70-110	0.02-0.04	-	乳化液 Emulsion	
		局部切削, 侧面加工 Partial cut. Side turning	80-130	0.03-0.10	0.05-0.65		
S	镍基合金和超级合金的 Nickel based and Superalloys 精加工 / Finishing	切槽用于所有材料 Grooving in solid	-	-	-	乳化液 (高压) Emulsion (High pressure)	
		局部切削, 侧面加工 Partial cut. Side turning	180-350	0.02-0.07	0.02-0.20		
	钛 (纯). 钛合金 Titanium (pure). Titanium alloys	CH1G	切槽用于所有材料 Grooving in solid	80-250	0.02-0.04	-	乳化液 (高压) Emulsion (High pressure)
			局部切削, 侧面加工 Partial cut. Side turning	100-300	0.02-0.08	0.03-0.30	



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ISO

C



- 车削铸造材料
- 通用加工

刀杆请见样本 Boehlerit

- Turning cast material
- Universal machining

For Holders please see our catalogue Boehlerit

在提供非标定制刀具方面，HORN在业界被认为是问题的解决者，能完成高要求的加工任务。在加工淬硬钢和其他难加工材料的CBN刀具领域，HORN也拥有高水平的专业知识。

在大多数情况下，CBN刀具是为用户的特殊加工应用和生产流程而设计的。HORN的工程师们总是以提高生产力、效率为目标，从而增加其用户的产量。

For the supply of customised special tools, HORN is regarded in the industry as a problem solver for demanding machining tasks. HORN also has a high level of expertise in the field of CBN-tipped ISO tools for machining hardened steels and other difficult materials.

CBN tools are in most cases designed for users' special machining applications and production processes. HORN's engineers always work with the aim of increasing the productivity, efficiency and thus the yield of its users.



硬材料加工

立方氮化硼是仅次于金刚石的第二硬的切割材料，其特点是综合了各种物理、机械和化学性能。最重要的是，高耐热性和高硬度能够以特定几何形状的切削刃对淬火钢进行经济地加工。CBN基材被用作切割复合材料。通过改变体积分数、颗粒大小和粘合剂系统，可以设定不同的性能，这可以有利地适用于各自的应用领域。通过CBN基材、切削刃的几何设计、合适的切削值和稳定的刀具系统的相互作用，金属去除率、精度和高表面质量都优于磨削技术。只有在极少数情况下才需要特殊机床。

实例:

20MnCr5 / 1.7147 (59-61HRC)

$v_c =$ 至 180m/min

X210CrW12 / 1.2436 (60-62HRC)

$v_c =$ 至 140m/min

HS6-5-2C / 1.3343 (60-64HRC)

$v_c =$ 至 125m/min

Hard machining

Cubic boron nitride, the second hardest material after diamond, is characterised by a combination of physical, mechanical and chemical properties. Above all, its high thermal resistance and hardness enable economical machining of hardened steel using geometrically defined cutting edge. CBN substrates are used for cutting composite materials. By varying the volume fraction, grain size and binder system, different properties can be set, that can be advantageously applied to the respective application. Through the interaction of the CBN substrate, the geometric design of the cutting edge, adapted cutting values and a stable tool system, metal removal rates, accuracies and high surface quality can be achieved that are superior to grinding. Special machines are only needed in rare cases.

Examples:

20MnCr5 / 1.7147 (59-61HRC)

$v_c =$ up to 180m/min

X210CrW12 / 1.2436 (60-62HRC)

$v_c =$ up to 140m/min

HS6-5-2C / 1.3343 (60-64HRC)

$v_c =$ up to 125m/min



铸造材料加工

铸造材料加工

立方氮化硼的高硬度和高耐热性,也适用于铸造材料的经济加工。铸造材料的领域和各自的特性一样广泛 所有这些都可用CBN加工。与硬质合金或陶瓷刀具相比,按几倍切削速度,可以提升效率10倍以上。

实例:

- GG25** (EN-GJL-250 / 0.6025)
 $v_c =$ 至 1,800m/min
- GGG40** (EN-GJS-400-15 / 0.7040)
 $v_c =$ 至 1,200m/min
- GGG-NiCr** 20-3 (EN-GJSA-XNiCr20-2 / 0.7660)
 $v_c =$ 至 600m/min

Machining castings

The high hardness of cubic boron nitride and its heat resistance make this cutting material group ideal for the economical machining of cast materials whose range is as wide as their respective properties — all of them can be machined with CBN. The performance compared to carbide or ceramic tools can be up to 10 time higher using several times the cutting speed.

Examples:

- GG25** (EN-GJL-250 / 0.6025)
 $v_c =$ up to 1,800m/min
- GGG40** (EN-GJS-400-15 / 0.7040)
 $v_c =$ up to 1,200m/min
- GGG-NiCr** 20-3 (EN-GJSA-XNiCr20-2 / 0.7660)
 $v_c =$ up to 600m/min

烧结钢加工

复杂的形状, 高产量和刀具磨损快: 这只是一些关键术语来描述烧结或粉末冶金部件的生产和制造。磨损主要是由于硬度 (>70 HRC) 和细小的陶瓷颗粒嵌入到相对柔软的金属基体中造成的。由于CBN的高硬度, 它能抑制磨料磨损。与硬质合金相比, 不仅可实现更高的刀具寿命, 而且切削速度也可以提高, 切削速度可以相应提高两到三倍。为此, 切削刃的几何形状需要按这个应用而设计。这与常规经典的硬加工不同, 通常需求是, 要确保部件没有毛刺。

实例:

SINT D11 (120HB)

$v_c =$ 至 390 m/min

SINT D39 (150HB)

$v_c =$ 至 260 m/min

SINT C42 (170HB)

$v_c =$ 至 220 m/min

Sintered steel machining

Complex shapes, large quantities and high tool wear: These are just some of the keywords that describe the umbrella term for sintered or powder metallurgically produced components. The wear is primarily due to hard (>70 HRC) and fine ceramic particles that are embedded in the relatively soft metal matrix. CBN opposes abrasion wear due to its high hardness. Compared to carbide, not only is the achievable tool life several times higher, but also the cutting speed can and should be increased by a factor of two to three. The cutting edge geometry is designed for the application. This differs from classic hard machining, not least to ensure that components are free of burrs, which a frequent requirement.

Beispiele:

SINT D11 (120HB)

$v_c =$ up to 390 m/min

SINT D39 (150HB)

$v_c =$ up to 260 m/min

SINT C42 (170HB)

$v_c =$ up to 220 m/min



镍基合金和超级合金的加工

镍基合金和其他超级合金的加工在制造业中迅速增长。这些材料特殊的机械、化学和热性能往往导致其可加工性差、刀具磨损大和切削速度低。这些材料的加工有时会给用户带来巨大的挑战。CBN切削材料可以作为这个问题的解决者。特别是在精加工时，它能够缩短加工时间，提高尺寸精度和提升表面质量。

精加工实例:

Inconel 718 (NiCr19NbMo / 2.4668)

v_c = 至 300 m/min

X6NiCrTiMoV26-15 (1.4944)

v_c = 至 400 m/min

Machining of Nickel-based and Superalloys

The machining of nickel-based and other superalloys is growing rapidly in the manufacturing industry. The special mechanical, chemical and thermal properties of these materials are often associated with poor machinability, high tool wear and low cutting speeds. The economical machining of these materials sometimes presents users with great challenges. The CBN cutting material can be used as a problem solver. Particularly when finishing, it enables shorter machining times, greater precision and higher surface quality.

