



MILLING CUTTER BODIES

Tooling systems and application consulting for the milling of complex 2.5 and 3D geometries



 **Spokolm**
PREMIUMTOOLS. WE KNOW HOW.

NEW CATALOGUE OF MILLING CUTTER BODIES

The new catalogue of Pokolm's milling cutter bodies and inserts

Dear Customer,

With this catalogue we are sending you detailed documentation about POKOLM's current range of milling cutter bodies and inserts. The new catalogue is just as well thought-through as our tooling systems. Because it is primarily structured according to the different forms of use! And it is clear straightaway, from the product overview, for what types of machining and material groups the individual cutter types can be used and in what sizes and connection types they are available.

Another positive aspect with regard to user-friendliness: the corresponding inserts, the accessories and cutting and enhanced use data is provided directly following the individual cutter types - removing the need for annoying searching for the information you need and therefore saving your working time.

Apart from the tried and tested series, all new developments have also naturally found their place in the product range. This ensures that you always find the optimum premium quality tooling system for your specific application.

Our top trained applications technicians will also be pleased to help you to develop individual and optimally coordinated solutions and concepts. We are happy to be of service and look forward to hearing from you!

Your Pokolm Team



Imprint

Pokolm
Frästechnik GmbH & Co. KG

Adam-Opel-Straße 5
33428 Harsewinkel
Germany

fon: +49 5247 9361-0
fax: +49 5247 9361-99

E-Mail: info@pokolm.com
Internet: www.pokolm.com

WWW.POKOLM.COM

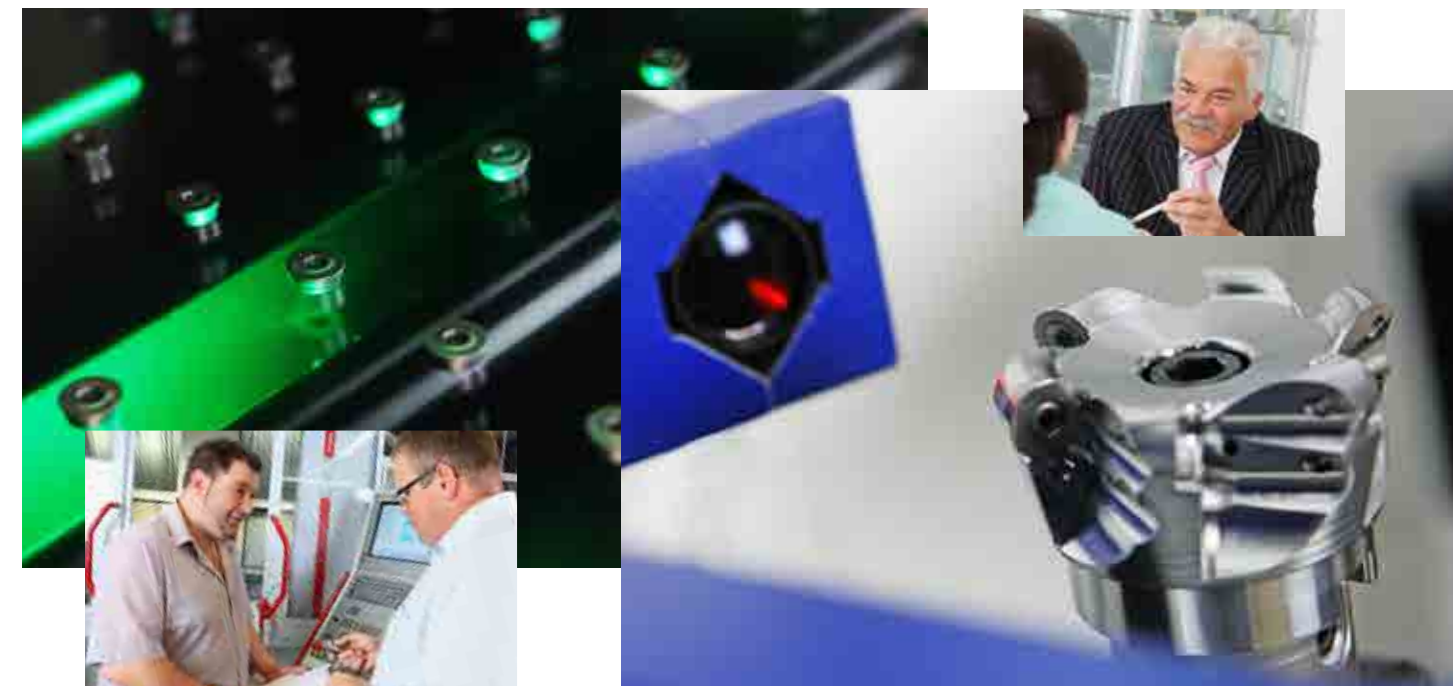
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BENEFIT FROM OUR SUCCESS STORY

Being better means continuously thinking about the competition and your own products and services, identifying potential optimisation and above all, developing innovations, which constitute real progress and benefit. In cutting/milling technology, lighter, significantly faster machines led to fundamental changes, which required new cutters for higher feed rates and and considerably smaller cutting depths closer to the contour. The founder of our company, F.-J. Pokolm played a decisive role in this important milling cutter body development step with many innovations that are now considered to be the standard. For example, unlike the inch sizes commonly used before, today milling cutter bodies and inserts in metric sizes simplify calculation of the relevant values. The embedded insert seat is a POKOLM innovation, for which we have the inventive genius and practical experience of the founder of our company to thank. The patented DUOPLUG® system with its significantly increased holding forces and maximum concentricity is thought by the industry to be the perfect screw connection between tool and the toolholder. A current cutting/milling technology milestone is the SPINWORX® round insert cutter with self-rotating inserts.

At the same time the SPINWORX® tooling system with its holder, inserts and locking pins clearly verifies how perfectly all the individual POKOLM components are coordinated with each other - the result of years of experience and in-depth know-how. Top quality and precision standards during development and series production, not only in-house but also at our suppliers, also form an indispensable basis for this success.



Successful practitioners consciously opt for POKOLM premium tools and benefit from this decision. This little bit "more" that gives POKOLM customers the decisive competitive advantage, results automatically from the interaction of

excellent products and outstanding technical advice provided by our technical field service, which is completely and individually orientated to every single customer.

- 1 Cutter group
- 2 Name of the product series
- 3 Types of machining with cutting system
- 4 Available connection types
- 5 Available sizes with page references
- 6 Material to be machined
- 7 Key

PLANWORX® FACE MILLING CUTTERS

Highly economic with large cutting depth and outstandingly smooth running

Properties

- Negative, therefore extremely stable basic form
- Eight reliably usable cutting edges
- Easy cutting due to highly positive indexable insert geometry
- Unequal pitch for less vibrations
- Internal coolant supply for fluids up to tool diameter of 125 mm
- Outstandingly smooth running

Machining types

Connection types

Practical video

Planworx in 1:05 / 1015 / St 52 - 3

Sizes

diam. 40 - 250 mm

Page

28

Cutting materials

Carbide grade Coating	ISO standard						feed per tooth d.o.c.		length	thickness	radius
	P	M	K	N	S	H	f _t (mm)	a _p (mm)	l (mm)	s (mm)	r (mm)
P40 PVSr							0.08 - 0.55	0.1 - 6.0	13	5.4	0.8
K10 PVTi							0.1 - 0.55	0.1 - 6.0	13	5.4	0.8
M40 PVST							0.08 - 0.3	0.1 - 4.0	13	5.4	0.8

major application
 minor application
 roughing
 fine finishing
 finishing

MILLING CUTTER BODIES

MILLING CUTTER BODIES

Major application

Slotting

Face milling

Profile milling

Minor application

Grooving

Bore milling

Turning

Machining modes

Forming

Swarfing

Circular milling

Linear plunging

Sawing

Backcutting

Square shoulder milling

Connecting

Drill base

Shoulder flank

End face flank

Flank chamfer

Chamfer chamfer

PRODUCT OVERVIEW

PAGE 1/2

Product lines	Connections	Page	Types of machining	Material to be machined
				P M K N S
⊕ Face milling cutters				
⊖ BASEWORX®				
⊖ diam. 35 - 125 mm		1	-	-
⊖ diam. 35 - 125 mm		2	-	-
⊖ PLANWORX®		3	-	-
⊖ diam. 40 - 250 mm		4	-	-
⊖ MIRROWORX®		4	-	-
⊖ diam. 42 - 100 mm		6	-	-
⊕ Square shoulder face milling + slotting cutters - k90°				
⊖ SLOTWORX®				
⊖ Size S - diam. 10 - 20 mm		7	-	-
⊖ Size M - diam. 16 - 52 mm		18	-	-
⊖ Size L - diam. 25 - 100 mm		20	-	-
⊖ ADEW		21	-	-
⊖ diam. 15 - 32 mm		22	-	-
⊖ Copy milling cutters k0°-90°				
⊖ SPINWORX®				
⊖ r5 - diam. 25 - 52 mm, 2° positive		23	-	-
⊖ r6 - diam. 35 - 66 mm, 3° positive		24	-	-
⊖ Cutters for round inserts				
⊖ r2.5 - diam. 10 - 20 mm		25	-	-
⊖ r3.5 - diam. 12 - 42 mm, s 1.99		27	-	-
⊖ r3.5 - diam. 12 - 42 mm, s 2.38		28	-	-
⊖ r5 - diam. 20 - 42 mm		29	-	-
⊖ r5 - diam. 20 - 35 mm, CBN		30	-	-
⊖ r6 - diam. 42 - 160 mm		33	-	-
⊖ r8 - diam. 32 - 160 mm		36	-	-
⊖ r10 - diam. 52 - 160 mm		40	-	-
⊖ Rhombic cutters - k95°				
⊖ FINWORX®				
⊖ diam. 16 - 42 mm r1		32	-	-
⊖ XDHW XDHT		33	-	-
⊖ diam. 16 - 42 mm r1		33	-	-
⊖ diam. 16 - 35 mm r2		33	-	-

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A PRODUCT OF THE HANSEN GROUP

Before each cutting system you will find a page with a uniform layout, on which the most important characteristics of the respective product range are shown, briefly and succinctly, in a clear form. This enables you to compare the different product ranges easily at a glance.

- ① Name of the product series
- ② Most important properties of the cutting system
- ③ Application video with QR code as link, where available
- ④ Types of machining with this cutting system
- ⑤ Available connection types
- ⑥ Available sizes with page references
- ⑦ Exemplary figure of the cutting system
- ⑧ Available cutting materials with application options and cutting data information
- ⑨ Key to application options

PLANWORX® - FACE MILLING CUTTERS

PLANWORX®

diam 40 - 250 mm

Face-milling cutter with maximum chipping depth of 6 mm, negative axial rake angle for square inserts with eight cutting edges. Internal coolant supply up to tool diameter 125mm. Differential pitch for smooth running.

Milling cutter bodies

Catalogue no.	d ₁	t	l ₁	l ₂	d ₂	s	z	Accessories	Features
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Shell type milling cutter bodies

	4 40 331	40	13	0.8	42	6.7	-	diam. 22	40	4	A, B, C, D, E	✓	✗	✗	✗
	5 50 331	50	13	0.8	52	6.7	-	diam. 27	48	5	A, B, C, D, E	✓	✗	✗	✗
	6 63 331	63	13	0.8	52	6.7	-	diam. 27	60	6	A, B, C, D, E	✓	✗	✗	✗
	8 80 331	80	13	0.8	52	6.7	-	diam. 32	70	8	A, B, C, D, E	✓	✗	✗	✗
	10 100 331	100	13	0.8	52	6.7	-	diam. 40	90	10	A, B, C, D, E	✓	✗	✗	✗
	12 125 331	125	13	0.8	52	6.7	-	diam. 40	90	12	A, B, C, D, E	✓	✗	✗	✗
	14 160 331	160	13	0.8	52	6.7	-	diam. 40	120	14	A, B, C, D, E	✓	✗	✗	✗
	16 200 331	200	13	0.8	52	6.7	-	diam. 60	160	16	A, B, C, D, E	✓	✗	✗	✗
	20 250 331	250	13	0.8	52	6.7	-	diam. 60	160	20	A, B, C, D, E	✓	✗	✗	✗

Accessories

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Indexable inserts

Catalogue no.	DIN Specification	Carbide grade	Coating	l	s	r	M
05 31 842	SNMX 135408 ER	P40	PVSR	13	5.4	0.8	M 4.0
05 31 862	SNMX 135408 ER	K10	PVTI	13	5.4	0.8	M 4.0
05 31 896	SNMX 135408 ER	M40	PVST	13	5.4	0.8	M 4.0

Feed per tooth (fz) | d.o.c. (ap)

Material	Feed per tooth d.o.c.	Steel	Aluminum steel	Cut iron	Non-ferrous materials	High-temperature alloys	Hardened steel
P40 PVSR f (mm) a _p (mm)	0.08-0.55 0.1-6	-	-	-	-	-	-
K10 PVTI f (mm) a _p (mm)	-	-	0.1-0.55 0.1-6	-	-	-	-
M40 PVST f (mm) a _p (mm)	-	0.08-0.3 0.1-4	-	-	0.08-0.2 0.1-3	-	-

(see latest items!)

available as long as stock lasts

on request

stock item, subject to confirmation

Cutting speed (Vc in m/min)

Material	Application	Steel	Aluminum steel	Cut iron	Non-ferrous materials	High-temperature alloys	Hardened steel
P40 PVSR roughing finishing		100 175 250	-	-	-	-	-
K10 PVTI roughing finishing		-	150 175 200 150 175 200	-	-	-	-
M40 PVST roughing finishing		-	80 145 210 120 185 230	-	40 65 90 60 90 120	-	-

Extended operation data

Plunging	
Cutter diam. d1	X _{min}
40-125	±
160-250	-

Ramping		
Cutter diam. d1	α°	y
40	<11	29.5
50	<8	39.5
63	<6.5	52.5
80	<4	69.5
100	<3.5	89.5
125	<2.5	114.5
160	-	-
200	-	-
250	-	-

Hole		
Cutter diam. d1	D _{min}	D _{max}
40	89.5	93.5
50	109.5	113.5
63	135.5	139.5
80	169.5	173.5
100	209.5	213.5
125	239.5	263.5
160	-	-
200	-	-

- ① Name of the product series
- ② Description of the product series
- ③ Example photo of a product in the product range
- ④ Dimensioned sketches of each type of connection, corresponding dimensions given in the adjacent table
- ⑤ Accessory allocation; for accessories see section 7
- ⑥ Properties, symbols in the key and on the last page of the catalogue
- ⑦ List of accessories with page reference
- ⑧ Key: stock statuses
- ⑨ Suitable indexable inserts
- ⑩ Feed per tooth (fz) and d.o.c. - depth of cut (ap)

- 11) **ATTENTION!** The values given are merely guide values and must be checked for each individual case!
High a_p values may not be combined with high f_z values!
Therefore, in case of high a_p values, low f_z values must be used and in case of high f_z values, low a_p values must be used.
- 12) Cutting speed
- 13) The values given reflect the bandwidth for both roughing and finishing. The **bold** figure in the middle is the respective average value.
If the figures are in *italics*, they are merely given as values for minor applications!
- 14) Extended operation data
- 15) Key to the pictograms in the tables and to the main and secondary precision, medium and rough machining applications

PURCHASE- AND INFO-HOTLINE



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Frästechnik GmbH & Co. KG
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click" away! With links to detailed technical informa-
tion.

Individual advice: the QR codes are the shortest
route to contacts on our website!



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office

Technical field service
National





Technical field service
International

MILLING CUTTER BODIES

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Product guide	from page 9
Milling cutter bodies and indexable inserts	from page 23
Accessories	from page 171
Technical information	from page 175
Assembly instructions	from page 192
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VARIETY OF THE HIGHEST QUALITY

The intelligent POKOLM tooling system has the optimum tool for your every need – from the adapter to the milling cutter body or solid carbide cutter through to the insert in various geometries, qualities and coatings. Competent advice from our technical sales representatives, first-class service, a complex range of accessories and further training for our customers in the POKOLM Academy complete our full service concept. In this way we support your success in all areas of the process chain, sustainably.

Milling cutter bodies for every use

➔ Square shoulder face milling cutter bodies and slotting cutter bodies, e.g.

- SLOTWORX® (4)
- ADEW (5)

➔ Copying cutters, e.g.

- SPINWORX® (6)
- Round insert cutters (7)

➔ Cutters for machining non-ferrous materials, e.g.

- VDGT (10)
- VCGT (11)

➔ High-feed cutters, e.g.

- QUADWORX® (15)
- TRIGAWORX® (16)
- SLOTWORX® (4)
- SLOTWORX®HP (17)

➔ Face milling cutters, e.g.

- BASEWORX® (1)
- PLANWORX® (2)
- MIRROWORX® (3)

➔ Kugel- / Torusfräser, e.g.

- UNIWORX® (12)
- WAVEWORX® (13)
- Ball nose end mills with 4 cutting edges (14)

➔ Rhombus cutters, e.g.

- FINWORX® (8)
- XDHW | XDHT (9)

The complete POKOLM product range for every aspect of milling technology



Milling cutter bodies



Adapter systems



Accessories



Indexable inserts



Spindle systems
Shrink technology



Detailed technical
know-how



Solid carbide cutters



Special products



Qualified service



MILLING CUTTER BODIES

Major application

- roughing
- pre-finishing
- finishing

Minor application

- roughing
- pre-finishing
- finishing

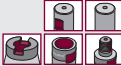
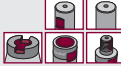
Types of machining

- plunging
- chamfering
- face milling
- circular milling
- axial plunging
- slotting
- pocketing
- square shoulder milling
- copying

Connections

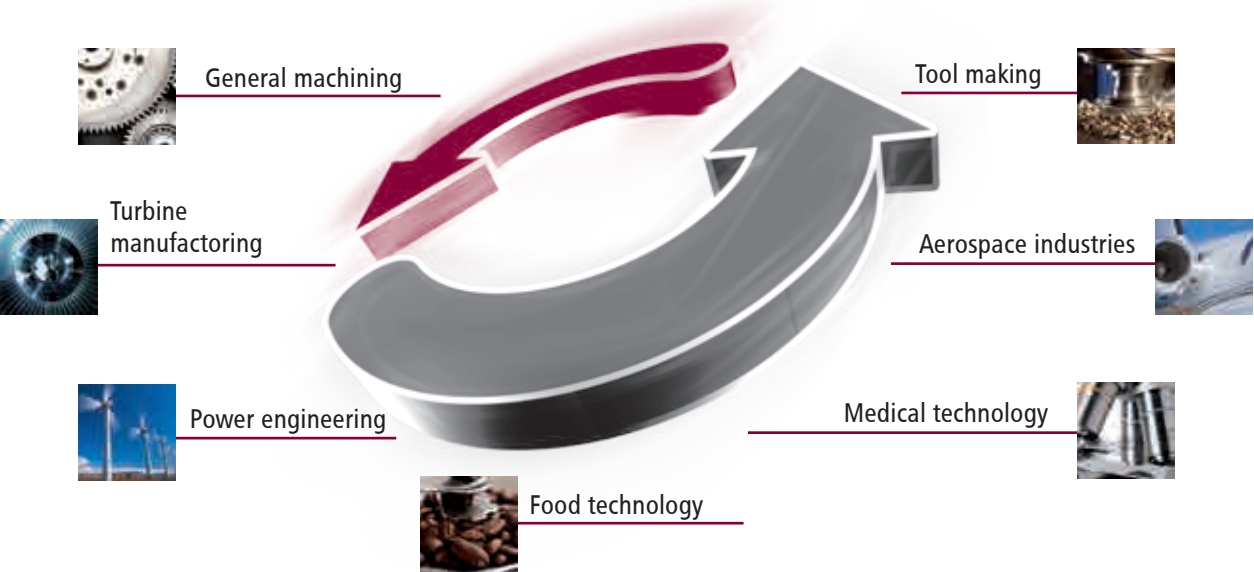
- shell type
- DuoPlug
- threaded shank
- weldon shank
- plain shank

PRODUCT OVERVIEW

Product lines	Connections	Page	Types of machining								Material to be machined							
											P	M	K	N	S	H		
➔ Face milling cutters																		
➔ BASEWORX®		23																
⊖ diam. 35 - 125 mm		24	-			-	-	-	-	-		-			-	-		
➔ PLANWORX®		27																
⊖ diam. 40 - 250 mm		28	-				-	-		-				-		-		
➔ MIRROWORX®		31																
⊖ diam. 42 - 100 mm		32	-	-		-	-	-	-	-								
➔ Square shoulder face milling + slotting cutters - k90°																		
➔ SLOTWORX®		33																
⊖ Size S - diam. 10 - 20 mm		34		-			-				-			-	-		-	
⊖ Size M - diam. 16 - 52 mm		36																
⊖ Size L - diam. 25 - 100 mm		40																
➔ ADEW		45																
⊖ diam. 15 - 32 mm		46		-			-				-					-		
➔ Copy milling cutters k0°-90°																		
➔ SPINWORX®		49																
⊖ r5 - diam. 25 - 52 mm, 7° positiv		50		-			-			-								
⊖ r6 - diam. 35 - 66 mm, 7° positiv		53		-			-			-								
➔ Cutters for round inserts		57																
⊖ r2.5 - diam. 10 - 20 mm		58		-				-		-						-		
⊖ r3.5 - diam. 12 - 30 mm, s 1,99		60																
⊖ r3.5 - diam. 12 - 42 mm, s 2,38		63																
⊖ r5 - diam. 20 - 42 mm, neutral		67																
⊖ r5 - diam. 25 - 52 mm, 7° positiv		71																
⊖ r5 - diam. 20 - 35 mm, CBN		75																
⊖ r6 - diam. 24 - 60 mm		77																
⊖ r8 - diam. 32 - 160 mm		84																
⊖ r10 - diam. 52 - 160 mm		90																
➔ Rhombic cutters - k95°																		
➔ FINWORX®		93																
⊖ diam. 16 - 42 mm r1		94														-		
➔ XDHW XDHT		97																
⊖ diam. 16 - 42 mm r1		98														-		
⊖ diam. 16 - 35 mm r2		101																

CUSTOMIZED CONCEPTS
FOR EVERY INDUSTRIAL SECTOR

From delicate medical engineering to powerful, vigorous racing sports – our services are used in the most various sectors. And at the same time, the requirements placed on our products are as diverse as they are demanding. Maximum precision, quality and expertise are what is demanded everywhere. It is inconsequential whether it is all about large components for aerospace or a highly-specific special tool for the wood industry. With this great diversity, direct contact with the customers is of decisive importance. That is the only way to precisely comprehend the specific challenges. Our highly-trained field service can often even help right onsite and flexibly and precisely find the perfect solution for highly customised requirements.



Dou-Plug®, SPINWORX® and other patents.

Guaranteed process optimization

If you don't go forward, you go backwards! For this reason, we continuously develop new products for our range of tooling. This is the only way to meet the requirements as technological leader in this field. And this is the way for you, having a lasting effect from our innovations and patents, which are able to promote your competitive advantage.

MILLING CUTTER BODIES

- Major application
- roughing
 - pre-finishing
 - finishing
- Minor application
- roughing
 - pre-finishing
 - finishing
- Types of machining
- plunging
 - chamfering
 - face milling
 - circular milling
 - axial plunging
 - slotting
 - pocketing
 - square shoulder milling
 - copying
- Connections
- shell type
 - DuoPlug
 - threaded shank
 - weldon shank
 - plain shank

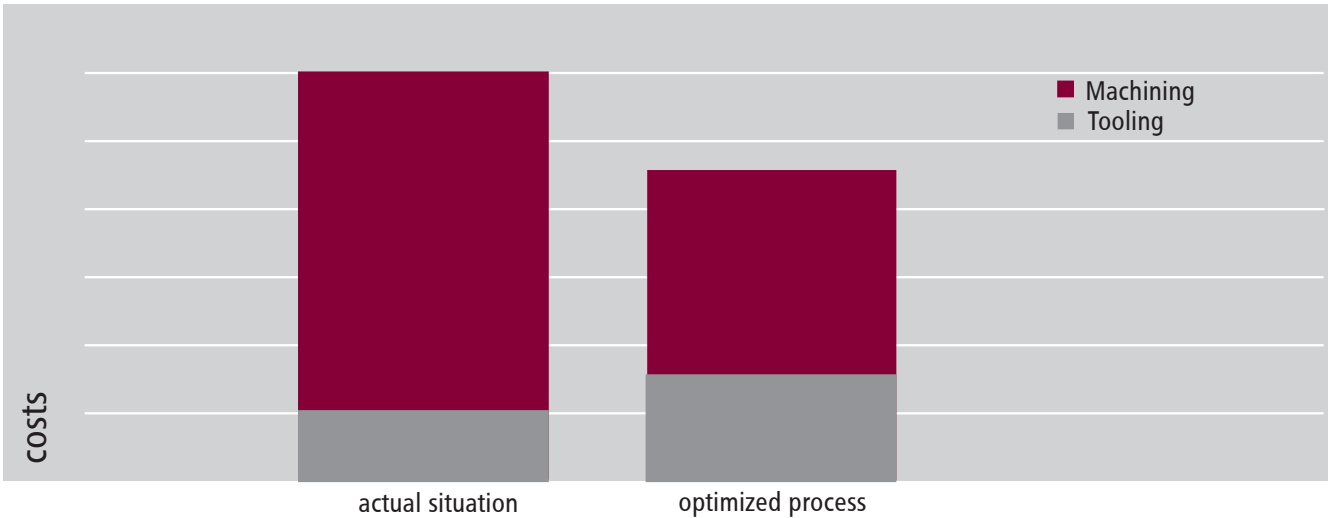
PRODUCT OVERVIEW

Product lines	Connections	Page	Types of machining								Material to be machined						
											P	M	K	N	S	H	
➔ Milling cutter bodies for non-ferrous materials																	
➔ VDGT - k93°		103															
⊖ diam. 15 - 42 mm r1		104		-			-					-	-	-		-	-
➔ VCGT - k92°		107															
⊖ diam. 32 - 125 mm r3		108		-			-					-	-	-		-	-
➔ Ball nose / bull end mill cutter bodies																	
➔ UNIWORX®		111															
⊖ diam. 8 - 20 mm r3 - r10		112	-	-	-	-	-	-	-	-						-	
➔ WAVEWORX®		125															
⊖ diam. 16 - 32 mm r8 - r16		126	-	-	-	-	-	-	-	-			-	-	-	-	-
➔ Cutters for inserts with 4 cutting edges		135															
⊖ diam. 10 - 20 mm r5 - r10		136	-	-	-	-	-	-	-	-							
➔ High feed milling cutter bodies																	
➔ QUADWORX®		145															
⊖ Size S - diam. 14 - 25 mm		146		-			-				-				-		
⊖ Size M - diam. 22 - 52 mm		149					-										
⊖ Size L - diam. 35 - 80 mm		152					-										
➔ TRIGAWORX®		155															
⊖ Size S - diam. 16 - 25 mm		156		-			-				-		-	-	-	-	
⊖ Size M - diam. 25 - 52 mm		158			-	-	-	-	-	-							
⊖ Size L - diam. 32 - 80 mm		161			-	-	-	-	-	-	-						
➔ SLOTWORX® - k94°		163															
⊖ Size M - diam. 16 - 52 mm		164		-			-				-		-		-	-	
➔ SLOTWORX® HP		167															
⊖ HP Size S - diam. 10 - 25 mm		168		-			-				-		-			-	

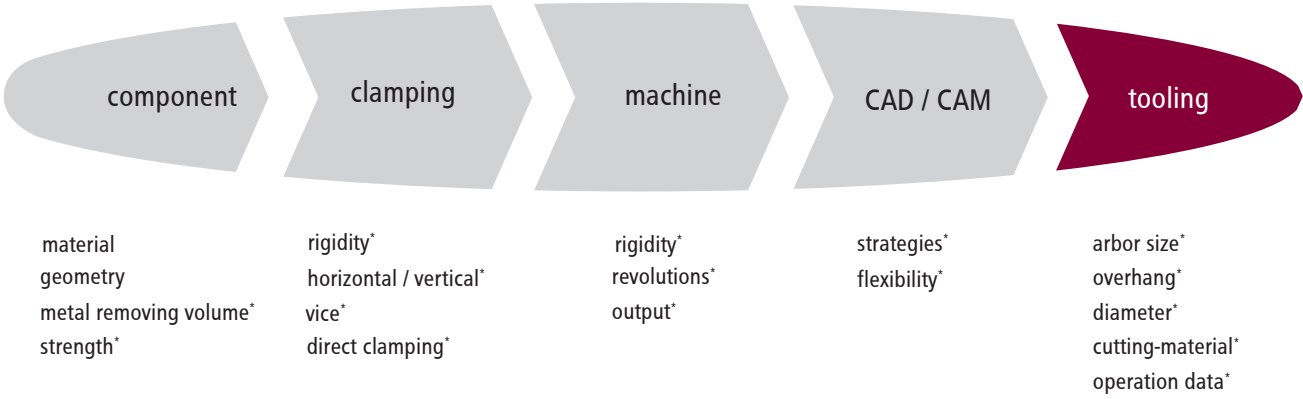
PURCHASE- AND INFO-HOTLINE

The integral analysis and individual advice from our highly qualified technical sales representatives is entirely focussed on your specific process application – and always with one goal in mind: To cut costs and increase productivity.

