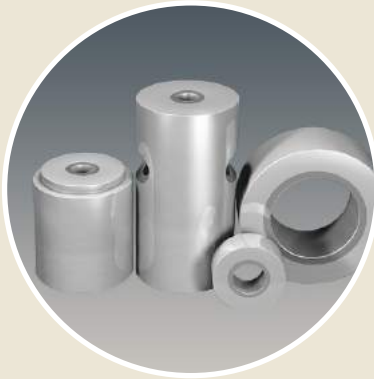


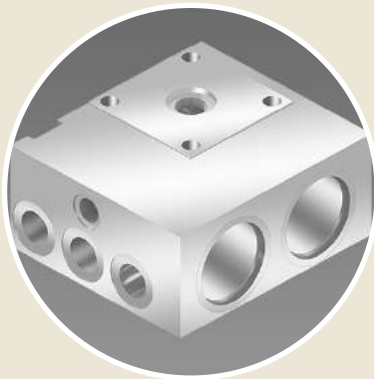
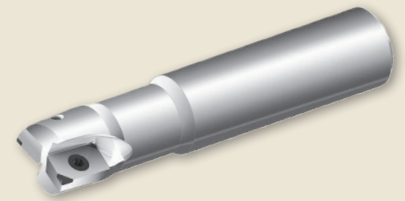


Milling Cutter Systems

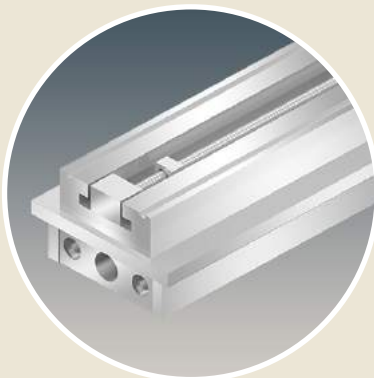
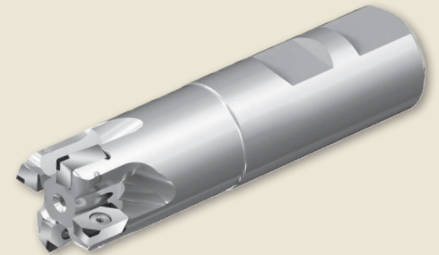
PCD, CVD-D, CBN



Medical Technology
Precision Engineering



Tool and
Mold Forming



Automotive
Mechanical Engineering



Aerospace





Welcome to DTS - Diamond Tooling Systems GmbH!

Based in Kaiserslautern - Germany - we have specialized in the development, production and distribution of precision tools equipped with ultrahard cutting materials, such as PCD (polycrystalline diamond), CVD-D (CVD thickfilm diamond), UltraDiamond (monocrystalline binderless diamond) and CBN (cubic boron nitride). As a leading manufacturer for tools with lasered cutting edges, we offer machining solutions in the areas of turning, milling, grooving, drilling, reaming, threading, and tool holding.

To be able to economically process ultra-hard cutting materials such as PCD, CVD-D and CBN on precision tools we realized early on that we would have to move away from the traditional production technology of „grinding“ to new technologies such as the „laser removal process“. This decision has contributed to the fact that our customers regard us, DTS GmbH, as the pioneer and leading manufacturer of lasered tools for machining.

Ultra-hard high-performance cutting materials have a key function in metal-cutting manufacturing. Precision tools equipped with ultra-hard cutting materials are products that require a great deal of explanation. The economical use of the cutting materials is only ensured if the machining process and the cutting material are coordinated with each other.

This is exactly where we at DTS - Diamond Tooling Systems GmbH - step in: Tools and processes are subjected to a comprehensive analysis by our experienced application engineers. Subsequently, the new process optimization is presented to the customer and in the next step, it is implemented in their production. Only in that way is it possible to exploit the optimum potential of our high-tech cutting materials.

Our experienced application engineers are also available to advise you during ongoing production. This close cooperation and mutual trust is the basis of our success.

With more than 25 years of optimization experience in the processing industry, this is where we see our strength!

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Technical Attachment

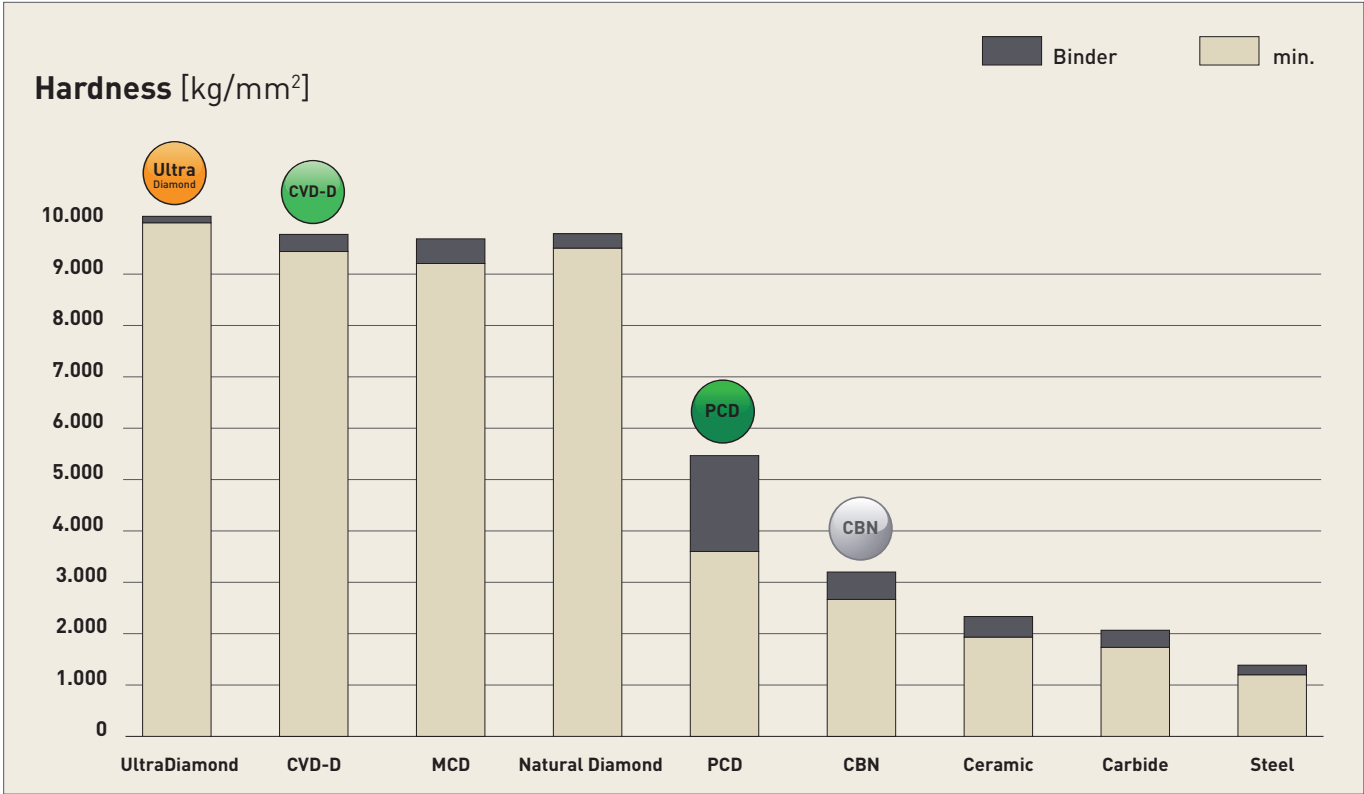
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PASSION FOR DIAMOND...

ultrahard cutting materials at a glance



... is not just a slogan for us - we live this passion in our daily dealings with our customers and we are your partner when it comes to diamond or CBN tools.



Polycrystalline diamond (PCD)

The well-known Standard Diamond

PCD is a synthetically produced, extremely tough, intergrown mass of diamond particles with a random orientation in a metal matrix. It is produced by sintering selected diamond particles under high pressure and high temperatures.

Graphite serves as a catalyst allowing the PDC crystals to intergrow. PCD has a high thermal conductivity and good heat dissipation away from the cutting edge. In addition, PCD has the highest bending fracture strength of all cutting materials.

PCD is very well suited for machining aluminum with a Si content of up to 10% and/or other abrasive fillers. The thermal hardness is about 750°C. The areas of application are like those of CVD thick-film diamond, but CVD thick film has a higher cost effectiveness with hard-brittle materials or aluminum from a Si content of 10%.

CVD-Thickfilm Diamond (CVD-D)

The Star among Diamond Cutting Materials

For the machining of hard-brittle materials such as Ceramics, glass, glass-Ceramics, tungsten Carbide, MMC and fiber-reinforced composites such as CFRP and GFRP. Due to the lack of a bonding matrix, the diamond content is much higher than with PCD. In the group of ultra-hard cutting materials, binderless CVD-D is one of the hardest man-made diamond cutting materials.

CVD-D is characterized by high hardness as well as high wear resistance. These properties make CVD-D the perfect cutting material for machining abrasive materials. Compared to PCD, which is damaged by the abrasive particles due to its soft metallic binder phase, the CVD-D cutting edge remains stable due to its binderless anchoring in the diamond matrix.

With the correct use of CVD-D, the tool life can be increased by up to 10 times (and even more) compared to PCD!

Binderless Diamond (UltraDiamond)

The hardest Mono Crystal

Single-crystal elements are laser-cut from diamond blanks in a defined orientation using laser segmentation technology. This new technology makes it possible, in addition to polycrystalline cutting materials such as PCD and CVD-D, to also braze a monocrystal (UltraDiamond) under high vacuum on any tool carrier. Compared to PCD, the tool life can be increased by approx. 15 to 25 times and compared to CVD-D by approx. 2 to 5 times.

The areas of application are similar to PCD and CVD-D, but this monocrystalline cutting material offers a further significant increase in tool life in all applications where PCD and CVD-D reach the limits of economic viability. The UltraDiamond cutting material makes economical machining of very hard, highly brittle materials such as Ceramics, glass, glass-Ceramics and hard metals with low cobalt binder and nickel binder (<10%) possible.

Polycrystalline Cubic Boron Nitride (CBN)

Chemically resistant and stable at high temperatures

of up to 1,400°C. Boron nitride powder is the starting point for the production of CBN, which has been available since the end of the 1960s. It is produced under high pressure and at temperatures of over 1,500°C and the many different substrates are specifically adapted to the final application.

CBN is now considered the second hardest material after diamond cutting materials!

The applications of CBN take place in the automotive industry, aerospace, tool and die and mold making as well as in mechanical engineering. The wide range as cutting and abrasive material includes hardened steels, cast irons, chilled Cast Iron, sintered materials, stellites, nickel- and cobalt-based superalloys. In many applications, cubic boron nitride is preferred to diamond cutting materials because it is absolutely stable in air at temperatures up to 1,400°C. Diamond, on the other hand, begins to decompose at a temperature of approx. 750°C.

Compared to PCD, CBN is also characterized by its chemical resistance to ferrous materials.

Our Cutting Material Assignment

about the materials

Benefit from over 25 years of application experience with ultra-hard cutting materials.

In the table you will find our cutting material recommendation for each material.


Green ✓

First choice

Orange ✓

Possible alternative

ISO	Material	PCD	CVD-D	CBN-H	CBN-X	CBN-K
H	Powder metallurgical Steel, hardened			✓	✓	
	Special Alloys (ASP,CPM,Hardox)			✓	✓	
	Steel, hardened up to 72 HRC			✓	✓	
	Tool Steel, hardened up to 72 HRC			✓	✓	
P	Sintered Steel				✓	✓
	Sintered Steel, hardened			✓	✓	
K	Grey Cast Iron (GCI)					✓
	Ductile Cast Iron (DCI)				✓	✓
	Shell Chilled Cast Iron			✓	✓	
S	Ni-, Co-, Fe- and Cr-Alloys			✓	✓	
	Titanium Alloys			✓	✓	
M	Stainless Steel, hardened			✓	✓	
N	Acrylic (PMMA)		✓			
	Aluminum, < 10% Si	✓	✓			
	Aluminum, > 10% Si	✓	✓			
	Brass	✓	✓			
	Ceramics	✓	✓			




You cannot find your material in the table?
If you have any further technical questions, please do not hesitate to contact us by phone or e-mail!