Example of finishing:

Inconel 718 (NiCr19NbMo / 2.4668)

v_c = up to 300 m/min

X6NiCrTiMoV26-15 (1.4944)

v_c = up to 400 m/min

整体多晶立方氮化硼(PCBN)是铸铁加工中最大性能和经济性的代名词。与钎焊PCBN刀具相比,整体PCBN刀片允许更大的切削深度,以及承受更高的温度和最大的切削力。后一种属性由HORN夹紧系统增强。由于刀片中性设计,刀片的刃数得到充分利用。

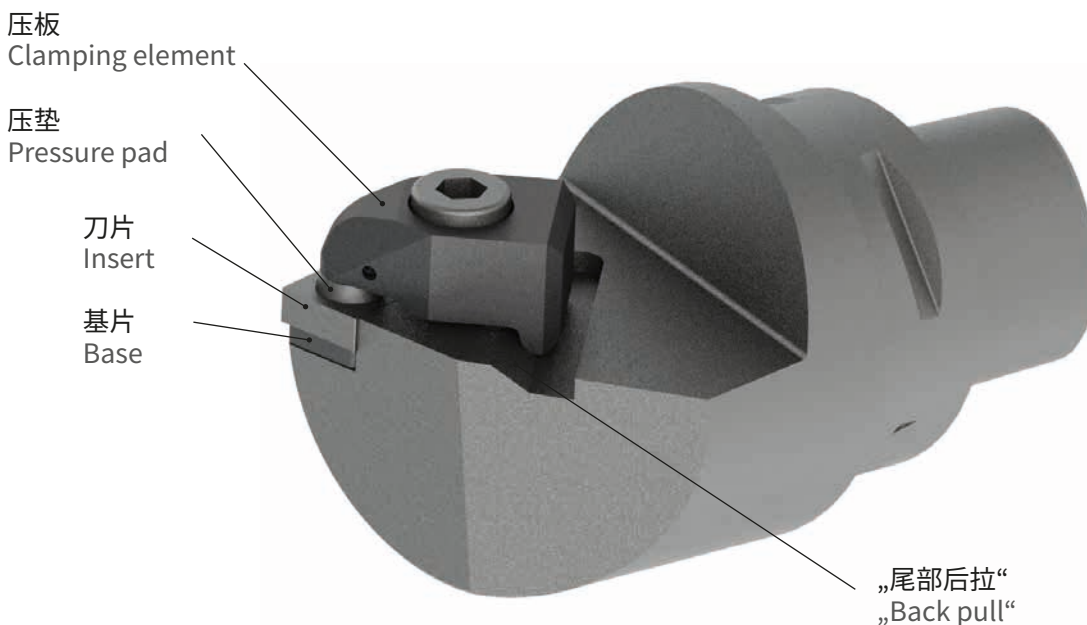
整体PCBN系列是为制动盘加工而设计的,但也非常适合一般铸铁加工,最恶劣条件下的重型切削。专利的HORN夹紧系统结合了三个重要标准:

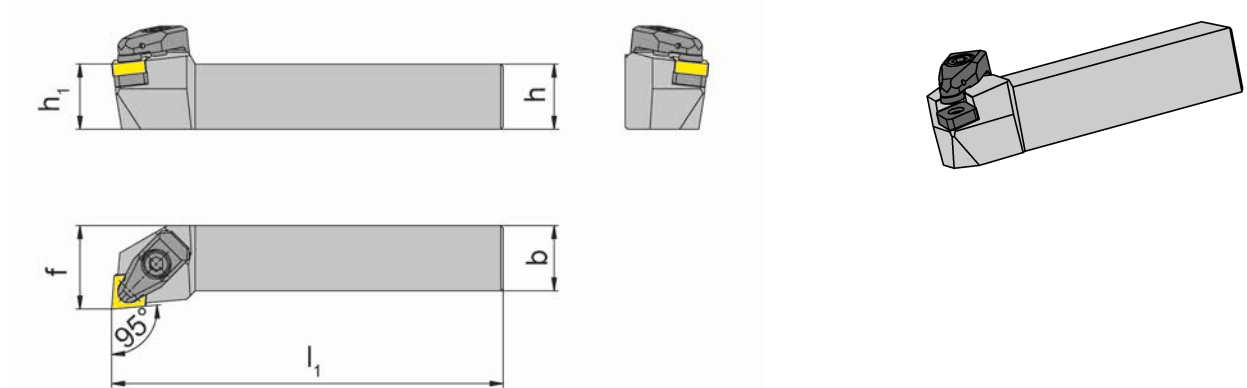
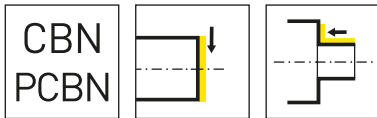
1. 硬质合金止推垫和镶件之间的摩擦连接总是由一个确定的环形表面产生。因此,避免了此系统的压缩应力。
2. 由于硬质合金止推垫在孔内和夹紧元件的斜面上的接合,切削刀片以确定的二次力安全地拉到接触面上。避免了夹紧误差,提高了精度。
3. 符合iso标准的刀片孔也可以在现有的夹具系统中夹紧。

Solid polycrystalline cubic boron nitride (PCBN), is synonymous with maximum performance and economy in cast iron machining. In contrast to brazed PCBN tools, solid PCBN inserts allow greater depths of cut as well as tolerating higher temperatures and maximum cutting forces. The latter attribute is enhanced by the HORN clamping system. Due to the neutral rake design, the number of inserts is fully utilised.

The solid PCBN range was designed for brake disc machining, but is also ideally suited to general cast iron machining, right up to heavy-duty cutting under the most adverse conditions. The patented HORN clamping system combines three important criteria:

1. The frictional connection from the carbide thrust pad to the insert is always generated by a defined annular surface. Compressive stresses, as with commercially available systems, are thus avoided.
2. Due to the engagement of the carbide thrust pad in the bore and the inclined plane of the clamping element, the cutting insert is securely drawn to the contact surfaces with a defined secondary force. Clamping errors are avoided and precision is increased.
3. The ISO-compliant bore in the inserts also enables clamping in existing holder systems.





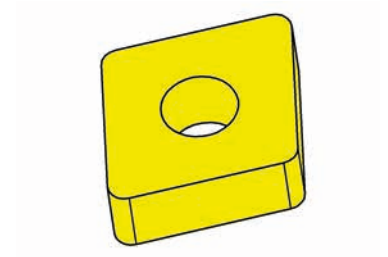
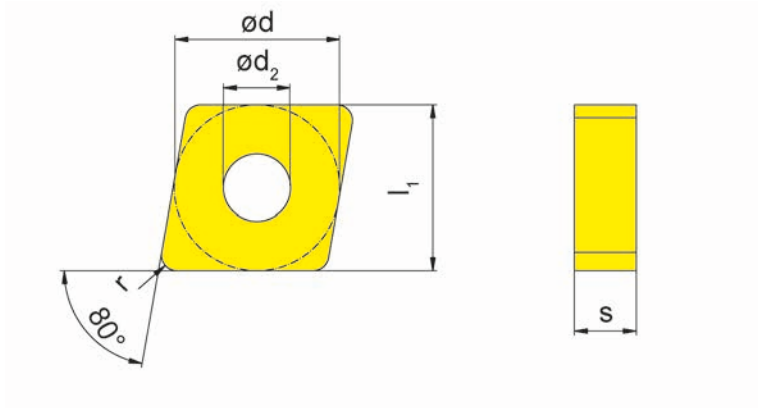
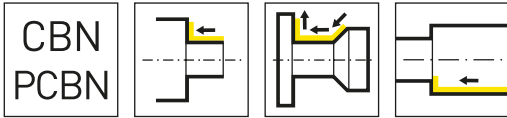
R=右手型-如图
R = right hand version shown

L=左手型
L = left hand version

产品型号 Part number	h	b	l_1	h_1	f	类型 Type
DCLNL2525M1204-1A	25	25	150	25	32	左/left
DCLNR2525M1204-1A	25	25	150	25	32	右/right

配件
Spare Parts

刀杆 Toolholder	压板 Clamping element	锁紧螺钉 Clamping Screw	TORX PLUS®扳手 TORX PLUS® Wrench
DCLN...	010.3215.1A	030.0408.T15P	T15PQ