Our goal: cutting costs



Our approach: process optimization



*this is just a range of influencing factors

YOUR KNOW-HOW CENTRE: THE POKOLM ACADEMY

First-class products are one thing. But the basis for tooling systems that are more economical, faster and more efficient is: KNOWLEDGE. Which is why we started the POKOLM Academy for you.

Here the aim is to actively find new solutions, to pass on knowledge and to secure long-term competitive advantages.

Continuous training and vocational development is of decisive importance to master market challenges. In the POKOLM Academy we offer you professional workshops, seminars and training course which pass on in-depth product knowledge. An important key to your success.



Added value through knowledge

To secure and expand the market position From metallurgy along with tools and their coatings to strategies for CNC mills and their programming – proven experts and specialists present their expertise in the academy. And that puts your employees at the cutting edge of everything.

YOUR ELECTRONIC QUOTATION PER 'CLICK'

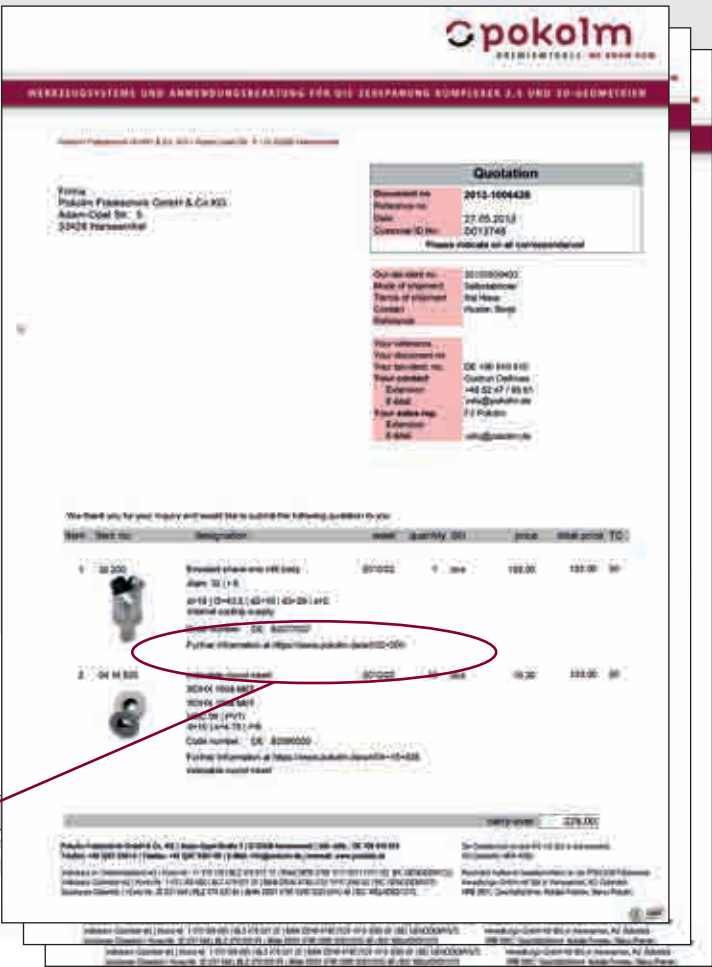
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Your electronic quotation per 'click'

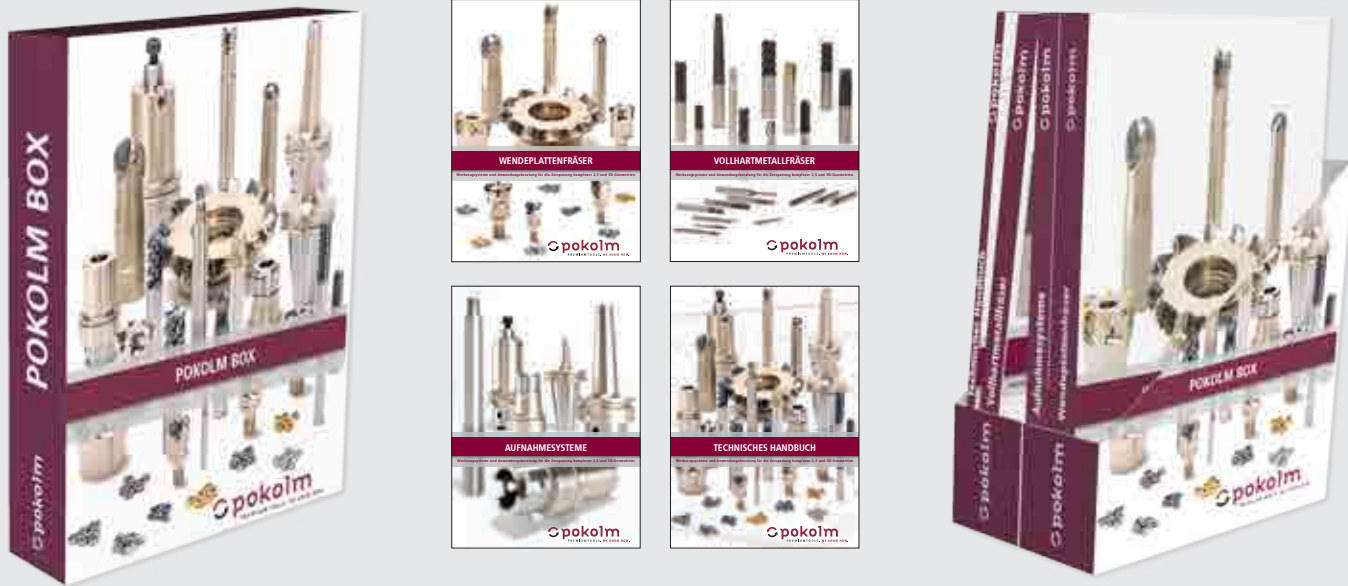
Your advantage:
With only one click, you can receive all information about products selected, displayed on your screen

- ➡ photo
- ➡ drawing
- ➡ all dimensions
- ➡ accessories
- ➡ suitable arbors, adapters, inserts or solid carbide tools

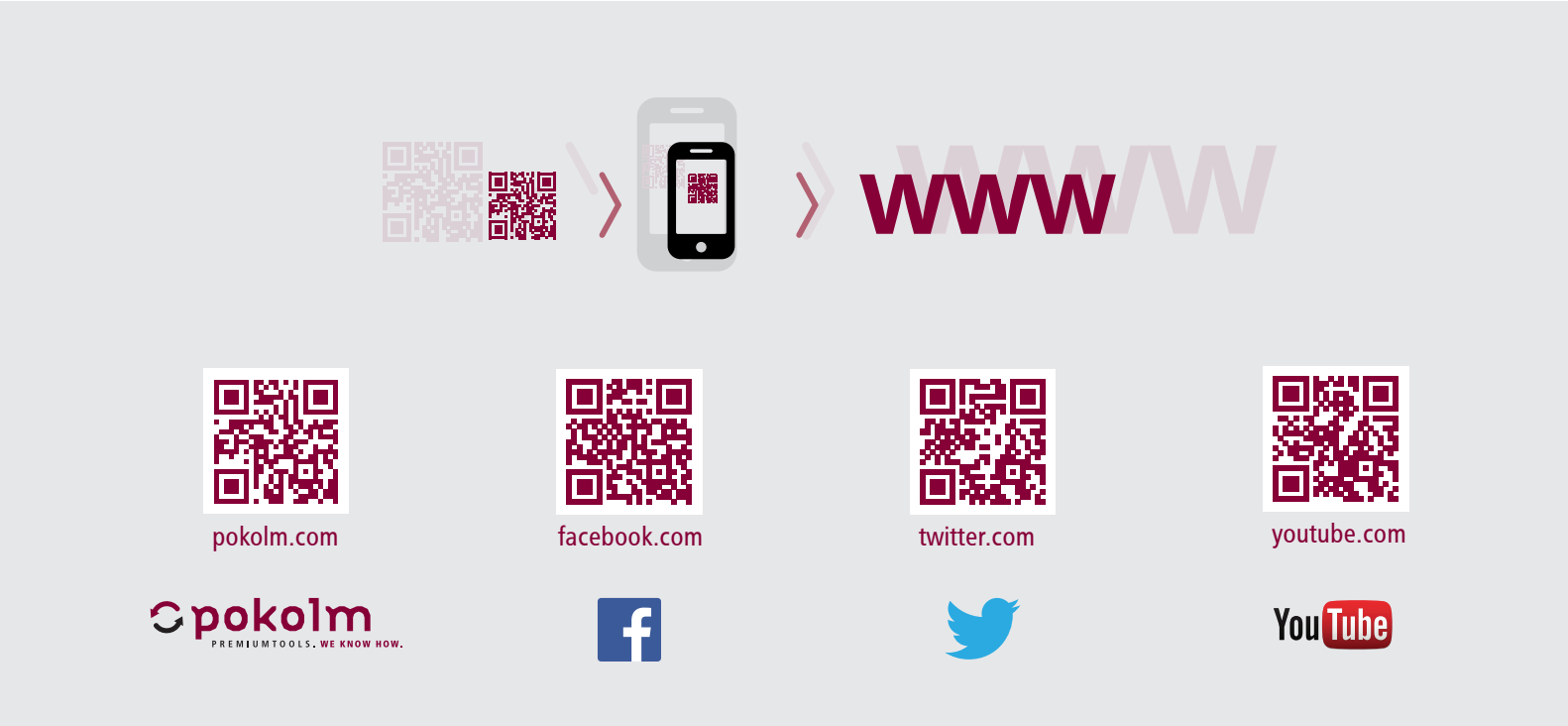
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THE POKOLM BOX – THE INNOVATIVE CATALOGUE-SYSTEM



QR-CODES – THE QUICKEST WAY TO OUR WEB PRESENCES



THE POKOLM TOOL SYSTEM

over 500000 combination possibilities

Shrinking combinations

Morse taper combinations

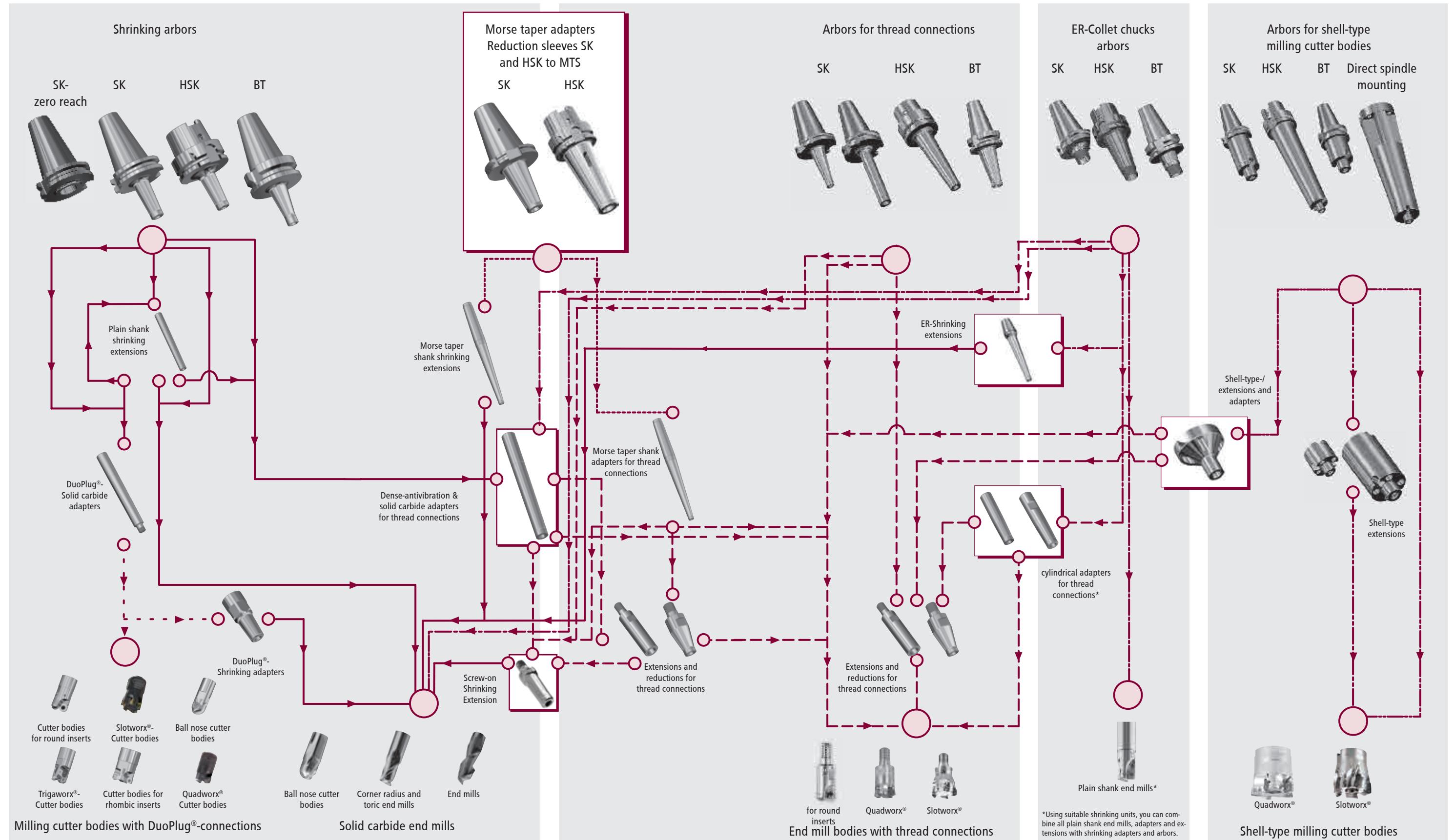
Thread connected combinations

Shell-type combinations

ER-Collet combinations

DuoPlug®-combinations

The listed options are applications examples. Do not hesitate to contact our technical field service for a huge number of further possible combinations.



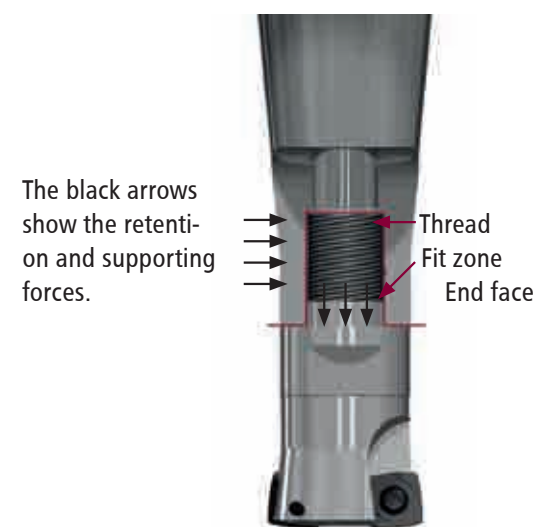
TECHNOLOGICAL COMPARISON

Thread Connection vs. Pokolm DuoPlug® Connection

WHERE THE DIFFERENCE IS:

Pokolm Thread Connection – our high-performance standard

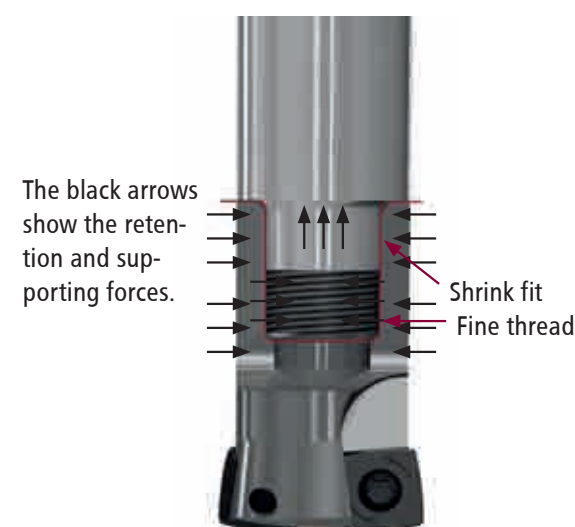
Pokolm Thread Connection



This standard thread connection is produced with the best tolerances possible using the latest technology. We maximize the efficiency of our Pokolm thread connections by optimizing our design of arbors, adapters, and milling cutter bodies.

Our patented protected DuoPlug® System – the perfect increase

Pokolm DuoPlug®= Shrink and Screw



Our Pokolm DuoPlug® system offers optimum rigidity and extremely high precision and concentricity. As a supplement to conventional thread connections, the retention and supporting forces between cutting tool and adapter act along the entire surface of the shrink fit and a large part of the shrink thread. For more information, please see the assembling and dismantling instructions for our DuoPlug® system in the "Operation Data" chapter.

The fact is:

DuoPlug® perfects the thread connection by means of greatly increased retention forces, resulting in the highest possible precision for extremely slim dimensions.

Pokolm Thread Connection – our high-performance standard

Performance

- ➔ no undercut, thus avoiding a rated break-point
- ➔ extremely precise fit zone and extremely precise flange contact surface
- ➔ better tensile strength and heat resistance because of the special materials and extra-hard coating
- ➔ for hundreds of tool changes
- ➔ optimized chamfers on arbors and adapters

Your Advantages

- ➔ increased process reliability
- ➔ universally applicable for all roughing and finishing operations
- ➔ better fatigue strength and red hardness
- ➔ lower tool costs because of longer tool life
- ➔ considerable increase in stability because of larger flange contact surface

Ideal Applications

- ➔ low-cost standard equipment for milling operations in shallow and medium-deep cavities
- ➔ especially for deep machining applications without vertical walls

Our patent protected DuoPlug® System – the perfect increase

Performance

- ➔ maximum precision and concentricity
- ➔ optimum stability
- ➔ absolutely backlash-free class of fits by screwed connection
- ➔ extremely precise and consistent connection
- ➔ clearly increased retention forces compared to conventional thread connection
- ➔ better tensile strength and heat resistance because of special materials and extra-hard coating

Your Advantages

- ➔ longer tool life
- ➔ absolutely minimal vibrations with long overhangs
- ➔ renders top precision in finishing operations
- ➔ increased availability of tool system and increased process reliability
- ➔ improved performance in roughing operations
- ➔ better fatigue strength and red hardness

Ideal Applications

- ➔ for maximum precision in finishing operations
- ➔ roughing and finishing applications with long overhangs
- ➔ ideal for applications on vertical walls because of extremely slim arbor/adapter system

MILLING CUTTER BODIES



Well Incorporated: For multiple advantages in milling.

For Pokolm-milling cutter systems, all bodies are completed by a fine tuned insert-range, leading to an extensive choice of tooling, covering about 90% of every possible application in mould- and die-Making.



Our patent protected, specially incorporated insert seats offer optimum support and insert-life during all milling operations by outstanding rigidity, in particular, when using high feed rates.



Tools with 0° axial rake angle (neutral) and with a variety of positive rake angles offer optimum cutting conditions for a wide range of all possible materials to be machined.



The latest Pokolm DuoPlug®-adapter- and milling cutter system eliminates the looseness between adapter and cutter body. Together with the enormous retention forces and adhesive strength through the shrinking process, you reach a high quality surface finish, even for extreme milling operations and long reach overhang.



Reliability in case of roughing operations. The shims have 2 functions: shock absorber and protection at the same time. Increased process reliability with positive influences to smooth running are further characteristics of this product feature.



For machining non-ferrous materials of all kinds, we offer specially designed tools with special insert geometries and optimum coatings with lubricating additives.



In keeping latest state-of-the-art developments: Nearly all the tools in the Pokolm range are equipped with an internal coolant supply.



Milling cutters with our special 2-point contact milling design can be used for 90° plunge angles.



Optimized tool-geometries, carbide grades and coatings, specially developed for the characteristics of stainless-, acid- and heat-resistant materials, guarantee excellent machining results.

Further information about special features of our POKOLM-tooling systems are indicated on following pages.

TECHNOLOGY OVERVIEW MILLING CUTTER BODIES

➔ Increased economic efficiency

Our seven different diameters for round inserts alone, plus numerous additional geometries and sizes – combined with five different rake angles in our milling cutter bodies – provide optimum cutting conditions for almost every application you can think of.

Large variety of rake angles for every special application.



negativ rake angle for maximum stability and smooth running



0° rake angle, the best solution for high accurate contour milling and machining hardened materials



milling cutter bodies with positive rake angles are suitable for nearly every application, together with inserts with concave molding they are the best solution for machining RSH materials



ø 5 x 1,50



ø 12 x 3,97



ø 7 x 1,99



ø 16 x 4,76



ø 7 x 2,38



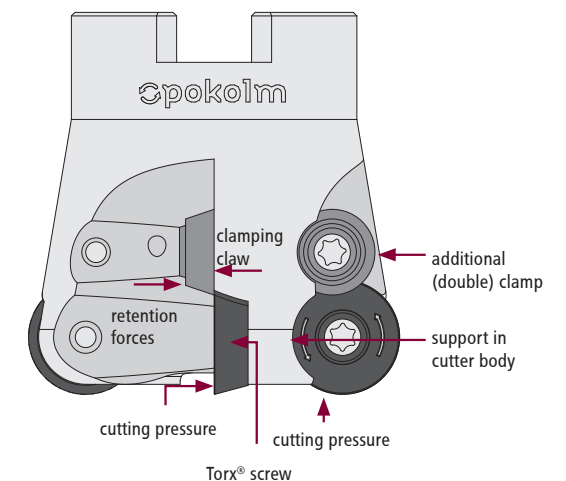
ø 20 x 6,00



ø 10 x 3,18

Optimum load distribution

The patent-protected, specially developed insert seats in our milling cutter bodies absorb all axial and radial milling forces, because the insert is not only fixed with a Torx® screw, it is also supported by being embedded into the cutter body. Thus, the cutting pressure no longer acts on the screw alone, but is also absorbed by our milling cutter bodies. Compared to open insert seats, our incorporated insert seats allow stronger teeth, clearly improving the rigidity of our milling cutters. This results in longer tool life and allows higher feed rates. Additional double clamps provide excellent support, even under extreme cutting conditions.

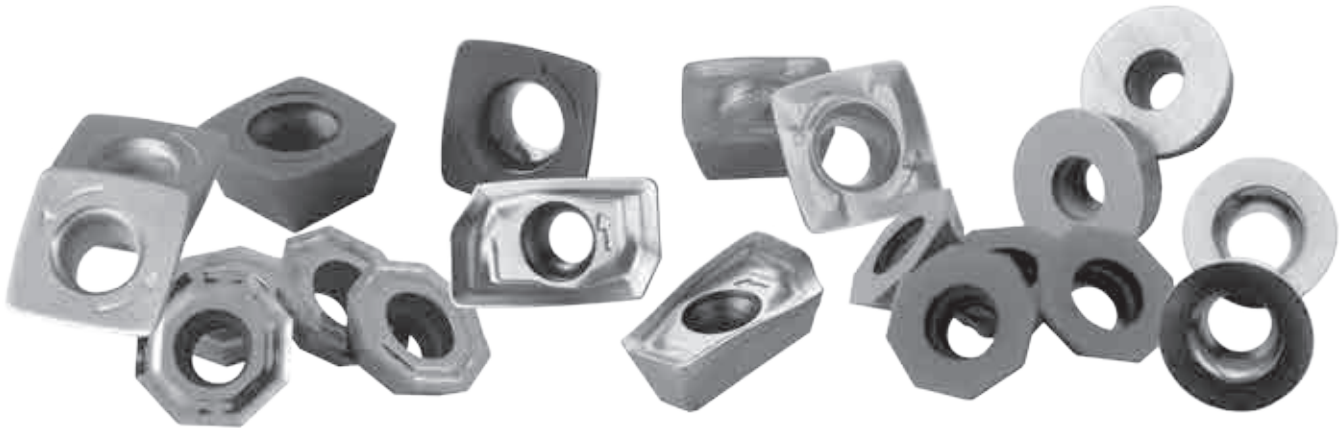


Reduced wear

Our chip spaces were specially designed for exceptionally easy chip flow, thus protecting both body and workpiece from damage. The supply channels for the coolant in arbors and cutter bodies are precisely coordinated with each other so that the coolant is conducted directly onto the cutting edge even under difficult cutting conditions.

Specially selected materials and extra-hard coatings offer higher tensile strength and heat resistance, making Pokolm tools and arbor systems unbeatable in durability and long-life-cycles.

INDEXABLE INSERTS



The complete range.

Our carefully planned, wide variety of indexable inserts is one of the highlights of the Pokolm program.

A perfect complement to our milling cutter program, it offers a wide selection of carbide grades, geometries, and different application possibilities. The range provides an optimum solution for every task:

Diameters from 5 to 20 mm (radii of 2.5 to 10 mm), different shapes, carbide grades, and coatings – along with a great variety of milling cutter bodies, our patent-protected insert seats, and arbor systems – allow every individual combination.

All Pokolm inserts have been developed based on shop-tested applications by our customers, and we improve our inserts to meet every new challenge.

This constant and innovative developmental process, and a remarkably intensive cooperation with our carbide suppliers and coating partners, guarantee state-of-the-art types of inserts at all times.

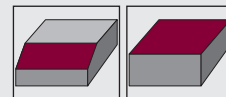
BASEWORX® FACE MILLING CUTTER

Economic quiet cutter for face milling operations

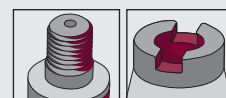
Properties

- ➔ Embedded indexable inserts = increases tooth stability
- ➔ Eight reliably usable cutting edges for a cutting depth $a_p < 2.2$ mm
- ➔ Lead angle $\sim 43^\circ$ for chamfering
- ➔ Ideally suitable for preparing for finishing with MIRROWORX®
- ➔ Easy cutting due to 20° positive rake angle
- ➔ Low power requirement and highly smooth running

Machining types



Connection types



Sizes

Page

diam. 35 - 125 mm

24

Cutting materials

Carbide grade Coating	ISO standard						feed per tooth d.o.c.		length	thickness	radius
	P	M	K	N	S	H	f_z (mm)	a_p (mm)	l (mm)	s (mm)	r (mm)
K10 polished	-	-	-	▽	-	-	0.08 - 0.3	0.1 - 3.5	12.7	3.77	0.5
P40 PVTi	▽	-	▽	-	-	-	0.1 - 0.5	0.2 - 3.0	12.7	3.77	1.0

▽ major application ▽ minor application ▽ ▽ roughing

▽ ▽ pre-finishing

▽ ▽ finishing

diam. 35 - 125 mm

Milling cutter bodies

Threaded shank end mill bodies

Shell type milling cutter bodies

Accessories

 latest items!  available as long as stock lasts  on request  stock item, subject to confirmation

Indexable inserts

Feed per tooth (fz) | d.o.c. (ap)

Cutting speed (V_c in m/min)

Extended operation data

 **major application**
 *minor application*
  roughing
   pre-finishing
   finishing

PLANWORX® FACE MILLING CUTTERS

Highly economic with large cutting depth and outstandingly smooth running

Properties

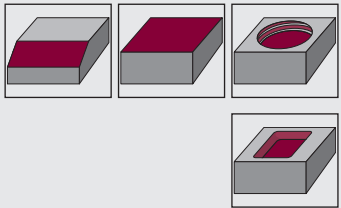
- ➡ Negative, therefore extremely stable basic form
- ➡ Eight reliably usable cutting edges
- ➡ Easy cutting due to highly positive indexable insert geometry
- ➡ unequal pitch for less vibrations
- ➡ Internal coolant supply for fluids up to tool diameter of 125 mm
- ➡ Outstandingly smooth running

Practical video

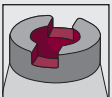
➡ Planworx in 1.0570 / 1015 / St 52 - 3



Machining types



Connection types



Sizes	Page
diam. 40 - 250 mm	28



Cutting materials

Carbide grade Coating	ISO standard						feed per tooth d.o.c.		length	thickness	radius
	P	M	K	N	S	H	f _z (mm)	a _p (mm)	l (mm)	s (mm)	r (mm)
P40 PVSR	▽						0.08 - 0.55	0.1 - 6.0	13	5.4	0.8
K10 PVTi			▽				0.1 - 0.55	0.1 - 6.0	13	5.4	0.8
M40 PVST		▽			▽		0.08 - 0.3	0.1 - 4.0	13	5.4	0.8

diam 40 - 250 mm

Milling cutter bodies

Shell type milling cutter bodies

Accessories

Indexable inserts

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade Coating	Feed per tooth d.o.c.						
P40 PVSR	f_z (mm) a_p (mm)	0.08-0.55 0.1-6	-	-	-	-	-
K10 PVTi	f_z (mm) a_p (mm)	-	-	0.1-0.55 0.1-6	-	-	-
M40 PVST	f_z (mm) a_p (mm)	-	0.08-0.3 0.1-4	-	-	0.08-0.2 0.1-3	-

NEW latest items! available as long as stock lasts on request stock item, subject to confirmation

Helix

Cutter diam. d_1	$D_{\min}$	$D_{\max}$
40	89.5	93.5
50	109.5	113.5
63	135.5	139.5
80	169.5	173.5
100	209.5	213.5
125	259.5	263.5
160	-	-
200	-	-
250	-	-

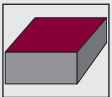
MIRROWORX® FACE MILLING CUTTERS

Milling instead of grinding - smooth surfaces with maximum economic efficiency

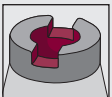
Properties

- ➡ Surface qualities of Ra < 0.8 µm, the grinding process can be omitted completely
- ➡ Particularly smooth running
- ➡ Fine adjustment controls absolute axial runout within the µm range
- ➡ Also suitable for unstable components
- ➡ All three cutting edges can be used reliably

Machining types



Connection types



Practical video

- ➡ MIRROWORX® in 1.2312



Sizes

diam. 42 - 100 mm

Page

32



Cutting materials

Carbide grade Coating	ISO standard						feed per tooth d.o.c.		length	thickness	radius
	P	M	K	N	S	H	f _z (mm)	a _p (mm)	l (mm)	s (mm)	r (mm)
HSC05 PVTi	▽	▽	▽	▽	▽	▽	0.2 - 2.0	0.05 - 0.25	14.32	4	-



MIRROWORX®

diam. 42 - 100 mm

Milling instead of grinding is our slogan for these finishing milling cutters. Developed for producing smooth and levelled surfaces with enormous feed rates. These tools enter into grinding domains.