Phone: +49(0)6301 32011-0

Mail: info@diamond-toolingsystems.com

ISO	Material	PCD	CVD-D	CBN-H	CBN-X	CBN-K
N	Ceramics (Green)	✓	✓			
	Plastics	✓	✓			
	Composite such as CFG/GFRP	✓	✓			
	Copper, Copper Alloys	✓	✓			
	Glass, Glass Ceramic	✓	✓			
	Graphite	✓	✓			
	Magnesium	✓	✓			
	MMC	✓	✓			
	PEEK	✓	✓			
	Silver, Gold, Platinum	✓	✓			
	Tungsten alloy	✓	✓			
	Zirconium	✓	✓			



Special tools on request for you!
Please send inquiries to info@diamond-toolingsystems.com



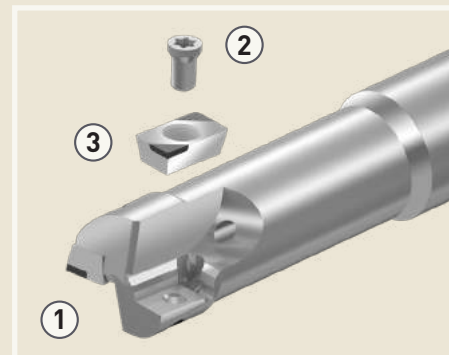
All our products are also available in the online shop.
Visit us at diamond-tools24.de

End Mill Systems

Shank- and Weldon End Mills for Milling Inserts

End Mills for Indexable Inserts from stock starting from Ø 10,00mm up to 14,00mm

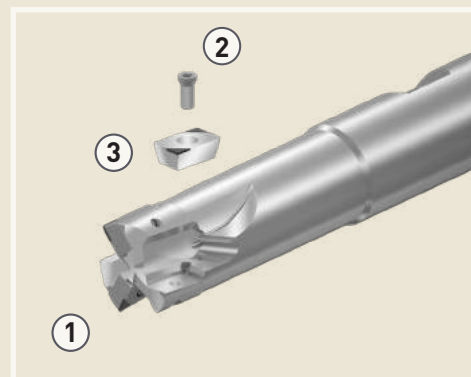
- Highest efficiency due to the use of Milling Inserts
- Ø 10.00 mm, equipped with 2 Milling Inserts
- Ø 12.00-14.00 mm, equipped with 3 Milling Inserts
- Can be used with PCD, CVD-D and CBN
- High stability and smooth rotation
- Corrosion resistant, nickel-plated base body



- ① Precision machined base body
- ② Screw for changing the milling insert
- ③ Milling Insert

Weldon End Mills from stock starting from Ø 16,00mm up to 25,00mm

- Highest efficiency due to the use of Milling Inserts
- Ø 16.00-25.00 mm, equipped with 2-4 Milling Inserts
- Can be used with PCD, CVD-D and CBN
- High stability and smooth rotation
- Corrosion resistant, nickel-plated base body



- ① Precision machined base body
- ② Screw for changing the milling insert
- ③ Milling Insert

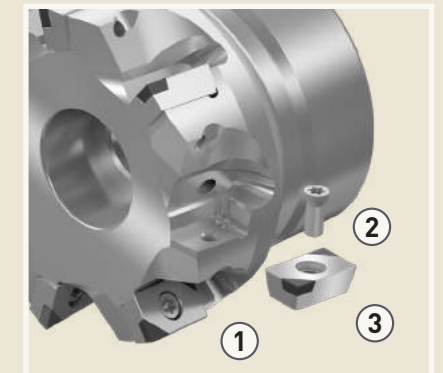
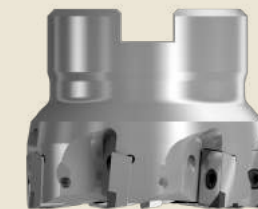
Shoulder and Cartridge Milling Cutter Systems

Shoulder Cutter and Cartridge System for Milling Inserts



Face and Shoulder Cutter from stock starting from Ø 32,00mm up to Ø 100,00mm

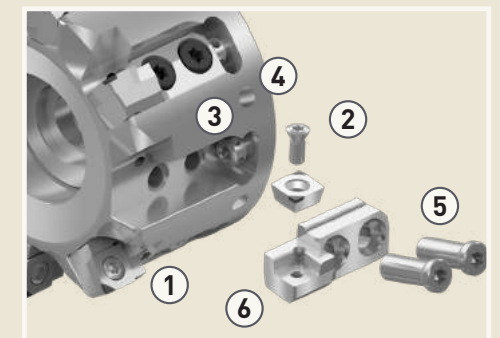
- Highest efficiency due to the use of Milling Inserts
- Ø 32.00-100.00 mm, equipped with 4-14 Milling Inserts
- Can be used with PCD, CVD-D and CBN
- High stability and smooth rotation
- Corrosion resistant, nickel-plated base body



- ① Precision machined base body
- ② Screw for changing the milling insert
- ③ Milling Insert

Axial mp precisely adjustable Aluminum or Steel Cartridge Milling Cutter from stock starting from Ø 50,00mm up to Ø 400,00mm

- Highest efficiency due to the use of Milling Inserts
- Ø 50.00-400.00 mm, equipped with 4-31 Milling Inserts
- Can be used with PCD, CVD-D and CBN
- High stability and smooth rotation
- Base body with aluminum or Steel available
- Steel body corrosion resistant, nickel-plated



- ① Precision machined base body
- ② Screw for the milling insert
- ③ Screw for height adjustment
- ④ Balancing screw
- ⑤ Screw for the cartridge
- ⑥ Cartridges



AOEX 04 Inserts
for face and corner shank end mill

Benefits:

- ✓ AOEX 04 – Insert size 6,48 mm
- ✓ R 0,20 – R0,40 – R0,80 mm
- ✓ Tipped with 2 cutting edges (Z2)
- ✓ CL 2,00 mm

Ø 10,00 – 14,00mm



AOEX 07 Inserts
for face and corner shank, weldon and 90° shoulder cutter

Benefits:

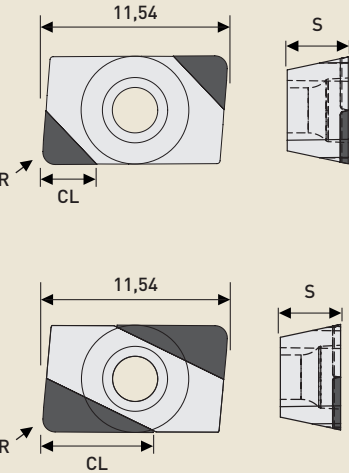
for face milling

- ✓ AOEX 07 – Insert size 11,54 mm
- ✓ R 0,20 – R0,40 – R0,80 – R1,20 – R1,60 mm
- ✓ Tipped with 2 cutting edges (Z2)
- ✓ CL 3,00 mm

for corner milling

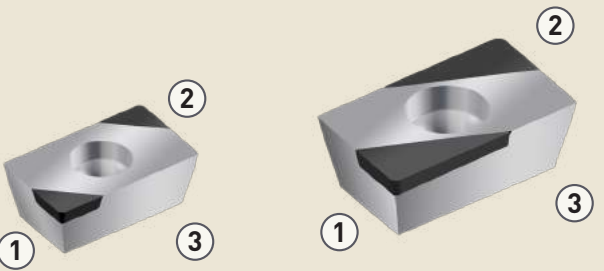
- ✓ AOEX 07 – Insert size 11,54 mm
- ✓ R 0,20 – R0,40 – R0,80 – R1,20 – R1,60 mm
- ✓ Tipped with 2 cutting edges (Z2)
- ✓ CL 7,00 mm

Ø16,00 - 100,00 mm

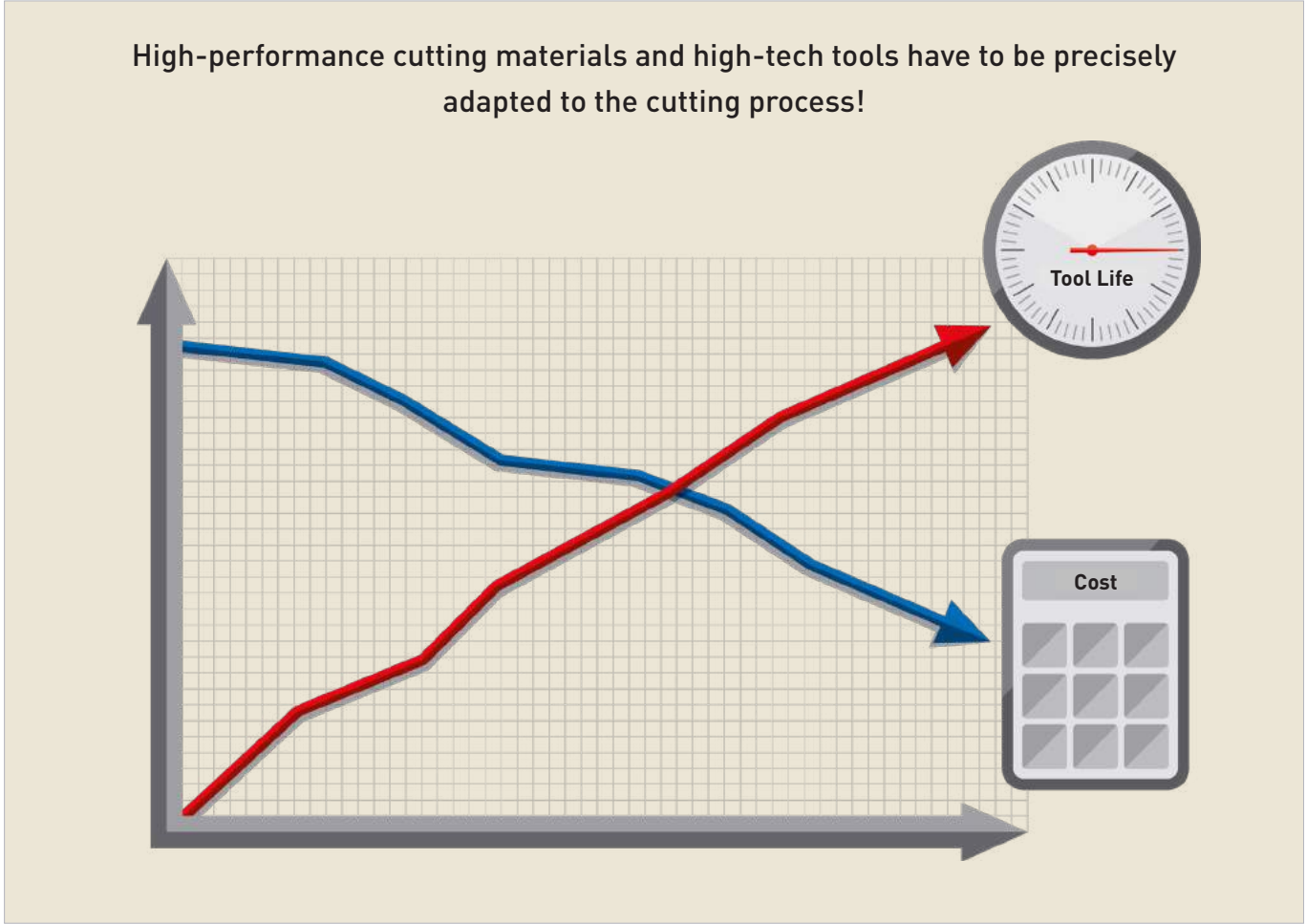


High efficiency due to multiple cutting edges
from stock with our cutting material PCD, CVD and CBN

Due to our 2-edged assembly of the DTS-Milling Inserts you can work highly economical compared to single-edged Milling Inserts or soldered milling systems.



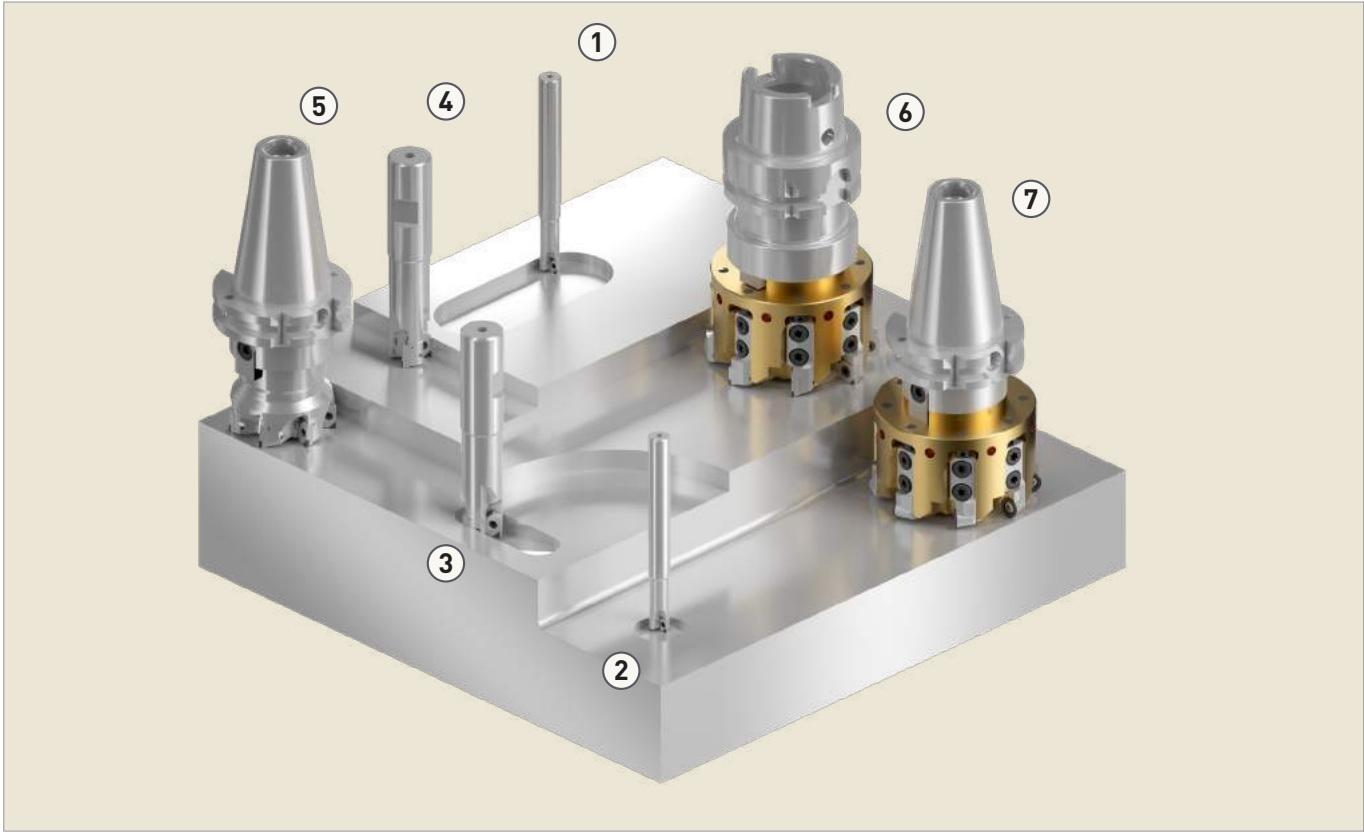
① Cutting edge 1
② Cutting edge 2
③ Carbide base body



Application Overview

for our Milling Cutter Systems

This is how you can work with our milling cutter systems:



DTS - Shank End Mill Ø 10 – 14mm

- Ramp
- Circular milling
- Face and corner milling

DTS - Weldon End Mill Ø 16 – 25mm

- Ramp
- Circular milling
- Face and corner milling

DTS - Shoulder Cutter Ø 32 – 100mm

- Ramp
- Circular milling
- Face and corner milling

DTS - Cartridge Milling Cutter Ø 40 – 400mm

- Ramp
- Circular milling
- Face and corner milling

With our milling cutters you can machine the following materials:

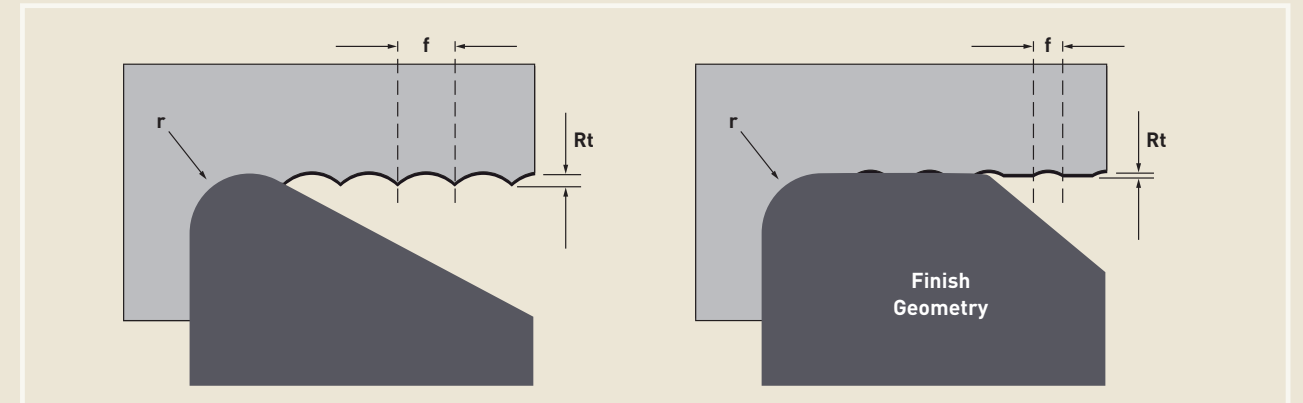
- Aluminum <10% Si
- Aluminum >10% Si
- Ceramics
- Copper and Brass
- Ductile Cast Iron (DCI)
- GFRP/CFRP
- Grey Cast Iron (GCI)
- Any Plastics
- Steel hardened
- Tool Steel

Finish Milling Inserts

for Cardige Milling Cutters, for the best surface



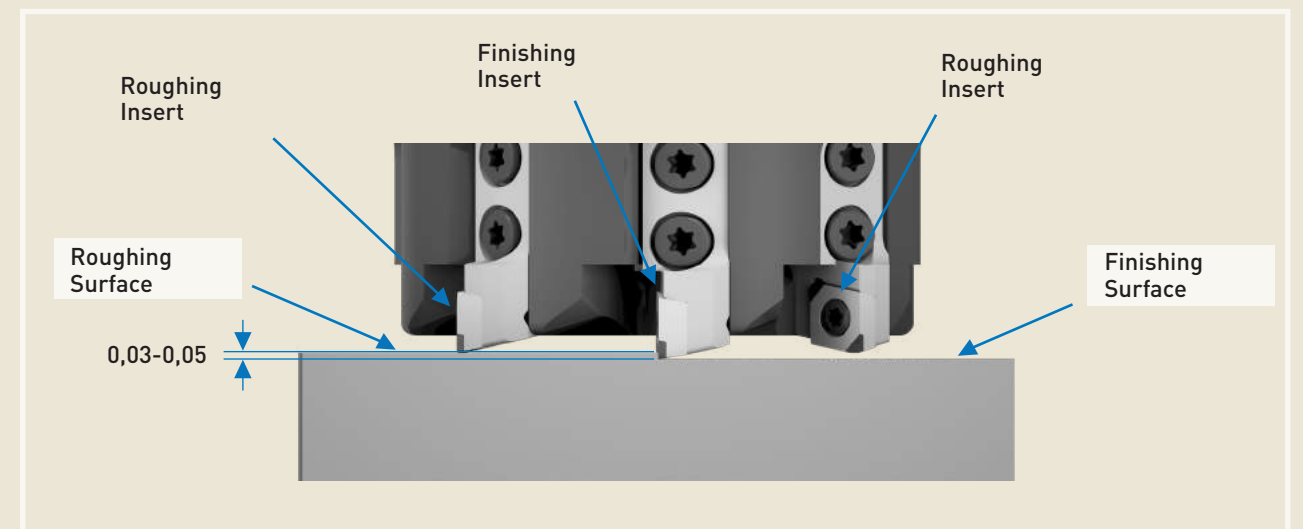
Finish Milling Inserts:



When using DTS finish Milling Inserts, you can improve the surface quality by a factor of 3 to 4 at the same feed rate. Special requests are also possible, precisely adapted to your machining process.

Roughing and Finishing in one Process:

You can adjust all of our Milling Inserts to within 5µm in height.



By increasing the height of the finishing milling insert, it is possible to realize a rough-finishing cut with one cut.

Thus, a significantly better surface quality can be produced in one cut.

Application Example

Milling Composites in one cut

You can mill different materials in one cut with our end mills and milling heads. You will find the cutting material assignment starting on page 6.

Adjustable Cartridge Milling Cutters

CFRP
GFRP
Graphite

Aluminum

CFRP
GFRP
Graphite

Copper
Brass

Machining with CVD-D Milling Inserts

Machining with CVD-D Milling Inserts

Face and 90° Shoulder Cutter

Steel hardened
up to 72 HRC

Steel hardened
up to 72 HRC

Solid
Carbide

Steel
hardened
up to 72 HRC

Machining with CBN-H Milling Inserts

Machining with CBN-X Milling Inserts

Our Cutting Materials

and their main applications at a glance



We want to offer you the ideal solution for your application. Therefore, we have developed five CBN-main groups, specially adapted to the requirements of the different materials.

Below you will find an overview of the different groups.

PCD

is ideally suited for the machining of *

Aluminum <10% Si | Brass | Copper, Copper Alloys | Graphite | Magnesium | PEEK | Tungsten alloy

continuous cut

light interrupted cut

heavy interrupted cut

CVD-D

is ideally suited for the machining of *

Acrylic (PMMA) | Aluminum >10% Si | Carbide | Ceramics | Composites (GFRP/CFRP) | Copper, Copper Alloys | Glass, Glass ceramic | Magnesium | Plastic | Silver, Gold, Platinum | Titanium | Zirconium

continuous cut

light interrupted cut

heavy interrupted cut

CBN-H

is ideally suited for the machining of *

Steel, hardened up to 72 HRC
Sinter Steel, hardened

continuous cut

light interrupted cut

heavy interrupted cut

CBN-K

is ideally suited for the machining of *

Grey Cast Iron (GCI)
Ductile Cast Iron (DCI)

continuous cut

light interrupted cut

heavy interrupted cut

CBN-X

is ideally suited for the machining of *

Powder metallurgical Steel, hardened
Special Alloys such as ASP, CPM, Hardox
Tool Steel, hardened up to 72 HRC

continuous cut

light interrupted cut

heavy interrupted cut

* all other applications can be found in the complete cutting material assignment from page 6

End Mill Systems

for milling inserts

Milling Cutter Systems

for milling inserts

Our face and corner end mills have been specially designed for economical use with diamond and CBN inserts. You have the possibility to realize a high chip removal. Furthermore, you can be very flexible between the cutting materials PCD, CVD-D, and CBN due to the indexable insert solution. This highly economical solution is available from stock from $\varnothing 10.00 - 25.00$ mm.



Especially suitable for the following industries:

- Tool and Mold Forming
- General Mechanical Engineering
- Automotive
- Aerospace Industry
- Optical Industry
- Ceramic Industry

Suitable for these materials:

- Aluminum up to 28 % Si
- Steel hardenend
- Glass and Glass Ceramic
- Graphite
- Cast Iron
- Hard Metals
- Ceramics
- Brass- and Bronze Alloys
- Tool Steels
- Zircon

Our face and shoulder cutters have been specially designed for economical use with diamond and CBN inserts. You have the possibility to realize a high chip removal. Furthermore you can be very flexible due to the indexable insert solution, with a cutting edge length of 3mm and 7mm. You can easily switch between the cutting materials PCD, CVD-D and CBN. This highly economical solution is available from stock from $\varnothing 32,00 - 100,00$ mm.

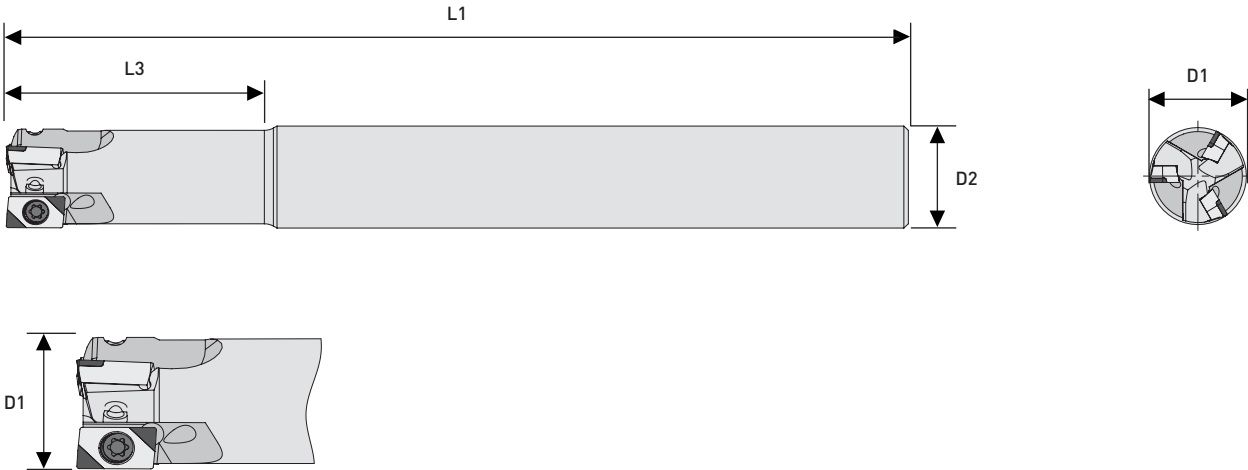
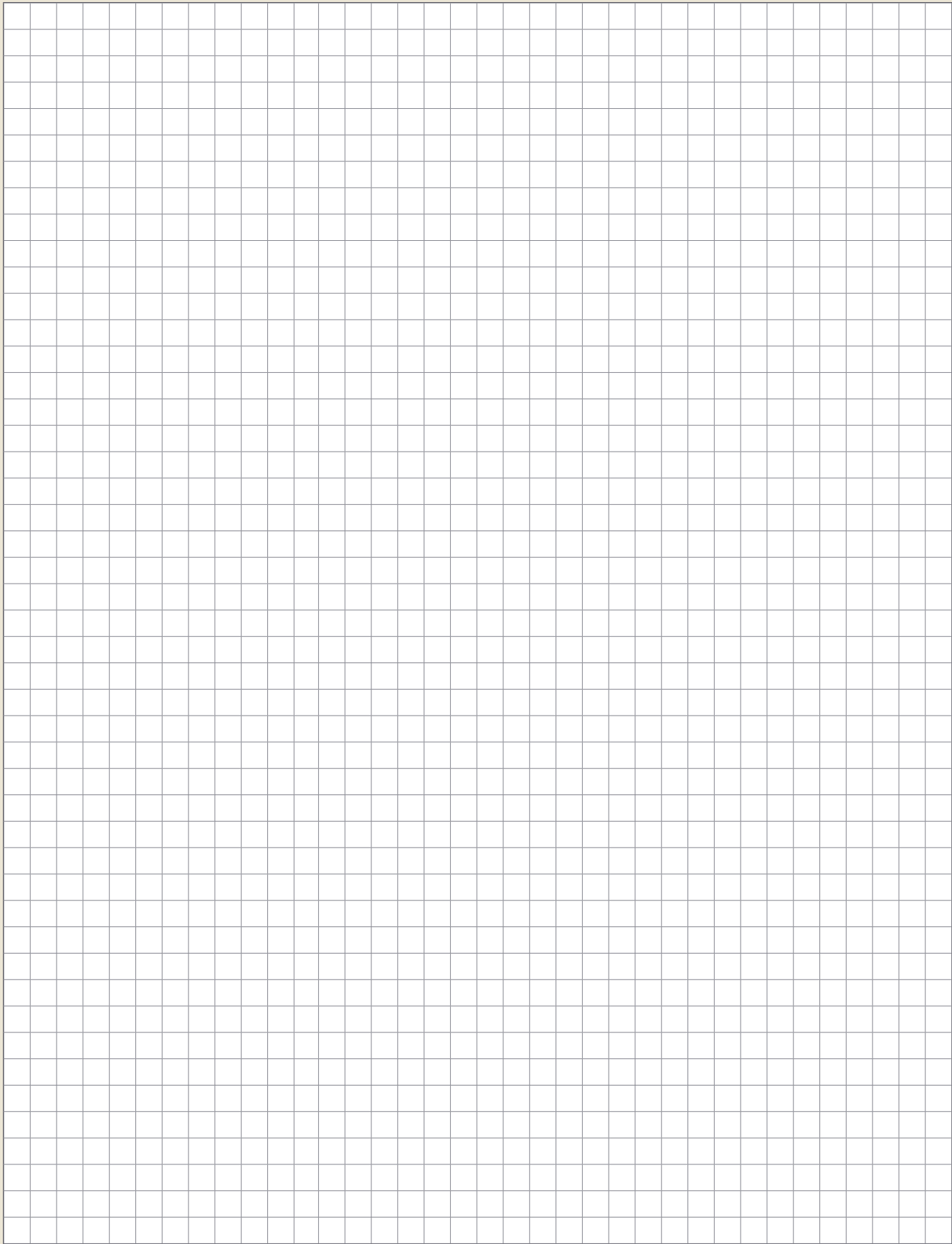


Especially suitable for the following industries:

- Tool and Mold Forming
- General Mechanical Engineering
- Automotive
- Aerospace Industry
- Optical Industry
- Ceramic Industry