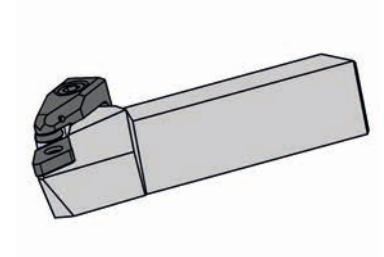
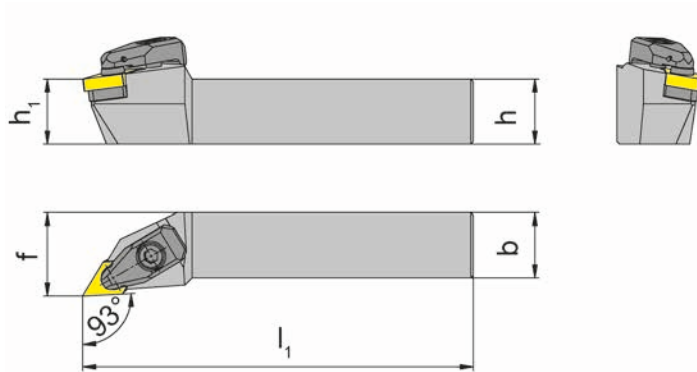
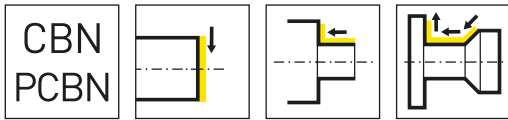


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	CB60	CB85
CNGA120404.TN5A	12.7	5.16	4.76	12.9	0.4	△	△
CNGA120408.TN5A	12.7	5.16	4.76	12.9	0.8	△	△
CNGA120412.TN5A	12.7	5.16	4.76	12.9	1.2	▲	△
CNGA120416.TN5A	12.7	5.16	4.76	12.9	1.6	▲	△



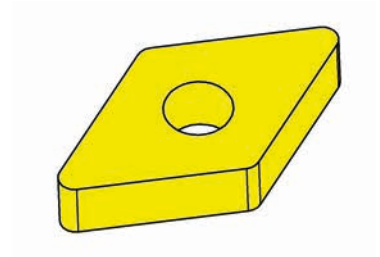
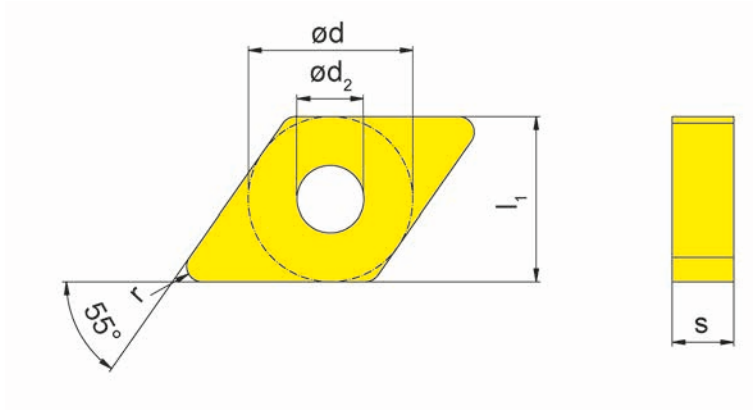
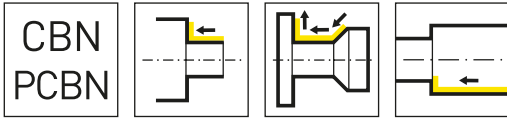
R=右手型-如图
R = right hand version shown

L=左手型
L = left hand version

产品型号 Part number	h	b	l_1	h_1	f	类型 Type
DDJNL2525M1504-3A	25	25	150	25	32	左/left
DDJNR2525M1504-3A	25	25	150	25	32	右/right

配件
Spare Parts

刀杆 Toolholder	锁紧螺钉 Clamping Screw	TORX PLUS®扳手 TORX PLUS® Wrench
DDJN...	030.0408.T15P	T15PQ

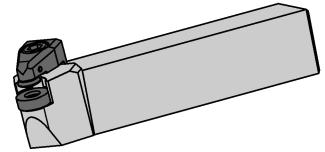
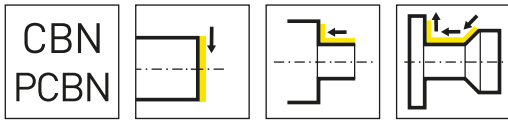


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	CB60	CB85
DNGA150404.TN5A	12.7	5.16	4.76	15.5	0.4	△	△
DNGA150408.TN5A	12.7	5.16	4.76	15.5	0.8	▲	▲
DNGA150412.TN5A	12.7	5.16	4.76	15.5	1.2	▲	▲
DNGA150416.TN5A	12.7	5.16	4.76	15.5	1.6	△	△



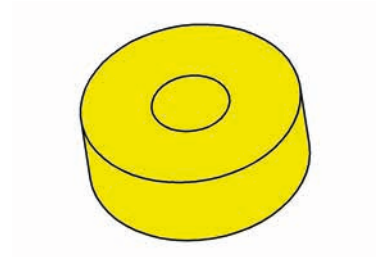
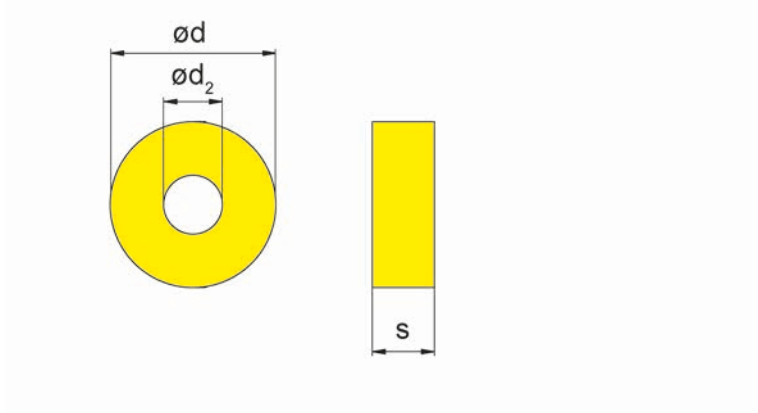
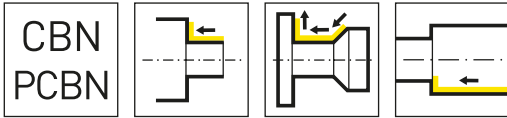
R=右手型-如图
R = right hand version shown

L=左手型
L = left hand version

产品型号 Part number	h	b	l_1	h_1	f	类型 Type
DRGNL2525M1204-2B	25	25	150	25	32	左/left
DRGNR2525M1204-2B	25	25	150	25	32	右/right

配件
Spare Parts

刀杆 Toolholder	锁紧螺钉 Clamping Screw	TORX PLUS®扳手 TORX PLUS® Wrench
DRGN...	030.0408.T15P	T15PQ

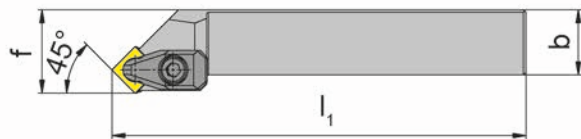
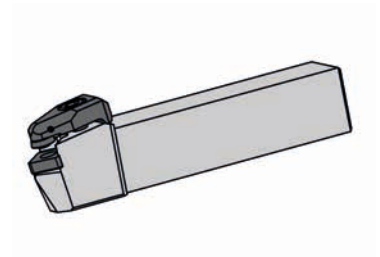
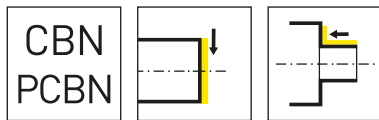


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	CB60	CB85
RNGX120400.TN5A	12.7	4.5	4.76	▲	△
RNGX1204M0.TN5A	12	4.5	4.76	△	△