Milling cutter bodies

Catalogue no.	d ₁	l	r	l ₃	l ₂	l ₁	d ₂	d ₃	z	Accessories	Features
---------------	----------------	---	---	----------------	----------------	----------------	----------------	----------------	---	-------------	----------

Shell-type milling cutter bodies

	2 42 384	42	14.32		43	1	-	diam. 16	35	2	A, B, C, D, E, F, G	✓
	2 52 384	52	14.32		43	1	-	diam. 22	48	2	A, B, D, E, F, G	✓
	2 66 384	66	14.32		53	1	-	diam. 27	60	2	A, B, D, E, F, G	✓
	2 80 384	80	14.32		53	1	-	diam. 27	60	2	A, B, D, E, F, G	✓
	2 100 384	100	14.32		53	1	-	diam. 32	70	2	A, B, D, E, F, G	✓

Accessories

 35 500 Torx screw A > Page 171	 45 500 L Torx screw B > Page 171	 GWSTPS8ISK hexagon socket set screw C > Page 172	 15 500 Torx-screwdriver D > Page 172	 20 500 Torx-screwdriver E > Page 172	 TV 2-8 Torque Vario®-S with window scale, F > Page 173
 T15 502 Compatible bit f. Torque Vario®, G > Page 174					

Indexable inserts

	Catalogue no.	DIN Specification	Carbide Grade	Coating	l	s	r	M
	04 84 835	TEHX 16T3 ZF	HSC 05	PVTi	14.32	4	-	M 3.5

Feed per tooth (fz) | d.o.c. (ap)

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade	Feed per tooth d.o.c.						
Coating							
HSC 05 PVTi	f _z (mm) a _p (mm)	0.5-2 0.05-0.2	0.5-1 0.05-0.1	0.5-2 0.05-0.2	0.5-2 0.05-0.25	0.2-1 0.05-0.1	0.2-1 0.05-0.1

Cutting speed (Vc in m/min)

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade	Application						
Coating							
HSC 05 PVTi	roughing finishing	150 225 300	100 150 200	200 275 350	100 250 400	40 70 100	35 93 150

SLOTWORX® SQUARE SHOULDER FACE MILLING AND SLOTTING CUTTER BODIES

With highly modern cutting edge geometry for universal applications

Properties

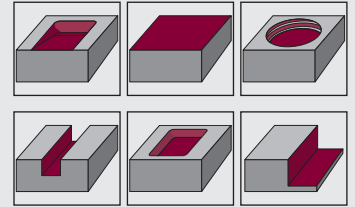
- Universal use options: Roughing and finishing of steel, aluminium, graphite, plastics, hardened materials, cast iron and stainless steel as well as high-temperature resistant materials
- Optimised coolant supply direct onto the cutting edge
- Integrated finishing land achieves outstanding surface qualities
- Corner radii from 0.8 - 5 mm

Practical video

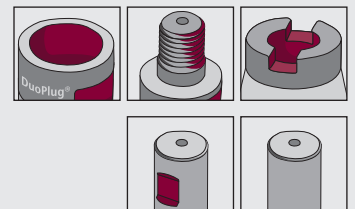
- Slotworx® M / zero reach adapters DuoPlug SK50 / 1.2344 ESU 48 HRC / X40CrMoV



Machining types



Connection types



Sizes

Page

S:	diam. 10 - 20 mm	34
M:	diam. 16 - 52 mm	36
L:	diam. 25 - 100 mm	40

Cutting materials

Size	ISO Standard						feed per tooth d.o.c.		length	Size, radius (mm), Carbide grade					
	P	M	K	N	S	H	f _z (mm)	a _p (mm)	l (mm)	0.8	1.0	2.0	3.0	4.0	5.0
S	▽	▽	-	-	▽	-	0.02 - 0.17	0.1 - 4.0	6.9	P40	-	-	-	-	-
M	▽	▽	▽	▽	▽	▽	0.05 - 1.5	0.1 - 9.0	10	HSC05, P40	K10, HSC05, P40, PKD, M40	K10, M40	K10, M40	K10, M40	-
L	▽	▽	▽	▽	▽	-	0.08 - 0.5	0.1 - 14	15	-	K10, P40, M40	M40	K10, M40	K10, M40	K10, M40

Size S - diam. 10 - 20 mm

- the increased no. of teeth allows for very large feed-rates

Accessories				
 18 500 Torx screw A > Page 171	 06 500 Torx-screwdriver B > Page 172	 TV 04-1 Screwdriver torque Vario®-S with window scale, C > Page 173	 T6 500 Torx interchangeable bit for Torque Vario® D > Page 173	 T6 502 Torx MagicSpring compatible bit f. Torque Vario®, E > Page 174

Helix

Cutter diam. d_1	$D_{\min}$	$D_{\max}$
10	13	20
12	17	24
16	25	32
20	33	40



SLOTWORX® - K90°

Size M - diam. 16 - 52 mm

This new range is the all-purpose solution for square shoulder face milling and slotting. Can be used with indexable inserts of the Slotworx®-M range up to a corner radius of 2 mm. Modified standard bodies for the use of indexable inserts with a corner radius ≥ 3 mm have additional R+ marking.

Milling cutter bodies

Catalogue no.	d ₁	l	r	l ₃	l ₂	l ₁	d ₂	d ₃	z	Accessories	Features
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DuoPlug®

	2 16 267 SG	16	10	0.8-2	38	2.5	-	M 10	15	2	A, C, D, E, F	
	2 16 267 SG R+	16	10	3 4	38	2.5	-	M 10	15	2	A, C, D, E, F	
	2 20 267 SG	20	10	0.8-2	40	2.5	-	M 12	18.6	2	A, C, D, E, F	
	2 20 267 SG R+	20	10	3 4	40	2.5	-	M 12	18.6	2	A, C, D, E, F	
	3 25 267 SG	25	10	0.8-2	43	2.5	-	M 16	23.5	3	A, C, D, E, F	
	3 25 267 SG R+	25	10	3 4	43	2.5	-	M 16	21.5	3	A, C, D, E, F	

Threaded shank end mill bodies

	2 16 267	16	10	0.8-2	29	2.5	-	M 8	13.8	2	A, C, D, E, F	
	2 16 267 R+	16	10	3 4	29	2.5	-	M 8	13.8	2	A, C, D, E, F	
	2 20 267	20	10	0.8-2	29	2.5	-	M 10	18	2	A, C, D, E, F	
	2 20 267 R+	20	10	3 4	29	2.5	-	M 10	18	2	A, C, D, E, F	
	3 20 267	20	10	0.8-2	29	2.5	-	M 10	18	3	A, C, D, E, F	
	3 20 267 R+	20	10	3 4	29	2.5	-	M 10	18	3	A, C, D, E, F	
	3 25 267	25	10	0.8-2	33	2.5	-	M 12	21	3	A, C, D, E, F	
	3 25 267 R+	25	10	3 4	33	2.5	-	M 12	21	3	A, C, D, E, F	
	4 25 267	25	10	0.8-2	33	2.5	-	M 12	21	4	A, C, D, E, F	
	4 25 267 R+	25	10	3 4	33	2.5	-	M 12	21	4	A, C, D, E, F	
	4 32 267	32	10	0.8-2	43	2.5	-	M 16	29	4	B, C, D, E, F	
	4 32 267 R+	32	10	3 4	43	2.5	-	M 16	29	4	B, C, D, E, F	
	5 32 267	32	10	0.8-2	43	2.5	-	M 16	29	5	B, C, D, E, F	
	5 32 267 R+	32	10	3 4	43	2.5	-	M 16	29	5	B, C, D, E, F	
	5 42 267	42	10	0.8-2	43	2.5	-	M 16	29	5	B, C, D, E, F	
	5 42 267 R+	42	10	3 4	43	2.5	-	M 16	29	5	B, C, D, E, F	

NEW latest items!

available as long as stock lasts

on request

stock item, subject to confirmation

Milling cutter bodies

Catalogue no.	d ₁	l	r	l ₃	l ₂	l ₁	d ₂	d ₃	z	Accessories	Features
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Plain shank end mill bodies

	2 32 16 167 G	16	10	0.8-2	32	2.5	165	diam. 16	-	2	A, C, D, E, F	
	2 32 16 167 G R+	16	10	3 4	32	2.5	165	diam. 16	-	2	A, C, D, E, F	
	3 40 20 167 G	20	10	0.8-2	40	2.5	165	diam. 20	-	3	A, C, D, E, F	
	3 40 20 167 G R+	20	10	3 4	40	2.5	165	diam. 20	-	3	A, C, D, E, F	
	3 50 25 167 G	25	10	0.8-2	50	2.5	225	diam. 25	-	3	A, C, D, E, F	
	3 50 25 167 G R+	25	10	3 4	50	2.5	225	diam. 25	-	3	A, C, D, E, F	
	4 50 25 167 G	25	10	0.8-2	50	2.5	225	diam. 25	-	4	A, C, D, E, F	
	4 50 25 167 G R+	25	10	3 4	50	2.5	225	diam. 25	-	4	A, C, D, E, F	

Shell type milling cutter bodies

	5 42 367	42	10	0.8-2	43	2.5	-	diam. 16	35	5	B, C, D, E, F	
	5 42 367 R+	42	10	3 4	43	2.5	-	diam. 16	35	5	B, C, D, E, F	
	6 52 367	52	10	0.8-2	53	2.5	-	diam. 22	40	6	B, C, D, E, F	
	6 52 367 R+	52	10	3 4	53	2.5	-	diam. 22	40	6	B, C, D, E, F	

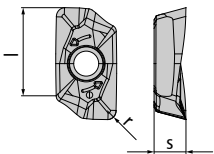
Accessories

 25 505 KP Torx screw A > Page 171	 25 505 P Torx screw for Slotworx M B > Page 171	 08 500 P Torx-screwdriver (Torx-Plus) C > Page 172	 TV 08-2 Screwdriver torque Vario®-S with window scale, D > Page 173	 T8 500 P Torx interchangeable bit for Torque Vario® E > Page 173	 T8 502 P Compatible bit f. Torque Vario®, F > Page 174
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major application minor application roughing

pre-finishing

finishing

Indexable inserts								
Catalogue no.		DIN Specification	Carbide Grade	Coating	l	s	r	M
	04 67 837 R08	XDMT 10T308 ER	HSC 05	PVFN	10	3.58	0.8	M 2.5
	04 67 848 R08	XDMT 10T308 ER	P40	PVGO	10	3.58	0.8	M 2.5
	04 67 820	XDHT 10T310 ER	K10	polished	10	3.58	1	M 2.5
	04 67 837	XDMT 10T310 ER	HSC 05	PVFN	10	3.58	1	M 2.5
	04 67 844	XDHT 10T310 ER	P40	PVGO	10	3.58	1	M 2.5
	04 67 848	XDMT 10T310 ER	P40	PVGO	10	3.58	1	M 2.5
	04 67 860	XDHT 10T310 ER	K10	PVTi	10	3.58	1	M 2.5
	04 67 860 D	XDHT 10T310 ER	K10	PVDiaN	10	3.58	1	M 2.5
	04 67 894	XDHT 10T310 ER	PCD	uncoated	10	3.58	1	M 2.5
	04 67 896	XDMT 10T310 ER	M40	PVST	10	3.58	1	M 2.5
	04 67 820 R20	XDHT 10T320 FR	K10	polished	10	3.58	2	M 2.5
	04 67 896 R20	XDMT 10T320 ER	M40	PVST	10	3.58	2	M 2.5
	04 67 820 R30	XDHT 10T330 FR	K10	polished	10	3.58	3	M 2.5
	04 67 896 R30	XDMT 10T330 ER	M40	PVST	10	3.58	3	M 2.5
	04 67 820 R40	XDHT 10T340 FR	K10	polished	10	3.58	4	M 2.5
	04 67 896 R40	XDMT 10T340 ER	M40	PVST	10	3.58	4	M 2.5

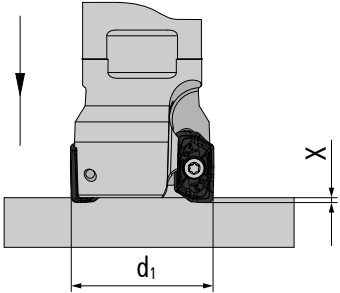
Feed per tooth (fz) | d.o.c. (ap)

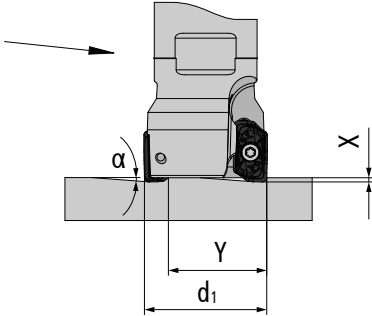
Material							
Carbide grade Coating	Feed per tooth d.o.c.	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
HSC 05 PVFN	f _z (mm) a _p (mm)	0.05-0.25 0.1-3	-	0.05-0.25 0.1-3	-	-	0.08-0.25 0.1-5
P40 PVGO	f _z (mm) a _p (mm)	0.05-0.25 0.1-3	0.05-0.25 0.1-3	0.05-0.25 0.1-3	-	0.05-0.25 0.1-3	-
K10 polished	f _z (mm) a _p (mm)	-	-	-	0.08-0.35 0.1-9	-	-
K10 PVTi	f _z (mm) a _p (mm)	-	-	-	0.08-0.35 0.1-9	0.08-0.12 0.1-3	0.08-0.15 0.1-1
K10 PVDiaN	f _z (mm) a _p (mm)	-	-	-	0.08-0.35 0.1-9	-	-
PCD uncoated	f _z (mm) a _p (mm)	-	-	-	0.08-0.2 0.1-4	-	-
M40 PVST	f _z (mm) a _p (mm)	0.05-0.25 0.1-3	0.08-0.35 0.1-9	-	-	0.08-0.25 0.1-9	-

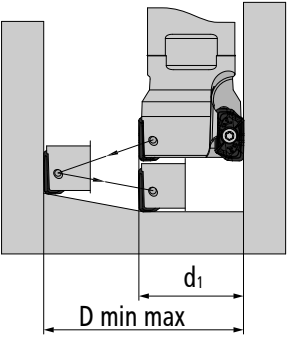
Cutting speed (Vc in m/min)

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade Coating	Application						
HSC 05 PVFN	roughing finishing	120 160 200 -	-	100 150 200 -	-	-	40 100 160 40 80 120
P40 PVGO	roughing finishing	100 150 200 160 205 250	90 110 130 110 135 160	110 130 150 120 150 180	-	60 80 100 80 100 120	-
K10 polished	roughing finishing	-	-	-	100 250 400 100 250 400	-	-
K10 PVTi	roughing finishing	-	-	-	200 500 800 200 500 800	-	-
K10 PVDiaN	roughing finishing	-	-	-	200 500 800 200 500 800	-	-
PCD uncoated	roughing finishing	-	-	-	200 500 800 600 800 1000	-	-
M40 PVST	roughing finishing	80 130 180 -	80 145 210 120 185 250	-	-	40 65 90 60 90 120	-

Extended operation data

Plunging	
	
Cutter diam. d1	X _{max}
16-52	2.5

Ramping		
		
Cutter diam. d1	α°	y
16	<24.5	5.3
20	<14.5	9.3
25	<8	14.3
32	<5	21.3
42	<3	31.3
52	<2.5	41.3

Helix		
		
Cutter diam. d1	D _{min}	D _{max}
16	21.3	32
20	29.3	40
25	39.3	50
32	53.3	64
42	73.3	84
52	93.3	104



SLOTWORX® - K90°

Size L - diam. 25 - 100 mm

Universally applicable for maximum cutting depths. These tools stand out due to low energy consumption and maximum rigidity. Usable with indexable inserts of the Slotworx®-L-range with a corner radius of up to 3.0 mm. Modified standard bodies for the use of indexable inserts with a corner radius ≥ 4 mm have additional R+ marking.

Milling cutter bodies

Catalogue no.	d ₁	l	r	l ₃	l ₂	l ₁	d ₂	d ₃	z	Accessories	Features
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Threaded shank end mill bodies

	2 25 268	25	15	1-3	35	3	-	M 12	21	2	A, B, C, D, E	
	2 25 268 R+	25	15	4 5	35	3	-	M 12	21	2	A, B, C, D, E	
	3 32 268	32	15	1-3	43	3	-	M 16	29	3	A, B, C, D, E	
	3 32 268 R+	32	15	4 5	43	3	-	M 16	29	3	A, B, C, D, E	
	4 40 268	40	15	1-3	43	3	-	M 16	29	4	A, B, C, D, E	
	4 40 268 R+	40	15	4 5	43	3	-	M 16	29	4	A, B, C, D, E	
	4 42 268	42	15	1-3	43	3	-	M 16	29	4	A, B, C, D, E	
	4 42 268 R+	42	15	4 5	43	3	-	M 16	29	4	A, B, C, D, E	
	4 42 268 R+	42	15	4 5	43	3	-	M 16	29	4	A, B, C, D, E	

Milling cutter bodies

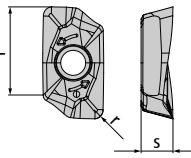
Catalogue no.	d ₁	l	r	l ₃	l ₂	l ₁	d ₂	d ₃	z	Accessories	Features
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Shell type milling cutter bodies

	4 40 368	40	15	1-3	43	3	-	diam. 16	35	4	A, B, C, D, E	
	4 40 368 R+	40	15	4 5	43	3	-	diam. 16	35	4	A, B, C, D, E	
	4 42 368	42	15	1-3	43	3	-	diam. 16	35	4	A, B, C, D, E	
	4 42 368 R+	42	15	4 5	43	3	-	diam. 16	35	4	A, B, C, D, E	
	5 50 368	50	15	1-3	53	3	-	diam. 22	40	5	A, B, C, D, E	
	4 50 368-2	50	15	1-3	50	3	-	diam. 22	43	4	A, B, C, D, E	
	5 63 368-1	63	15	1-3	50	3	-	diam. 22	48	5	A, B, C, D, E	
	5 50 368 R+	50	15	4 5	53	3	-	diam. 22	40	5	A, B, C, D, E	
	5 52 368	52	15	1-3	53	3	-	diam. 22	40	5	A, B, C, D, E	
	5 52 368 R+	52	15	4 5	53	3	-	diam. 22	40	5	A, B, C, D, E	
	6 63 368	63	15	1-3	53	3	-	diam. 27	48	6	A, B, C, D, E	
	6 63 368 R+	63	15	4 5	53	3	-	diam. 27	48	6	A, B, C, D, E	
	6 66 368	66	15	1-3	53	3	-	diam. 27	48	6	A, B, C, D, E	
	6 66 368 R+	66	15	4 5	53	3	-	diam. 27	48	6	A, B, C, D, E	
	7 80 368	80	15	1-3	53	3	-	diam. 27	60	7	A, B, C, D, E	
	7 80 368 R+	80	15	4 5	53	3	-	diam. 27	60	7	A, B, C, D, E	
	9 100 368	100	15	1-3	53	3	-	diam. 32	70	9	A, B, C, D, E	
	6 100 368-1	100	15	1-3	50	3	-	diam. 32	78	6	A, B, C, D, E	
	9 100 368 R+	100	15	4 5	53	3	-	diam. 32	70	9	A, B, C, D, E	

Accessories

 35 500 Torx screw A > Page 171	 15 500 Torx-screwdriver B > Page 172	 TV 2-8 Screwdriver torque Vario®-S with window scale, C > Page 173	 T15 500 Torx interchangeable bit for Torque Vario® D > Page 173	 T15 502 Torx MagicSpring compatible bit f. Torque Vario®, E > Page 174	
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Indexable inserts		Catalogue no.	DIN Specification	Carbide Grade	Coating	l	s	r	M
		05 68 820	XDHT 155210	K10	polished	15	5.2	1	M 3.5
		05 68 848	XDMT 155210 ER	P40	PVGO	15	5.2	1	M 3.5
		05 68 862	XDMT 155210 ER	K10	PVTi	15	5.2	1	M 3.5
		05 68 896	XDMT 155210 ER	M40	PVST	15	5.2	1	M 3.5
		05 68 896 R20	XDMT 155220 ER	M40	PVST	15	5.2	2	M 3.5
		05 68 820 R30	XDHT 155230 FR	K10	polished	15	5.2	3	M 3.5
		05 68 896 R30	XDMT 155230 ER	M40	PVST	15	5.2	3	M 3.5
		05 68 820 R40	XDHT 155240 FR	K10	polished	15	5.2	4	M 3.5
		05 68 896 R40	XDMT 155240 ER	M40	PVST	15	5.2	4	M 3.5
		05 68 820 R50	XDHT 155250 FR	K10	polished	15	5.2	5	M 3.5
		05 68 896 R50	XDMT 155250 ER	M40	PVST	15	5.2	5	M 3.5

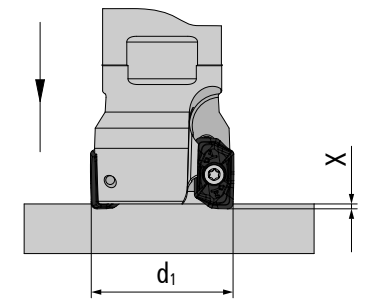
Feed per tooth (fz) | d.o.c. (ap)

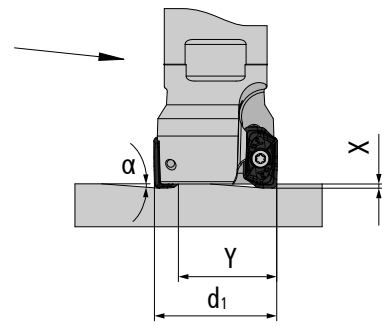
Material							
Carbide grade Coating	Feed per tooth d.o.c.	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
K10 polished	f _z (mm) a _p (mm)	-	-	-	0.08-0.35 0.1-14	-	-
P40 PVGO	f _z (mm) a _p (mm)	0.1-0.5 0.2-14	-	0.1-0.5 0.2-14	-	-	-
K10 PVTi	f _z (mm) a _p (mm)	0.1-0.4 4-14	-	0.1-0.4 0.2-14	-	-	-
M40 PVST	f _z (mm) a _p (mm)	-	0.08-0.5 0.1-14	-	-	0.08-0.25 0.1-14	-

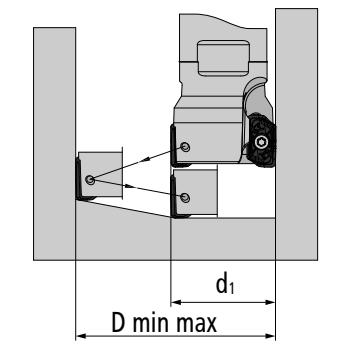
Cutting speed (Vc in m/min)

Material							
Carbide grade Coating	Application	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
K10 polished	roughing finishing	-	-	-	200 500 800 200 500 800	-	-
P40 PVGO	roughing finishing	100 150 200 160 205 250	-	110 130 150 120 150 180	-	-	-
K10 PVTi	roughing finishing	130 165 200 -	-	150 175 200 150 175 200	-	-	-
M40 PVST	roughing finishing	-	80 145 210 120 185 250	-	-	40 65 90 60 90 120	-

Extended operation data

Plunging	
	
Cutter diam. d1	X _{max}
25-100	3

Ramping		
		
Cutter diam. d1	α°	y
25	<8.3	17
32	<5.9	24
40	<4.4	32
42	<4.2	34
50	<3.3	42
52	<3.2	44
63	<2.5	55
66	<2.4	58
80	<1.9	72
100	<1.5	92

Helix		
		
Cutter diam. d1	D _{min}	D _{max}
25	42	50
32	56	64
40	72	80
42	76	84
50	92	100
52	96	104
63	118	126
66	124	132
80	152	160
100	192	200

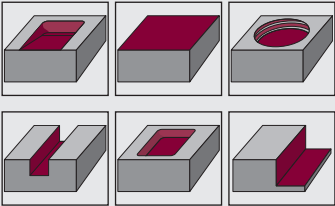
ADEW® SQUARE SHOULDER FACE MILLING AND SLOTTING CUTTER BODIES

Universal cutter with particularly low power requirement

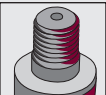
Properties

- Low power requirement
- Particularly suitable for mechanical engineering and toolmaking
- Very good for use in residual material removal

Machining types



Connection types



Sizes	Page
diam. 15 - 32 mm	46



Cutting materials

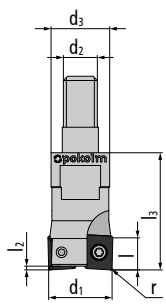
Carbide grade Coating	ISO standard						feed per tooth d.o.c.		length	thickness	radius
	P	M	K	N	S	H	f _z (mm)	a _p (mm)	l (mm)	s (mm)	r (mm)
HSC 05 PVTi	▽	▽	▽	▽	-	▽	0.1 - 0.25	0.1 - 2.0	9.52	2.38	0.8
P25 PVTi	▽	-	▽	-	-	-	0.1 - 0.25	0.1 - 2.0	9.52	2.38	0.8
K10 PVDiaN	-	-	-	▽	-	-	0.1 - 0.25	0.1 - 2.0	9.52	2.38	0.8

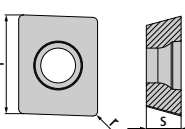


ADEW - K90°

diam. 15 - 32 mm

These universal milling cutters for machine building and toolmaking are characterized for their low energy consumption.