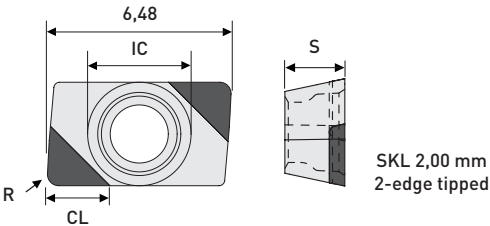
Suitable for these materials:






- Aluminum up to 28 % Si
- Steel hardenend
- Glass and Glass Ceramic
- Graphite
- Cast Iron
- Hard Metals
- Ceramics
- Brass- and Bronze Alloys
- Tool Steels
- Zircon








D1	D2	L1	L3	Z	n max	Item No.	Clamping Screw	Clamping Key
10,00	10h6	100,00	28,00	2	36.000	FW7060-0050	01-SP9090-0186	01-SP9091-0090
12,00	12h6	100,00	30,00	3	36.000	FW7060-0055	01-SP9090-0188	01-SP9091-0090
14,00	12h6	120,00	32,00	3	36.000	FW7060-0060	01-SP9090-0188	01-SP9091-0090

for face and 90° shoulder milling

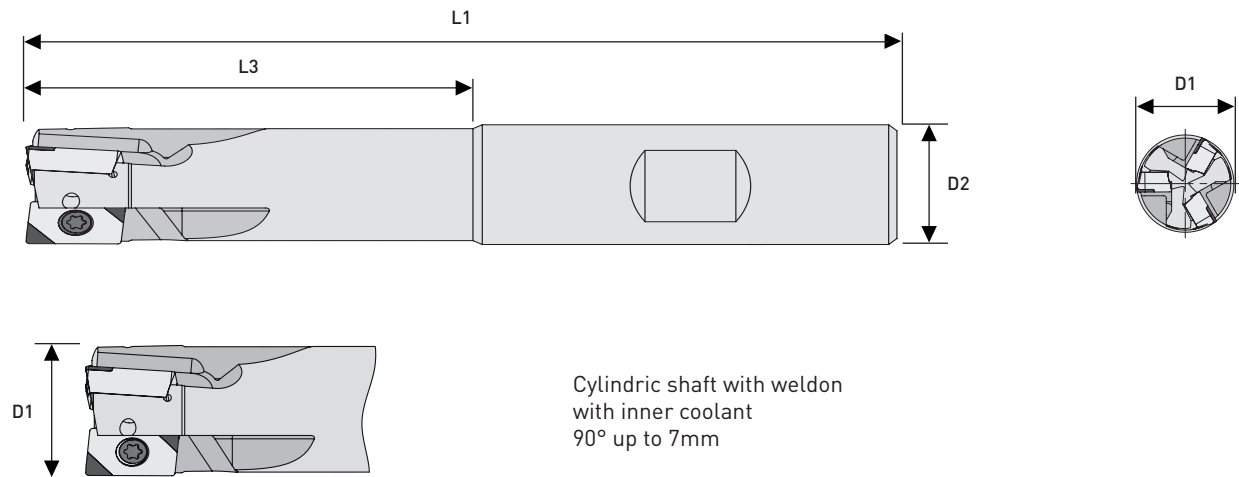


ISO Code	IC	S	R	 PCD	 CVD-D	 CBN-H	 CBN-X	 CBN-K
				Item No.	Item No.	Item No.	Item No. <small>New</small>	Item No.
AOEX 040202	3,65	2,38	0,20	MI1010-0020	MI2010-0020	MI5010-0020	MI5910-0020	MI5510-0020
AOEX 040204	3,65	2,38	0,40	MI1010-0025	MI2010-0025	MI5010-0025	MI5910-0025	MI5510-0025
AOEX 040208	3,65	2,38	0,80	MI1010-0030	MI2010-0030	MI5010-0030	MI5910-0030	MI5510-0030

Application range:

-  **PCD** Aluminum < 10% Si, Brass, Graphite coarse-grained, Plastics, Zinc ...
-  **CVD-D** Aluminum > 10% Si, Carbide > 8% Co, Copper, GFRP, CFRP, Glass materials, Graphite fine-grained, Titanium (Finishing) ...
-  **CBN-H** Steel hardened up to 72 HRC ...
-  **CBN-X** Tool Steel up to 72 HRC, Stellite, powder metallurgical Steel, Stainless Steel hardened, Ni-, Co-, Fe- and Cr-Alloys ...
-  **CBN-K** Grey Cast Iron (GCI), Ductile Cast Iron (DCI) ...

Weldon End Mill 90°
for milling inserts AOEX | Ø16,00 - 25,00



Cylindric shaft with weldon
with inner coolant
90° up to 7mm

D1	D2	L1	L3	Z	n max	Item No.
16,00	16h6	80,00	30,00	2	32.000	FW7060-0100
	16h6	90,00	40,00	2	32.000	FW7060-0105
20,00	20h6	95,00	40,00	3	28.000	FW7060-0110
	20h6	105,00	50,00	3	28.000	FW7060-0115
25,00	25h6	110,00	50,00	3	24.000	FW7060-0120
	25h6	135,00	75,00	3	24.000	FW7060-0125
	25h6	110,00	50,00	4	24.000	FW7060-0130
	25h6	135,00	75,00	4	24.000	FW7060-0135
Clamping Screw						01-SP9090-0255
Clamping Key						01-SP9091-0110

Application range:

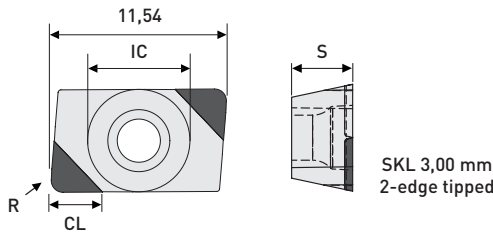
- PCD** Aluminum < 10% Si, Brass, Graphite coarse-grained, Plastics, Zinc ...
- CVD-D** Aluminum > 10% Si, Carbide > 8% Co, Copper, GFRP, CFRP, Glass materials, Graphite fine-grained, Titanium (Finishing) ...
- CBN-H** Steel hardened up to 72 HRC ...
- CBN-X** Tool Steel up to 72 HRC, Stellite, powder metallurgical Steel, Stainless Steel hardened, Ni-, Co-, Fe- and Cr-Alloys ...
- CBN-K** Grey Cast Iron (GCI), Ductile Cast Iron (DCI) ...

You will find further application ranges in the detailed overview from page 6.

AOEX Milling Inserts
for our Weldon End Mill

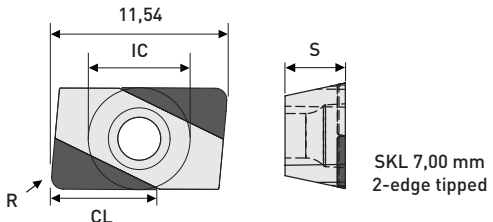


for face and 90° shoulder milling



ISO Code	IC	S	R	PCD	CVD-D	CBN-H	CBN-X	CBN-K
				Item No.	Item No.	Item No.	Item No. ^{New}	Item No.
AOEX 07T302	7,00	3,97	0,20	MI1010-0050	MI2010-0050	MI5010-0050	MI5910-0050	MI5510-0050
AOEX 07T304	7,00	3,97	0,40	MI1010-0055	MI2010-0055	MI5010-0055	MI5910-0055	MI5510-0055
AOEX 07T308	7,00	3,97	0,80	MI1010-0060	MI2010-0060	MI5010-0060	MI5910-0060	MI5510-0060
AOEX 07T312	7,00	3,97	1,20	MI1010-0064	MI2010-0064	MI5010-0064	MI5910-0064	MI5510-0064
AOEX 07T316	7,00	3,97	1,60	MI1010-0065	MI2010-0065	MI5010-0065	MI5910-0065	MI5510-0065

for corner and 90° shoulder milling



ISO Code	IC	S	R	PCD	CVD-D	CBN-H	CBN-X	CBN-K
				Item No.	Item No.	Item No.	Item No. ^{New}	Item No.
AOEX 07T302	7,00	3,97	0,20	MI1025-0050	MI2025-0050	MI5025-0050	MI5925-0050	MI5525-0050
AOEX 07T304	7,00	3,97	0,40	MI1025-0055	MI2025-0055	MI5025-0055	MI5925-0055	MI5525-0055
AOEX 07T308	7,00	3,97	0,80	MI1025-0060	MI2025-0060	MI5025-0060	MI5925-0060	MI5525-0060
AOEX 07T312	7,00	3,97	1,20	MI1025-0064	MI2025-0064	MI5025-0064	MI5925-0064	MI5525-0064
AOEX 07T316	7,00	3,97	1,60	MI1025-0065	MI2025-0065	MI5025-0065	MI5925-0065	MI5525-0065



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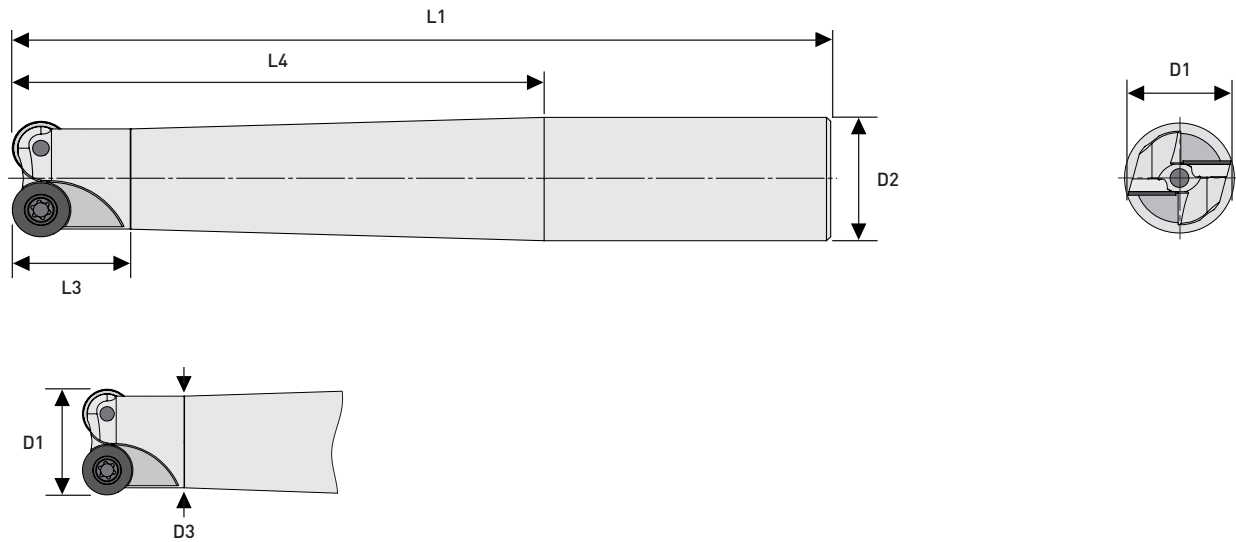


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Subject to technical changes.

Copy End Mills

for milling inserts RDHX | Ø15,00 - 20,00



D1	D2	D3	L1	L3	L4	Z	ß	for RDHX...	Item No. ^{New}
15,00	16h6	13,00	88,00	-	40,00	2	20°	0702M0	FW7060-6050
	16h6	13,00	108,00	20,00	60,00	2	20°	0702M0	FW7060-6055
	20h6	13,00	130,00	20,00	80,00	2	20°	0702M0	FW7060-6060
	20h6	13,00	150,00	20,00	100,00	2	20°	0702M0	FW7060-6065
	25h6	13,00	176,00	20,00	120,00	2	20°	0702M0	FW7060-6070
20,00	20h6	18,00	90,00	20,00	40,00	2	20°	1003M0	FW7060-6100
	20h6	18,00	110,00	20,00	60,00	2	20°	1003M0	FW7060-6105
	25h6	18,00	136,00	20,00	80,00	2	20°	1003M0	FW7060-6110
	25h6	18,00	156,00	20,00	100,00	2	20°	1003M0	FW7060-6115
	25h6	18,00	176,00	20,00	120,00	2	20°	1003M0	FW7060-6120

Application range:

- PKD

Aluminum < 10% Si, Brass, Graphite coarse-grained, Plastics, Zinc ...
- CVD-D

Aluminum > 10% Si, Carbide > 8% Co, Copper, GFRP, CFRP, Glass materials, Graphite fine-grained, Titanium (Finishing) ...
- CBN-H

Steel hardened up to 72 HRC ...
- CBN-X

Tool Steel up to 72 HRC, Stellite, powder metallurgical Steel, Stainless Steel hardened, Ni-, Co-, Fe- and Cr-Alloys ...
- CBN-K

Grey Cast Iron (GCI), Ductile Cast Iron (DCI) ...

You will find further application ranges in the detailed overview from page 6.