R=右手型-如图
R = right hand version shown

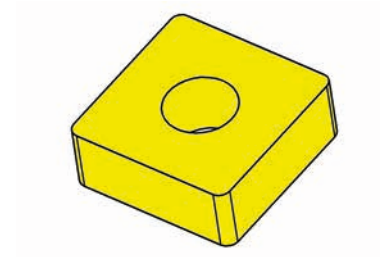
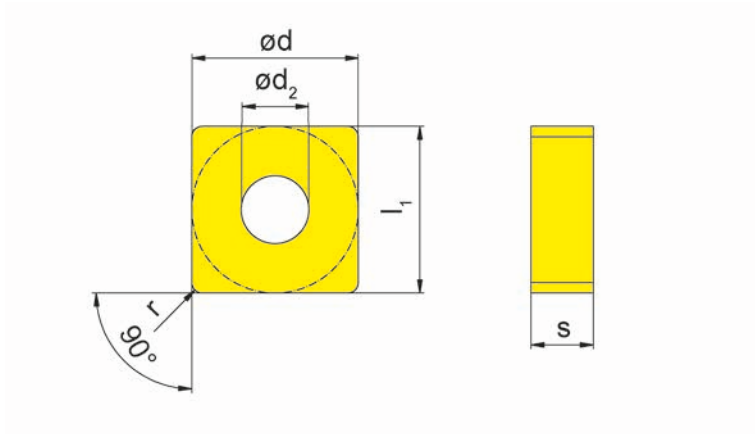
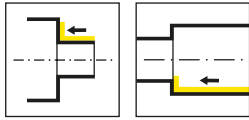
L=左手型
L = left hand version

产品型号 Part number	h	b	l_1	h_1	f	类型 Type
DSSNL2525M1204-1A	25	25	150	25	32	左/left
DSSNR2525M1204-1A	25	25	150	25	32	右/right

配件
Spare Parts

刀杆 Toolholder	压板 Clamping element	锁紧螺钉 Clamping Screw	TORX PLUS® 扳手 TORX PLUS® Wrench
DSSN...	010.3215.1A	030.0408.T15P	T15PQ

CBN
PCBN

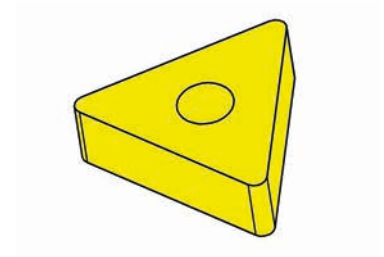
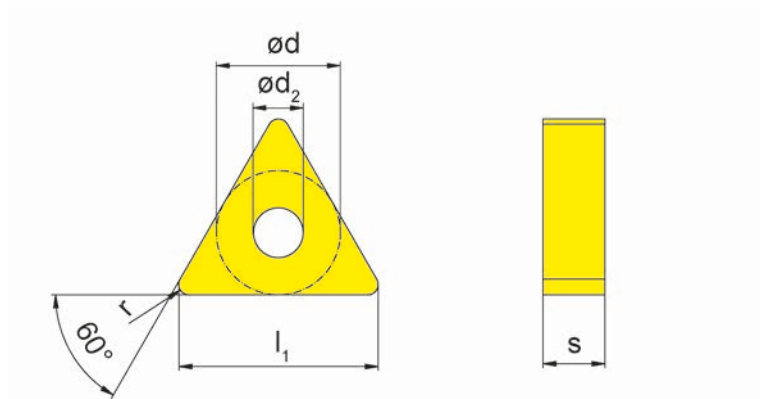
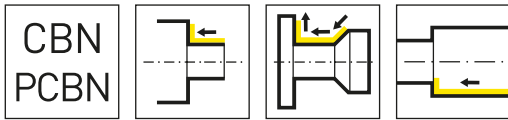


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	CB60	CB85
SNGA120404.TN5A	12.7	5.16	4.76	12.7	0.4	△	△
SNGA120408.TN5A	12.7	5.16	4.76	12.7	0.8	▲	▲
SNGA120412.TN5A	12.7	5.16	4.76	12.7	1.2	▲	▲
SNGA120416.TN5A	12.7	5.16	4.76	12.7	1.6	▲	▲

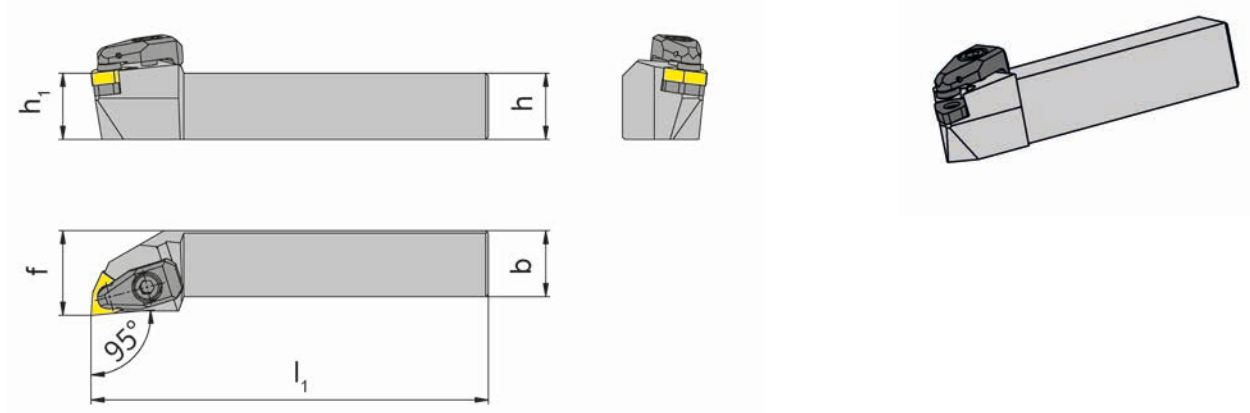
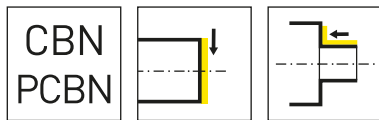


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r	CB60	CB85
TNGA160404.TN5A	9.52	3.81	4.76	16.5	0.4	△	△
TNGA160408.TN5A	9.52	3.81	4.76	16.5	0.8	▲	△
TNGA160412.TN5A	9.52	3.81	4.76	16.5	1.2	▲	△
TNGA160416.TN5A	9.52	3.81	4.76	16.5	1.6	△	△



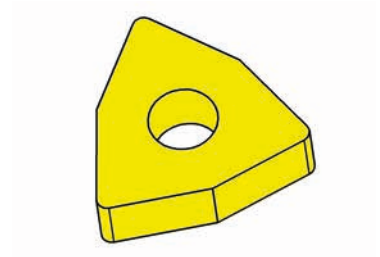
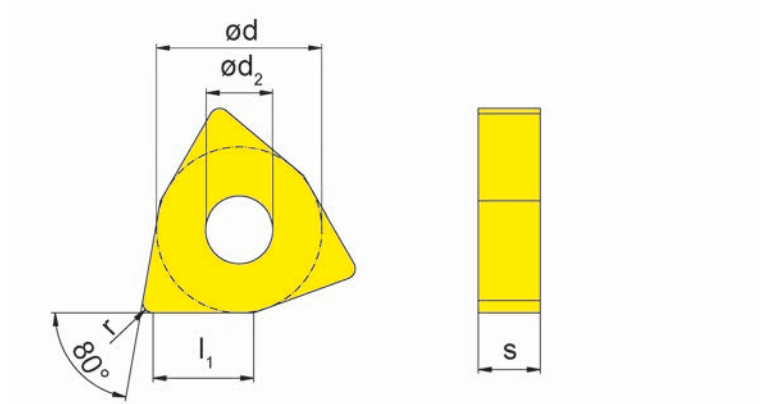
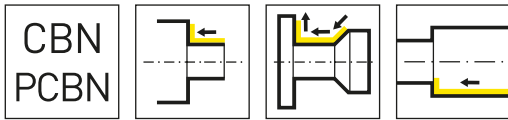
R=右手型-如图
R = right hand version shown