Milling cutter bodies													Accessories	Features		
Catalogue no.		d ₁	l	r	l ₃	l ₂	l ₁	d ₂	d ₃	z						
Threaded Shank End Mill Bodies																
	15 242 A	15	9.52	0.8	27.5	0.9	-	M 8	13.8	2	A, B, C, D, E					
	20 242 A	20	9.52	0.8	27.5	0.9	-	M 10	18	3	A, B, C, D, E					
	25 242 A	25	9.52	0.8	32.5	0.9	-	M 12	21	4	A, B, C, D, E					
	32 242 A	32	9.52	0.8	37.5	0.9	-	M 16	29	5	A, B, C, D, E					
Accessories																
 25 500 Torx screw A > Page 171	 07 500 Torx-screwdriver B > Page 172	 TV 04-1 Screwdriver torque Vario®-S with window scale, C > Page 173	 T7 500 Torx interchangeable bit for Torque Vario® D > Page 173	 T7 502 Torx MagicSpring compatible bit f. Torque Vario®, E > Page 174												

Indexable inserts								
	Catalogue no.	DIN Specification	Carbide Grade	Coating	l	s	r	M
	02 78 835	ADEW 090208 TR	HSC 05	PVTi	9.52	2.38	0.8	M 2.5
	02 78 850	ADEW 090208 TR	P25	PVTi	9.52	2.38	0.8	M 2.5
	02 78 860 D	ADEW 090208 TR	K10	PVDiaN	9.52	2.38	0.8	M 2.5

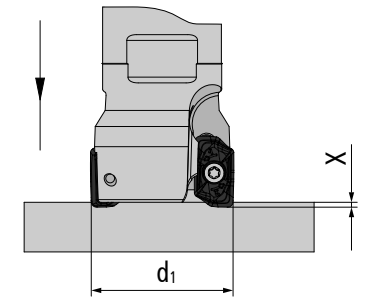
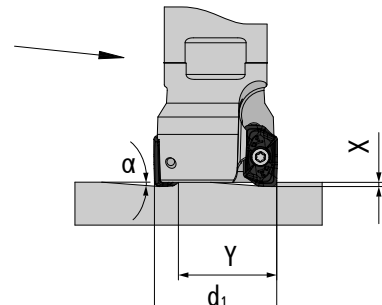
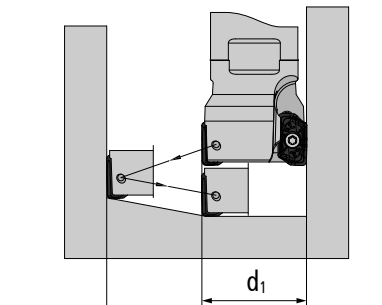
Feed per tooth (fz) | d.o.c. (ap)

Material							
Carbide grade Coating	Feed per tooth d.o.c.	steel		stainless steel		cast iron	
HSC 05 PVTi	f _z (mm)	0.1-0.25		0.1		0.1-0.25	
	a _p (mm)	0.1-2		0.1		0.1-2	
P25 PVTi	f _z (mm)	0.1-0.25				0.1-0.18	
	a _p (mm)	0.1-2				0.1-1.05	
K10 PVDiaN	f _z (mm)					0.1-0.25	
	a _p (mm)					0.1-2	

Cutting speed (Vc in m/min)

Material		steel		stainless steel		cast iron		non-ferrous materials		high-temperature alloys		hardened steel	
Carbide grade Coating	Application												
HSC 05 PVTi	roughing	120	210	300	-	100	200	300	200	500	800	35	93
	finishing	150	225	300	100 150 200	200	275	350	100	250	400	35	93
P25 PVTi	roughing	100	140	180	-	100	125	150	-	-	-	-	-
	finishing	150	200	250	-	150	200	250	-	-	-	-	-
K10 PVDiaN	roughing	-	-	-	-	-	-	-	100	250	400	-	-
	finishing	-	-	-	-	-	-	-	100	250	400	-	-

Extended operation data

Plunging		Ramping		Helix	
					
Cutter diam. d1		Cutter diam. d1		Cutter diam. d1	
X _{max}		α°		D _{min}	
15-32		y		D _{max}	
		15		15	
		20		20	
		25		25	
		32		32	



SPINWORX® COPYING CUTTERS

Time-saving tooling system with self-rotating inserts

Properties

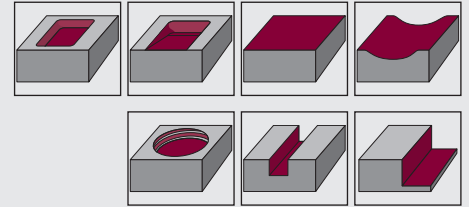
- ➔ 100% use of the complete cutting edge
- ➔ Minimised tooling-up times, manual adjustment of the inserts is no longer necessary
- ➔ Far higher tool lives and chip volume without stopping the production process
- ➔ Optimally suitable for roughing and stock material removing
- ➔ Reduced chip compression leads to lower power consumption, which also protects your machine spindle.

Practical video

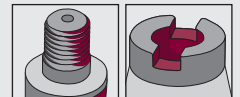
- ➔ Spinworx® in 1.2738 / Tool life 13 hours / P20 / 40CrMnNiMo8-6-4



Machining types



Connection types



Sizes

Page

r 5 - diam. 25 - 52 mm	50
r 6 - diam. 35 - 66 mm	53

Cutting materials

Size	ISO standard						feed per tooth d.o.c.		Insert diam. d (mm)	Carbide grade coating		
	P	M	K	N	S	H	f _z (mm)	a _p (mm)		0	1	3
R5							0.05 - 0.8	0.1 - 1.0	10	A, C	A, D	A, D
R6							0.05 - 0.8	0.1 - 1.5	12	A, C	A, D	A, D



SPINWORX®

r5 - diam. 25 - 52 mm, 7° positive rake angle

- The all-rounders in the SPINWORX series.
- Wide range of uses for almost all areas of application.
 - With specially adapted primary and secondary coolant supply.
 - Low power consumption, high chip removal rate.

Milling cutter bodies

Catalogue no.	d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z	Accessories	Features
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Threaded shank end mill bodies

	DR10-025-E12-03	25	10	5	32.5	2.5	-	M 12	21	3	A, B, C, D	
	DR10-025-E12-04	25	10	5	32.5	2.5	-	M 12	21	4	A, B, C, D	
	DR10-030-E16-04	30	10	5	43	2.5	-	M 16	29	4	A, B, C, D	
	DR10-030-E12-04	30	10	5	33	2.5	-	M 12	21	4	A, B, C, D	
	DR10-030-E16-05	30	10	5	43	2.5	-	M 16	29	5	A, B, C, D	
	DR10-032-E16-04	32	10	5	43	2.5	-	M 16	29	4	A, B, C, D	
	DR10-035-E16-05	35	10	5	43	2.5	-	M 16	29	5	A, B, C, D	
	DR10-042-E16-06	42	10	5	43	2.5	-	M 16	29	6	A, B, C, D	

Shell-type milling cutter bodies

	DR10-052-A22-07	52	10	5	52	2.5	-	diam. 22	40	7	A, B, C, D	

Accessories

 T10-1,4NM Torque Vario® - S torque screwdriver A > Page 173	 T10 500 Torx interchangeable bit for Torque Vario® B > Page 173	 T10 502 Torx MagicSpring compatible bit f. Torque Vario® C > Page 174	 Z 00043 HTC ceramic paste WS 600 005 D > Page 174		
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Indexable inserts

	Catalogue no.	DIN Specification	Carbide Grade	Coating	d	s	r	M
	DR10-8A0	RORA 1035 M0SN	A0		10	3.5	5	
	DR10-8A1	RORM 1035 M0EN	A1		10	3.5	5	
	DR10-8A3	RORM 1035 M0EN	A3		10	3.5	5	
	DR10-8C0	RORA 1035 M0SN	C0		10	3.5	5	
	DR10-8D1	RORM 1035 M0EN	D1		10	3.5	5	
	DR10-8D3	RORM 1035 M0EN	D3		10	3.5	5	

Feed per tooth (fz) | d.o.c. (ap)

Material		Material					
Carbide grade Coating	Feed per tooth d.o.c.	Material					
		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
A0	f _z (mm) a _p (mm)	0.15-0.8 0.2-1	-	0.15-0.8 0.2-1	-	-	-
A1	f _z (mm) a _p (mm)	0.1-0.5 0.2-1	0.05-0.5 0.1-1	-	-	0.05-0.4 0.1-1	-
A3	f _z (mm) a _p (mm)	-	0.05-0.4 0.1-1	-	0.2-0.3 0.2-1	0.05-0.3 0.1-1	-
C0	f _z (mm) a _p (mm)	0.15-0.8 0.2-1	-	0.15-0.8 0.2-1	-	-	0.1-0.2 0.1-0.5
D1	f _z (mm) a _p (mm)	-	0.05-0.5 0.1-1	-	-	0.05-0.4 0.1-1	-
D3	f _z (mm) a _p (mm)	-	0.05-0.4 0.1-1	-	-	0.05-0.3 0.1-1	-

Cutting speed (Vc in m/min)

Material		Material					
Carbide grade Coating	Application	Material					
		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
A0	roughing finishing	100 150 200 -	-	120 170 220 -	-	-	-
A1	roughing finishing	90 135 180 -	70 125 180 -	-	-	30 65 100	-
A3	roughing finishing	-	70 125 180 -	-	100 350 600 -	30 65 100	-
C0	roughing finishing	130 165 200 -	-	130 165 200 -	-	-	120 185 250 -
D1	roughing finishing	-	80 135 190 -	-	-	40 75 110	-
D3	roughing finishing	-	80 135 190 -	-	-	50 70 90 -	-

Extended operation data

Plunging	
Cutter diam. d1	X _{max}
25-52	2.5

Ramping		
Cutter diam. d1	α°	y
25	<19.7	7
30	<11.7	12
32	<9.8	14
35	<8.4	17
42	<5.9	24
52	<4.2	34

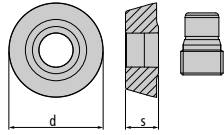
Helix		
Cutter diam. d1	D _{min}	D _{max}
25	32	50
30	42	60
32	46	64
35	52	70
42	66	84
52	86	104

SPINWORX®
r6 - diam. 35 - 66 mm, 7° positive rake angle

- Highly efficient SPINWORX systems also available in intermediate sizes.
- Can be used in steel, cast iron, stainless steels and heat-resistant materials.
 - With specially adapted primary and secondary coolant supply.
 - Unrivalled in terms of machining volume and tool life.



Milling cutter bodies												Catalogue no.		d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z	Accessories		Features		
Threaded shank end mill bodies													DR12-032-E16-04	32	12	6	42.5	2.8	-	M 16	29	4	B, C, D, E				
DR12-035-E16-04													35	12	6	42.5	2.8	-	M 16	29	4	B, C, D, E					
Shell-type milling cutter bodies													DR12-040-A16-05	40	12	6	42.5	2.8	-	diam. 16	35	5	A, B, C, D, E				
DR12-042-A16-05													42	12	6	42.5	2.8	-	diam. 16	35	5	A, B, C, D, E					
DR12-050-A22-06													50	12	6	52.5	2.8	-	diam. 22	40	6	B, C, D, E					
DR12-052-A22-06													52	12	6	52.5	2.8	-	diam. 22	40	6	B, C, D, E					
DR12-066-A27-07													66	12	6	52.5	2.8	-	diam. 27	48	7	B, C, D, E					
Accessories													GWSTPS8ISK hexagon socket set screw A > Page 172			T10-1,4NM Torque Vario® - S torque screwdriver B > Page 173			T10 500 Torx interchangeable bit for Torque Vario® C > Page 173			T10 502 Torx MagicSpring compatible bit f. Torque Vario®, D > Page 174			Z 00043 HTC ceramic paste WS 600 005 E > Page 174		

Indexable inserts		Catalogue no.	DIN Specification	Carbide Grade	Coating	d	s	r	M
	DR12-8A0	RORA 1245 M0SN	A0			12	4.5	6	
	DR12-8A1	RORM 1245 M0EN	A1			12	4.5	6	
	DR12-8A3	RORM 1245 M0EN	A3			12	4.5	6	
	DR12-8C0	RORA 1245 M0SN	C0			12	4.5	6	
	DR12-8D1	RORM 1245 M0EN	D1			12	4.5	6	
	DR12-8D3	RORM 1245 M0EN	D3			12	4.5	6	

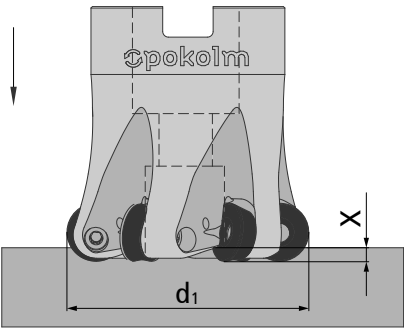
Feed per tooth (fz) | d.o.c. (ap)

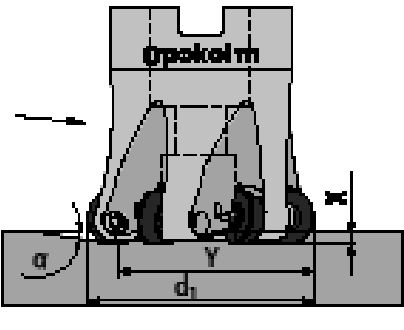
Material							
Carbide grade	Feed per tooth d.o.c.	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
A0	f _z (mm)	0.2-0.8	-	0.15-0.8	-	-	-
	a _p (mm)	0.3-1.5	-	0.2-1.5	-	-	-
A1	f _z (mm)	0.1-0.5	0.05-0.5	-	-	0.05-0.4	-
	a _p (mm)	0.1-1.5	0.1-1.5	-	-	0.1-1.5	-
A3	f _z (mm)	-	0.05-0.5	-	0.25-0.4	0.05-0.4	-
	a _p (mm)	-	0.1-1.5	-	0.3-1.5	0.1-1.5	-
C0	f _z (mm)	0.2-0.8	-	0.15-0.8	-	-	0.1-0.18
	a _p (mm)	0.3-1.5	-	0.2-1.5	-	-	0.1-0.4
D1	f _z (mm)	-	0.05-0.5	-	-	0.05-0.4	-
	a _p (mm)	-	0.1-1.5	-	-	0.1-1.5	-
D3	f _z (mm)	-	0.05-0.5	-	-	0.05-0.4	-
	a _p (mm)	-	0.1-1.5	-	-	0.1-1.5	-

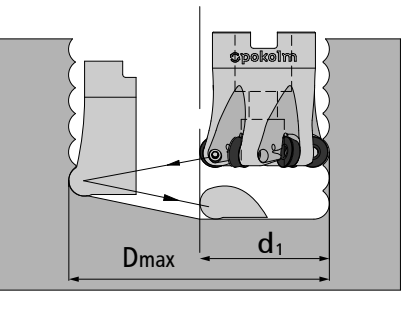
Cutting speed (Vc in m/min)

Material							
Carbide grade	Application	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
A0	roughing	100 150 200	-	120 170 220	-	-	-
	finishing	-	-	-	-	-	-
A1	roughing	90 135 180	70 125 180	-	-	30 65 100	-
	finishing	-	-	-	-	-	-
A3	roughing	-	70 125 180	-	100 350 600	30 65 100	-
	finishing	-	-	-	-	-	-
C0	roughing	130 165 200	-	130 165 200	-	-	120 150 180
	finishing	-	-	-	-	-	-
D1	roughing	-	80 135 190	-	-	40 75 110	-
	finishing	-	-	-	-	-	-
D3	roughing	-	80 135 190	-	-	50 70 90	-
	finishing	-	-	-	-	-	-

Extended operation data

Plunging	
	
Cutter diam. d1	X _{max}
32-66	2.5

Ramping		
		
Cutter diam. d1	α°	γ
32	<16	10
35	<13	13
40	<7.5	18
42	<6.5	20
50	<5.9	28
52	<7.5	30
66	<3.9	44

Helix		
		
Cutter diam. d1	D _{min}	D _{max}
32	42	64
35	48	70
40	58	80
42	62	84
50	78	100
52	82	104
66	110	132

ROUND INSERT CUTTER K0-90° COPYING CUTTER

the universal geniuses for all standard jobs and the most unusual tasks

Properties

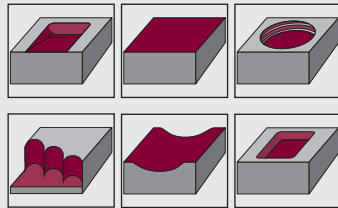
- Tool diameter 10 - 160 mm
- 0° axial angle for maximum contour accuracy
- in conjunction with DuoPlug® maximum stability
- 7° axial angle ensures low power consumption
- Stable toolholder due to embedded indexable inserts
- 6 different hard metal qualities with 7 adapted high-performance coatings

Practical video

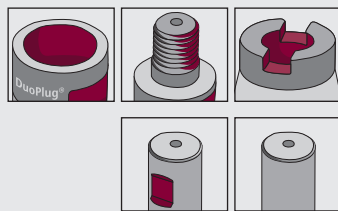
- Indexable round insert 02 10 896 in 1.4301 / 304 / X5CrNi18-10



Machining types



Connection types



Sizes	Page
r2.5 - diam. 10 - 20 mm	58
r3.5 - diam. 12 - 30 mm, s 1.99	60
r3.5 - diam. 14 - 42 mm, s 2.38	63
r5 - diam. 20 - 52 mm	67
r5 - diam. 20 - 35 mm, CBN	75
r6 - diam. 24 - 80 mm	77
r8 - diam. 32 - 160 mm	84
r10 - diam. 40 - 160 mm	90



Cutting materials

Carbide grade coating	ISO standard						Insert diam. d (mm) - thickness (s mm)						
	P	M	K	N	S	H	5	7 - s1.99	7 - s2.38	10	12	16	20
HSC05 PVTi; HSC05 PVFN	▽	▽	▽	▽	-	▽	⊗	⊗	⊗	⊗	⊗	⊗	⊗
K10 PVTi	▽	▽	▽	-	▽	▽	-	⊗	⊗	⊗	⊗	⊗	⊗
K10 PVTi (RDHX - concave moulding)	-	▽	-	▽	▽	-	-	⊗	⊗	⊗	⊗	⊗	⊗
P25 PVTi	▽	-	▽	-	-	-	-	-	⊗	⊗	⊗	⊗	⊗
P25 PVGO	-	▽	-	-	▽	-	-	-	⊗	⊗	⊗	⊗	-
P25 PVSR	▽	-	▽	-	-	▽	-	-	-	⊗	⊗	⊗	-
P40 PVTi	▽	-	-	-	-	-	-	⊗	⊗	⊗	⊗	⊗	⊗
P40 PVGO	▽	-	▽	-	-	-	-	-	⊗	⊗	⊗	⊗	-
P40 PVSR	▽	-	▽	-	-	▽	-	⊗	⊗	⊗	⊗	⊗	-
P40 PVML	▽	-	▽	-	-	▽	-	-	⊗	⊗	⊗	⊗	-
CBN C	-	-	▽	-	-	-	-	-	-	⊗	-	-	-
CBN S	-	-	-	-	-	▽	-	-	⊗	⊗	-	-	-
K10 polished	-	-	-	▽	-	-	-	⊗	⊗	⊗	⊗	⊗	⊗
K10 PVDiaN	-	-	-	▽	-	-	-	⊗	⊗	⊗	⊗	-	-
M40 PVST	▽	▽	-	-	▽	-	-	-	-	⊗	⊗	-	-



CUTTERS FOR ROUND INSERTS - K0-90°

r2.5 - diam. 10 - 20 mm

Tools especially suitable for milling small dies and engraving.
The larger number of teeth allows much higher feed rates.

Milling cutter bodies		Catalogue no.										Accessories		Features	
		d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z					

DuoPlug®															
		3 12 225 SG	12	5	2.5	24.5	1.3	-	M 7	10.8	3	A, B, C, D, E			
		4 15 225 SG	15	5	2.5	28	1.3	-	M 10	14	4	A, B, C, D, E			
		4 16 225 SG	16	5	2.5	28	1.3	-	M 10	15	4	A, B, C, D, E			
		5 20 225 SG	20	5	2.5	28	1.3	-	M 12	18.5	5	A, B, C, D, E			

Threaded shank end mill bodies															
		2 10 225 M6	10	5	2.5	19	-	-	M 6	9.75	2	A, B, C, D, E			
		3 12 225 M6	12	5	2.5	20.5	1.3	-	M 6	11.5	3	A, B, C, D, E			
		4 15 225	15	5	2.5	20.5	1.3	-	M 8	13.8	4	A, B, C, D, E			
		5 20 225	20	5	2.5	25.5	1.3	-	M 10	18	5	A, B, C, D, E			

Plain shank end mill bodies															
		30 08 125	8	5	2.5	30	-	18	diam. 10	-	1	A, B, C, D, E			
		30 10 125	10	5	2.5	30	-	24	diam. 10	-	2	A, B, C, D, E			
		30 12 125	12	5	2.5	30	1.3	24	diam. 12	-	3	A, B, C, D, E			
		30 16 125	16	5	2.5	30	1.3	23.5	diam. 16	-	5	A, B, C, D, E			

Accessories					
21 500 Torx screw A > Page 171	06 500 Torx-screwdriver B > Page 172	TV 04-1 Screwdriver torque Vario®-S with window scale, C > Page 173	T6 500 Torx interchangeable bit for Torque Vario® D > Page 173	T6 502 Torx MagicSpring compatible bit f. Torque Vario®, E > Page 174	

Indexable inserts		Catalogue no.		DIN Specification		Carbide Grade		Coating		d	s	r	M
		01 05 835		RDHX 0501 M0T		HSC 05		PVTi		5	1.5	2.5	M 2.0

Feed per tooth (fz) | d.o.c. (ap)

Material		Feed per tooth d.o.c.		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade Coating		f _z (mm)	a _p (mm)						
	HSC 05 PVTi	0.1-0.2	0.1-0.2	0.1-0.2	0.1	0.1-0.15	0.1-0.15	-	0.1-0.12

Cutting speed (Vc in m/min)

Material		Application		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade Coating									
	HSC 05 PVTi	roughing	finishing	150 225 300	100 150 200	150 225 300	200 500 800	-	35 93 150

Extended operation data

Plunging

Cutter diam. d1

8-20

X_{max}

1

Ramping

Cutter diam.
d1

8

10

12

15

16

20

α°

-

-

< 14.0

< 8.1

< 7.1

< 4.7

y

-

-

4

7

8

24

Helix

Cutter diam.
d1

8

10

12

16

15

20

D_{min}

10

12

16

22

24

32

D_{max}

16

20

24

30

32

40



CUTTERS FOR ROUND INSERTS - K0-90°

r3.5 - diam. 12 - 42 mm, s 1.99

Tools especially suitable for milling small dies or engraving.
The larger number of teeth allows much higher feed rates.

Milling cutter bodies

Milling cutter bodies												
Catalogue no.												
d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z	Accessories		Features	

DuoPlug®

	2 12 235 SG	12	7	3.5	24.5	-	-	M 7	10.8	2	B, C, D, E, F	
	3 15 235 SG	15	7	3.5	28	1.5	-	M 10	14	3	A, C, D, E, F	
	5 25 235 SG	25	7	3.5	30	1.5	-	M 16	23.5	5	A, C, D, E, F	

Threaded shank end mill bodies

	12 200 M6	12	7	3.5	28.5	-	-	M 6	11.5	2	B, C, D, E, F	
	12 200	12	7	3.5	28.5	-	-	M 8	11.8	2	B, C, D, E, F	
	3 15 235	15	7	3.5	28.5	1.5	-	M 8	13.8	3	A, C, D, E, F	
	4 20 235	20	7	3.5	28.5	1.5	-	M 10	18	4	A, C, D, E, F	
	5 25 235	25	7	3.5	28.5	1.5	-	M 12	21	5	A, C, D, E, F	
	6 30 235	30	7	3.5	28.5	1.5	-	M 16	29	6	A, C, D, E, F	

Plain shank end mill bodies

	30 12 100	12	7	3.5	30	-	23	diam. 12	-	2	B, C, D, E, F	

Milling cutter bodies

Milling cutter bodies											Accessories	Features
Catalogue no.												
d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z				

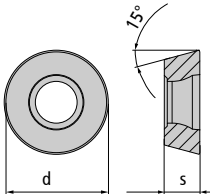
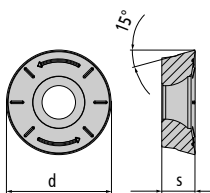
End mill bodies with plain shanks and flats

	40 12 100	12	7	3.5	40	-	19.5	diam. 16	-	2	B, C, D, E, F	
	60 12 100	12	7	3.5	60	-	19.5	diam. 16	-	2	B, C, D, E, F	
	80 12 100	12	7	3.5	80	-	19.5	diam. 16	-	2	B, C, D, E, F	
	30 15 100	15	7	3.5	30	1.2	19.5	diam. 12	-	3	A, C, D, E, F	

Accessories

 25 500 Torx screw A > Page 171	 25 500 K Torx screw B > Page 171	 POKOLM 07 500 Torx-screwdriver C > Page 172	 TV 04-1 Screwdriver torque Vario®-S with window scale, D > Page 173	 T7 500 Torx interchangeable bit for Torque Vario® E > Page 173	 T7 502 Compatible bit f. Torque Vario®, F > Page 174
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Indexable inserts

Indexable inserts		Catalogue no.	DIN Specification	Carbide Grade	Coating	d	s	r	M
	01 07 835	RDHX 07T1 M0T	HSC 05	PVTi	7	1.99	3.5	M 2.5	
	01 07 840	RDHX 07T1 M0T	P40	PVTi	7	1.99	3.5	M 2.5	
	01 07 842	RDEX 07T1 M0T	P40	PVSR	7	1.99	3.5	M 2.5	
	01 07 860	RDHX 07T1 M0T	K10	PVTi	7	1.99	3.5	M 2.5	
	01 07 831P	RDHX 07T1 M0E	K10	polished	7	1.99	3.5	M 2.5	
	01 07 880 D	RDHX 07T1 M0E	K10	PVDiaN	7	1.99	3.5	M 2.5	
	01 07 880	RDHX 07T1 M0E	K10	PVTi	7	1.99	3.5	M 2.5	

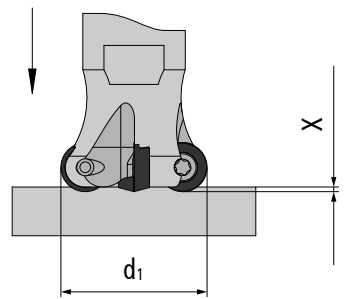
Feed per tooth (fz) | d.o.c. (ap)

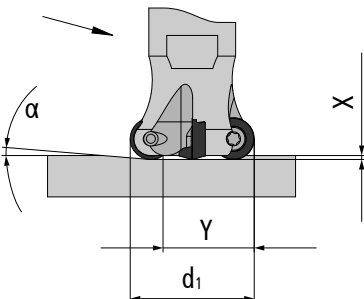
Material							
Carbide grade Coating	Feed per tooth d.o.c.	steel		stainless steel		cast iron	
		non-ferrous materials		high-temperature alloys		hardened steel	
HSC 05 PVTi	f _z (mm)	0.1-0.3	0.1	0.1-0.3	0.1-0.2	-	0.1-0.12
	a _p (mm)	0.1-0.5	0.1	0.1-0.5	0.1-0.4	-	0.1-0.15
P40 PVTi	f _z (mm)	0.1-0.3	-	-	-	-	-
	a _p (mm)	0.1-0.5	-	-	-	-	-
P40 PVSR	f _z (mm)	0.1-0.3	-	0.1-0.3	-	-	0.1-0.15
	a _p (mm)	0.1-0.7	-	0.1-0.5	-	-	0.1-0.2
K10 PVTi	f _z (mm)	0.1	0.1	0.1-0.3	0.1-0.3	0.1-0.2	0.1-0.12
	a _p (mm)	0.1	0.1	0.1-0.5	0.1-0.7	0.1-0.5	0.1-0.15
K10 polished	f _z (mm)	-	-	-	0.1-0.3	-	-
	a _p (mm)	-	-	-	0.1-0.7	-	-
K10 PVDiaN	f _z (mm)	-	-	-	0.1-0.3	-	-
	a _p (mm)	-	-	-	0.1-0.7	-	-

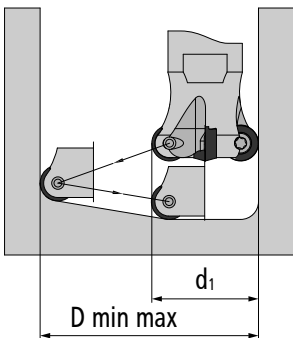
Cutting speed (Vc in m/min)

Material		steel			stainless steel			cast iron			non-ferrous materials			high temperature alloys			hardened steel		
Carbide grade	Application																		
Coating																			
HSC 05 PVTi	roughing	120	210	300	-	-	-	100	200	300	200	500	800	-	-	-	35	93	150
	finishing	150	225	300	100	150	200	200	275	350	100	250	400	-	-	-	35	93	150
P40 PVTi	roughing	100	175	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	finishing	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P40 PVSR	roughing	100	175	250	-	-	-	160	190	220	-	-	-	-	-	-	70	110	150
	finishing	-	-	-	-	-	-	160	190	220	-	-	-	-	-	-	-	-	-
K10 PVTi	roughing	-	-	-	-	-	-	150	175	200	100	250	400	35	43	50	35	93	150
	finishing	150	200	250	120	150	180	150	175	200	100	250	400	35	43	50	-	-	-
K10 polished	roughing	-	-	-	-	-	-	-	-	-	100	250	400	-	-	-	-	-	-
	finishing	-	-	-	-	-	-	-	-	-	100	250	400	-	-	-	-	-	-
K10 PVDiaN	roughing	-	-	-	-	-	-	-	-	-	100	250	400	-	-	-	-	-	-
	finishing	-	-	-	-	-	-	-	-	-	100	250	400	-	-	-	-	-	-