RDHX Milling Inserts

for our Copy End Mills



for Copy End Mills D1 Ø15

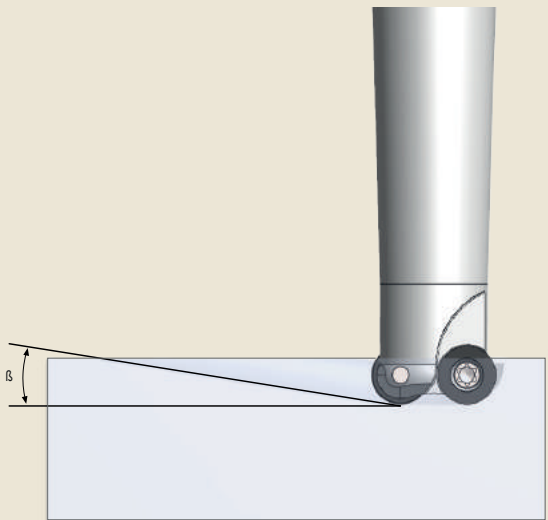
ISO Code	IC	S	R	Item No. ^{New}	Item No. ^{New}	Item No. ^{New}	Item No. ^{New}	Item No. ^{New}
RDHX 0702M0	7,00	2,38	M0	DP1030-0007	DP2030-0007	MI5030-0135	MI5930-0137	MI5530-0137

for Copy End Mills D1 Ø20

ISO Code	IC	S	R	Item No. ^{New}	Item No. ^{New}	Item No. ^{New}	Item No. ^{New}	Item No. ^{New}
RDHX 1003M0	10,00	3,18	M0	DP1030-0008	DP2030-0008	MI5030-0140	MI5930-0142	MI5530-0142

Ramp angle ß

(look at the table on page 26)



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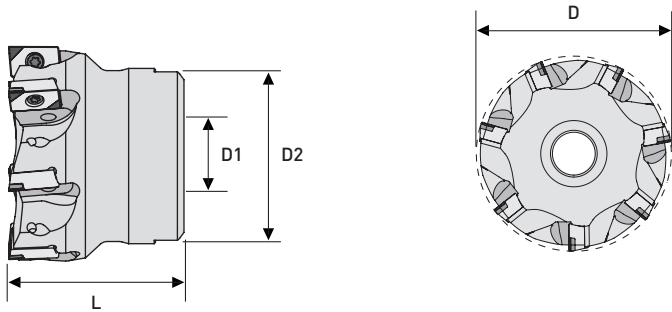


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Subject to technical changes.

Face and 90° Shoulder Cutter

for milling inserts AOEX | Ø32,00 - 100,00

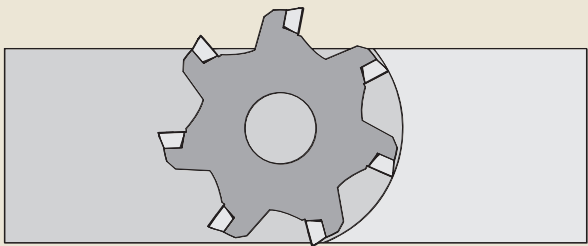


Steel body
Insert angle 5°
90° up to 7mm

Including base body | Excluding milling inserts and chuck

D	D1	D2	L	Z	n max	Item No.	Clamping Screw	Clamping Key
32,00	16,00	30,00	32	4	24.000	FW7060-4990	01-SP9090-0255	01-SP9091-0110
32,00	16,00	30,00	32	5	24.000	FW7060-5000	01-SP9090-0255	01-SP9091-0110
40,00	22,00	38,00	40	5	20.000	FW7060-5010	01-SP9090-0255	01-SP9091-0110
40,00	22,00	38,00	40	6	20.000	FW7060-5020	01-SP9090-0255	01-SP9091-0110
50,00	22,00	40,00	40	5	18.000	FW7060-5030	01-SP9090-0255	01-SP9091-0110
50,00	22,00	40,00	40	7	18.000	FW7060-5040	01-SP9090-0255	01-SP9091-0110
63,00	27,00	48,00	50	7	16.000	FW7060-5050	01-SP9090-0255	01-SP9091-0110
63,00	27,00	48,00	50	9	16.000	FW7060-5060	01-SP9090-0255	01-SP9091-0110
80,00	27,00	60,00	50	11	12.000	FW7060-5070	01-SP9090-0255	01-SP9091-0110
100,00	32,00	80,00	55	14	10.000	FW7060-5080	01-SP9090-0255	01-SP9091-0110

Milling Tool diameter should be 20-30% larger than the workpiece width.

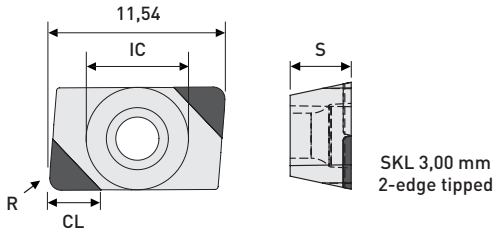


AOEX Milling Inserts

for face and 90° shoulder milling

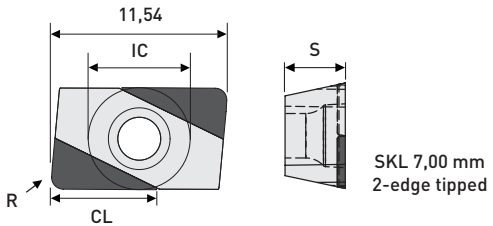


for face and 90° shoulder milling



ISO Code	IC	S	R	PCD	CVD-D	CBN-H	CBN-X	CBN-K
				Item No.	Item No.	Item No.	Item No. ^{New}	Item No.
AOEX 07T302	7,00	3,97	0,20	MI1010-0050	MI2010-0050	MI5010-0050	MI5910-0050	MI5510-0050
AOEX 07T304	7,00	3,97	0,40	MI1010-0055	MI2010-0055	MI5010-0055	MI5910-0055	MI5510-0055
AOEX 07T308	7,00	3,97	0,80	MI1010-0060	MI2010-0060	MI5010-0060	MI5910-0060	MI5510-0060
AOEX 07T312	7,00	3,97	1,20	MI1010-0064	MI2010-0064	MI5010-0064	MI5910-0064	MI5510-0064
AOEX 07T316	7,00	3,97	1,60	MI1010-0065	MI2010-0065	MI5010-0065	MI5910-0065	MI5510-0065

for corner and 90° shoulder milling



ISO Code	IC	S	R	PCD	CVD-D	CBN-H	CBN-X	CBN-K
				Item No.	Item No.	Item No.	Item No. ^{New}	Item No.
AOEX 07T302	7,00	3,97	0,20	MI1025-0050	MI2025-0050	MI5025-0050	MI5925-0050	MI5525-0050
AOEX 07T304	7,00	3,97	0,40	MI1025-0055	MI2025-0055	MI5025-0055	MI5925-0055	MI5525-0055
AOEX 07T308	7,00	3,97	0,80	MI1025-0060	MI2025-0060	MI5025-0060	MI5925-0060	MI5525-0060
AOEX 07T312	7,00	3,97	1,20	MI1025-0064	MI2025-0064	MI5025-0064	MI5925-0064	MI5525-0064
AOEX 07T316	7,00	3,97	1,60	MI1025-0065	MI2025-0065	MI5025-0065	MI5925-0065	MI5525-0065

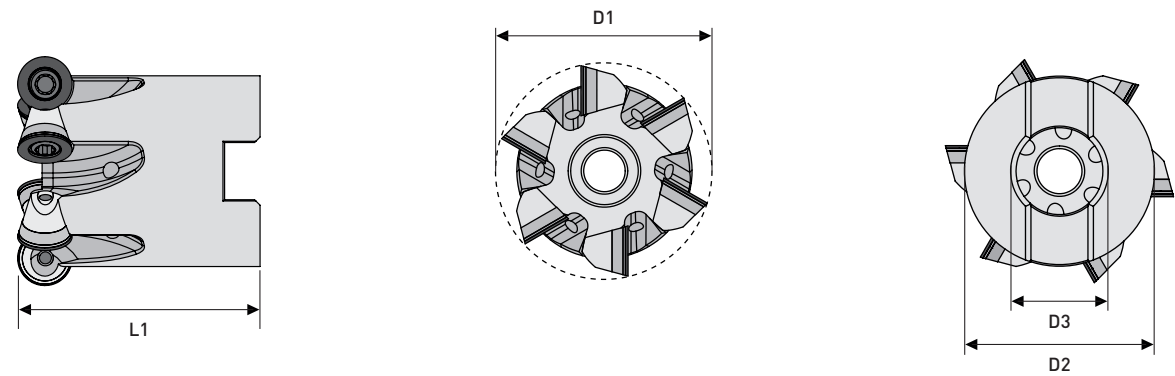


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Copy End Mills
for milling inserts RDHX | Ø42,00 - 80,00



Including base body | Excluding milling inserts and chuck

D1	D2	D3	L1	Z	B	for RDHX...	Item No. ^{New}	Clamping Screw
42,00	35,00	16,00	44,00	6	-	RDHX 1003M0	FW7060-5930	01-FW7090-0065
52,00	40,00	22,00	50,00	5	5,7°	RDHX 12T3M0	FW7060-5945	01-FW7090-0065
66,00	48,00	27,00	50,00	6	4,1°	RDHX 12T3M0	FW7060-5950	01-FW7090-0065
80,00	60,00	27,00	50,00	7	3,2°	RDHX 12T3M0	FW7060-5955	01-FW7090-0065

Application range:

- PCD Aluminum < 10% Si, Brass, Graphite coarse-grained, Plastics, Zinc ...
- CVD-D Aluminum > 10% Si, Carbide > 8% Co, Copper, GFRP, CFRP, Glass materials, Graphite fine-grained, Titanium (Finishing) ...
- CBN-H Steel hardened up to 72 HRC ...
- CBN-X Tool Steel up to 72 HRC, Stellite, powder metallurgical Steel, Stainless Steel hardened, Ni-, Co-, Fe- and Cr-Alloys ...
- CBN-K Grey Cast Iron (GCI), Ductile Cast Iron (DCI) ...

You will find further application ranges in the detailed overview from page 6.

RDHX Milling Inserts
for our Copy End Mills



for Copy End Mills D1 Ø42

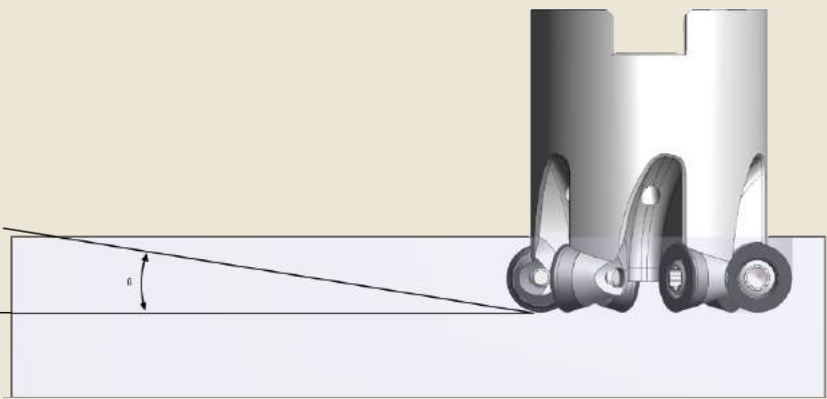
ISO Code	IC	S	R	Item No. ^{New}	Item No. ^{New}	Item No. ^{New}	Item No. ^{New}	Item No. ^{New}
RDHX 1003M0	10,00	3,18	M0	DP1030-0008	DP2030-0008	MI5030-0140	MI5930-0142	MI5530-0142

for Copy End Mills from D1 Ø52

ISO Code	IC	S	R	Item No. ^{New}	Item No. ^{New}	Item No. ^{New}	Item No. ^{New}	Item No. ^{New}
RDHX 12T3M0	12,00	3,97	M0	DP1030-0009	DP2030-0009	MI5030-0145	MI5930-0147	MI5530-0147

Ramp angle B

(look at the table on page 26)



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Milling Cutter Systems with adjustable Cartridges

Aluminum Base Body from 50mm to 400mm

Milling Cutter Systems with adjustable Cartridges

Steel Base Body from 50mm to 400mm



Special features of our milling cutters:

- One base body for 5 different exchangeable cartridges
- Exact adjustability of the cartridges
- With internal cooling
- Threaded borings for fine balancing
- Use of finish inserts for best surfaces
- PCD, CVD-D and CBN inserts from stock

Suitable for these materials:

- Aluminum up to 28 % Si
- Steel hardenend
- Glass and Glass Ceramic
- Graphite
- Cast Iron
- Hard Metals
- Ceramics
- Brass- and Bronze Alloys
- Tool Steels
- Zircon

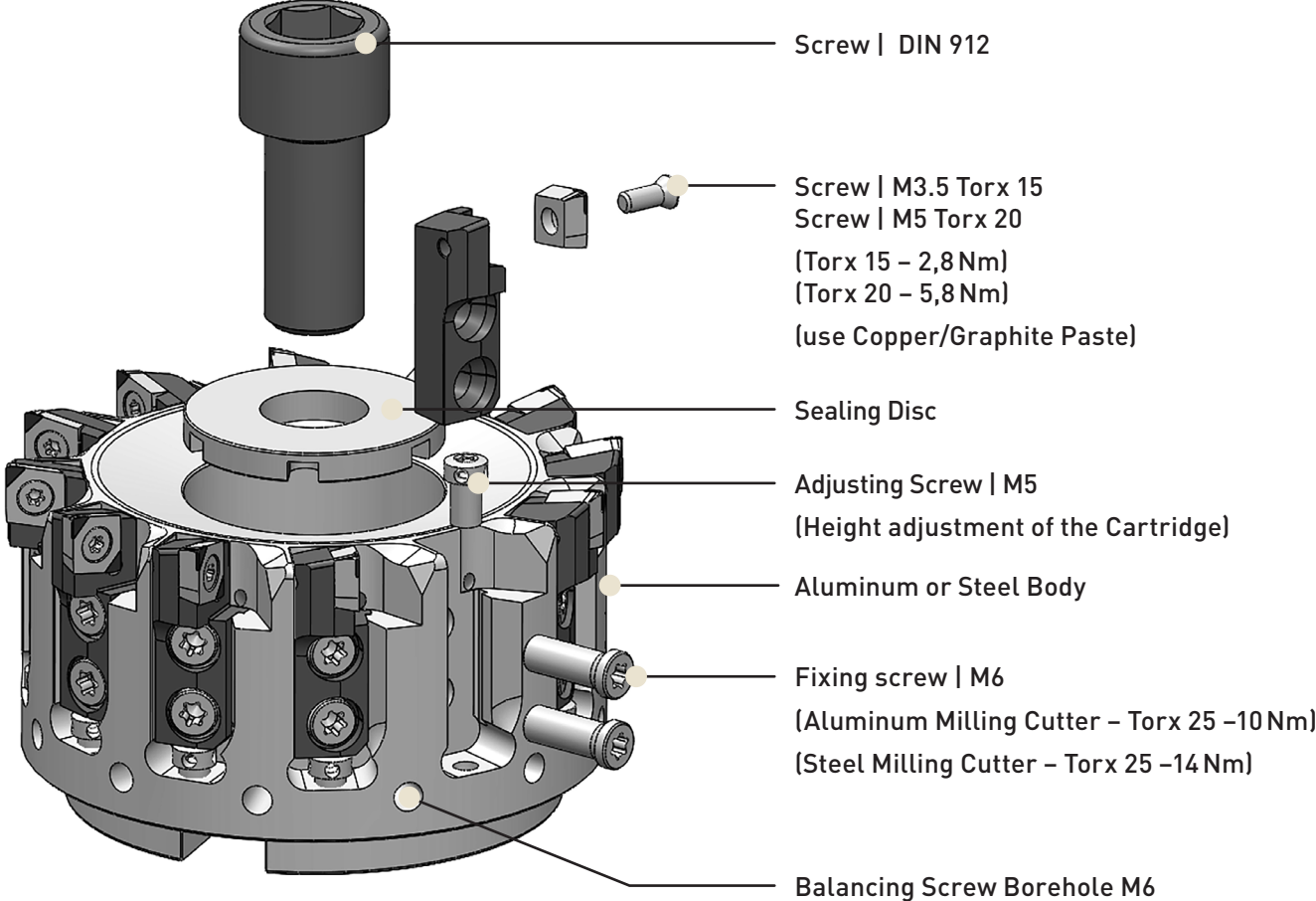
Cartridges and Indexable Inserts of Milling Cutters