L=左手型
L = left hand version

Bestellnummer Part number	h	b	l ₁	h ₁	f	类型 Type
DWLN L 2525M0804-1A	25	25	150	25	32	左/left
DWLN R 2525M0804-1A	25	25	150	25	32	右/right

配件
Spare Parts

刀杆 Toolholder	压板 Clamping element	锁紧螺钉 Clamping Screw	TORX PLUS®扳手 TORX PLUS® Wrench
DWLN...	010.3215.1A	030.0408.T15P	T15PQ

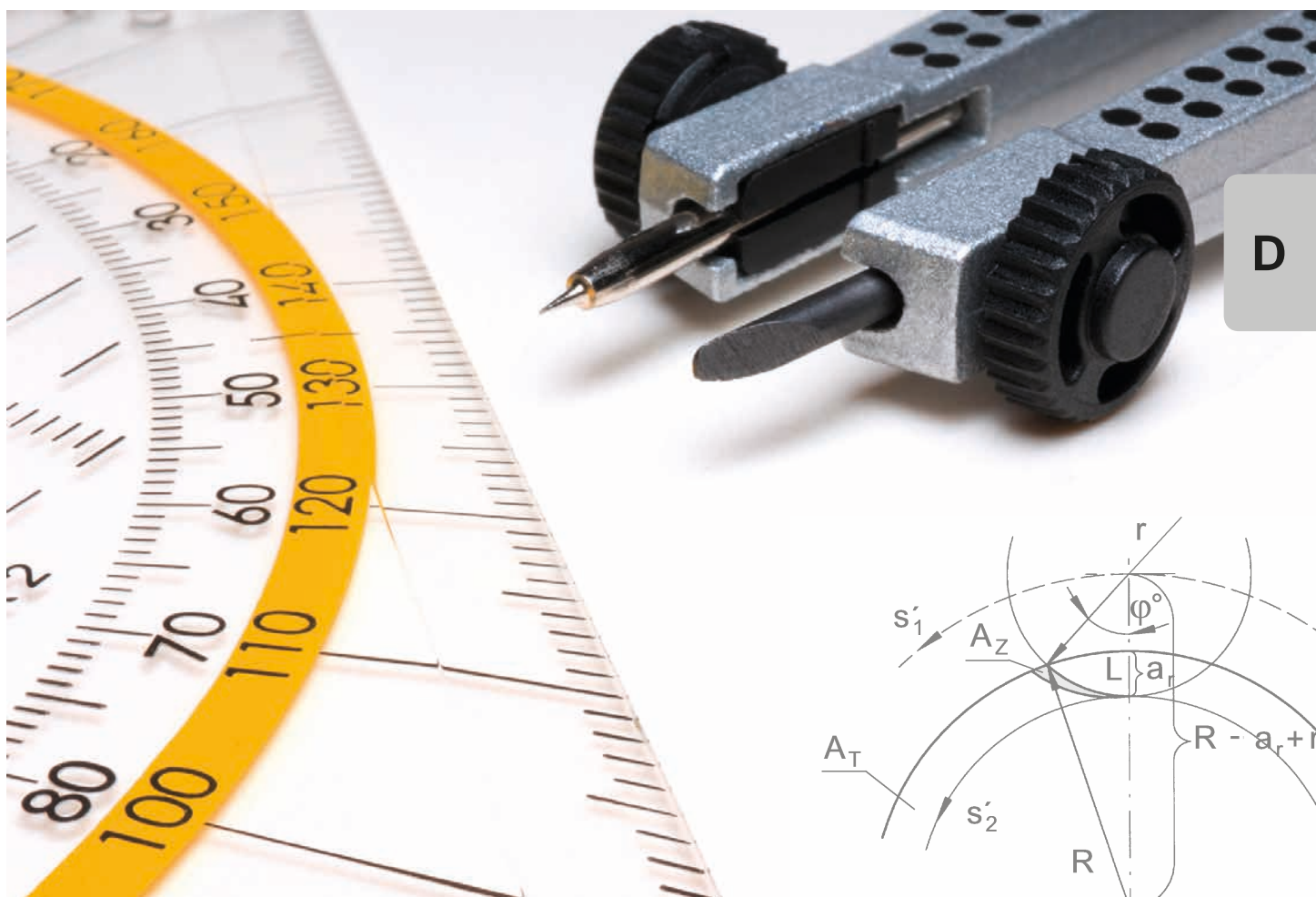


硬质合金牌号
Carbide grades

▲ 库存
on stock

△ 4周
4 weeks

产品型号 Part number	d	d ₂	s	l ₁	r		CB60	CB85
WNGA080404.TN5A	12.7	5.16	4.76	8.5	0.4		△	△
WNGA080408.TN5A	12.7	5.16	4.76	8.5	0.8		▲	△
WNGA080412.TN5A	12.7	5.16	4.76	8.5	1.2		▲	△
WNGA080416.TN5A	12.7	5.16	4.76	8.5	1.6		△	△
						P	-	-
						M	-	-
						K	-	-
						N	-	-
						S	-	-
						H	●	●



摘要/Summary	页/Page
扭矩说明 Torque Specification	238
表面质量 Surface quality	239
修光刃 Wiper Geometries	240
平衡 Balancing	241
金刚石切削材料 Diamond cutting materials	242-243
附加设备 Additional Equipment	244-247

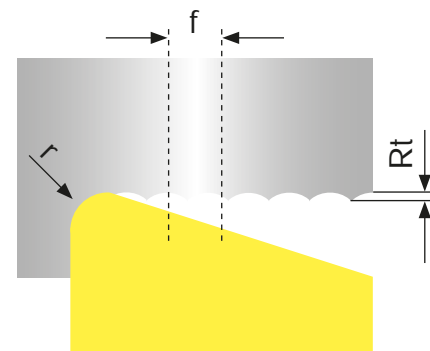
以下是允许使用的螺钉的扭矩,不建议使用额外的润滑剂,如铜膏或其他的

Following torques are allowed for screws of inserts. We do not recommend using any additional lubricants such as copper paste or similar for the screws.

型号 type	螺钉 Screw	M _d Nm	夹紧扳手 Clamping wrench	刀板 Blade
B105.MD...	DIN913-M5x5	1.0	SW2.5DIN911	DSW25K
H117.1...	4.09T15P	5.0	T15PQ	DT15PK
H117.MD...	030.400P.0227	5.0	T15PQ	DT15PK
HC105.MD	DIN913-M5x5	1.0	SW2.0DIN911	DSW20K
M117K...05	030.265P.0821	1.2	T8PL	DT8PK
M117K...07	030.265P.0819	1.2	T8PL	DT8PK
M117K...09	030.400P.0227	4.3	T15PQ	DT15PK
M117.MD10...	030.400P.0227	4.3	T15PQ	DT15PK
M117.MD...M0/...X0	4.09T15P	5.0	T15PQ	DT15PK
M117P...05	030.265P.0818	1.2	T8PL	DT8PK
M117P...07	2.6.5T8EP	1.2	T8PL	DT8PK
M117U...05	030.265P.0818	1.2	T8PL	DT8PK
M117U...07	2.6.5T8EP	1.2	T8PL	DT8PK
NH105.MD...	DIN913-M4x5	1.0	SW2.0DIN911	DSW20K

表面质量与刀尖半径和进给速度有关。
选择系统稳定性、工件形状和切屑控制允许的最大刀尖半径。

Surface quality in relation between edge radius and feed rate.
Choose the maximal edge radius of which system stability, workpiece shape and chip control allows.