Extended operation data

Plunging	
	
Cutter diam. d1	X _{max}
12-30	1.2

Ramping		
		
Cutter diam. d1	α°	y
12	-	-
15	<26.5	2
20	<8.5	8
25	<5.3	13
30	<3.8	18

Helix		
		
Cutter diam. d1	D _{min}	D _{max}
12	14	24
15	17	30
20	28	40
25	38	50
30	48	60

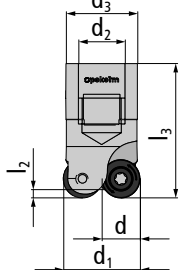
CUTTERS FOR ROUND INSERTS - K0-90°

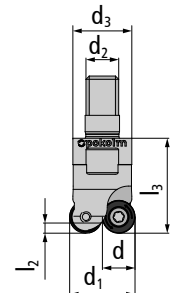
r3.5 - diam. 12 - 42 mm, s 2.38

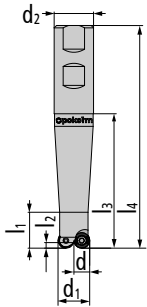
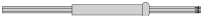
- Our all-purpose milling cutter:
- for high-speed machining centres
 - for roughing and finishing applications

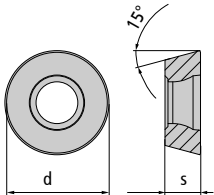
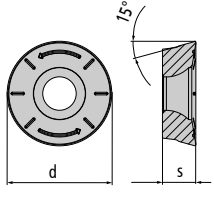


Milling cutter bodies		Catalogue no.										Accessories		Features	
		d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z					

DuoPlug®															
	2 16 200 SG	16	7	3.5	28.5	1.5	-	M 10	15	2	A, B, C, D, E				
	3 16 200 SG	16	7	3.5	28.5	1.5	-	M 10	15	3	A, B, C, D, E				
	4 20 200 SG	20	7	3.5	28.5	1.5	-	M 12	18.6	4	A, B, C, D, E				
	5 25 200 SG	25	7	3.5	30	1.5	-	M 16	23.5	5	A, B, C, D, E				

Threaded shank end mill bodies															
	15 200	15	7	3.5	28.5	1.5	-	M 8	13.8	2	A, B, C, D, E				
	3 16 200	16	7	3.5	28.5	1.5	-	M 8	13.8	3	A, B, C, D, E				
	4 20 200	20	7	3.5	28.5	1.5	-	M 10	18	4	A, B, C, D, E				
	5 25 200	25	7	3.5	28.5	1.5	-	M 12	21	5	A, B, C, D, E				
	5 30 200	30	7	3.5	28.5	1.5	-	M 16	29	5	A, B, C, D, E				
	6 35 200	35	7	3.5	28.5	1.5	-	M 16	29	6	A, B, C, D, E				
	7 42 200	42	7	3.5	42.5	1.5	-	M 16	29	7	A, B, C, D, E				

Milling cutter bodies											Catalogue no.		Accessories										Features							
											d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z											
End mill bodies with plain shanks and flats																														
	40 15 100	15	7	3.5	40	2.6	23	diam. 16	-	2	A, B, C, D, E																			
	60 15 100	15	7	3.5	60	2.6	23	diam. 16	-	2	A, B, C, D, E																			
	80 15 100	15	7	3.5	80	2.6	22	diam. 20	-	2	A, B, C, D, E																			
	100 15 100	15	7	3.5	100	2.6	22	diam. 20	-	2	A, B, C, D, E																			
Accessories																														
 25 500 Torx screw A > Page 171	 07 500 Torx-screwdriver B > Page 172	 TV 04-1 Screwdriver torque Vario®-S with window scale, C > Page 173	 T7 500 Torx interchangeable bit for Torque Vario® D > Page 173	 T7 502 Torx MagicSpring compatible bit f. Torque Vario®, E > Page 174																										

Indexable inserts								
	Catalogue no.	DIN Specification	Carbide Grade	Coating	d	s	r	M
	02 07 835	RDHX 0702 M0T	HSC 05	PVTi	7	2.38	3.5	M 2.5
	02 07 840	RDHX 0702 M0T	P40	PVTi	7	2.38	3.5	M 2.5
	02 07 842	RDEX 0702 M0T	P40	PVSR	7	2.38	3.5	M 2.5
	02 07 844	RDHX 0702 M0T	P40	PVML	7	2.38	3.5	M 2.5
	02 07 846	RDMX 0702 M0T	P40	PVGO	7	2.38	3.5	M 2.5
	02 07 850	RDHX 0702 M0T	P25	PVTi	7	2.38	3.5	M 2.5
	02 07 860	RDHX 0702 M0T	K10	PVTi	7	2.38	3.5	M 2.5
	02 07 892	RDHX 0702 M0T	CBN for steel	uncoated	7	2.38	3.5	M 2.5
	02 07 831P	RDHX 0702 M0E	K10	polished	7	2.38	3.5	M 2.5
	02 07 880	RDHX 0702 M0E	K10	PVTi	7	2.38	3.5	M 2.5
	02 07 880 D	RDHX 0702 M0E	K10	PVDiaN	7	2.38	3.5	M 2.5
	02 07 897	RDPX 0702 M0T	P25	PVGO	7	2.38	3.5	M 2.5
	02 07 848	RDMX 0702 M0T	P40	PVGO	7	2.38	3.5	M 2.5

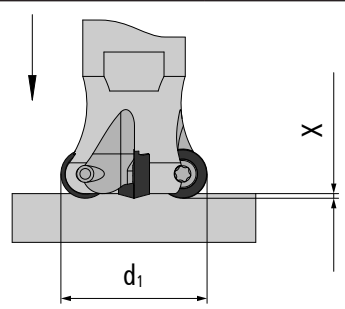
Feed per tooth (fz) | d.o.c. (ap)

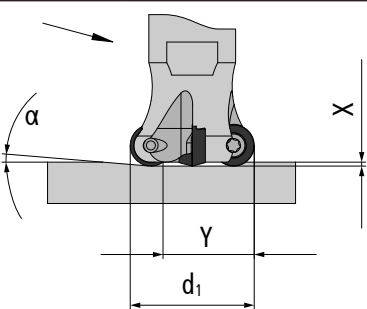
Material								
Carbide grade Coating	Feed per tooth d.o.c.	steel		stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
HSC 05 PVTi	f _z (mm) a _p (mm)	0.1-0.3 0.1-0.7	0.1 0.1	0.1-0.3 0.1-0.7	0.1-0.2 0.1-0.55	-	0.1-0.15 0.1-0.2	
P40 PVTi	f _z (mm) a _p (mm)	0.2-0.5 0.1-0.75	-	-	-	-	-	
P40 PVSR	f _z (mm) a _p (mm)	0.2-0.5 0.1-0.75	-	0.1-0.3 0.1-0.7	-	-	0.1-0.15 0.1-0.2	
P40 PVML	f _z (mm) a _p (mm)	0.2-0.5 0.1-0.75	-	0.1-0.3 0.1-0.7	-	-	0.1-0.15 0.1-0.2	
P40 PVGO	f _z (mm) a _p (mm)	0.2-0.5 0.1-0.75	-	0.1-0.3 0.1-0.7	-	-	-	
P25 PVTi	f _z (mm) a _p (mm)	0.1-0.3 0.1-0.7	-	0.1-0.2 0.1-0.4	-	-	-	
K10 PVTi	f _z (mm) a _p (mm)	0.1 0.1	0.1 0.1	0.1-0.3 0.1-0.7	0.1-0.3 0.1-1	0.1-0.2 0.1-0.75	0.1-0.15 0.1-0.2	
CBN for steel uncoated	f _z (mm) a _p (mm)	-	-	-	-	-	0.1-0.2 0.1	
K10 polished	f _z (mm) a _p (mm)	-	-	-	0.1-0.3 0.1-1	-	-	
K10 PVDiaN	f _z (mm) a _p (mm)	-	-	-	0.1-0.3 0.1-1	-	-	
P25 PVGO	f _z (mm) a _p (mm)	-	0.1-0.4 0.1-0.7	-	-	0.1-0.3 0.1-0.7	-	

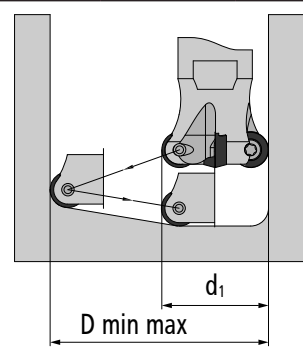
Cutting speed (Vc in m/min)

Material		steel		stainless steel		cast iron		non-ferrous materials		high-temperature alloys		hardened steel	
Carbide grade Coating	Application												
HSC 05 PVTi	roughing finishing	120 210 300 150 225 300	- 100 150 200	100 200 300 200 275 350	200 500 800 100 250 400	-	35 93 150 35 93 150						
P40 PVTi	roughing finishing	100 175 250 -	-	-	-	-	-						
P40 PVSR	roughing finishing	100 175 250 -	-	160 190 220 160 190 220	-	-	70 110 150 -						
P40 PVML	roughing finishing	100 175 250 -	-	140 170 200 160 190 220	-	-	70 110 150 70 100 130						
P40 PVGO	roughing finishing	100 175 250 -	-	140 170 200 160 190 220	-	-	-						
P25 PVTi	roughing finishing	100 140 180 150 200 250	-	100 125 150 150 200 250	-	-	-						
K10 PVTi	roughing finishing	- 150 200 250	- 120 150 180	150 175 200 150 175 200	100 250 400 100 250 400	35 43 50 35 43 50	35 93 150 -						
CBN for steel uncoated	roughing finishing	-	-	-	-	-	400 600 800						
K10 polished	roughing finishing	-	-	-	100 250 400 100 250 400	-	-						
K10 PVDiaN	roughing finishing	-	-	-	100 250 400 100 250 400	-	-						
P25 PVGO	roughing finishing	-	80 145 210 120 175 230	-	-	50 80 110 50 80 110	-						

Extended operation data

Plunging	
	
Cutter diam. d1	X _{max}
15-42	1.2

Ramping		
		
Cutter diam. d1	α°	y
15	<26.5	2
16	<14.0	4
20	<8.5	8
25	<5.3	13
30	<3.8	18
35	<3.0	23
42	<2.3	30

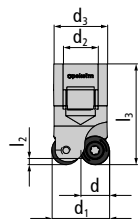
Helix		
		
Cutter diam. d1	D _{min}	D _{max}
15	17	30
16	20	32
20	28	40
25	38	50
30	48	60
35	58	70
42	72	84

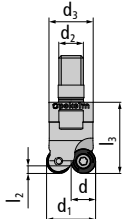
CUTTERS FOR ROUND INSERTS - K0-90°

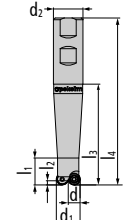
r5 - diam. 20 - 42 mm, neutral - 0° axial rake angle

The all-rounder:
Tools are applicable for a wide range of milling operations.



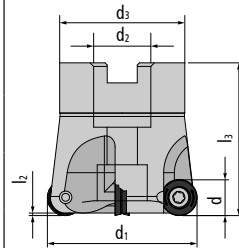
Milling cutter bodies		Catalogue no.										Accessories		Features	
		d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z					
DuoPlug®															
	20 200 SG	20	10	5	35	-	-	M 12	18.6	2	A, B, C, D, E				
	3 25 200 SG	25	10	5	35	2.8	-	M 16	23.5	3	A, B, C, D, E				

Threaded shank end mill bodies															
	20 200	20	10	5	29	-	-	M 10	18	2	A, B, C, D, E	    			
	2 25 200	25	10	5	33	2.8	-	M 12	21	2	A, B, C, D, E	   			
	3 25 200	25	10	5	33	2.8	-	M 12	21	3	A, B, C, D, E	   			
	4 25 200	25	10	5	33	2.8	-	M 12	21	4	A, B, C, D, E	   			
	4 30 201	30	10	5	33	2.8	-	M 12	21	4	A, B, C, D, E	   			
	4 30 200	30	10	5	43	2.8	-	M 16	29	4	A, B, C, D, E	   			
	5 35 200	35	10	5	43	2.8	-	M 16	29	5	A, B, C, D, E	   			
	N 5 42 200	42	10	5	43	2.8	-	M 16	29	5	A, B, C, D, E	   			
	6 42 200	42	10	5	43	2.8	-	M 16	29	6	A, B, C, D, E	   			

End mill bodies with plain shanks and flats															
		d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z					
	40 20 100	20	10	5	40	-	23	diam. 20	-	2	A, B, C, D, E	✓	I	II	III
	60 20 100	20	10	5	60	-	23	diam. 20	-	2	A, B, C, D, E	✓	I	II	III
	80 20 100	20	10	5	80	-	23	diam. 25	-	2	A, B, C, D, E	✓	I	II	III
	100 20 100	20	10	5	100	-	23	diam. 25	-	2	A, B, C, D, E	✓	I	II	III
	120 20 100	20	10	5	120	-	23	diam. 25	-	2	A, B, C, D, E	✓	I	II	III

Milling cutter bodies											Accessories		Features	
Catalogue no.														
d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z						

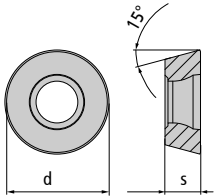
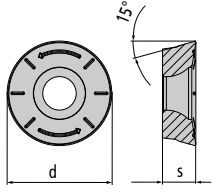
Shell type milling cutter bodies

	6 42 310	42	10	5	43	2.8	-	diam. 16	35	6	A, B, C, D, E			

Accessories

 35 500 Torx screw A > Page 171	 15 500 Torx-screwdriver B > Page 172	 TV 2-8 Screwdriver torque Vario®-S with window scale, C > Page 173	 T15 500 Torx interchangeable bit for Torque Vario® D > Page 173	 T15 502 Torx MagicSpring compatible bit f. Torque Vario®, E > Page 174	
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Indexable inserts

	Catalogue no.		DIN Specification		Carbide Grade		Coating		d	s	r	M
	02 10 835	RDHX 1003 M0T	HSC 05	PVTi	10	3.18	5	M 3.5				
	02 10 837	RDMX 1003 M0T	HSC 05	PVFN	10	3.18	5	M 3.5				
	02 10 840	RDHX 1003 M0T	P40	PVTi	10	3.18	5	M 3.5				
	02 10 842	RDEX 1003 M0T	P40	PVSR	10	3.18	5	M 3.5				
	02 10 844	RDHX 1003 M0T	P40	PVML	10	3.18	5	M 3.5				
	02 10 846	RDMX 1003 MOSN	P40	PVGO	10	3.18	5	M 3.5				
	02 10 850	RDHX 1003 M0T	P25	PVTi	10	3.18	5	M 3.5				
	02 10 852	RDEX 1003 M0T	P25	PVSR	10	3.18	5	M 3.5				
	02 10 860	RDHX 1003 M0T	K10	PVTi	10	3.18	5	M 3.5				
	02 10 892	RDHX 1003 M0T	CBN for steel	uncoated	10	3.18	5	M 3.5				
02 10 893	RDHX 1003 M0T	CBN for cast iron	uncoated	10	3.18	5	M 3.5					
	02 10 831P	RDHX 1003 M0T	K10	polished	10	3.18	5	M 3.5				
	02 10 848	RDMX 1003 M0T	P40	PVGO	10	3.18	5	M 3.5				
	02 10 880	RDHX 1003 M0T	K10	PVTi	10	3.18	5	M 3.5				
	02 10 880 D	RDHX 1003 M0T	K10	PVDiaN	10	3.18	5	M 3.5				
	02 10 897	RDPX 1003 M0T	P25	PVGO	10	3.18	5	M 3.5				
	02 10 896	RDMT 1003 M0EN	M40	PVST	10	3.18	5	M 3.5				

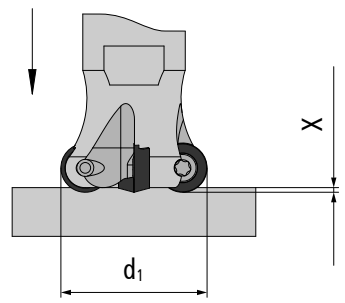
Feed per tooth (fz) | d.o.c. (ap)

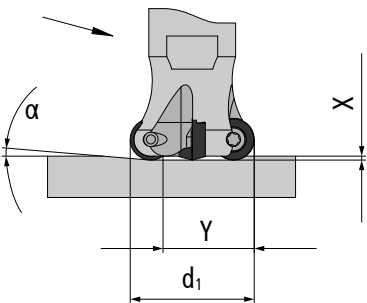
Material		steel		stainless steel		cast iron		non-ferrous materials		high-temperature alloys		hardened steel	
Carbide grade	Feed per tooth d.o.c.												
Coating													
HSC 05 PVTi	f _z (mm) a _p (mm)	0.1-0.3 0.1-1		0.15 0.1		0.15-0.3 0.1-1		0.1-0.2 0.1-0.8		-		0.1-0.2 0.1-0.5	
HSC 05 PVFN	f _z (mm) a _p (mm)	0.1-0.4 0.1-1		0.1-0.2 0.1-0.3		0.1-0.3 0.1-1		0.1-0.2 0.1-0.3		-		0.1-0.2 0.1-0.5	
P40 PVTi	f _z (mm) a _p (mm)	0.2-0.6 0.1-1.5		-		-		-		-		-	
P40 PVSR	f _z (mm) a _p (mm)	0.2-0.7 0.2-1.5		-		0.1-0.3 0.1-1		-		-		0.1-0.15 0.1-0.3	
P40 PVML	f _z (mm) a _p (mm)	0.2-0.7 0.2-1.5		-		0.1-0.3 0.1-1		-		-		0.1-0.15 0.1-0.3	
P40 PVGO	f _z (mm) a _p (mm)	0.1-0.9 0.1-1.5		-		0.1-0.3 0.1-1		-		-		-	
P25 PVTi	f _z (mm) a _p (mm)	0.15-0.3 0.1-1		-		0.15-0.22 0.1-0.55		-		-		-	
P25 PVSR	f _z (mm) a _p (mm)	0.2-0.7 0.2-1.5		-		0.1-0.3 0.1-1		-		-		0.1-0.15 0.1-0.3	
K10 PVTi	f _z (mm) a _p (mm)	0.15 0.1		0.15 0.1		0.15-0.3 0.1-1		0.1-0.3 0.1-1.5		0.1-0.2 0.1-1		0.1-0.15 0.1-0.3	
CBN for steel uncoated	f _z (mm) a _p (mm)	-		-		-		-		-		0.1-0.2 0.1-0.3	
CBN for cast iron uncoated	f _z (mm) a _p (mm)	-		-		0.1-0.2 0.1-0.3		-		-		-	
K10 polished	f _z (mm) a _p (mm)	-		-		-		0.1-0.3 0.1-1.5		-		-	
K10 PVDiaN	f _z (mm) a _p (mm)	-		-		-		0.1-0.3 0.1-1.5		-		-	
P25 PVGO	f _z (mm) a _p (mm)	-		0.15-0.6 0.2-1		-		-		0.1-0.4 0.1-1		-	
M40 PVST	f _z (mm) a _p (mm)	0.1-0.2 0.1-0.3		0.15-0.6 0.2-2		-		-		0.1-0.4 0.1-2		-	

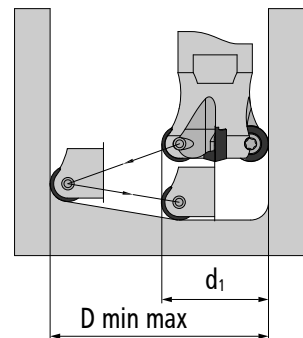
Cutting speed (Vc in m/min)

Material		steel			stainless steel			cast iron			non-ferrous materials			high-temperature alloys			hardened steel		
Carbide grade Coating	Application																		
HSC 05 PVTi	roughing finishing	120 210 300 150 225 300	- 100 150 200	100 200 300 200 275 350	200 500 800 100 250 400	-	35 93 150 35 93 150												
HSC 05 PVFN	roughing finishing	120 160 200 150 250 350	- 100 150 200	100 150 200 200 275 350	200 500 800 200 500 800	-	40 100 160 40 80 120												
P40 PVTi	roughing finishing	100 175 250 -	-	-	-	-	-												
P40 PVSR	roughing finishing	100 175 250 -	-	160 190 220 160 190 220	-	-	70 110 150 -												
P40 PVML	roughing finishing	100 175 250 -	-	140 170 200 160 190 220	-	-	70 110 150 70 100 130												
P40 PVGO	roughing finishing	100 150 200 160 205 250	-	110 130 150 120 150 180	-	-	-												
P25 PVTi	roughing finishing	100 140 180 150 200 250	-	100 125 150 150 200 250	-	-	-												
P25 PVSR	roughing finishing	150 165 180 -	-	160 190 220 160 190 220	-	-	70 110 150 -												
K10 PVTi	roughing finishing	- 150 200 250	- 120 150 180	150 175 200 150 175 200	100 250 400 100 250 400	35 43 50 35 43 50	35 93 150 -												
CBN for steel uncoated	roughing finishing	-	-	-	-	-	400 600 800 400 700 1000												
CBN for cast iron uncoated	roughing finishing	-	-	500 750 1000 500 750 1000	-	-	-												
K10 polished	roughing finishing	-	-	-	100 250 400 100 250 400	-	-												
K10 PVDiaN	roughing finishing	-	-	-	100 250 400 100 250 400	-	-												
P25 PVGO	roughing finishing	-	80 145 210 120 175 230	-	-	50 80 110 50 80 110	-												
M40 PVST	roughing finishing	100 150 200 -	80 145 210 120 185 250	-	-	40 65 90 60 90 120	-												

Extended operation data

Plunging	
	
Cutter diam. d1	X _{max}
20-35	2.5
42	3.5

Ramping		
		
Cutter diam. d1	α°	y
20	-	-
25	<19.7	7
30	<11.7	12
35	<8.4	17
42	<5.9	24

Helix		
		
Cutter diam. d1	D _{min}	D _{max}
20	22	40
25	32	50
30	42	60
35	52	70
42	66	84

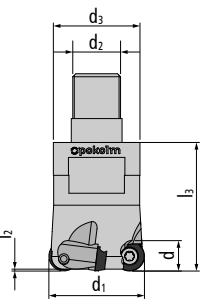
CUTTERS FOR ROUND INSERTS - K0-90°

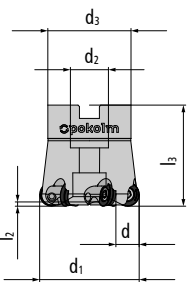
r5 - diam. 25 - 52 mm, 7° positive rake angle

The all-rounder:
Tools are applicable for a wide range of milling operations.

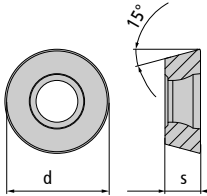
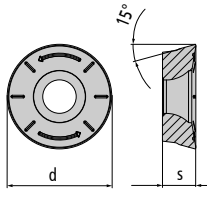


Milling cutter bodies												Accessories	Features
Catalogue no.													
d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z					

Threaded shank end mill bodies													
	3 25 200/7	25	10	5	32.5	2.5	-	M 12	21	3	A, B, C, D, E	    	
	5 35 200/7	35	10	5	43	2.5	-	M 16	29	5	A, B, C, D, E	    	
	6 42 200/7	42	10	5	42.5	2.5	-	M 16	29	6	A, B, C, D, E	    	

Shell type milling cutter bodies													
	6 42 310/7	42	10	5	42.5	3.5	-	diam. 16	35	6	A, B, C, D, E	    	
	7 52 310/7	52	10	5	52.5	3.5	-	diam. 22	40	7	A, B, C, D, E	    	

Accessories					
 35 500 Torx screw A > Page 171	 15 500 Torx-screwdriver B > Page 172	 TV 2-8 Screwdriver torque Vario®-S with window scale, C > Page 173	 T15 500 Torx interchangeable bit for Torque Vario® D > Page 173	 T15 502 Torx MagicSpring compatible bit f. Torque Vario®, E > Page 174	

Indexable inserts		Catalogue no.	DIN Specification	Carbide Grade	Coating	d	s	r	M
	02 10 835	RDHX 1003 M0T	HSC 05	PVTi	10	3.18	5	M 3.5	
	02 10 837	RDMX 1003 M0T	HSC 05	PVFN	10	3.18	5	M 3.5	
	02 10 840	RDHX 1003 M0T	P40	PVTi	10	3.18	5	M 3.5	
	02 10 842	RDEX 1003 M0T	P40	PVSR	10	3.18	5	M 3.5	
	02 10 844	RDHX 1003 M0T	P40	PVML	10	3.18	5	M 3.5	
	02 10 846	RDMX 1003 MOSN	P40	PVGO	10	3.18	5	M 3.5	
	02 10 850	RDHX 1003 M0T	P25	PVTi	10	3.18	5	M 3.5	
	02 10 852	RDEX 1003 M0T	P25	PVSR	10	3.18	5	M 3.5	
	02 10 860	RDHX 1003 M0T	K10	PVTi	10	3.18	5	M 3.5	
	02 10 892	RDHX 1003 M0T	CBN for steel	uncoated	10	3.18	5	M 3.5	
02 10 893	RDHX 1003 M0T	CBN for cast iron	uncoated	10	3.18	5	M 3.5		
	02 10 831P	RDHX 1003 M0T	K10	polished	10	3.18	5	M 3.5	
	02 10 848	RDMX 1003 M0T	P40	PVGO	10	3.18	5	M 3.5	
	02 10 880	RDHX 1003 M0T	K10	PVTi	10	3.18	5	M 3.5	
	02 10 880 D	RDHX 1003 M0T	K10	PVDiaN	10	3.18	5	M 3.5	
	02 10 897	RDPX 1003 M0T	P25	PVGO	10	3.18	5	M 3.5	
	02 10 896	RDMT 1003 M0EN	M40	PVST	10	3.18	5	M 3.5	

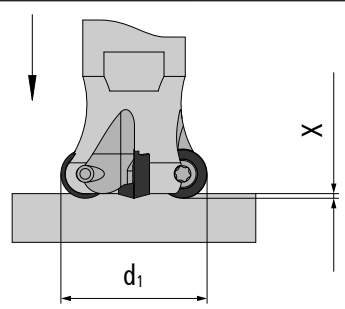
Feed per tooth (fz) | d.o.c. (ap)

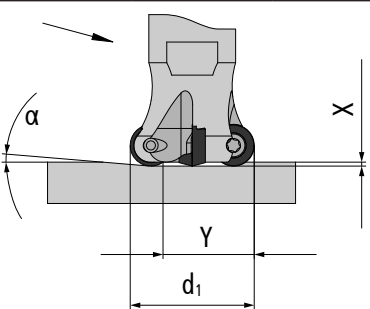
Material		steel		stainless steel		cast iron		non-ferrous materials		high-temperature alloys		hardened steel	
Carbide grade	Coating	Feed per tooth d.o.c.											
HSC 05	PVTi	f _z (mm)	a _p (mm)	0.1-0.3	0.1	0.15-0.3	0.1-1	0.1-0.2	0.1-0.8	-	-	0.1-0.2	0.1-0.5
HSC 05	PVFN	f _z (mm)	a _p (mm)	0.1-0.4	0.1-0.3	0.1-0.3	0.1-1	0.1-0.2	0.1-0.3	-	-	0.1-0.2	0.1-0.5
P40	PVTi	f _z (mm)	a _p (mm)	0.2-0.6	-	-	-	-	-	-	-	-	-
P40	PVSR	f _z (mm)	a _p (mm)	0.2-0.7	-	0.1-0.3	0.1-1	-	-	-	-	0.1-0.15	0.1-0.3
P40	PVML	f _z (mm)	a _p (mm)	0.2-0.7	-	0.1-0.3	0.1-1	-	-	-	-	0.1-0.15	0.1-0.3
P40	PVGO	f _z (mm)	a _p (mm)	0.1-0.9	-	0.1-0.3	0.1-1	-	-	-	-	-	-
P25	PVTi	f _z (mm)	a _p (mm)	0.15-0.3	0.1-1	0.15-0.22	0.1-0.55	-	-	-	-	-	-
P25	PVSR	f _z (mm)	a _p (mm)	0.2-0.7	-	0.1-0.3	0.1-1	-	-	-	-	0.1-0.15	0.1-0.3
K10	PVTi	f _z (mm)	a _p (mm)	0.15	0.1	0.15-0.3	0.1-1	0.1-0.3	0.1-1.5	0.1-0.2	0.1-1	0.1-0.15	0.1-0.3
CBN for steel	uncoated	f _z (mm)	a _p (mm)	-	-	-	-	-	-	-	-	0.1-0.2	0.1-0.3
CBN for cast iron	uncoated	f _z (mm)	a _p (mm)	-	-	0.1-0.2	0.1-0.3	-	-	-	-	-	-
K10	polished	f _z (mm)	a _p (mm)	-	-	-	-	0.1-0.3	0.1-1.5	-	-	-	-
K10	PVDiaN	f _z (mm)	a _p (mm)	-	-	-	-	0.1-0.3	0.1-1.5	-	-	-	-
P25	PVGO	f _z (mm)	a _p (mm)	-	0.15-0.6	-	-	-	-	0.1-0.4	0.1-1	-	-
M40	PVST	f _z (mm)	a _p (mm)	0.1-0.2	0.1-0.3	0.15-0.6	0.2-2	-	-	0.1-0.4	0.1-2	-	-