tipped with PCD, CVD-D and CBN

90° Cartridge System for face milling		 CPGW	<ul style="list-style-type: none">• 2-edge tipped face and corner milling inserts• CPGW 09T302 - 12 in Z2 CL 3,00 - 6,00 mm• CPGW 120404 - 12 in Z2 CL 8,00 mm• From stock in PCD, CVD-D and CBN
90° Cartridge System for face milling		 CPGW Wiper Finish	<ul style="list-style-type: none">• 2-edge tipped finish inserts• CPGW 09T302 - 04 in Z2 CL 3,00 mm• CPGW 120404 - 08 in Z2 CL 3,00 mm• From stock in PCD, CVD-D and CBN
43° Cartridge System for face milling		 ODGW	<ul style="list-style-type: none">• 8-edge tipped face milling inserts• ODGW 05T302 - 12 in FullFace• From stock in PCD, CVD-D and CBN
45° Cartridge System for face milling		 TPGW	<ul style="list-style-type: none">• 3-edge tipped milling inserts• TPGW 090302 - 08 in Z3 CL 3,00 mm• From stock in PCD, CVD-D and CBN
75° Cartridge System for face milling		 SPGW	<ul style="list-style-type: none">• 2-edge tipped face milling inserts• SPGW 09T302 - 08 in Z2 CL 5,50 mm• SPGW 120404 - 12 in Z2 CL 7,50 mm• From stock in PCD, CVD-D and CBN
90° Cartridge System for face milling		 RPGW	<ul style="list-style-type: none">• Face and corner milling inserts• RPGW 10T3M0 FullFace• From stock in PCD, CVD-D and CBN

Adjustment Instructions Milling Cutter

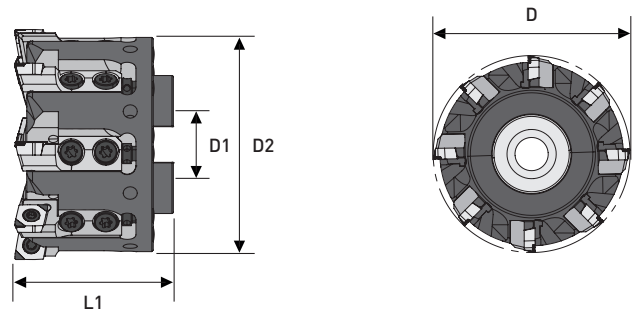
for Aluminum and Steel Bodies



- 1 - Place the base body on the SK - HSK - etc. interface
- 2 - Insert the Sealing Disc
- 3 - Tighten DIN 912 screw
- 4 - Screw in the M5 adjusting screw
- 5 - Insert the cartridge
- 6 - Apply fastening screw M6
- 7 - Insert the milling plates into the cartridge (use copper graphite paste on the screw)
- 8 - Tighten the milling plate screw with torque wrench 2.8 Nm
- 9 - Adjust all cutting edges on height difference max. 0.005 mm with the adjusting screw M5
- 9.1 - If you use finishing inserts Set them 0.01 mm to 0.03 mm higher
- 10 - Tighten the fastening screw with torque wrench 10/14 Nm
- 11 - Check milling cutter for imbalance - if necessary, balance

Complete Set for CPGW Milling Inserts

adjustable milling cutter with inner coolant



Including base body, exchangeable cartridges and accessories | Excluding milling inserts and chuck

D	Base Body	Item No.	D1	D2	L1	Z	n max	Cartridges
50,00	Steel	FK7000-0210	22,00	40,00	57,00	4	24.000	CPGW 09 / 90°
50,00	Aluminum	FK7500-0210	22,00	40,00	57,00	4	24.000	CPGW 09 / 90°
63,00	Steel	FK7000-0220	22,00	40,00	54,00	6	22.000	CPGW 09 / 90°
63,00	Aluminum	FK7500-0220	22,00	40,00	54,00	6	22.000	CPGW 09 / 90°
80,00	Steel	FK7000-0230	27,00	48,00	54,00	8	20.000	CPGW 09 / 90°
80,00	Aluminum	FK7500-0230	27,00	48,00	54,00	8	20.000	CPGW 09 / 90°
100,00	Steel	FK7000-0240	32,00	80,00	58,00	12	18.000	CPGW 09 / 90°
100,00	Aluminum	FK7500-0240	32,00	80,00	58,00	12	18.000	CPGW 09 / 90°
125,00	Steel	FK7000-0250	40,00	100,00	59,00	14	16.000	CPGW 09 / 90°
125,00	Aluminum	FK7500-0250	40,00	100,00	59,00	14	16.000	CPGW 09 / 90°
160,00	Steel	FK7002-0260	40,00	130,00	61,00	17	14.000	CPGW 12 / 90°
160,00	Aluminum	FK7502-0260	40,00	130,00	61,00	17	14.000	CPGW 12 / 90°
200,00	Steel	FK7002-0270	60,00	160,00	61,00	19	12.000	CPGW 12 / 90°
200,00	Aluminum	FK7502-0270	60,00	160,00	61,00	19	12.000	CPGW 12 / 90°
250,00	Steel	FK7002-0280	60,00	220,00	69,00	22	10.000	CPGW 12 / 90°
250,00	Aluminum	FK7502-0280	60,00	220,00	69,00	22	10.000	CPGW 12 / 90°
315,00	Steel	FK7002-0290	60,00	225,00	76,00	27	8.000	CPGW 12 / 90°
315,00	Aluminum	FK7502-0290	60,00	225,00	76,00	27	8.000	CPGW 12 / 90°
400,00	Stal Steel	FK7002-0301	60,00	230,00	80,00	31	7.000	CPGW 12 / 90°
400,00	Aluminum	FK7502-0301	60,00	230,00	80,00	31	7.000	CPGW 12 / 90°

Application range:

- PCD

Aluminum < 10% Si, Brass, Graphite coarse-grained, Plastics, Zinc ...
- CVD-D

Aluminum > 10% Si, Carbide > 8% Co, Copper, GFRP, CFRP, Glass materials, Graphite fine-grained, Titanium (Finishing) ...
- CBN-H

Steel hardened up to 72 HRC ...
- CBN-X

Tool Steel up to 72 HRC, Stellite, powder metallurgical Steel, Stainless Steel hardened, Ni-, Co-, Fe- and Cr-Alloys ...
- CBN-K

Grey Cast Iron (GCI), Ductile Cast Iron (DCI) ...

You will find further application ranges in the detailed overview from page 6.

CPGW Milling Inserts

adjustable milling cutter with inner coolant

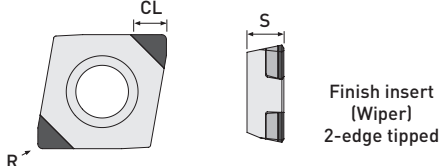







				PCD	CVD-D	CBN-H	CBN-X	CBN-K
ISO Code	CL	S	R	Item No.	Item No.	Item No.	Item No. New	Item No.
CPGW 09T302	3,50	3,97	0,20	MI1091-0111	MI2091-0111	MI5091-0111	MI5991-0111	MI5591-0111
CPGW 09T304	3,50	3,97	0,40	MI1091-0113	MI2091-0113	MI5091-0113	MI5991-0113	MI5591-0113
CPGW 09T308	3,50	3,97	0,80	MI1091-0115	MI2091-0115	MI5091-0115	MI5991-0115	MI5591-0115
CPGW 09T312	3,50	3,97	1,20	MI1091-0117	MI2091-0117	MI5091-0117	MI5991-0117	MI5591-0117

for face and corner milling
2-edge tipped


				PCD	CVD-D	CBN-H	CBN-X	CBN-K
ISO Code	CL	S	R	Item No.	Item No.	Item No.	Item No. New	Item No.
CPGW 09T302	6,00	3,97	0,20	MI1091-0110	MI2091-0110	MI5091-0110	MI5991-0110	MI5591-0110
CPGW 09T304	6,00	3,97	0,40	MI1091-0112	MI2091-0112	MI5091-0112	MI5991-0112	MI5591-0112
CPGW 09T308	6,00	3,97	0,80	MI1091-0114	MI2091-0114	MI5091-0114	MI5991-0114	MI5591-0114
CPGW 09T312	6,00	3,97	1,20	MI1091-0116	MI2091-0116	MI5091-0116	MI5991-0116	MI5591-0116

ISO Code	CL	S	R	PCD	CVD-D	CBN-H	CBN-X	CBN-K
				Item No.	Item No.	Item No.	Item No. <small>New</small>	Item No.
CPGW 120404	8,00	4,76	0,40	MI1091-0142	MI2091-0142	MI5091-0142	MI5991-0142	MI5591-0142
CPGW 120408	8,00	4,76	0,80	MI1091-0144	MI2091-0144	MI5091-0144	MI5991-0144	MI5591-0144
CPGW 120412	8,00	4,76	1,20	MI1091-0146	MI2091-0146	MI5091-0146	MI5991-0146	MI5591-0146

								
ISO Code	CL	S	R	Item No.	Item No.	Item No.	Item No. <small>New</small>	Item No.
CPGW 09T302	3,00	3,97	0,20	MI1091-0119	MI2091-0119	MI5091-0119	MI5991-0119	MI5591-0119
CPGW 09T304	3,00	3,97	0,40	MI1091-0120	MI2091-0120	MI5091-0120	MI5991-0120	MI5591-0120
CPGW 120404	3,00	4,76	0,40	MI1091-0150	MI2091-0150	MI5091-0150	MI5991-0150	MI5591-0150
CPGW 120408	3,00	4,76	0,80	MI1091-0152	MI2091-0152	MI5091-0152	MI5991-0152	MI5591-0152

Subject to technical changes.

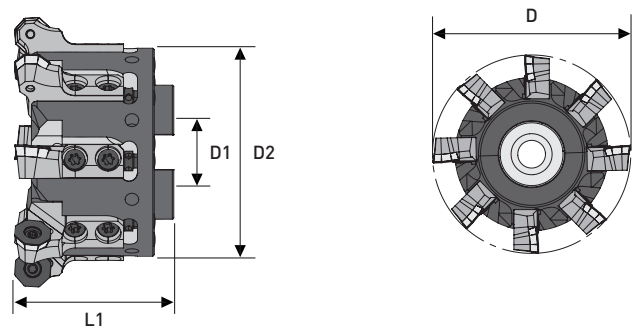
Accessories for Cartridge Milling Cutters with CPGW Milling Inserts

							
D	Type	Base Body	Sealing Disc	Cartridges	Fixing Screw	Adjusting Screw	Insert Clamping Screw
50	Steel	FK7060-0210		01-FK7091-0255	01-FK7090-0227	01-FK7090-0223	01-KL7090-9021
	Aluminum	FK7560-0210					
63	Steel	FK7060-0220		01-FK7091-0255	01-FK7090-0227	01-FK7090-0223	01-KL7090-9021
	Aluminum	FK7560-0220					
80	Steel	FK7060-0230	01-FK7090-0230	01-FK7091-0210	01-FK7090-0225	01-FK7090-0223	01-KL7090-9021
	Aluminum	FK7560-0230					
100	Steel	FK7060-0240	01-FK7090-0240	01-FK7091-0210	01-FK7090-0225	01-FK7090-0223	01-KL7090-9021
	Aluminum	FK7560-0240					
125	Steel	FK7060-0250	01-FK7090-0250	01-FK7091-0210	01-FK7090-0225	01-FK7090-0223	01-KL7090-9021
	Aluminum	FK7560-0250					
160	Steel	FK7060-0260	01-FK7090-0260	01-FK7091-0220	01-FK7090-0226	01-FK7090-0223	01-FK7090-0213
	Aluminum	FK7560-0260					
200	Steel	FK7060-0270	01-FK7090-0270	01-FK7091-0220	01-FK7090-0226	01-FK7090-0223	01-FK7090-0213
	Aluminum	FK7560-0270					
250	Steel	FK7060-0280	01-FK7090-0280	01-FK7091-0220	01-FK7090-0226	01-FK7090-0223	01-FK7090-0213
	Aluminum	FK7560-0280					
315	Steel	FK7060-0290	01-FK7090-0290	01-FK7091-0220	01-FK7090-0226	01-FK7090-0223	01-FK7090-0213
	Aluminum	FK7560-0290					
400	Steel	FK7060-0301	01-FK7090-0291	01-FK7091-0220	01-FK7090-0226	01-FK7090-0223	01-FK7090-0213
	Aluminum	FK7560-0301					