单位 μm
Data's in μm

$$Rt = \frac{f_2}{8 \times r} \quad r = \frac{f_2}{8 \times Rt} \quad f = \sqrt{8 \times r \times Rt}$$

D

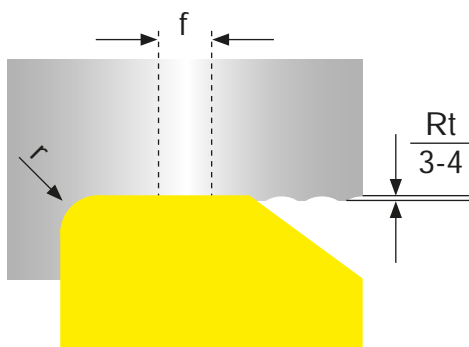
理论表面质量

theoretical surface quality

Ra (μm) Rt (μm)	0.4 - 0.8	0.8 - 1.6	1.6 - 3.2	3.2 - 6.3	6.3 - 12.5	12.5 - 25
	1.6	4	10	16	28	40
圆角 Radius	fn (mm/U) fn(mm/rev)					
0.1	0.04	0.05	0.07	0.10	0.12	0.18
0.2	0.05	0.07	0.10	0.14	0.18	0.45
0.4	0.07	0.09	0.15	0.22	0.25	0.35
0.8	0.10	0.17	0.22	0.27	0.35	0.50
1.2	0.12	0.20	0.25	0.34	0.43	0.60

使用修光刃的表面质量

Surface quality with Wiper-Geometry



为了满足车削和铣削加工中要求的更佳表面质量,我们开发了很多种带有修光几何槽型的刀片。该类槽型在刀尖圆角和横向切削刃之间有一个后缘,其类似于切削角 0° 的切削刃。即使在2-4倍大的进给率下也能得到同样的表面质量。通过降低循环周期,更高进给率下最佳的切削控制和刀具寿命的增加,您能逐步提高产能同时降低成本。

使用修光槽型时请注意:

接近角 需要准确应用,以便得到最好的修光效果,使表面质量最佳。

CCGW / T = 95° DCGW / T = 93°

注意切削方向。修光槽型被设计作用于切削刃之后,以得到良好的切屑流和表面质量。端面加工方向应从大径到小径。由于后缘,失真可能出现在圆角,倒角和锥形面上。

修光槽型的优点:

- 同样的切削参数下更佳表面质量
- 更高的进给率-可使用同一刀片进行粗加工和精加工
- 通过更高进给实现更佳的切屑控制
- 更高的进给率降低了每个工件的切削时间,并提高了耐磨性和刀具寿命。

For the purpose of high performance cutting in the fields turning and milling, we developed a large number of inserts with WIPER geometry. Those geometries are designed with a trailing edge between edge radius and lateral cutting edge, which works like a cutting edge with 0° approach angle. Even with 2 - 4 times higher feed rates you can achieve the same surface qualities. Through reduction of cycle time, the optimal chip control with higher feed rates and the increase of tool life, you can escalate your productivity while reducing costs at the same time.

Please keep in mind when using Wiper Geometries:

The **approach angle** needs to be applied accurately, in order to achieve the desired wiper effect to get best surface qualities:

CCGW / T = 95° DCGW / T = 93°

Be aware of the cutting direction. Wiper geometries are designed to trail behind the cutting edge for proper chip flow and surface quality.

Facing operations should always be performed from the larger to smaller diameter.

Because of the trailing edge, **distortion** can occur on radii, chamfers and tapers.

Advantages of Wiper Geometries:

- Better surface qualities at the same cutting parameters
- Higher feed rates - Roughing and finishing with one insert is possible
- Better chip control through higher feed rates
- Higher feed rates reduce the cutting time per workpiece and therefore the wear characteristic and this leads to significantly longer tool life

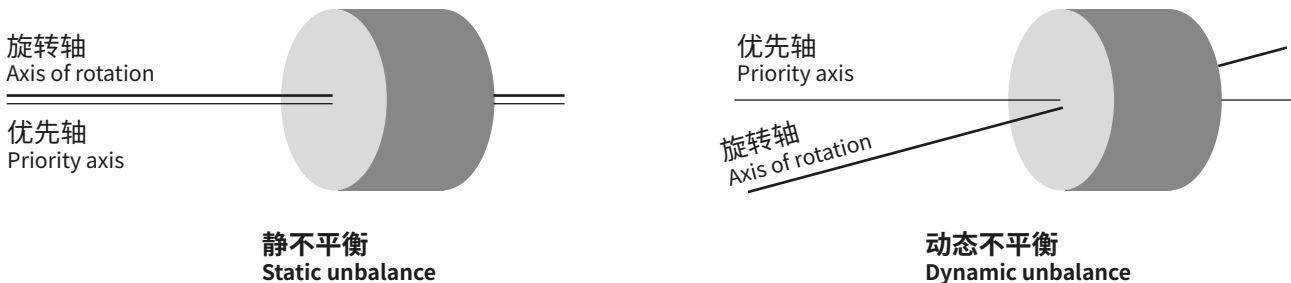
旋转不平衡是质量沿旋转轴的不均匀分布.当质量中心(惯性轴)与旋转中心(几何轴)不对齐时,就会引起不平衡。
来源:<http://de.wikipedia.org/wiki/Unwucht>

与先进的工具主轴相关联的高速意味着所使用的工具需要与它们的支持相平衡.如果做不到这一点,就会对表面质量产生影响,这不仅会影响工具的使用寿命,对达到完美的效果也是至关重要的.特别是在抛光和精加工方面.对于较大的质量或较大的直径,即使在相对较低的速度下工作,也必须考虑任何不平衡的影响.

静态不平衡和动态不平衡是有区别的.当转子的重心在旋转轴外时,就会发生静力不平衡.

对于短工具,高扭矩值不能发展,这意味着在一个平面上平衡通常是足够的(静态).

我们的工具在CAD阶段被设计成平衡的.在实践中,这意味着在理论设计阶段要考虑质量比及其偏移量.这是一个展示我们的质量的特性,并且是一种无需额外工作就能达到所需平衡的方法.然而,这项措施并没有取代平衡整个系统的需要.



Rotating Unbalance is the uneven distribution of mass around an axis of rotation. Unbalance is caused when the centre of mass (inertia axis) is out of alignment with the centre of rotation (geometric axis)....

source: <http://de.wikipedia.org/wiki/Unwucht>

The high speeds associated with state-of-the-art tool spindles mean that the tools used need to be balanced with their supports. Failure to do this has an impact on the surface qualities that can be achieved as well as on tool life - this can be crucial when it comes to achieving a perfect result, particularly with respect to polishing and brilliant finish machining. With large masses and/or large diameters, the effects of any unbalance must be taken into account even when working at relatively low speeds.

A distinction is drawn between static unbalance and dynamic unbalance. Static unbalance occurs when the rotor's centre of gravity is outside the rotary axis.

With short tools, high torque values cannot develop meaning that balancing in one plane is often sufficient here (static).

Our tools are designed to be balanced at the CAD stage. In practice, this means that the mass ratios and their offsets are considered during the theoretical design phase. This is a feature that demonstrates our quality and is a way of achieving the required balance without the need for additional work. Nevertheless, this measure does not replace the need to balance the system as a whole.