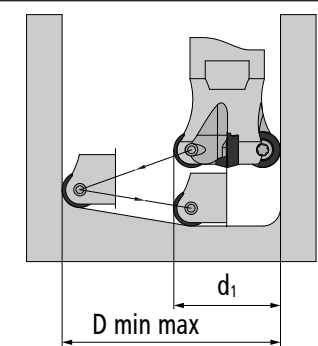
Cutting speed (Vc in m/min)

Material		steel		stainless steel		cast iron		non-ferrous materials		high-temperature alloys		hardened steel	
Carbide grade	Application												
HSC 05	PVTi	roughing	120 210 300	-	-	100 200 300	200 500 800	-	-	-	-	35 93 150	-
HSC 05	PVFN	roughing	150 225 300	100 150 200	-	200 275 350	100 250 400	-	-	-	-	35 93 150	-
P40	PVTi	roughing	120 160 200	-	-	100 150 200	200 500 800	-	-	-	-	40 100 160	-
P40	PVSR	roughing	150 250 350	100 150 200	-	200 275 350	200 500 800	-	-	-	-	40 80 120	-
P40	PVML	roughing	100 175 250	-	-	-	-	-	-	-	-	-	-
P40	PVGO	roughing	-	-	-	-	-	-	-	-	-	-	-
P25	PVTi	roughing	100 175 250	-	-	160 190 220	-	-	-	-	-	70 110 150	-
P25	PVSR	roughing	-	-	-	160 190 220	-	-	-	-	-	-	-
P25	PVST	roughing	100 175 250	-	-	140 170 200	-	-	-	-	-	70 110 150	-
P25	PVGO	roughing	-	-	-	160 190 220	-	-	-	-	-	70 100 130	-
P25	PVTi	roughing	100 150 200	-	-	110 130 150	-	-	-	-	-	-	-
P25	PVSR	roughing	160 205 250	-	-	120 150 180	-	-	-	-	-	-	-
P25	PVST	roughing	100 140 180	-	-	100 125 150	-	-	-	-	-	-	-
P25	PVGO	roughing	150 200 250	-	-	150 200 250	-	-	-	-	-	-	-
P25	PVST	roughing	150 165 180	-	-	160 190 220	-	-	-	-	-	70 110 150	-
K10	PVTi	roughing	-	-	-	160 190 220	-	-	-	-	-	-	-
CBN for steel	uncoated	roughing	-	-	-	150 175 200	100 250 400	35 43 50	-	-	-	35 93 150	-
CBN for cast iron	uncoated	roughing	150 200 250	120 150 180	-	150 175 200	100 250 400	35 43 50	-	-	-	-	-
K10	polished	roughing	-	-	-	-	-	-	-	-	-	-	-
K10	PVDiaN	roughing	-	-	-	-	-	-	-	-	-	-	-
P25	PVGO	roughing	-	-	-	-	-	-	-	-	-	-	-
M40	PVST	roughing	-	-	-	-	-	-	-	-	-	-	-

Extended operation data

Plunging	
	
Cutter diam. d1	X _{max}
25-35	2.5
42-52	3.5

Ramping		
		
Cutter diam. d1	α°	y
25	<19.7	7
35	<8.4	17
42	<5.9	24
52	<4.2	34

Helix		
		
Cutter diam. d1	D _{min}	D _{max}
25	32	50
35	52	70
42	66	84
52	86	104

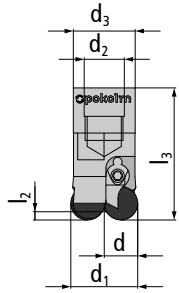
CUTTERS FOR ROUND INSERTS - K0-90°

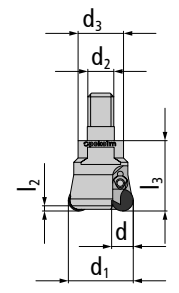
r5 - diam. 20 - 35 mm, CBN, neutral - 0° axial rake angle

Specially designed for high-speed super-finish milling of hardened steel.

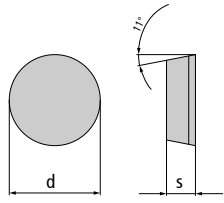


Milling cutter bodies		Catalogue no.										Accessories		Features	
		d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z					

DuoPlug®															
		2 20 294 SG	20	10	5	39.5	-	-	M 12	18.5	2	A, B, C, D, E			
		3 25 294 SG	25	10	5	41.5	2.5	-	M 16	23.5	3	A, B, C, D, E			

Threaded shank end mill bodies															
		20 294	20	10	5	28.5	-	-	M 10	18	2	A, B, C, D, E			
		25 294	25	10	5	32.5	2.5	-	M 12	21	3	A, B, C, D, E			
		30 294	30	10	5	32.5	2.5	-	M 12	21	4	A, B, C, D, E			
		35 294	35	10	5	42.5	2.5	-	M 16	29	4	A, B, C, D, E			

Accessories					
					
10 500 Torx-screwdriver A > Page 172	TV 2-8 Screwdriver torque Vario®-S with window scale, B > Page 173	T10 500 Torx interchangeable bit for Torque Vario® C > Page 173	T10 502 Torx MagicSpring compatible bit f. Torque Vario®, D > Page 174	10 514 clamping finger for CBN E > Page 174	

Indexable inserts		Catalogue no.	DIN Specification	Carbide Grade	Coating	d	s	r	M
		02 10 092	RPHN 1003 M0	CBN for steel	uncoated	10	3.18	5	
		02 10 093	RPHN 1003 M0	CBN for cast iron	uncoated	10	3.18	5	

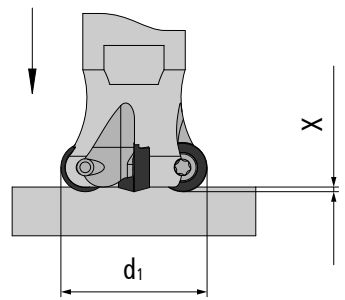
Feed per tooth (fz) | d.o.c. (ap)

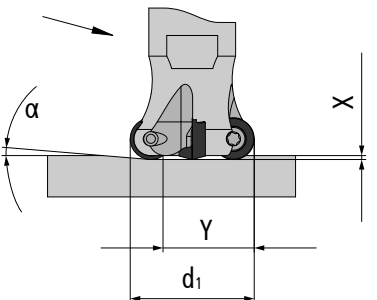
Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade	Feed per tooth d.o.c.						
Coating							
CBN for steel	f _z (mm)	-	-	-	-	-	0.1-0.2
uncoated	a _p (mm)	-	-	-	-	-	0.1-0.3
CBN for cast iron	f _z (mm)	-	-	0.1-0.2	-	-	-
uncoated	a _p (mm)	-	-	0.1-0.3	-	-	-

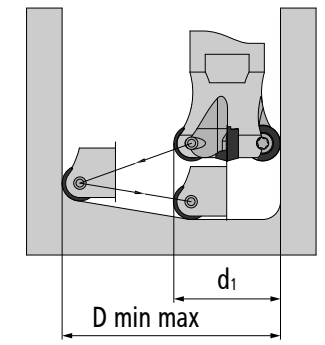
Cutting speed (Vc in m/min)

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade	Application						
Coating							
CBN for steel	roughing	-	-	-	-	-	400 600 800
uncoated	finishing	-	-	-	-	-	400 700 1000
CBN for cast iron	roughing	-	-	500 750 1000	-	-	-
uncoated	finishing	-	-	500 750 1000	-	-	-

Extended operation data

Plunging	
	
Cutter diam. d1	X _{max}
20-35	2.5

Ramping		
		
Cutter diam. d1	α°	y
20	-	-
25	<19.7	7
30	<11.7	12
35	<8.4	17

Helix		
		
Cutter diam. d1	D _{min}	D _{max}
20	22	40
25	32	50
30	42	60
35	52	70

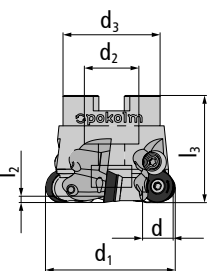
CUTTERS FOR ROUND INSERTS - K0-90°

r6 - diam. 42 - 80 mm, 7° positive rake angle, with shims

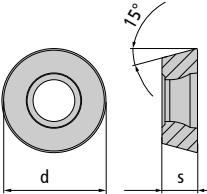
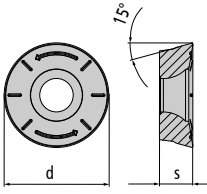
- increased reliability against fractures during machining
- optimum protection of milling cutter body by shim
- in case of insert fracture, shims, screws and threaded bushes can be replaced separately, it is not necessary to buy a new body



Milling cutter bodies		Catalogue no.	d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z	Accessories	Features
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Shell type milling cutter bodies													
		42 310/7 HL	42	12	6	42	3.5	-	diam. 16	35	4	A, B, C, D, E, F, G, H	
		52 310/7 HL	52	12	6	52.5	3.5	-	diam. 22	40	5	A, B, C, D, E, F, G, H	
		66 310/7 HL	66	12	6	52.5	3.5	-	diam. 27	48	6	A, B, C, D, E, F, G, H	
		80 310/7 HL	80	12	6	52.5	3.5	-	diam. 27	60	7	A, B, C, D, E, F, G, H	

Accessories					
 35 500 L Torx screw A > Page 171	 35 510 locking screw B > Page 171	 35 500 I threaded and tapped bush C > Page 172	 09 511 Shim for RDHX 12T3 D > Page 172	 15 500 Torx-screwdriver E > Page 172	 TV 2-8 Screwdriver torque Vario®-S with window scale, F > Page 173
 T15 500 Torx interchangeable bit for Torque Vario® G > Page 173	 T15 502 Torx MagicSpring compatible bit f. Torque Vario® H > Page 174				

Indexable inserts		Catalogue no.	DIN Specification	Carbide Grade	Coating	d	s	r	M
	03 12 835K	RDHX 12T3 M0T	HSC 05	PVTi		12	3.97	6	M 3.5
	03 12 837K	RDMX 12T3 M0T	HSC 05	PVFN		12	3.97	6	M 3.5
	03 12 840K	RDHX 12T3 M0T	P40	PVTi		12	3.97	6	M 3.5
	03 12 842K	RDEX 12T3 M0T	P40	PVSR		12	3.97	6	M 3.5
	03 12 844K	RDHX 12T3 M0T	P40	PVML		12	3.97	6	M 3.5
	03 12 846K	RDMX 12T3 M0T	P40	PVGO		12	3.97	6	M 3.5
	03 12 850K	RDHX 12T3 M0T	P25	PVTi		12	3.97	6	M 3.5
	03 12 852K	RDEX 12T3 M0T	P25	PVSR		12	3.97	6	M 3.5
	03 12 860K	RDHX 12T3 M0T	K10	PVTi		12	3.97	6	M 3.5
	03 12 831P	RDHX 12T3 M0T	K10	polished		12	3.97	6	M 3.5
	03 12 848K	RDMX 12T3 M0T	P40	PVGO		12	3.97	6	M 3.5
	03 12 880	RDHX 12T3 M0T	K10	PVTi		12	3.97	6	M 3.5
	03 12 880 D	RDHX 12T3 M0T	K10	PVDiaN		12	3.97	6	M 3.5
	03 12 896K	RDMT 12T3 M0EN	M40	PVST		12	3.97	6	M 3.5
	03 12 897K	RDPX 12T3 M0T	P25	PVGO		12	3.97	6	M 3.5

Feed per tooth (fz) | d.o.c. (ap)

Material							
Carbide grade Coating	Feed per tooth d.o.c.	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
HSC 05 PVTi	f _z (mm)	0.1-0.3	0.15	0.15-0.4	0.1-0.25	-	0.1-0.18
	a _p (mm)	0.1-1.5	0.1	0.1-1.5	0.1-1.05	-	0.1-0.4
HSC 05 PVFN	f _z (mm)	0.1-0.4	0.12-0.24	0.12-0.4	0.12-0.24	-	0.1-0.25
	a _p (mm)	0.1-1.5	0.1-0.3	0.1-1.5	0.1-0.3	-	0.1-0.7
P40 PVTi	f _z (mm)	0.2-0.7	-	-	-	-	-
	a _p (mm)	0.2-2	-	-	-	-	-
P40 PVSR	f _z (mm)	0.2-0.8	-	0.1-0.4	-	-	0.1-0.18
	a _p (mm)	0.2-2	-	0.1-1.5	-	-	0.1-0.4
P40 PVML	f _z (mm)	0.2-0.8	-	0.1-0.4	-	-	0.1-0.18
	a _p (mm)	0.2-2	-	0.1-1.5	-	-	0.1-0.4
P40 PVGO	f _z (mm)	0.12-1	-	0.1-0.4	-	-	-
	a _p (mm)	0.1-2	-	0.1-1.5	-	-	-
P25 PVTi	f _z (mm)	0.15-0.4	-	0.15-0.28	0.1-0.4	-	-
	a _p (mm)	0.1-1.5	-	0.1-0.8	0.1-2	-	-
P25 PVSR	f _z (mm)	0.2-0.8	-	0.1-0.4	-	-	0.1-0.18
	a _p (mm)	0.2-2	-	0.1-1.5	-	-	0.1-0.4
K10 PVTi	f _z (mm)	0.15	0.15	0.15-0.4	0.1-0.4	0.1-0.25	0.1-0.25
	a _p (mm)	0.1	0.1	0.1-1.5	0.1-2	0.1-1	0.1-0.7
K10 polished	f _z (mm)	-	-	-	0.1-0.4	-	-
	a _p (mm)	-	-	-	0.1-2	-	-
K10 PVDiaN	f _z (mm)	-	-	-	0.1-0.4	-	-
	a _p (mm)	-	-	-	0.1-2	-	-
M40 PVST	f _z (mm)	0.12-0.24	0.2-0.8	-	-	0.12-0.5	-
	a _p (mm)	0.1-1.5	0.12-2.5	-	-	0.12-2.5	-
P25 PVGO	f _z (mm)	-	0.2-0.8	-	-	0.12-0.5	-
	a _p (mm)	-	0.25-2	-	-	0.12-1.5	-

Cutting speed (Vc in m/min)

Material							
		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade Coating	Application						
HSC 05 PVTi	roughing	120 210 300	-	100 200 300	200 500 800	-	35 93 150
	finishing	150 225 300	100 150 200	200 275 350	100 250 400	-	35 93 150
HSC 05 PVFN	roughing	120 160 200	-	100 150 200	200 500 800	-	40 100 160
	finishing	150 250 350	100 150 200	200 275 350	200 500 800	-	40 80 120
P40 PVTi	roughing	100 175 250	-	-	-	-	-
	finishing	-	-	-	-	-	-
P40 PVSR	roughing	100 175 250	-	160 190 220	-	-	70 110 150
	finishing	-	-	160 190 220	-	-	-
P40 PVML	roughing	100 175 250	-	140 170 200	-	-	70 110 150
	finishing	-	-	160 190 220	-	-	70 100 130
P40 PVGO	roughing	100 150 200	-	110 130 150	-	-	-
	finishing	160 205 250	-	120 150 180	-	-	-
P25 PVTi	roughing	100 140 180	-	100 125 150	100 250 400	-	-
	finishing	150 200 250	-	150 200 250	100 250 400	-	-
P25 PVSR	roughing	150 165 180	-	160 190 220	-	-	70 110 150
	finishing	-	-	160 190 220	-	-	-
K10 PVTi	roughing	-	-	150 175 200	100 250 400	35 43 50	35 93 150
	finishing	150 200 250	120 150 180	150 175 200	100 250 400	35 43 50	35 93 150
K10 polished	roughing	-	-	-	100 250 400	-	-
	finishing	-	-	-	100 250 400	-	-
K10 PVDiaN	roughing	-	-	-	100 250 400	-	-
	finishing	-	-	-	100 250 400	-	-
M40 PVST	roughing	100 150 200	80 145 210	-	-	40 65 90	-
	finishing	-	120 185 250	-	-	60 90 120	-
P25 PVGO	roughing	-	80 145 210	-	-	50 80 110	-
	finishing	-	120 175 230	-	-	50 80 110	-

Extended operation data

Plunging

Cutter diam. d1

42-80

X_{max}

3

Ramping

Cutter diam.
d1

42

52

66

80

α°

<6.5

5.7

<3.9

<3.0

y

20

30

44

58

Helix

Cutter diam.
d1

42

52

66

80

D_{min}

62

82

110

136

D_{max}

84

104

132

160



CUTTERS FOR ROUND INSERTS - K0-90°

r6 - diam. 24 - 80 mm, neutral or 7° positive rake angle

The allrounder:

- for high-speed-machining centres
- for roughing and finishing operations

Milling cutter bodies

Milling cutter bodies												
Catalogue no.												
d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z	Accessories		Features	

Threaded shank end mill bodies

	24 200	24	12	6	33	-	-	M 12	21	2	A, B, C, D, E, F	
	35 200	35	12	6	43	3	-	M 16	29	3	A, B, C, D, E, F	
	4 35 200	35	12	6	43	3	-	M 16	29	4	A, C, D, E, F	
	42 200	42	12	6	43	3	-	M 16	29	4	A, B, D, E, F	
	5 42 200	42	12	6	43	3	-	M 16	29	5	A, C, D, E, F	

Shell tp. mill. cutt. bodies | 0° axial rake angle

	4 42 310	42	12	6	43	3	-	diam. 16	35	4	A, B, C, D, E, F	
	5 42 310	42	12	6	43	3	-	diam. 16	35	5	A, C, D, E, F	
	52 310	52	12	6	53	3.5	-	diam. 22	40	5	A, B, C, D, E, F	

Thr. sh. end mill bodies | 7° pos. rake angle

	3 35 200/7	35	12	6	42.5	3	-	M 16	29	3	A, B, C, D, E, F	
	4 35 200/7	35	12	6	42.5	3	-	M 16	29	4	A, C, D, E, F	

Milling cutter bodies

Milling cutter bodies										
Catalogue no.										
d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z	Accessories	Features

Shell tp. mill. cutt. bodies | 7° pos. rake angle

	52 310/7	52	12	6	52.5	3.5	-	diam. 22	40	5	A, B, C, D, E, F	
	66 310/7	66	12	6	52.5	3.5	-	diam. 27	48	6	A, B, D, E, F	
	80 310/7	80	12	6	52.5	3.5	-	diam. 27	60	7	A, B, D, E, F	

Accessories

 35 500 Torx screw A > Page 171	 35 510 locking screw B > Page 171	 15 500 Torx-screwdriver C > Page 172	 TV 2-8 Screwdriver torque Vario®-S with window scale, D > Page 173	 T15 500 Torx interchangeable bit for Torque Vario®, E > Page 173	 T15 502 Compatible bit f. Torque Vario®, F > Page 174
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Indexable inserts

	Catalogue no.	DIN Specification	Carbide Grade	Coating				
					d	s	r	M
	03 12 835K	RDHX 12T3 M0T	HSC 05	PVTi	12	3.97	6	M 3.5
	03 12 837K	RDMX 12T3 M0T	HSC 05	PVFN	12	3.97	6	M 3.5
	03 12 840K	RDHX 12T3 M0T	P40	PVTi	12	3.97	6	M 3.5
	03 12 842K	RDEX 12T3 M0T	P40	PVSR	12	3.97	6	M 3.5
	03 12 844K	RDHX 12T3 M0T	P40	PVML	12	3.97	6	M 3.5
	03 12 846K	RDMX 12T3 M0T	P40	PVGO	12	3.97	6	M 3.5
	03 12 850K	RDHX 12T3 M0T	P25	PVTi	12	3.97	6	M 3.5
	03 12 852K	RDEX 12T3 M0T	P25	PVSR	12	3.97	6	M 3.5
	03 12 860K	RDHX 12T3 M0T	K10	PVTi	12	3.97	6	M 3.5
	03 12 831P	RDHX 12T3 M0T	K10	polished	12	3.97	6	M 3.5
	03 12 848K	RDMX 12T3 M0T	P40	PVGO	12	3.97	6	M 3.5
	03 12 880	RDHX 12T3 M0T	K10	PVTi	12	3.97	6	M 3.5
	03 12 880 D	RDHX 12T3 M0T	K10	PVDiaN	12	3.97	6	M 3.5
	03 12 896K	RDMT 12T3 M0EN	M40	PVST	12	3.97	6	M 3.5
	03 12 897K	RDPX 12T3 M0T	P25	PVGO	12	3.97	6	M 3.5

Feed per tooth (fz) | d.o.c. (ap)

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade	Feed per tooth d.o.c.						
Coating							
HSC 05 PVTi	f _z (mm)	0.1-0.3	0.15	0.15-0.4	0.1-0.25	-	0.1-0.18
	a _p (mm)	0.1-1.5	0.1	0.1-1.5	0.1-1.05	-	0.1-0.4
HSC 05 PVFN	f _z (mm)	0.1-0.4	0.12-0.24	0.12-0.4	0.12-0.24	-	0.1-0.25
	a _p (mm)	0.1-1.5	0.1-0.3	0.1-1.5	0.1-0.3	-	0.1-0.7
P40 PVTi	f _z (mm)	0.2-0.7	-	-	-	-	-
	a _p (mm)	0.2-2	-	-	-	-	-
P40 PVSR	f _z (mm)	0.2-0.8	-	0.1-0.4	-	-	0.1-0.18
	a _p (mm)	0.2-2	-	0.1-1.5	-	-	0.1-0.4
P40 PVML	f _z (mm)	0.2-0.8	-	0.1-0.4	-	-	0.1-0.18
	a _p (mm)	0.2-2	-	0.1-1.5	-	-	0.1-0.4
P40 PVGO	f _z (mm)	0.12-1	-	0.1-0.4	-	-	-
	a _p (mm)	0.1-2	-	0.1-1.5	-	-	-
P25 PVTi	f _z (mm)	0.15-0.4	-	0.15-0.28	0.1-0.4	-	-
	a _p (mm)	0.1-1.5	-	0.1-0.8	0.1-2	-	-
P25 PVSR	f _z (mm)	0.2-0.8	-	0.1-0.4	-	-	0.1-0.18
	a _p (mm)	0.2-2	-	0.1-1.5	-	-	0.1-0.4
K10 PVTi	f _z (mm)	0.15	0.15	0.15-0.4	0.1-0.4	0.1-0.25	0.1-0.25
	a _p (mm)	0.1	0.1	0.1-1.5	0.1-2	0.1-1	0.1-0.7
K10 polished	f _z (mm)	-	-	-	0.1-0.4	-	-
	a _p (mm)	-	-	-	0.1-2	-	-
K10 PVDiaN	f _z (mm)	-	-	-	0.1-0.4	-	-
	a _p (mm)	-	-	-	0.1-2	-	-
M40 PVST	f _z (mm)	0.12-0.24	0.2-0.8	-	-	0.12-0.5	-
	a _p (mm)	0.1-1.5	0.12-2.5	-	-	0.12-2.5	-
P25 PVGO	f _z (mm)	-	0.2-0.8	-	-	0.12-0.5	-
	a _p (mm)	-	0.25-2	-	-	0.12-1.5	-

Extended operation data

Plunging		Ramping			Helix		
Cutter diam. d1	X _{max}	Cutter diam. d1	α°	y	Cutter diam. d1	D _{min}	D _{max}
24-80	3	24	-	-	24	26	48
		35	<13.0	13	35	46	70
		42	<6.5	20	42	62	84
		52	5.7	30	52	82	104
		66	<3.9	44	66	110	132
		80	<3.0	58	80	136	160

Cutting speed (Vc in m/min)

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade	Application						
Coating							
HSC 05 PVTi	roughing	120 210 300	-	100 200 300	200 500 800	-	35 93 150
	finishing	150 225 300	100 150 200	200 275 350	100 250 400	-	35 93 150
HSC 05 PVFN	roughing	120 160 200	-	100 150 200	200 500 800	-	40 100 160
	finishing	150 250 350	100 150 200	200 275 350	200 500 800	-	40 80 120
P40 PVTi	roughing	100 175 250	-	-	-	-	-
	finishing	-	-	-	-	-	-
P40 PVSR	roughing	100 175 250	-	160 190 220	-	-	70 110 150
	finishing	-	-	160 190 220	-	-	-
P40 PVML	roughing	100 175 250	-	140 170 200	-	-	70 110 150
	finishing	-	-	160 190 220	-	-	70 100 130
P40 PVGO	roughing	100 150 200	-	110 130 150	-	-	-
	finishing	160 205 250	-	120 150 180	-	-	-
P25 PVTi	roughing	100 140 180	-	100 125 150	100 250 400	-	-
	finishing	150 200 250	-	150 200 250	100 250 400	-	-
P25 PVSR	roughing	150 165 180	-	160 190 220	-	-	70 110 150
	finishing	-	-	160 190 220	-	-	-
K10 PVTi	roughing	-	-	150 175 200	100 250 400	35 43 50	35 93 150
	finishing	150 200 250	120 150 180	150 175 200	100 250 400	35 43 50	35 93 150
K10 polished	roughing	-	-	-	100 250 400	-	-
	finishing	-	-	-	100 250 400	-	-
K10 PVDiaN	roughing	-	-	-	100 250 400	-	-
	finishing	-	-	-	100 250 400	-	-
M40 PVST	roughing	100 150 200	80 145 210	-	-	40 65 90	-
	finishing	-	120 185 250	-	-	60 90 120	-
P25 PVGO	roughing	-	80 145 210	-	-	50 80 110	-
	finishing	-	120 175 230	-	-	50 80 110	-



CUTTERS FOR ROUND INSERTS - K0-90°

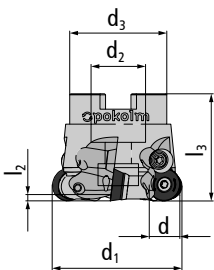
r8 - diam. 52 - 100 mm, 7° positive rake angle, with shims

- increased reliability against fractures during machining
- optimum protection of milling cutter body by shim
- in case of insert fracture, shims, screws and threaded bushes can be replaced separately, it is not necessary to buy a new body

Milling cutter bodies

Catalogue no.	d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z	Accessories	Features
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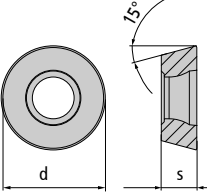
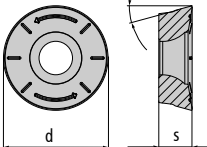
Shell type milling cutter bodies

	52 300/7 HL	52	16	8	53	4.1	-	diam. 22	40	4	A, B, C, D, E, F, G, H, I	
	66 300/7 HL	66	16	8	53	4.1	-	diam. 27	48	5	A, B, C, D, E, F, G, H, I	
	80 300/7 HL	80	16	8	53	4.1	-	diam. 27	60	6	A, B, C, D, E, F, G, H, I	
	100 300/7 HL	100	16	8	53	4.1	-	diam. 32	70	7	A, B, C, D, E, F, G, H, I	

Accessories

 45 500 Torx screw A > Page 171	 45 500 L Torx screw B > Page 171	 45 500 I threaded and tapped bush C > Page 172	 10 510 locking washer D > Page 172	 10 511 Shim for RDHX 1604 E > Page 172	 20 500 Torx-screwdriver F > Page 172
 TV 2-8 Screwdriver torque Vario®-S with window scale, G > Page 173	 T20 500 Torx interchangeable bit for Torque Vario® H > Page 173	 T20 502 Torx MagicSpring compa- tible bit f. Torque Vario® I > Page 174			