Your Notes

Complete Set for ODGW Milling Inserts

adjustable milling cutter with inner coolant



Interchangeable cartridge system, right side cutting
Steel- or aluminum body

Including base body, exchangeable cartridges and accessories | Excluding milling inserts and chuck

D	Base Body	Item No.	D1	D2	L	Z	n max	Cartridges
50,00	Steel	FK7004-0210	22,00	40,00	58,00	4	24.000	ODGW 05 / 43°
50,00	Aluminum	FK7504-0210	22,00	40,00	58,00	4	24.000	ODGW 05 / 43°
63,00	Steel	FK7004-0220	22,00	40,00	55,00	6	22.000	ODGW 05 / 43°
63,00	Aluminum	FK7504-0220	22,00	40,00	55,00	6	22.000	ODGW 05 / 43°
160,00	Steel	FK7004-0260	40,00	130,00	63,00	17	14.000	ODGW 05 / 43°
160,00	Aluminum	FK7504-0260	40,00	130,00	63,00	17	14.000	ODGW 05 / 43°
200,00	Steel	FK7004-0270	60,00	160,00	63,00	19	12.000	ODGW 05 / 43°
200,00	Aluminum	FK7504-0270	60,00	160,00	63,00	19	12.000	ODGW 05 / 43°
250,00	Steel	FK7004-0280	60,00	220,00	71,00	22	10.000	ODGW 05 / 43°
250,00	Aluminum	FK7504-0280	60,00	220,00	71,00	22	10.000	ODGW 05 / 43°
315,00	Steel	FK7004-0290	60,00	225,00	78,00	27	8.000	ODGW 05 / 43°
315,00	Aluminum	FK7504-0290	60,00	225,00	78,00	27	8.000	ODGW 05 / 43°
400,00	Steel	FK7004-0301	60,00	230,00	82,00	31	7.000	ODGW 05 / 43°
400,00	Aluminum	FK7504-0301	60,00	230,00	82,00	31	7.000	ODGW 05 / 43°

Application range:

- PCD** Aluminum < 10% Si, Brass, Graphite coarse-grained, Plastics, Zinc ...
- CVD-D** Aluminum > 10% Si, Carbide > 8% Co, Copper, GFRP, CFRP, Glass materials, Graphite fine-grained, Titanium (Finishing) ...
- CBN-H** Steel hardened up to 72 HRC ...
- CBN-X** Tool Steel up to 72 HRC, Stellite, powder metallurgical Steel, Stainless Steel hardened, Ni-, Co-, Fe- and Cr-Alloys ...
- CBN-K** Grey Cast Iron (GCI), Ductile Cast Iron (DCI) ...

You will find further application ranges in the detailed overview from page 6.

ODGW Milling Inserts and Accessories

adjustable milling cutter with inner coolant



	ISO Code	IC	S	R	Item No.	Item No.	Item No.	Item No.	Item No.
ODGW 05T302	FF	3,97	0,20		MI1030-0100	MI2030-0100	MI5030-0100	MI5930-0100	MI5530-0100
ODGW 05T304	FF	3,97	0,40		MI1030-0102	MI2030-0102	MI5030-0102	MI5930-0102	MI5530-0102
ODGW 05T308	FF	3,97	0,80		MI1030-0104	MI2030-0104	MI5030-0104	MI5930-0104	MI5530-0104

Accessories:

D	Type	Base Body	Sealing Disc	Cartridges	Fixing Screw	Adjusting Screw	Insert Clamping Screw
50	Steel	FK7060-0210		01-FK7091-0265	01-FK7090-0227	01-FK7090-0223	01-KL7090-9021
	Aluminum	FK7560-0210					
63	Steel	FK7060-0220		01-FK7091-0265	01-FK7090-0227	01-FK7090-0223	01-KL7090-9021
	Aluminum	FK7560-0220					
160	Steel	FK7060-0260	01-FK7090-0260	01-FK7091-0230	01-FK7090-0226	01-FK7090-0223	01-KL7090-9021
	Aluminum	FK7560-0260					
200	Steel	FK7060-0270	01-FK7090-0270	01-FK7091-0230	01-FK7090-0226	01-FK7090-0223	01-KL7090-9021
	Aluminum	FK7560-0270					
250	Steel	FK7060-0280	01-FK7090-0280	01-FK7091-0230	01-FK7090-0226	01-FK7090-0223	01-KL7090-9021
	Aluminum	FK7560-0280					
315	Steel	FK7060-0290	01-FK7090-0290	01-FK7091-0230	01-FK7090-0226	01-FK7090-0223	01-KL7090-9021
	Aluminum	FK7560-0290					
400	Steel	FK7060-0301	01-FK7090-0291	01-FK7091-0230	01-FK7090-0226	01-FK7090-0223	01-KL7090-9021
	Aluminum	FK7560-0301					



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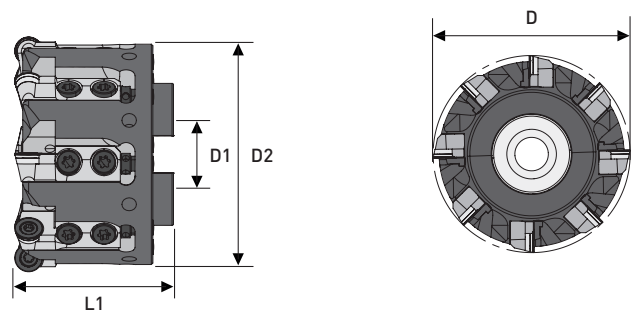


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Complete Set for RPGW Milling Inserts

adjustable milling cutter with inner coolant



Interchangeable cartridge system, right side cutting
Steel- or aluminum body

Including base body, exchangeable cartridges and accessories | Excluding milling inserts and chuck

D	Base Body	Item No.	D1	D2	L	Z	n max	Cartridges
50,00	Steel	FK7005-0210	22,00	40,00	57,00	4	24.000	RPGW 10 / 90°
50,00	Aluminum	FK7505-0210	22,00	40,00	57,00	4	24.000	RPGW 10 / 90°
63,00	Steel	FK7005-0220	22,00	40,00	54,00	6	22.000	RPGW 10 / 90°
63,00	Aluminum	FK7505-0220	22,00	40,00	54,00	6	22.000	RPGW 10 / 90°
80,00	Steel	FK7005-0230	27,00	48,00	54,00	8	20.000	RPGW 10 / 90°
80,00	Aluminum	FK7505-0230	27,00	48,00	54,00	8	20.000	RPGW 10 / 90°
100,00	Steel	FK7005-0240	32,00	80,00	58,00	12	18.000	RPGW 10 / 90°
100,00	Aluminum	FK7505-0240	32,00	80,00	58,00	12	18.000	RPGW 10 / 90°
125,00	Steel	FK7005-0250	40,00	100,00	59,00	14	16.000	RPGW 10 / 90°
125,00	Aluminum	FK7505-0250	40,00	100,00	59,00	14	16.000	RPGW 10 / 90°

Application range:

- PCD

Aluminum < 10% Si, Brass, Graphite coarse-grained, Plastics, Zinc ...
- CVD-D

Aluminum > 10% Si, Carbide > 8% Co, Copper, GFRP, CFRP, Glass materials, Graphite fine-grained, Titanium (Finishing) ...
- CBN-H

Steel hardened up to 72 HRC ...
- CBN-X

Tool Steel up to 72 HRC, Stellite, powder metallurgical Steel, Stainless Steel hardened, Ni-, Co-, Fe- and Cr-Alloys ...
- CBN-K

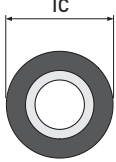






Grey Cast Iron (GCI), Ductile Cast Iron (DCI) ...

You will find further application ranges in the detailed overview from page 6.

RPGW Milling Inserts and Accessories

adjustable milling cutter with inner coolant



		FullFace					
			Item No.	Item No.	Item No.	Item No. <small>New</small>	Item No.
ISO Code	IC	S	R				
RPGW 10T3M0	10,00	3,97	0,20	MI1092-0110	MI2092-0110	MI5092-0110	MI5992-0110 MI5592-0110

Accessories:

							
D	Type	Base Body	Sealing Disc	Cartridges	Fixing Screw	Adjusting Screw	Insert Clamping Screw
50	Steel	FK7060-0210		01-FK7091-0270	01-FK7090-0227	01-FK7090-0223	01-KL9060-0006
	Aluminum	FK7560-0210					
63	Steel	FK7060-0220		01-FK7091-0270	01-FK7090-0227	01-FK7090-0223	01-KL9060-0006
	Aluminum	FK7560-0220					
80	Steel	FK7060-0230	01-FK7090-0230	01-FK7091-0235	01-FK7090-0225	01-FK7090-0223	01-KL9060-0006
	Aluminum	FK7560-0230					
100	Steel	FK7060-0240	01-FK7090-0240	01-FK7091-0235	01-FK7090-0225	01-FK7090-0223	01-KL9060-0006
	Aluminum	FK7560-0240					
125	Steel	FK7060-0250	01-FK7090-0250	01-FK7091-0235	01-FK7090-0225	01-FK7090-0223	01-KL9060-0006
	Aluminum	FK7560-0250					



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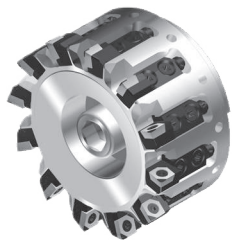
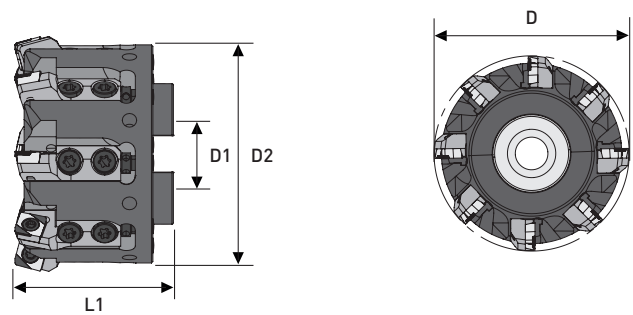


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Complete Set for SPGW Milling Inserts

adjustable milling cutter with inner coolant



Interchangeable cartridge system, right side cutting
Steel- or aluminum body

Including base body, exchangeable cartridges and accessories | Excluding milling inserts and chuck

D	Base Body	Item No.	D1	D2	L	Z	n max	Cartridges
80,00	Steel	FK7006-0230	27,00	48,00	55,00	8	20.000	SPGW 09 / 75°
80,00	Aluminum	FK7506-0230	27,00	48,00	55,00	8	20.000	SPGW 09 / 75°
100,00	Steel	FK7006-0240	32,00	80,00	59,00	12	18.000	SPGW 09 / 75°
100,00	Aluminum	FK7506-0240	32,00	80,00	59,00	12	18.000	SPGW 09 / 75°
125,00	Steel	FK7006-0250	40,00	100,00	60,00	14	16.000	SPGW 09 / 75°
125,00	Aluminum	FK7506-0250	40,00	100,00	60,00	14	16.000	SPGW 09 / 75°
160,00	Steel	FK7007-0260	40,00	130,00	62,00	17	14.000	SPGW 12 / 75°
160,00	Aluminum	FK7507-0260	40,00	130,00	62,00	17	14.000	SPGW 12 / 75°
200,00	Steel	FK7007-0270	60,00	160,00	62,00	19	12.000	SPGW 12 / 75°
200,00	Aluminum	FK7507-0270	60,00	160,00	62,00	19	12.000	SPGW 12 / 75°
250,00	Steel	FK7007-0280	60,00	220,00	70,00	22	10.000	SPGW 12 / 75°
250,00	Aluminum	FK7507-0280	60,00	220,00	70,00	22	10.000	SPGW 12 / 75°
315,00	Steel	FK7007-0290	60,00	225,00	77,00	27	8.000	SPGW 12 / 75°
315,00	Aluminum	FK7507-0290	60,00	225,00	77,00	27	8.000	SPGW 12 / 75°
400,00	Steel	FK7007-0301	60,00	230,00	81,00	31	7.000	SPGW 12 / 75°
400,00	Aluminum	FK7507-0301	60,00	230,00	81,00	31	7.000	SPGW 12 / 75°

Application range:

- PCD

Aluminum < 10% Si, Brass, Graphite coarse-grained, Plastics, Zinc ...
- CVD-D

Aluminum > 10% Si, Carbide > 8% Co, Copper, GFRP, CFRP, Glass materials, Graphite fine-grained, Titanium (Finishing) ...
- CBN-H

Steel hardened up to 72 HRC ...
- CBN-X

Tool Steel up to 72 HRC, Stellite, powder metallurgical Steel, Stainless Steel hardened, Ni-, Co-, Fe- and Cr-Alloys ...
- CBN-K

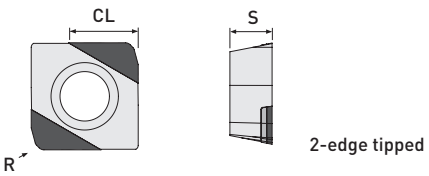





Grey Cast Iron (GCI), Ductile Cast Iron (DCI) ...

You will find further application ranges in the detailed overview from page 6.