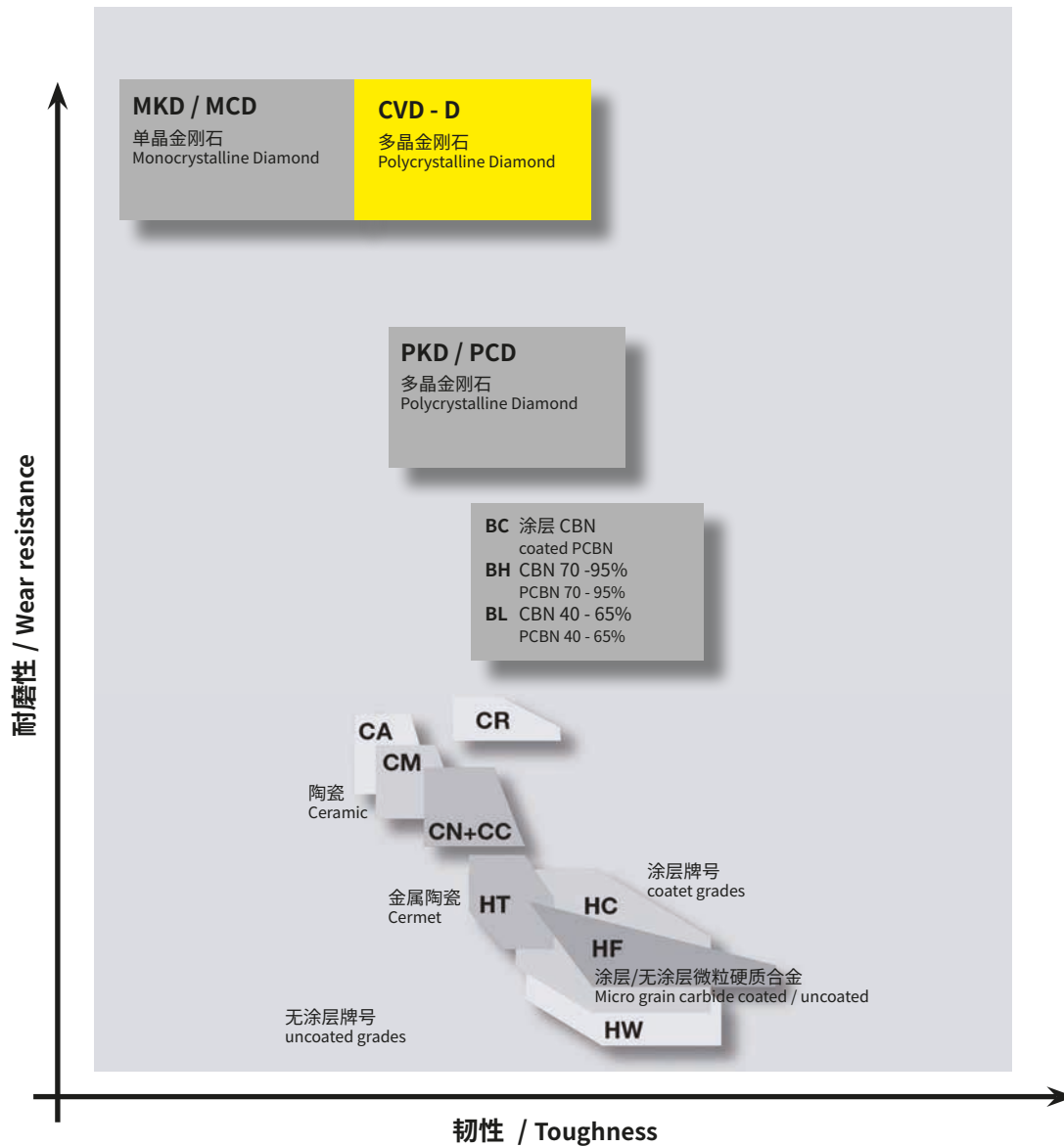
D

HORN-材质	切削材料	性	能推荐应用
MD10	MCD	固体单晶金刚石 无粒状组织, 极高硬度, 无微型裂口的极其锋利的切削刃, 低韧性。	所有有色金属、无磨料增强塑料、贵金属和贵重合金的抛光和高抛光加工
HD03 HD05 HD08	CVD-D	CVD金刚石 (多晶金刚石基材) 无整体硬质合金材质并无金属粘结剂。99.9%金刚石, 非常高的硬度和耐磨性, 无微型裂口使切削刃更锋利, 韧性也得到提高。	加工所有有色金属、铝合金、耐磨增强塑料、贵重合金、硬质合金、陶瓷绿色零件
PD70	PCD	多晶金刚石, 混合晶粒 整体硬质合金强化, 粒度细, 切削刃锋利度好, 最高的耐磨性和韧性	适用于所有有色金属和塑料的研磨增强材料, 从精加工到粗加工
PD75	PCD	多晶金刚石, 微晶粒 整体硬质合金强化, 粒度细, 切削刃锋利性好, 提高耐磨性和韧性	适用于所有有色金属和塑料的耐磨增强材料, 超细精加工和从精加工到粗加工

HORN-Grades	Cutting material	Properties	Recommended applications
MD10	MCD	Solid Monocrystalline Diamond without grain structure, highest hardness, absolutely sharp cutting edge without micro fractures, low toughness	Polish and high polish machining of all nonferrous metals, plastics without abrasive reinforcements, precious metals and precious alloys
HD03 HD05 HD08	CVD-D	CVD Diamond (Polycrystalline Diamond substrate) without solid carbide material and without metallic binder. 99.5% Diamond, Highest hardness and wear resistance, sharp cutting edge without micro fractures, improved toughness	Machining of all nonferrous metals, Aluminium alloys, Plastics with abrasive reinforcements, precious alloys, Solid Carbide, Ceramic green parts
PD70	PCD	Polycrystalline Diamond, mixed grain solid carbide reinforced, fine grit size, good cutting edge sharpness, highest wear resistance and toughness	All purpose for all nonferrous metals and plastics with abrasive reinforcements, from finishing to roughing
PD75	PCD	Polycrystalline Diamond, micro grain solid carbide reinforced, fine grit size, very good cutting edge sharpness, improved wear resistance and toughness	All purpose for all nonferrous metals and plastics with abrasive reinforcements, ultra fine finishing and from finishing to roughing

根据DIN ISO 513 (2001)的切削材质说明

Description of cutting materials according DIN ISO 513 (2001)



D



D 041 VL
0.4-1 Nm

带刻度的扭矩扳手
-扭矩可调
-屏幕显示调整扭矩

扭矩无极调节,符合人体工程学的多组件手柄,轻而紧凑的设计,当达到设定扭矩时单击信号按钮。
(标准: EN ISO 6798, BS EN 26789, ASME B 107.14.M.)
(精度: $\pm 6\%$)



D 15 VL
1-5 Nm

Torque screw driver with scale
- variable torque setting
- adjusted torque is shown on display

The Torque can be adjusted with a special torque setter (included).

Handle: Ergonomical form gives perfect handling abilities. Audible signal when set torque is reached.
Standard: EN ISO 6798, BS EN 26789, ASME B 107.14.M.
Precision: $\pm 6\%$



D 28 VL
2-7 Nm



ED 28 VL
配 / for
D041VL / D15VL / D28VL

设定扭矩的设备

柄部: 醋酸纤维材质,表面为细微结构
刃部: 八角形,硬化处理,镀锌

Device for setting the required torque

Handle: Celluloseacetat with micro structured surface
Blade: Octogonal (8 flats) blade, hardened galvanized



- DT6PK
- DT7PK
- DT8PK
- DT9PK
- DT10PK
- DT15PK
- DT20PK
- DT25PK
- DT27PK

配 / for
D041VL / D15VL / D28VL



Plus

扳手刀头配 TORX PLUS® 螺钉

刀头: 高品质铬钒钢, 经过硬化处理, 镀铬。Wiha 镀铬刀片保证了最好的精密度。使用深绿色代
应用: 使用给定的扭紧扭矩, 结合一个Wiha扭矩扳手。

Blade for TORX-Plus® screws

Blade: High quality Chrome-Vanadium steel, through hardened, chrome plated. Wiha Chrome Blade guarantees maximum precision. Colored code dark green
Utilization: Controlled screw setting with definite torque in combination with Wiha torque screw driver handle.