Indexable inserts

	Catalogue no.	DIN Specification	Carbide Grade	Coating	d	s	r	M
	04 16 835	RDHX 1604 M0T	HSC 05	PVTi	16	4.76	8	M 4.5
	04 16 840	RDHX 1604 M0T	P40	PVTi	16	4.76	8	M 4.5
	04 16 842	RDEX 1604 M0T	P40	PVSR	16	4.76	8	M 4.5
	04 16 844	RDHX 1604 M0T	P40	PVML	16	4.76	8	M 4.5
	04 16 850	RDHX 1604 M0T	P25	PVTi	16	4.76	8	M 4.5
	04 16 852	RDEX 1604 M0T	P25	PVSR	16	4.76	8	M 4.5
	04 16 860	RDHX 1604 M0T	K10	PVTi	16	4.76	8	M 4.5
	04 16 831P	RDHX 1604 M0T	K10	polished	16	4.76	8	M 4.5
	04 16 848	RDMX 1604 M0T	P40	PVGO	16	4.76	8	M 4.5
	04 16 880	RDHX 1604 M0T	K10	PVTi	16	4.76	8	M 4.5
	04 16 897	RDPX 1604 M0T	P25	PVGO	16	4.76	8	M 4.5

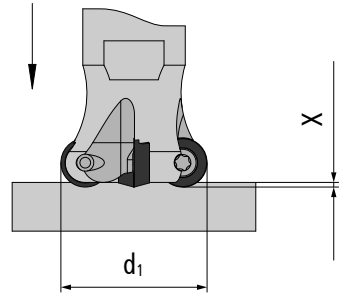
Feed per tooth (fz) | d.o.c. (ap)

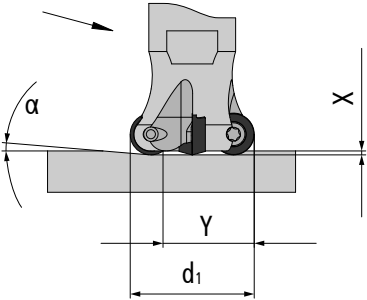
Material							
Carbide grade Coating	Feed per tooth d.o.c.	steel		stainless steel	cast iron	non-ferrous materials	high-temperature alloys
							hardened steel
HSC 05 PVTi	f _z (mm) a _p (mm)	0.2-0.3 0.2-1.5		0.15 0.1	0.2-0.5 0.2-3	0.2-0.35 0.2-2.1	0.15-0.22 0.2-0.85
P40 PVTi	f _z (mm) a _p (mm)	0.2-0.9 0.2-4		-	-	-	-
P40 PVSR	f _z (mm) a _p (mm)	0.25-1 0.2-3		-	0.2-0.5 0.2-3	-	0.15-0.22 0.2-0.85
P40 PVML	f _z (mm) a _p (mm)	0.25-1 0.2-3		-	0.2-0.5 0.2-3	-	0.15-0.22 0.2-0.85
P25 PVTi	f _z (mm) a _p (mm)	0.2-0.5 0.2-3		-	0.2-0.35 0.2-1.6	-	-
P25 PVSR	f _z (mm) a _p (mm)	0.25-1 0.2-3		-	0.2-0.5 0.2-3	-	0.15-0.22 0.2-0.85
K10 PVTi	f _z (mm) a _p (mm)	0.2 0.2		0.15 0.1	0.2-0.5 0.2-3	0.2-0.5 0.2-4	0.15-0.3 0.2-2.5
K10 polished	f _z (mm) a _p (mm)	-		-	-	0.2-0.5 0.2-4	-
P40 PVGO	f _z (mm) a _p (mm)	0.16-1.2 0.1-3		-	0.16-0.5 0.1-2	-	-
P25 PVGO	f _z (mm) a _p (mm)	-		0.3-1 0.3-3	-	-	0.15-0.5 0.15-2

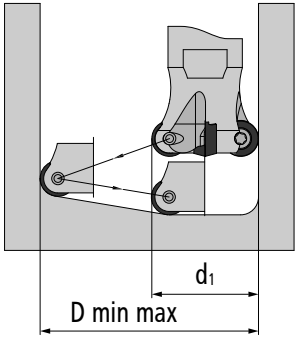
Cutting speed (Vc in m/min)

Material		steel			stainless steel			cast iron			non-ferrous materials			high temperature alloys			hardened steel		
Carbide grade	Application																		
Coating																			
HSC 05 PVTi	roughing	120	210	300	-	-	-	100	200	300	200	500	800	-	-	-	35	93	150
	finishing	150	225	300	100	150	200	200	275	350	100	250	400	-	-	-	35	93	150
P40 PVTi	roughing	100	175	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	finishing	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P40 PVSR	roughing	100	175	250	-	-	-	160	190	220	-	-	-	-	-	-	70	110	150
	finishing	-	-	-	-	-	-	160	190	220	-	-	-	-	-	-	-	-	-
P40 PVML	roughing	100	175	250	-	-	-	140	170	200	-	-	-	-	-	-	70	110	150
	finishing	-	-	-	-	-	-	160	190	220	-	-	-	-	-	-	70	100	130
P25 PVTi	roughing	100	140	180	-	-	-	100	125	150	-	-	-	-	-	-	-	-	-
	finishing	150	200	250	-	-	-	150	200	250	-	-	-	-	-	-	-	-	-
P25 PVSR	roughing	150	165	180	-	-	-	160	190	220	-	-	-	-	-	-	70	110	150
	finishing	-	-	-	-	-	-	160	190	220	-	-	-	-	-	-	-	-	-
K10 PVTi	roughing	-	-	-	-	-	-	100	250	400	35	43	50	-	-	-	35	93	150
	finishing	150	200	250	120	150	180	150	175	200	100	250	400	35	43	50	-	-	-
K10 polished	roughing	-	-	-	-	-	-	100	250	400	-	-	-	-	-	-	-	-	-
	finishing	-	-	-	-	-	-	100	250	400	-	-	-	-	-	-	-	-	-
P40 PVGO	roughing	100	150	200	-	-	-	110	130	150	-	-	-	-	-	-	-	-	-
	finishing	160	205	250	-	-	-	120	150	180	-	-	-	-	-	-	-	-	-
P25 PVGO	roughing	-	-	-	80	145	210	-	-	-	50	80	110	-	-	-	-	-	-
	finishing	-	-	-	120	175	230	-	-	-	50	80	110	-	-	-	-	-	-

Extended operation data

Plunging	
	
Cutter diam. d1	X _{max}
52-100	4

Ramping		
		
Cutter diam. d1	α°	y
52	<10.3	22
66	<6.4	36
80	<4.6	50
100	<3.3	70

Helix		
		
Cutter diam. d1	D _{min}	D _{max}
52	74	104
66	102	132
80	130	1,610
100	170	200

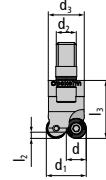
CUTTERS FOR ROUND INSERTS - K0-90°

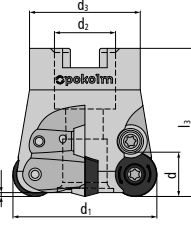
r8 - diam. 32 - 160 mm, neutral, 7° positive

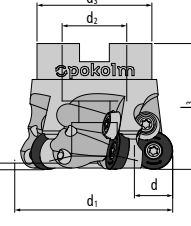
The first choice when using SK 50 machines for medium and heavy milling. Tools with a 7° rake angle are characterized by its low energy consumption.



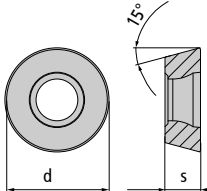
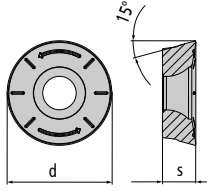
Milling cutter bodies		Catalogue no.										Accessories		Features	
		d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z					

Threaded shank end mill bodies															
		32 200	32	16	8	43.5	-	-	M 16	29	2	A, C, D, E, F			
		35 201	35	16	8	43.5	4	-	M 16	29	3	A, C, D, E, F			

Shell tp. mill. cutt. bodies 0° axial rake angle															
		52 300	52	16	8	53.5	4.7	-	diam. 22	40	4	A, B, C, D, E, F			
		66 300	66	16	8	53.5	5.1	-	diam. 27	48	5	A, B, C, D, E, F			
		80 300	80	16	8	53.5	5.8	-	diam. 27	60	6	A, B, C, D, E, F			
		100 300	100	16	8	53.5	5.8	-	diam. 32	70	7	A, B, C, D, E, F			

Shell tp. mill. cutt. bodies 7° pos. rake angle															
		5 52 300/7	52	16	8	53	4.1	-	diam. 22	40	5	A, C, D, E, F			
		66 300/7	66	16	8	53	4.6	-	diam. 27	48	5	A, B, C, D, E, F			
		6 66 300/7	66	16	8	53	5.1	-	diam. 27	48	6	A, C, D, E, F			
		80 300/7	80	16	8	53	5.1	-	diam. 27	60	6	A, B, C, D, E, F			
		100 300/7	100	16	8	53	5.1	-	diam. 32	70	7	A, B, C, D, E, F			
		125 300/7	125	16	8	53	5.1	-	diam. 40	90	8	A, B, C, D, E, F			
		160 300/7	160	16	8	53	5.1	-	diam. 40	120	9	A, B, C, D, E, F			

Accessories					
 45 500 Torx screw A > Page 171	 10 510 locking washer B > Page 172	 20 500 Torx-screwdriver C > Page 172	 TV 2-8 Screwdriver torque Vario®-S with window scale, D > Page 173	 T20 500 Torx interchangeable bit for Torque Vario® E > Page 173	 T20 502 Compatible bit f. Torque Vario®, F > Page 174

Indexable inserts		Catalogue no.	DIN Specification	Carbide Grade	Coating	d	s	r	M
	04 16 835	RDHX 1604 M0T	HSC 05	PVTi	16	4.76	8	M 4.5	
	04 16 840	RDHX 1604 M0T	P40	PVTi	16	4.76	8	M 4.5	
	04 16 842	RDEX 1604 M0T	P40	PVSR	16	4.76	8	M 4.5	
	04 16 844	RDHX 1604 M0T	P40	PVML	16	4.76	8	M 4.5	
	04 16 850	RDHX 1604 M0T	P25	PVTi	16	4.76	8	M 4.5	
	04 16 852	RDEX 1604 M0T	P25	PVSR	16	4.76	8	M 4.5	
	04 16 860	RDHX 1604 M0T	K10	PVTi	16	4.76	8	M 4.5	
	04 16 831P	RDHX 1604 M0T	K10	polished	16	4.76	8	M 4.5	
	04 16 848	RDMX 1604 M0T	P40	PVGO	16	4.76	8	M 4.5	
	04 16 880	RDHX 1604 M0T	K10	PVTi	16	4.76	8	M 4.5	
	04 16 897	RDPX 1604 M0T	P25	PVGO	16	4.76	8	M 4.5	

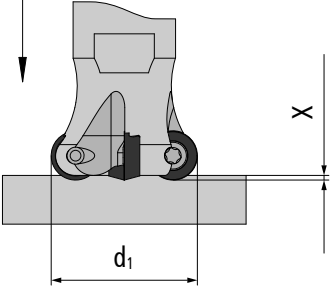
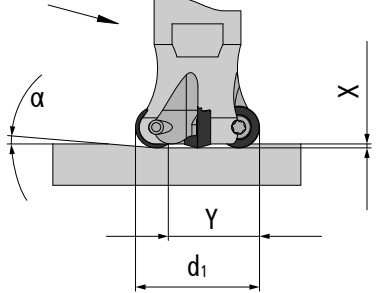
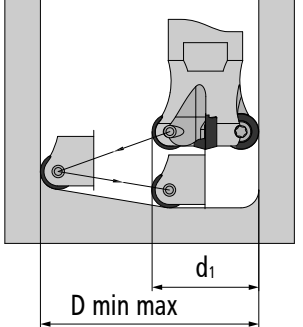
Feed per tooth (fz) | d.o.c. (ap)

Material							
Carbide grade	Feed per tooth d.o.c.	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
HSC 05 PVTi	f _z (mm)	0.2-0.3	0.15	0.2-0.5	0.2-0.35	-	0.15-0.22
	a _p (mm)	0.2-1.5	0.1	0.2-3	0.2-2.1	-	0.2-0.85
P40 PVTi	f _z (mm)	0.2-0.9	-	-	-	-	-
	a _p (mm)	0.2-4	-	-	-	-	-
P40 PVSR	f _z (mm)	0.25-1	-	0.2-0.5	-	-	0.15-0.22
	a _p (mm)	0.2-3	-	0.2-3	-	-	0.2-0.85
P40 PVML	f _z (mm)	0.25-1	-	0.2-0.5	-	-	0.15-0.22
	a _p (mm)	0.2-3	-	0.2-3	-	-	0.2-0.85
P25 PVTi	f _z (mm)	0.2-0.5	-	0.2-0.35	-	-	-
	a _p (mm)	0.2-3	-	0.2-1.6	-	-	-
P25 PVSR	f _z (mm)	0.25-1	-	0.2-0.5	-	-	0.15-0.22
	a _p (mm)	0.2-3	-	0.2-3	-	-	0.2-0.85
K10 PVTi	f _z (mm)	0.2	0.15	0.2-0.5	0.2-0.5	0.15-0.3	0.15-0.22
	a _p (mm)	0.2	0.1	0.2-3	0.2-4	0.2-2.5	0.2-0.85
K10 polished	f _z (mm)	-	-	-	0.2-0.5	-	-
	a _p (mm)	-	-	-	0.2-4	-	-
P40 PVGO	f _z (mm)	0.16-1.2	-	0.16-0.5	-	-	-
	a _p (mm)	0.1-3	-	0.1-2	-	-	-
P25 PVGO	f _z (mm)	-	0.3-1	-	-	0.15-0.5	-
	a _p (mm)	-	0.3-3	-	-	0.15-2	-

Cutting speed (Vc in m/min)

Material							
		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade	Application						
Coating							
HSC 05 PVTi	roughing	120 210 300	-	100 200 300	200 500 800	-	35 93 150
	finishing	150 225 300	100 150 200	200 275 350	100 250 400	-	35 93 150
P40 PVTi	roughing	100 175 250	-	-	-	-	-
	finishing	-	-	-	-	-	-
P40 PVSR	roughing	100 175 250	-	160 190 220	-	-	70 110 150
	finishing	-	-	160 190 220	-	-	-
P40 PVML	roughing	100 175 250	-	140 170 200	-	-	70 110 150
	finishing	-	-	160 190 220	-	-	70 100 130
P25 PVTi	roughing	100 140 180	-	100 125 150	-	-	-
	finishing	150 200 250	-	150 200 250	-	-	-
P25 PVSR	roughing	150 165 180	-	160 190 220	-	-	70 110 150
	finishing	-	-	160 190 220	-	-	-
K10 PVTi	roughing	-	-	150 175 200	100 250 400	35 43 50	35 93 150
	finishing	150 200 250	120 150 180	150 175 200	100 250 400	35 43 50	-
K10 polished	roughing	-	-	-	100 250 400	-	-
	finishing	-	-	-	100 250 400	-	-
P40 PVGO	roughing	100 150 200	-	110 130 150	-	-	-
	finishing	160 205 250	-	120 150 180	-	-	-
P25 PVGO	roughing	-	80 145 210	-	-	50 80 110	-
	finishing	-	120 175 230	-	-	50 80 110	-

Extended operation data

Plunging		Ramping			Helix		
							
Cutter diam. d1		X _{max}			Cutter diam. d1		
32-160		4			D _{min}		
					D _{max}		



CUTTERS FOR ROUND INSERTS - K0-90°

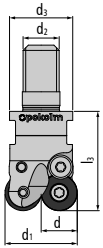
r10 - diam. 40 - 160 mm, neutral, 7° positive

These tools have extremely rigid inserts, which provide optimal conditions for heavy-duty milling operations under most difficult conditions and allows for very high-performance milling and extremely high feed-rates.

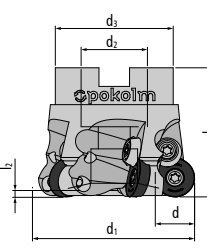
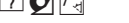
Milling cutter bodies

Catalogue no.	d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z	Accessories	Features
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Threaded shank end mill bodies

	40 200	40	20	10	53.5	-	-	M 16	29	2	A, B, C, D, E, F	

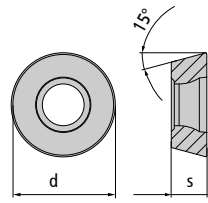
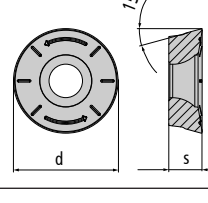
Shell tp. mill. cutt. bodies | 7° pos. rake angle

	5 66 340/7	66	20	10	53	6.5	-	diam. 27	48	5	A, B, C, D, E, F	
	80 340/7	80	20	10	53	6.5	-	diam. 27	60	5	A, B, C, D, E, F	
	100 340/7	100	20	10	53	6.5	-	diam. 32	70	6	A, B, C, D, E, F	
	125 340/7	125	20	10	53	6.5	-	diam. 40	90	7	A, B, C, D, E, F	
	160 340/7	160	20	10	53	6.5	-	diam. 40	120	8	A, B, C, D, E, F	

Accessories

 45 500 Torx screw A > Page 171	 10 510 locking washer B > Page 172	 20 500 Torx-screwdriver C > Page 172	 TV 2-8 Screwdriver torque Vario®-S with window scale, D > Page 173	 T20 500 Torx interchangeable bit for Torque Vario®, E > Page 173	 T20 502 Compatible bit f. Torque Vario®, F > Page 174
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Indexable inserts

	Catalogue no.	DIN Specification	Carbide Grade	Coating	d	s	r	M
	06 20 835	RDMX 2006 M0T	HSC 05	PVTi	20	6	10	M 4.5
	06 20 840	RDMX 2006 M0T	P40	PVTi	20	6	10	M 4.5
	06 20 850	RDMX 2006 M0T	P25	PVTi	20	6	10	M 4.5
	06 20 860	RDMX 2006 M0T	K10	PVTi	20	6	10	M 4.5
	06 20 831P	RDHT 2006 M0T	K10	polished	20	6	10	M 4.5
	06 20 880	RDHT 2006 M0T	K10	PVTi	20	6	10	M 4.5

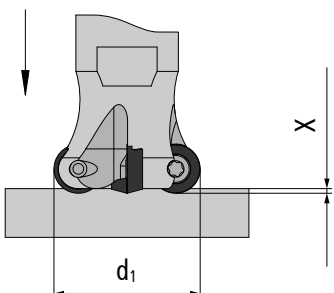
Feed per tooth (fz) | d.o.c. (ap)

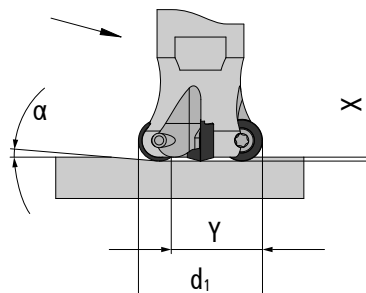
Material							
Carbide grade	Feed per tooth d.o.c.	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
HSC 05 PVTi	f _z (mm) a _p (mm)	0.25-0.4 0.2-2	0.15 0.1	0.25-0.6 0.2-4	0.25-0.42 0.2-5	-	0.2-0.3 0.2-1.1
P40 PVTi	f _z (mm) a _p (mm)	0.25-1.2 0.2-5	-	-	-	-	-
P25 PVTi	f _z (mm) a _p (mm)	0.25-0.6 0.2-4	-	0.25-0.42 0.2-2.1	-	-	-
K10 PVTi	f _z (mm) a _p (mm)	0.25 0.2	0.15 0.1	0.25-0.6 0.2-4	0.25-0.6 0.2-5	0.2-0.4 0.2-3	0.2-0.3 0.2-1.1
K10 polished	f _z (mm) a _p (mm)	-	-	-	0.25-0.6 0.2-5	-	-

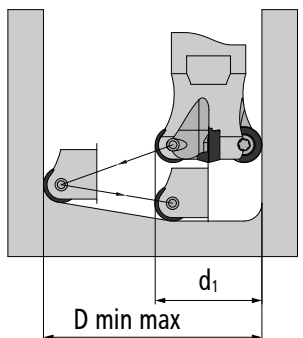
Cutting speed (Vc in m/min)

Material							
Carbide grade	Application	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
HSC 05 PVTi	roughing finishing	120 210 300 150 225 300	- 100 150 200	100 200 300 200 275 350	200 500 800 100 250 400	-	35 93 150 35 93 150
P40 PVTi	roughing finishing	- 100 175 250	-	-	-	-	-
P25 PVTi	roughing finishing	100 140 180 150 200 250	-	100 125 150 150 200 250	-	-	-
K10 PVTi	roughing finishing	- 150 200 250	- 120 150 180	150 175 200 150 175 200	100 250 400 100 250 400	35 43 50 35 43 50	35 93 150 -
K10 polished	roughing finishing	-	-	-	100 250 400 100 250 400	-	-

Extended operation data

Plunging	
	
Cutter diam. d1	X _{max}
40-160	5

Ramping		
		
Cutter diam. d1	α°	y
40	-	-
66	<10.1	28
80	<6.8	42
100	<4.6	62
125	<3.3	87
160	<2.3	122

Helix		
		
Cutter diam. d1	D _{min}	D _{max}
40	42	80
66	94	132
80	122	160
100	162	200
125	212	250
160	282	320

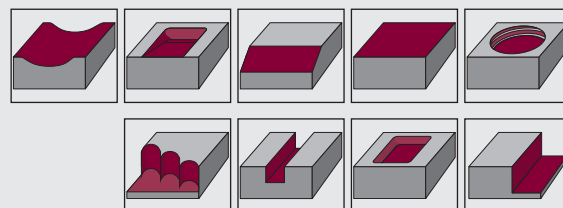
FINWORX® RHOMBIC CUTTER

Economic miracle with 4 flutes

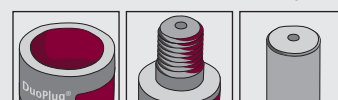
Properties

- ➔ Finishing tool for a wide range of applications
- ➔ Can be used in steel, hardened steel, cast iron and RSH
- ➔ CBN & PCD cutting materials for modern materials
- ➔ Contour and copying cutting
- ➔ Circular milling and ramping

Machining types



Connection types



Sizes

Page

diam. 16 - 42 mm

94

Cutting materials

Carbide grade Coating	ISO standard						feed per tooth d.o.c.		length	thickness	radius
	P	M	K	N	S	H	f_z (mm)	a_p (mm)	l (mm)	s (mm)	r (mm)
HSC 05 PVTi	▽	▽	▽	-	-	▽	0,05 - 0,5	0,1 - 1,0	6,5	3	1
HSC 05 PVTiH	▽	▽	▽	-	-	▽	0,05 - 1,0	0,1 - 1,0	6,5	3	1
HSC 05 PVDiaN	-	-	-	▽	-	-	0,05 - 1,0	0,1 - 1,0	6,5	3	1
CBN for steel	-	-	-	-	-	▽	0,05 - 0,2	0,1 - 0,2	6,5	3	1
PCD	-	-	-	▽	-	-	0,05 - 0,2	0,1 - 0,5	6,5	3	1



FINWORX®

diam. 16 - 42 mm | r1

Universal milling cutters for finishing and profile milling with small radii.

- particularly smooth operating in corners and pockets
- extreme economic due to four effective cutting edges
- low energy consumption

Milling cutter bodies

Catalogue no.	d ₁	l	r	l ₃	l ₂	l ₁	d ₂	d ₃	z	Accessories	Features
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DuoPlug®

	2 16 285 SG	16	6.5	1	31	0.7	-	M 10	15	2	A, B, C, D, E	
	3 20 285 SG	20	6.5	1	32.5	1	-	M 12	18.6	3	A, B, C, D, E	
	4 25 285 SG	25	6.5	1	37.5	1	-	M 16	23.5	4	A, B, C, D, E	

Threaded shank end mill bodies

	2 16 285	16	6.5	1	28.5	0.7	-	M 8	13.8	2	A, B, C, D, E	
	3 20 285	20	6.5	1	28.5	1	-	M 10	18	3	A, B, C, D, E	
	4 25 285	25	6.5	1	32.5	1	-	M 12	21	4	A, B, C, D, E	
	4 30 285	30	6.5	1	32.5	1	-	M 16	29	4	A, B, C, D, E	
	5 32 285	32	6.5	1	32.5	1	-	M 16	29	5	A, B, C, D, E	
	5 35 285	35	6.5	1	42.5	1	-	M 16	29	5	A, B, C, D, E	
	6 42 285	42	6.5	1	42.5	1	-	M 16	29	6	A, B, C, D, E	

Milling cutter bodies

Catalogue no.	d ₁	l	r	l ₃	l ₂	l ₁	d ₂	d ₃	z	Accessories	Features
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Plain shank end mill bodies

	2 32 16 185 G	16	6.5	1	30	0.7	165	diam. 16	15.5	2	A, B, C, D, E	
	3 40 20 185 G	20	6.5	1	40	1	165	diam. 20	19.5	3	A, B, C, D, E	

Accessories

 25 505 Torx screw for ball nose inserts A > Page 171	 08 500 P Torx-screwdriver (Torx-Plus) B > Page 172	 TV 1-5 Screwdriver torque Vario®-S with window scale, C > Page 173	 T8 500 P Torx interchangeable bit for Torque Vario® D > Page 173	 T8 502 P Torx MagicSpring compatible bit f. Torque Vario®, E > Page 174	
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Indexable inserts

Catalogue no.	DIN Specification	Carbide Grade	Coating	l	s	r	M
	03 85 835	XNHU 063010 EN	HSC 05	PVTi	6.5	3.1	1
	03 85 836	XNHU 063010 EN	HSC 05	PVTiH	6.5	3.1	1
	03 85 835 D	XNHU 063010 EN	HSC 05	PVDiaN	6.5	3.1	1
	03 85 892	XNHU 063010 EN	CBN for steel	uncoated	6.5	3.1	1
	03 85 894	XNHU 063010 EN	PCD	uncoated	6.5	3.1	1

Feed per tooth (fz) | d.o.c. (ap)

Material							
Carbide grade	Feed per tooth d.o.c.	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Coating							
HSC 05 PVTi	f _z (mm) a _p (mm)	0.05-0.5 0.1-0.55	0.05-0.15 0.1-0.25	0.05-0.5 0.1-0.55	-	-	0.05-0.2 0.1-0.35
HSC 05 PVTiH	f _z (mm) a _p (mm)	0.05-0.5 0.1-0.55	0.05-0.15 0.05-0.2	0.05-0.5 0.1-0.55	-	-	0.05-0.2 0.1-0.35
HSC 05 PVDiaN	f _z (mm) a _p (mm)	-	-	-	0.05-0.5 0.1-1	-	-
CBN for steel uncoated	f _z (mm) a _p (mm)	-	-	-	-	-	0.05-0.2 0.1-0.2
PCD uncoated	f _z (mm) a _p (mm)	-	-	-	0.05-0.2 0.1-0.5	-	-

Cutting speed (Vc in m/min)

Material		steel			stainless steel			cast iron			non-ferrous materials			high temperature alloys			hardened steel		
Carbide grade	Application																		
Coating																			
HSC 05 PVTi	roughing	150	225	300	-	-	-	150	225	300	-	-	-	-	-	-	35	93	150
		150	225	300	100	150	200	200	275	350	-	-	-	-	-	-	35	93	150
HSC 05 PVTiH	roughing	150	225	300	-	-	-	150	225	300	-	-	-	-	-	-	35	93	150
		150	225	300	100	150	200	200	275	350	-	-	-	-	-	-	35	93	150
HSC 05 PVDiaN	roughing	-	-	-	-	-	-	-	-	-	200	500	800	-	-	-	-	-	-
CBN for steel uncoated	roughing	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	400	600	800
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	400	600	800
PCD uncoated	roughing	-	-	-	-	-	-	-	-	-	400	600	800	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	400	600	800	-	-	-	-	-	-

Extended operation data

Plunging	
Cutter diam. d1	X _{max}
16	0.7
20-42	1

Ramping		
Cutter diam. d1	α°	y
16	<2.8	14
20	<3.2	18
25	<2.5	23
30	<2	28
32	<1.9	30
35	<1.7	33
42	<1.4	40

Helix		
Cutter diam. d1	D _{min}	D _{max}
16	30	32
20	38	40
25	48	50
30	58	60
32	62	64
35	68	70
42	82	84

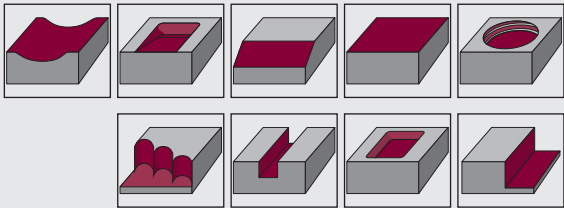
XDHW | XDHT RHOMBIC CUTTERS

Universal tool for finishing and contour cutting with small radii

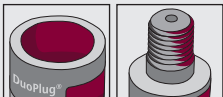
Properties

- ⌚ Particularly smooth tool running in corners and pockets
- ⌚ Low power consumption

Machining types



Connection types



Size	Page
diam. 16 - 42 mm r1	98
diam. 16 - 35 mm r2	101

Cutting materials

Carbide grade Coating	ISO standard						feed per tooth d.o.c.		length	thickness	radius
	P	M	K	N	S	H	f _z (mm)	a _p (mm)	l (mm)	s (mm)	r (mm)
HSC 05 PVTi	▽	▽	▽	-	-	▽	0.1 - 0.35	0.1 - 1.0	6.5	2.38	1
CBN for steel	-	-	-	-	-	▽	0.1	0.1	6.5	2.38	1
PCD	-	-	-	▽	-	-	0.1 - 0.35	0.1 - 0.1	6.5	2.38	1
K10 polished	-	-	-	▽	-	-	0.1 - 0.35	0.1 - 1.0	6.5	2.38	1
K10 PVTi	-	-	-	▽	-	-	0.1 - 0.35	0.1 - 1.0	6.5	2.38	1
K10 PVDiaN	-	-	-	▽	-	-	0.1 - 0.35	0.1 - 1.0	6.5	2.38	1
HSC 05 PVTi	▽	▽	▽	-	-	▽	0.1 - 0.35	0.1 - 1.0	6.5	2.38	2



XDHW | XDHT

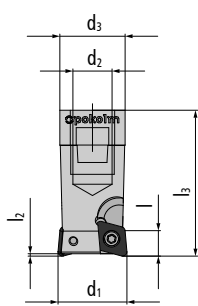
diam. 16 - 42 mm | r1

Universal milling cutters for finishing and profile milling with small radii.