SPGW Milling Inserts and Accessories

adjustable milling cutter with inner coolant



 2-edge tipped								
ISO Code	CL	S	R	Item No.	Item No.	Item No.	Item No.	Item No.
SPGW 09T302	5,50	3,97	0,20	MI1091-0160	MI2091-0160	MI5091-0160	MI5991-0160	MI5591-0160
SPGW 09T304	5,50	3,97	0,40	MI1091-0162	MI2091-0162	MI5091-0162	MI5991-0162	MI5591-0162
SPGW 09T308	5,50	3,97	0,80	MI1091-0164	MI2091-0164	MI5091-0164	MI5991-0164	MI5591-0164
SPGW 120404	7,50	4,76	0,40	MI1091-0172	MI2091-0172	MI5091-0172	MI5991-0172	MI5591-0172
SPGW 120408	7,50	4,76	0,80	MI1091-0174	MI2091-0174	MI5091-0174	MI5991-0174	MI5591-0174
SPGW 120412	7,50	4,76	1,20	MI1091-0176	MI2091-0176	MI5091-0176	MI5991-0176	MI5591-0176

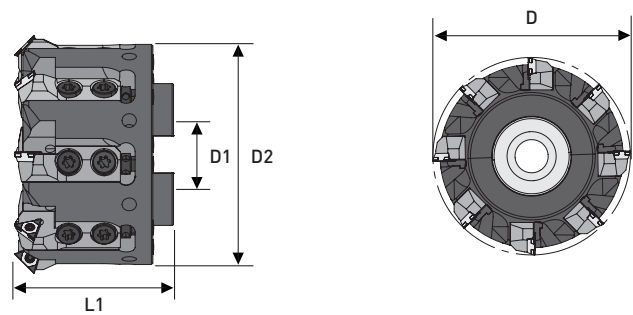
Accessories:

							
D	Type	Base Body	Sealing Disc	Cartridges	Fixing Screw	Adjusting Screw	Insert Clamping Screw
80	Steel	FK7060-0230	01-FK7090-0230	01-FK7091-0240	01-FK7090-0225	01-FK7090-0223	01-KL7090-9021
	Aluminum	FK7560-0230					
100	Steel	FK7060-0240	01-FK7090-0240	01-FK7091-0240	01-FK7090-0225	01-FK7090-0223	01-KL7090-9021
	Aluminum	FK7560-0240					
125	Steel	FK7060-0250	01-FK7090-0250	01-FK7091-0240	01-FK7090-0225	01-FK7090-0223	01-KL7090-9021
	Aluminum	FK7560-0250					
160	Steel	FK7060-0260	01-FK7090-0260	01-FK7091-0245	01-FK7090-0226	01-FK7090-0223	01-FK7090-0213
	Aluminum	FK7560-0260					
200	Steel	FK7060-0270	01-FK7090-0270	01-FK7091-0245	01-FK7090-0226	01-FK7090-0223	01-FK7090-0213
	Aluminum	FK7560-0270					
250	Steel	FK7060-0280	01-FK7090-0280	01-FK7091-0245	01-FK7090-0226	01-FK7090-0223	01-FK7090-0213
	Aluminum	FK7560-0280					
315	Steel	FK7060-0290	01-FK7090-0290	01-FK7091-0245	01-FK7090-0226	01-FK7090-0223	01-FK7090-0213
	Aluminum	FK7560-0290					
400	Steel	FK7060-0301	01-FK7090-0291	01-FK7091-0245	01-FK7090-0226	01-FK7090-0223	01-FK7090-0213
	Aluminum	FK7560-0301					

Subject to technical changes.

Complete Set for TPGW Milling Inserts

adjustable milling cutter with inner coolant



Interchangeable cartridge system, right side cutting
Steel- or aluminum body

Including base body, exchangeable cartridges and accessories | Excluding milling inserts and chuck

D	Base Body	Item No.	D1	D2	L	Z	n max	Cartridges
50,00	Steel	FK7008-0210	22,00	40,00	58,00	4	24.000	TPGW 09 / 45°
50,00	Aluminum	FK7508-0210	22,00	40,00	58,00	4	24.000	TPGW 09 / 45°
63,00	Steel	FK7008-0220	22,00	40,00	55,00	6	22.000	TPGW 09 / 45°
63,00	Aluminum	FK7508-0220	22,00	40,00	55,00	6	22.000	TPGW 09 / 45°
80,00	Steel	FK7008-0230	27,00	48,00	56,00	8	20.000	TPGW 09 / 45°
80,00	Aluminum	FK7508-0230	27,00	48,00	56,00	8	20.000	TPGW 09 / 45°
100,00	Steel	FK7008-0240	32,00	80,00	60,00	12	18.000	TPGW 09 / 45°
100,00	Aluminum	FK7508-0240	32,00	80,00	60,00	12	18.000	TPGW 09 / 45°
125,00	Steel	FK7008-0250	40,00	100,00	61,00	14	16.000	TPGW 09 / 45°
125,00	Aluminum	FK7508-0250	40,00	100,00	61,00	14	16.000	TPGW 09 / 45°

Application range:

- PCD**

Aluminum < 10% Si, Brass, Graphite coarse-grained, Plastics, Zinc ...
- CVD-D**

Aluminum > 10% Si, Carbide > 8% Co, Copper, GFRP, CFRP, Glass materials, Graphite fine-grained, Titanium (Finishing) ...
- CBN-H**

Steel hardened up to 72 HRC ...
- CBN-X**

Tool Steel up to 72 HRC, Stellite, powder metallurgical Steel, Stainless Steel hardened, Ni-, Co-, Fe- and Cr-Alloys ...
- CBN-K**

Grey Cast Iron (GCI), Ductile Cast Iron (DCI) ...

You will find further application ranges in the detailed overview from page 6.

TPGW Milling Inserts and Accessories

adjustable milling cutter with inner coolant



ISO Code	CL	S	R	Item No.	Item No.	Item No.	Item No.	Item No.
TPGW 090302	3,00	3,18	0,20	MI1091-0180	MI2091-0180	MI5091-0180	MI5991-0180	MI5591-0180
TPGW 090304	3,00	3,18	0,40	MI1091-0182	MI2091-0182	MI5091-0182	MI5991-0182	MI5591-0182
TPGW 090308	3,00	3,18	0,80	MI1091-0184	MI2091-0184	MI5091-0184	MI5991-0184	MI5591-0184

Accessories:

D	Type	Base Body	Sealing Disc	Cartridges	Fixing Screw	Adjusting Screw	Insert Clamping Screw
50	Steel	FK7060-0210		01-FK7091-0280	01-FK7090-0227	01-FK7090-0223	01-KL7090-9025
	Aluminum	FK7560-0210					
63	Steel	FK7060-0220		01-FK7091-0280	01-FK7090-0227	01-FK7090-0223	01-KL7090-9025
	Aluminum	FK7560-0220					
80	Steel	FK7060-0230	01-FK7090-0230	01-FK7091-0250	01-FK7090-0225	01-FK7090-0223	01-KL7090-9025
	Aluminum	FK7560-0230					
100	Steel	FK7060-0240	01-FK7090-0240	01-FK7091-0250	01-FK7090-0225	01-FK7090-0223	01-KL7090-9025
	Aluminum	FK7560-0240					
125	Steel	FK7060-0250	01-FK7090-0250	01-FK7091-0250	01-FK7090-0225	01-FK7090-0223	01-KL7090-9025
	Aluminum	FK7560-0250					



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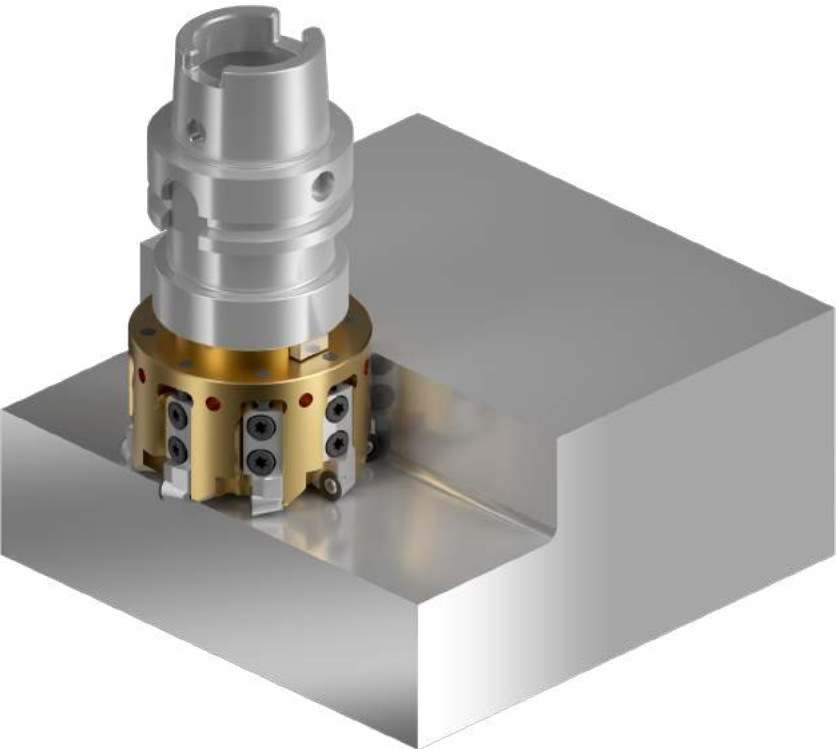


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Formulas

Milling



V_f	Feed rate	mm/min
f_n	Feed per revolution	mm/rev
n	Spindle speed	rev/min
v_c	Cutting speed	m/min
D_c	Cutter diameter	mm
t_c	Cutting Time	min
l_m	Cutting length	mm
Q	Stock removal rate	cm³/min
a_p	Cutting depth	mm

► Cutting speed

$$V_c = \frac{D_c \times \pi \times n}{1000}$$

[m/min]

► Spindle speed

$$n = \frac{v_c \times 1000}{\pi \times D_c}$$

[rev/min]

► Feed per tooth

$$f_z = \frac{V_f}{n \times Z}$$

[mm/Z]

► Feed per revolution

$$V_f = n \times Z \times f_z$$

[mm/min]

► Machine performance

$$P = \frac{a_p \times a_e \times V_f}{1800}$$

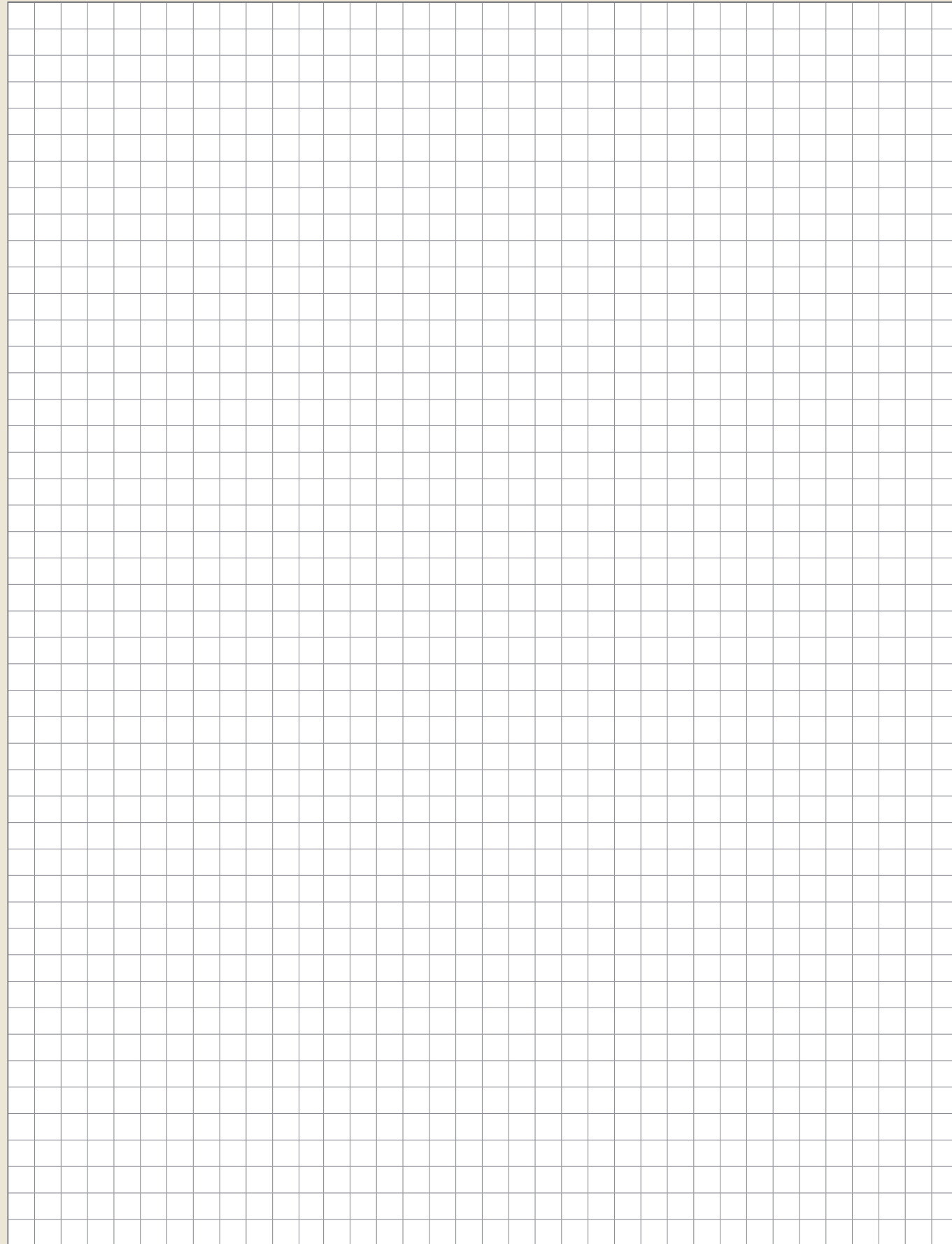
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► Stock removal rate

$$Q = \frac{a_p \times a_e \times V_f}{1000}$$

[cm³/min]

Your Notes



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We reserve the right to make production-related technical changes and changes to the delivery program. The cutting values given are guide values which must be adjusted according to the process environment.

Safety Instructions:

- ▶ DTS tools equipped with ultra-hard cutting edges are very sharp laser cut tools.
- ▶ Careful handling of the tools during unpacking and their use is recommended.
- ▶ Wearing protective gloves reduces the risk of injury.
- ▶ Material chipping and tool breakage may occur during machining, wearing safety glasses is recommended.
- ▶ Balanced holders are recommended for speeds above 10,000 rpm.
- ▶ We do not accept any responsibility for tools that have been modified, reground or used incorrectly and beyond their normal service life.
- ▶ Protective goggles are recommended when using DTS tools, sparks may also occur, make sure that no fire can occur.



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