- T6PW
- T7PW
- T8PW
- T9PW
- T10PW
- T15PW
- T20PW
- T25PW
- T30PW



Plus

TORX PLUS® 螺钉扳手

应用: 适用于各种使用TORX PLUS®螺钉
注意: TORX PLUS®-扳手不适用于 Torx-螺钉

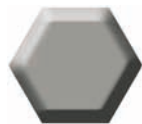
Wrench for TORX PLUS® Screws

Utilization: For all kind of using TORX PLUS® Screws
Attention: TORX PLUS®-Wrench does NOT fit for Torx-Screws



- DSW15K
- DSW20K
- DSW25K
- DSW30K
- DSW40K

配 / for
D041VL / D15VL / D28VL



扳手刀头-内六角螺钉

刀头: 高品质的铬钒钢, 硬化处理, 镀铬。Wiha 镀铬刀片保证了最好的精密度。使用红色代码
应用: 使用给定的扭紧扭矩, 结合一个Wiha扭矩扳手。

Blade for allen screws

Blade: High quality Chrome-Vanadium steel, through hardened, chrome plated. Wiha Chrome Blade guarantees maximum precision. Colored code red
Utilization: Controlled screw setting with definite torque in combination with Wiha torque screw driver handle

- DSW50K
- DSW60K

配 / for
D15QL





D14ZBK

配 / for
D041VL / D15VL / D28VL

通用钻套
也用于所有的C6.3和E6.3(1/4")钻头

刀头: 高品质铬钒钢, 经过硬化处理, 镀铬。

刀颈: 不锈钢

应用: 用于固定扭矩, 扭矩标与柄部。

Universal Bitholder for C6,3 and E6,3 (1/4") Bits

Blade: High quality Chrome-Vanadium steel, through hardened, chrome plated.

Collar: Stainless steel

Utilization: For controlled screw setting with definite torque in combination with torque screw driver handle.



D515QL

5-15 Nm

带刻度的扭矩扳手

-扭矩可调

-屏幕显示调整扭矩

扭矩无极调节, 符合人体工程学的多组件手柄, 轻而紧凑的设计, 当达到设定扭矩时单击信号按钮。

(标准: EN ISO 6798, BS EN 26789, ASME B 107.14.M.)
(精度: $\pm 6\%$)

Torque screw driver with scale

- variable torque setting

- adjusted torque is shown on display

The Torque can be adjusted with a special torque setter (included).

Handle: Ergonomical form gives perfect handling abilities. Audible signal when set torque is reached.

Standard: EN ISO 6798, BS EN 26789, ASME B 107.14.M.

Precision: $\pm 6\%$



ED515QL

配 / for
D515QL

扭矩调整扳手

柄部: 纤维素乙酸酯微观结构表面

刃部: 8角形状, 经过硬化处理, 镀铬。

Device for setting the required torque.

Handle: Celluloseacetat with micro structured surface

Blade: Octogonal (8 flats) blade, hardened galvanized



DT15PQ
DT20PQ
DT25PQ
DT27PQ
DT30PQ

配 / for
 D515QL



Plus

扳手刀头配 TORX PLUS® 螺钉

刀头: 高品质铬钒钢, 经过硬化处理, 镀铬。Wiha 镀铬刀片保证了最好的精密度。使用深绿色代码
应用: 使用给定的扭紧扭矩, 结合一个Wiha扭矩扳手。

Blade for TORX-Plus® screws

Blade: High quality Chrome-Vanadium steel, through hardened, chrome plated. Wiha Chrome Blade guarantees maximum precision. Colored code dark green
Utilization: Controlled screw setting with definite torque in combination with Wiha torque screw driver handle.



D14ZBQ

配 / for
 D515QL

通用钻套

也用于所有的C6.3和E6.3(1/4")钻头

刀头: 高品质铬钒钢, 经过硬化处理, 镀铬。

刀颈: 不锈钢

应用: 用于固定扭矩, 扭矩标与柄部。

Universal Bitholder for C6,3 and E6,3 (1/4") Bits

Blade: High quality Chrome-Vanadium steel, through hardened, chrome plated.

Collar: Stainless steel

Utilization: For controlled screw setting with definite torque in combination with torque screw driver handle.



14ZQK

通用T型刀柄的钻套

也用于所有的C6.3和E6.3(1/4")钻头

刀头: 高品质铬钒钢, 经硬化处理, 镀铬

刀颈: 不锈钢

应用: 开关控制

Universal Bitholder with T-handle for C6,3 and E6,3 (1/4") Bits

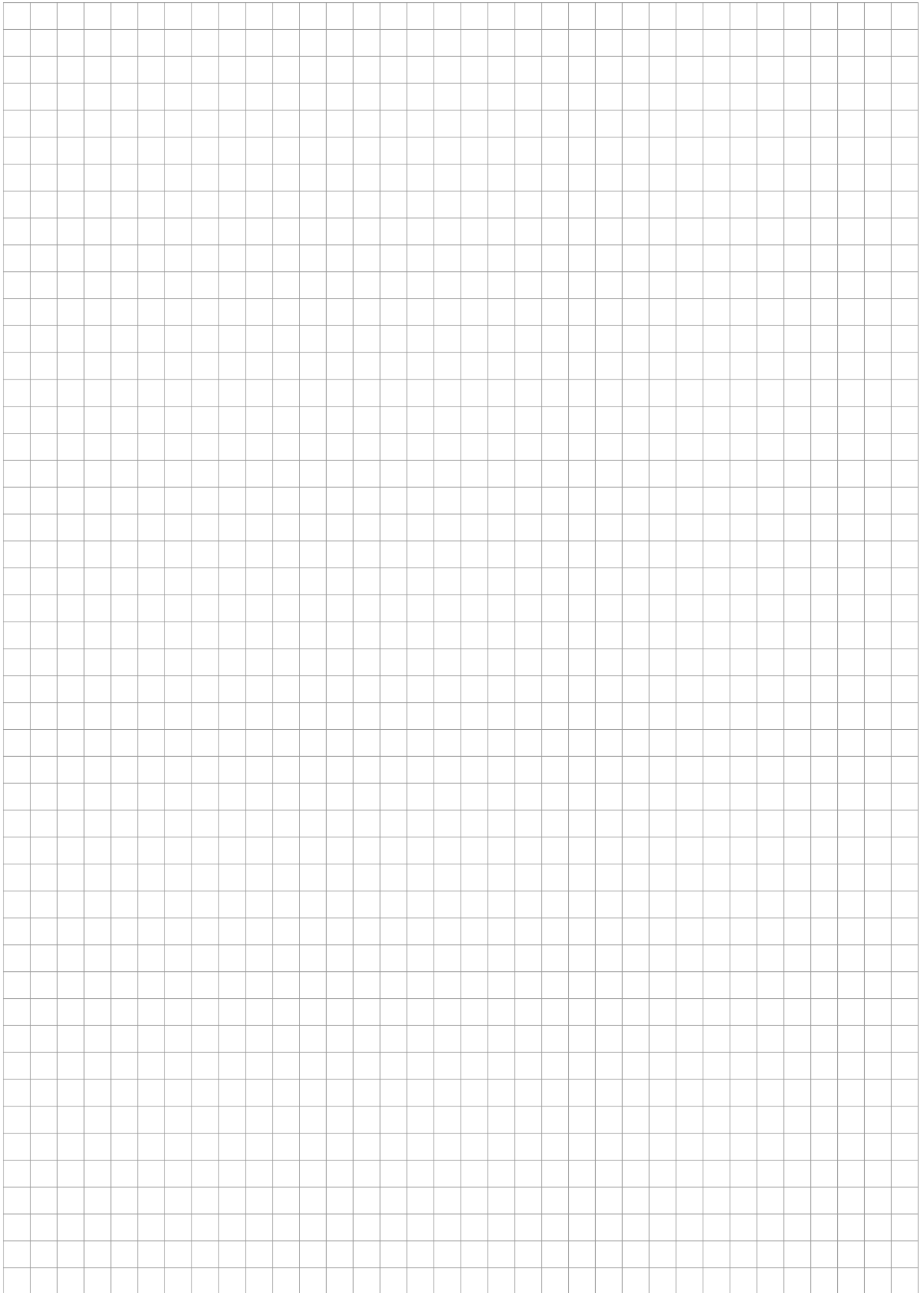
Blade: High quality Chrome-Vanadium steel, through hardened, chrome plated.

Collar: Stainless steel

Utilization: For controlled opening

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