- particularly smooth operating in corners and pockets
- low energy consumption

Milling cutter bodies

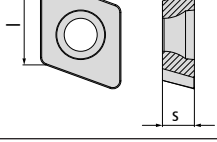
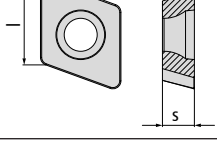
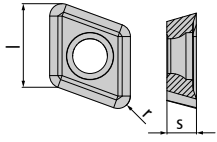
Catalogue no.	d ₁	l	r	l ₃	l ₂	l ₁	d ₂	d ₃	z	Accessories	Features
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DuoPlug®												
	16 281 SG	16	6.5	1	31	1.3	-	M 10	15	2	A, B, C, D, E	
	20 281 SG	20	6.5	1	31.5	1.3	-	M 12	18.5	3	A, B, C, D, E	
	25 281 SG	25	6.5	1	37.5	1.3	-	M 16	23.5	4	A, B, C, D, E	

Threaded shank end mill bodies

	16 281	16	6.5	1	28.5	1.3	-	M 8	13.8	2	A, B, C, D, E	
	20 281	20	6.5	1	28.5	1.3	-	M 10	18	3	A, B, C, D, E	
	25 281	25	6.5	1	32.5	1.3	-	M 12	21	4	A, B, C, D, E	
	30 281	30	6.5	1	32.5	1.3	-	M 12	21	5	A, B, C, D, E	
	35 281	35	6.5	1	42.5	1.3	-	M 16	29	6	A, B, C, D, E	
	42 281	42	6.5	1	42.5	1.3	-	M 16	29	6	A, B, C, D, E	

Accessories					
 25 500 Torx screw A > Page 171	 07 500 Torx-screwdriver B > Page 172	 TV 04-1 Screwdriver torque Vario®-S with window scale, C > Page 173	 T7 500 Torx interchangeable bit for Torque Vario®, D > Page 173	 T7 502 Torx MagicSpring compatible bit f. Torque Vario®, E > Page 174	

Indexable inserts		Catalogue no.	DIN Specification	Carbide Grade	Coating	l	s	r	M
	02 79 835	XDHW 060210 SN	HSC 05	PVTi	6.5	2.38	1	M 2.5	
	02 79 892	XDHW 060210 SN	CBN for steel	uncoated	6.5	2.38	1	M 2.5	
	02 79 894	XDHW 060210 SN	PCD	uncoated	6.5	2.38	1	M 2.5	
	02 79 831P	XDHT 060210 EN	K10	polished	6.5	2.38	1	M 2.5	
	02 79 880	XDHT 060210 EN	K10	PVTi	6.5	2.38	1	M 2.5	
	02 79 880 D	XDHW 060210 SN	K10	PVDiaN	6.5	2.38	1	M 2.5	

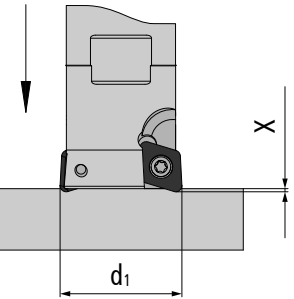
Feed per tooth (fz) | d.o.c. (ap)

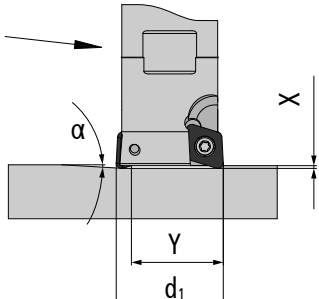
Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade	Feed per tooth d.o.c.						
HSC 05 PVTi	f _z (mm)	0.1-0.2	0.1	0.1-0.3	-	-	0.1-0.2
	a _p (mm)	0.1-0.55	0.1	0.1-1	-	-	0.1-0.55
CBN for steel uncoated	f _z (mm)	-	-	-	-	-	0.1
	a _p (mm)	-	-	-	-	-	0.1
PCD uncoated	f _z (mm)	-	-	-	0.1-0.35	-	-
	a _p (mm)	-	-	-	0.1-1	-	-
K10 polished	f _z (mm)	-	-	-	0.1-0.2	-	-
	a _p (mm)	-	-	-	0.1-0.55	-	-
K10 PVTi	f _z (mm)	-	-	-	0.1-0.2	-	-
	a _p (mm)	-	-	-	0.1-0.55	-	-
K10 PVDiaN	f _z (mm)	-	-	-	0.1-0.35	-	-
	a _p (mm)	-	-	-	0.1-1	-	-

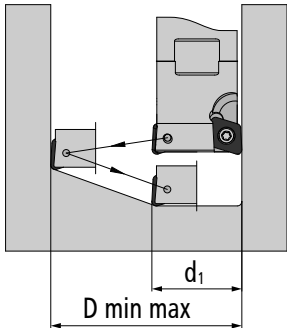
Cutting speed (Vc in m/min)

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade	Application						
HSC 05 PVTi	roughing	150 225 300	-	100 200 300	-	-	35 93 150
	finishing	150 225 300	100 150 200	200 275 350	-	-	35 93 150
CBN for steel uncoated	roughing	-	-	-	-	-	400 700 1000
	finishing	-	-	-	-	-	-
PCD uncoated	roughing	-	-	-	200 400 600	-	-
	finishing	-	-	-	400 600 800	-	-
K10 polished	roughing	-	-	-	100 250 400	-	-
	finishing	-	-	-	100 250 400	-	-
K10 PVTi	roughing	-	-	-	100 250 400	-	-
	finishing	-	-	-	100 250 400	-	-
K10 PVDiaN	roughing	-	-	-	100 250 400	-	-
	finishing	-	-	-	100 250 400	-	-

Extended operation data

Plunging	
	
Cutter diam. d1	X _{max}
16-42	1.2

Ramping		
		
Cutter diam. d1	α°	y
16	<16.7	4
20	<8.5	8
25	<5.3	13
30	<3.8	18
35	<3.8	23
42	<2.3	30

Helix		
		
Cutter diam. d1	D _{min}	D _{max}
16	28	32
20	36	40
25	46	50
30	56	60
35	66	70
42	80	84

XDHW | XDHT

diam. 16 - 35 mm | r2

Universal milling cutters for finishing and profile milling with small radii.

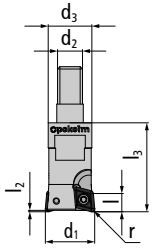
- particularly smooth operating in corners and pockets
- low energy consumption



Milling cutter bodies

Milling cutter bodies													
Catalogue no.										Accessories			Features

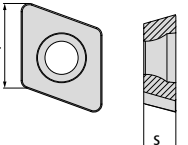
Threaded shank end mill bodies

	16 282	16	6.5	2	28.5	1.3	-	M 8	13.8	2	A, B, C, D, E	
	20 282	20	6.5	2	28.5	1.3	-	M 10	18	3	A, B, C, D, E	
	25 282	25	6.5	2	32.5	1.3	-	M 12	21	4	A, B, C, D, E	
	30 282	30	6.5	2	32.5	1.3	-	M 12	21	5	A, B, C, D, E	
	35 282	35	6.5	2	42.5	1.3	-	M 16	29	6	A, B, C, D, E	

Accessories

 25 500 Torx screw A > Page 171	 07 500 Torx-screwdriver B > Page 172	 TV 04-1 Screwdriver torque Vario®-S with window scale, C > Page 173	 T7 500 Torx interchangeable bit for Torque Vario® D > Page 173	 T7 502 Torx MagicSpring compatible bit f. Torque Vario®, E > Page 174	
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Indexable inserts

Indexable inserts		Catalogue no.	DIN Specification	Carbide Grade	Coating	l	s	r	M
	02 79 835 R2	XDHW 060220 SN	HSC 05	PVTi	6.5	2.38	2	M 2.5	

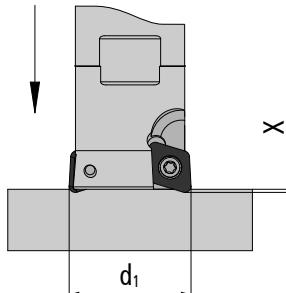
Feed per tooth (fz) | d.o.c. (ap)

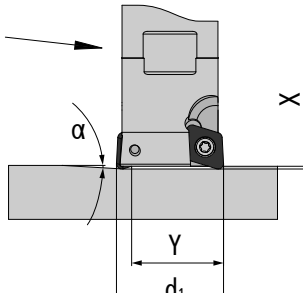
Material		steel		stainless steel		cast iron		non-ferrous materials		high-temperature alloys		hardened steel	
Carbide grade	Feed per tooth d.o.c.												
Coating													
HSC 05 PVTi	f _z (mm) a _p (mm)	0.1-0.2 0.1-0.55		0.1 0.1		0.1-0.3 0.1-1		-		-		0.1-0.2 0.1-0.55	

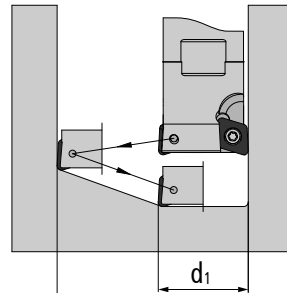
Cutting speed (Vc in m/min)

Material		steel		stainless steel		cast iron		non-ferrous materials		high-temperature alloys		hardened steel	
Carbide grade	Application												
Coating													
HSC 05 PVTi	roughing finishing	150 225 300 150 225 300		- 100 150 200		100 200 300 200 275 350		-		-		35 93 150 35 93 150	

Extended operation data

Plunging	
	
Cutter diam. d1	X _{max}
16-35	1..2

Ramping		
		
Cutter diam. d1	α°	y
16	<16.7	4
20	<8.5	8
25	<5.3	13
30	<3.8	18
35	<3.8	23

Helix		
		
Cutter diam. d1	D _{min}	D _{max}
16	28	32
20	36	40
25	46	50
30	56	60
35	66	70

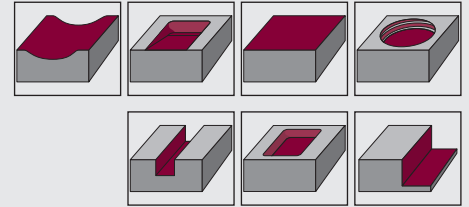
VDGT - CUTTER FOR MACHINING NON-FERROUS METALS

Roughing and rough finishing specialist on vertical walls

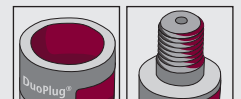
Properties

- ➔ Ideal for machining aluminium, copper, plastic and graphite
- ➔ Particularly soft cut
- ➔ High cutting speeds
- ➔ High feed rates
- ➔ Especially for machining situations on vertical walls
- ➔ Axial clearance 3°, kappa 93°
- ➔ Radius r 1 mm

Machining types



Connection types



Sizes

diam. 15 - 42 mm

Page

104



Cutting materials

Carbide grade Coating	ISO standard						feed per tooth d.o.c.		length	thickness	radius
	P	M	K	N	S	H	f _z (mm)	a _p (mm)	l (mm)	s (mm)	r (mm)
K10 polished	-	-	-	▽	-	-	0.05 - 0.3	0.1 - 2.5	9.0	2.78	1
K10 PVTi	-	-	-	▽	-	-	0.05 - 0.3	0.1 - 2.5	9.0	2.78	1
K10 PVDiaN	-	-	-	▽	-	-	0.05 - 0.3	0.1 - 2.5	9.0	2.78	1

diam. 15 - 42 mm | r1

Milling cutter bodies

Threaded shank end mill bodies

Accessories

Indexable inserts

NEW latest items!

☐ on request

☒ stock item, subject to confirmation

Helix

Cutter diam. d_1	D_{min}	D_{max}
15	26	30
16	28	32
20	36	40
25	46	50
32	60	64
42	80	84

 finishing

VCGT - CUTTER FOR MACHINING NON-FERROUS METALS

Roughing and rough-finishing specialist for high cutting speeds

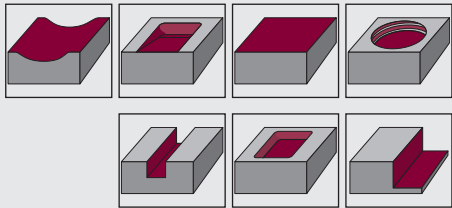
Properties

- ⌚ Kappa k92° for reliable machining of cavities without draft
- ⌚ Ideal for machining aluminium, copper, plastic and graphite
- ⌚ Particularly soft cut
- ⌚ High cutting speeds
- ⌚ High feed rates
- ⌚ Radius r 3 mm

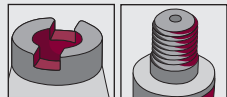
- ⌚ For tools with kappa k90° add "-90" to the Order No.

For example: "42 360-90"

Machining types



Connection types



Size	Page
diam. 32 - 125 mm	108



Cutting materials

Carbide grade Coating	ISO standard						feed per tooth d.o.c.		length	thickness	radius
	P	M	K	N	S	H	f _z (mm)	a _p (mm)	l (mm)	s (mm)	r (mm)
K10 Poliirt	-	-	-	▽	-	-	0,1 - 0,6	0,1 - 7,0	16	5,56	3
K10 PVTi	-	-	-	▽	-	-	0,1 - 0,6	0,1 - 7,0	16	5,56	3
K10 PVDiaN	-	-	-	▽	-	-	0,1 - 0,6	0,1 - 7,0	16	5,56	3



VCGT - K92°

diam. 32 - 125 mm | r3

These milling cutters are especially suitable for milling aluminium, copper, plastics and graphite. It allows very easy cutting and very high cutting speeds and feed rates.
Only for roughing and pre-finishing operations!

Milling cutter bodies

Catalogue no.											Accessories	Features
	d ₁	l	r	l ₃	l ₂	l ₁	d ₂	d ₃	z			

Threaded shank end mill bodies

	32 260	32	16	3	48	9.5	-	M 16	29	2	A, C, D, E, F	
	42 260	42	16	3	48	9.5	-	M 16	29	3	A, C, D, E, F	

Shell type milling cutter bodies

	42 360	42	16	3	57	9.5	-	diam. 16	35	3	A, B, C, D, E, F	
	52 360	52	16	3	57	9.5	-	diam. 22	40	3	A, C, D, E, F	
	66 360	66	16	3	57	9.5	-	diam. 27	48	4	A, C, D, E, F	
	80 360	80	16	3	57	9.5	-	diam. 27	60	5	A, C, D, E, F	
	100 360	100	16	3	57	9.5	-	diam. 32	70	6	A, C, D, E, F	
	125 360	125	16	3	57	9.5	-	diam. 40	90	7	A, C, D, E, F	

Accessories

 45 500 Torx screw A > Page 171	 GWSTPS8ISK hexagon socket set screw B > Page 172	 20 500 Torx-screwdriver C > Page 172	 TV 2-8 Screwdriver torque Vario®-S with window scale, D > Page 173	 T20 500 Torx interchangeable bit for Torque Vario® E > Page 173	 T20 502 Compatible bit f. Torque Vario® F > Page 174
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Indexable inserts

Catalogue no.	DIN Specification	Carbide Grade	Coating				
				l	s	r	M
	05 22 820	VCGT 220530 FN	K10	polished	16	5.56	3 M 4.5
	05 22 860	VCGT 220530 FN	K10	PVTi	16	5.56	3 M 4.5
	05 22 860 D	VCGT 220530 FN	K10	PVDiaN	16	5.56	3 M 4.5

latest items! available as long as stock lasts on request stock item, subject to confirmation

Feed per tooth (fz) | d.o.c. (ap)

Material							
Carbide grade Coating	Feed per tooth d.o.c.	steel		stainless steel		cast iron	
		non-ferrous materials		high-temperature alloys		hardened steel	
K10 polished	f _z (mm) a _p (mm)	-	-	-	-	0.1-0.6 0.1-7	-
K10 PVTi	f _z (mm) a _p (mm)	-	-	-	-	0.1-0.6 0.1-7	-
K10 PVDiaN	f _z (mm) a _p (mm)	-	-	-	-	0.1-0.6 0.1-7	-

Cutting speed (Vc in m/min)

Material							
Carbide grade Coating	Application	steel		stainless steel		cast iron	
		non-ferrous materials		high-temperature alloys		hardened steel	
K10 polished	roughing finishing	-	-	-	-	100 250 400	-
K10 PVTi	roughing finishing	-	-	-	-	100 250 400	-
K10 PVDiaN	roughing finishing	-	-	-	-	100 250 400	-

Extended operation data

Plunging	
Cutter diam. d1	X _{max}
32-125	9

Ramping		
Cutter diam. d1	α°	y
32	<42	10
42	<24.2	20
52	<16.7	30
66	<11.6	44
80	<8.8	58
100	<6.6	78
125	<5.3	103

Helix		
Cutter diam. d1	D _{min}	D _{max}
32	42	64
42	62	84
52	82	104
66	110	132
80	138	160
100	178	200
125	228	250

major application minor application roughing pre-finishing finishing



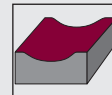
UNIWORX® - BALL NOSE / BULL NOSE END MILL CUTTER BODIES

Universal cutters with maximum variations for precision machining

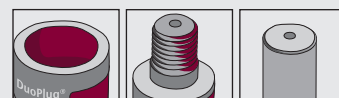
Properties

- ➔ For ball nose and toroidal inserts
- ➔ V-shaped insert seat for keyed and interference fit jointing of toolholder, insert and fitting screw
- ➔ Easy positioning of the inserts
- ➔ Indexing insert ground finish produced in helical flutes ensures easy cutting performance and top surface qualities
- ➔ Different coatings and cutting materials, especially matched to precision machining

Machining types



Connection types



Sizes

Page

diam. 8 mm, r3 r4	112
diam. 10 mm, r4 r5	114
diam. 12 mm, r5 r6	116
diam. 16 mm, r7 r8	119
diam. 20 mm, r8 r10	122



Cutting materials

Carbide grade Coating	ISO standard						feed per tooth d.o.c.		length	thickness	radius
	P	M	K	N	S	H	f _z (mm)	a _p (mm)	l (mm)	s (mm)	r (mm)
HSC 05 PVTi / PVTiH					-		0.08 - 0.16	0.1 - 0.3	8	2.0	3 4
							0.1 - 0.2	0.1 - 0.3	10	2.75	4 5
							0.12 - 0.24	0.1 - 0.3	12	3.3	5 6
							0.16 - 0.32	0.1 - 0.5	16	4.0	7 8
							0.2 - 0.4	0.1 - 0.5	20	5.0	8 10
CBN for cast iron	-	-		-	-	-	0.1 - 0.2	0.1 - 0.2	8	2.0	3 -
							0.1 - 0.2	0.1 - 0.2	10	2.75	4 -
							0.1 - 0.2	0.1 - 0.2	12	3.3	5 -
							0.1 - 0.2	0.1 - 0.2	16	4.0	7 -
							0.1 - 0.2	0.1 - 0.2	20	5.0	8 -

major application minor application roughing

pre-finishing

finishing



UNIWORX®

diam. 8 mm - r3 | r4

Our ball nose and bull end combi end mills provide maximum precision because of both the V-shaped insert seat and because the insert was ground in only one setup. The helix-shaped rake angle allows very easy cutting and extremely smooth operation.
Only for finishing and pre-finishing operations.

Milling cutter bodies

Catalogue no.	d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z	Accessories	Features
---------------	----------------	---	---	----------------	----------------	----------------	----------------	----------------	---	-------------	----------

Threaded shank end mill bodies

	08 214	8	8	3 4	26	-	18.9	M 5	9.6	2	A, B, C, D, E	
	08 214 M6	8	8	3 4	26	-	18.9	M 6	9.6	2	A, B, C, D, E	

Plain shank end mill bodies

	50 08 114	8	8	3 4	50	-	20	diam. 12	-	2	A, B, C, D, E	

Accessories

 30 522 locating screw A > Page 171	 08 500 Torx-screwdriver B > Page 172	 TV 08-2 Screwdriver torque Vario®-S with window scale, C > Page 173	 T8 500 Torx interchangeable bit for Torque Vario® D > Page 173	 T8 502 Torx MagicSpring compatible bit f. Torque Vario®, E > Page 174	
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Indexable inserts

	Catalogue no.	DIN Specification	Carbide Grade	Coating	d	s	r	M
	08 835 V	ROHX 08T1	HSC 05	PVTi	8	2	4	M 3.0
	08 836 V	ROHX 08T1	HSC 05	PVTiH	8	2	4	M 3.0
	08 093 V R3	ROHX 08T1	CBN for cast iron	uncoated	8	2	3	M 3.0
	08 835 V R3	ROHX 08T1	HSC 05	PVTi	8	2	3	M 3.0
	08 836 V R3	ROHX 08T1	HSC 05	PVTiH	8	2	3	M 3.0

Feed per tooth (fz) | d.o.c. (ap)

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade	Feed per tooth d.o.c.						
HSC 05 PVTi	f _z (mm)	0.08-0.12	0.08	0.08-0.12	0.08-0.12	-	0.08
	a _p (mm)	0.1-0.2	0.1	0.1-0.2	0.1-0.2	-	0.1
HSC 05 PVTiH	f _z (mm)	0.08-0.12	0.08	0.08-0.12	0.08-0.12	-	0.08
	a _p (mm)	0.1-0.2	0.1	0.1-0.2	0.1-0.2	-	0.1
CBN for cast iron uncoated	f _z (mm)	-	-	0.1-0.2	-	-	-
	a _p (mm)	-	-	0.1-0.2	-	-	-

Cutting speed (Vc in m/min)

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade	Application						
HSC 05 PVTi	roughing	150 225 300	-	150 225 300	200 500 800	-	-
	finishing	150 225 300	100 150 200	200 275 350	100 250 400	-	35 93 150
HSC 05 PVTiH	roughing	150 225 300	-	150 225 300	200 500 800	-	-
	finishing	150 225 300	100 150 200	200 275 350	200 500 800	-	35 93 150
CBN for cast iron uncoated	roughing	-	-	500 750 1000	-	-	-
	finishing	-	-	500 750 1000	-	-	-

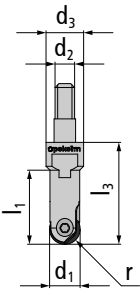


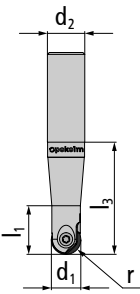
UNIWORX®

diam. 10 mm - r4 | r5

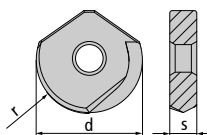
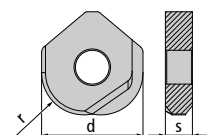
Our ball nose and bull end combi end mills provide maximum precision because of both the V-shaped insert seat and because the insert was ground in only one setup. The helix-shaped rake angle allows very easy cutting and extremely smooth operation.
Only for finishing and pre-finishing operations.

Milling cutter bodies												Accessories	Features
Catalogue no.		d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z			

Threaded shank end mill bodies													
10 214 M6		10	10	4 5	24.5	-	-	M 6	9.75	2	A, B, C, D, E		

Plain shank ball nose end mill bodies													
30 10 114		10	10	4 5	30	-	20	diam. 12	-	2	A, B, C, D, E		

Accessories					
 35 520 locating screw A > Page 171	 10 500 Torx-screwdriver B > Page 172	 TV 1-5 Screwdriver torque Vario®-S with window scale, C > Page 173	 T10 500 Torx interchangeable bit for Torque Vario® D > Page 173	 T10 502 Torx MagicSpring compatible bit f. Torque Vario®, E > Page 174	

Indexable inserts	Catalogue no.		DIN Specification	Carbide Grade	Coating	d	s	r	M
	10 835 V	ROHX 10T2	HSC 05	PVTi	10	2.75	5	M 3.5	
	10 836 V	ROHX 10T2	HSC 05	PVTiH	10	2.75	5	M 3.5	
	10 093 V R4	ROHX 10T2	CBN for cast iron	uncoated	10	2.75	4	M 3.5	
	10 835 V R4	ROHX 10T2	HSC 05	PVTi	10	2.75	4	M 3.5	
	10 836 V R4	ROHX 10T2	HSC 05	PVTiH	10	2.75	4	M 3.5	

Feed per tooth (fz) | d.o.c. (ap)

Material								
Carbide grade Coating	Feed per tooth d.o.c.	steel		stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
HSC 05 PVTi	f _z (mm)	0.08-0.12	0.08	0.08-0.12	0.08-0.12	-	0.08	
	a _p (mm)	0.1-0.2	0.1	0.1-0.2	0.1-0.2	-	0.1	
HSC 05 PVTiH	f _z (mm)	0.08-0.12	0.08	0.08-0.12	0.08-0.12	-	0.08	
	a _p (mm)	0.1-0.2	0.1	0.1-0.2	0.1-0.2	-	0.1	
CBN for cast iron uncoated	f _z (mm)	-	-	0.1-0.2	-	-	-	
	a _p (mm)	-	-	0.1-0.2	-	-	-	

Cutting speed (Vc in m/min)

Material							
Carbide grade Coating	Application	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
							
HSC 05 PVTi	roughing finishing	150 225 300 150 225 300	- 100 150 200	150 225 300 200 275 350	200 500 800 100 250 400	-	- 35 93 150
HSC 05 PVTiH	roughing finishing	150 225 300 150 225 300	- 100 150 200	150 225 300 200 275 350	200 500 800 200 500 800	-	- 35 93 150
CBN for cast iron uncoated	roughing finishing	-	-	500 750 1000 500 750 1000	-	-	-

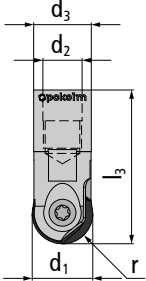


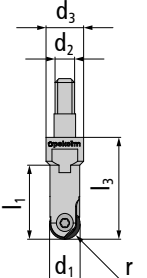
UNIWORX®

diam. 12 mm - r5 | r6

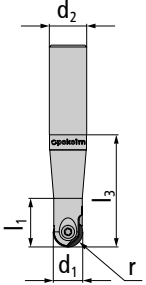
Our ball nose and bull end combi end mills provide maximum precision because of both the V-shaped insert seat and because the insert was ground in only one setup. The helix-shaped rake angle allows very easy cutting and extremely smooth operation.
Only for finishing and pre-finishing operations.

Milling cutter bodies												Accessories	Features
Catalogue no.													
d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z					

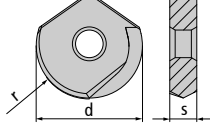
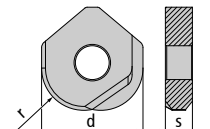
DuoPlug®												   
	12 214 SG	12	12	5 6	33.5	-	-	M 7	10.8	2	A, B, C, D, E	

Threaded shank end mill bodies												
	12 214 M6	12	12	5 6	28.5	-	-	M 6	11.5	2	A, B, C, D, E	  

Milling cutter bodies											Accessories	Features
Catalogue no.												
	d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z			

Plain shank ball nose end mill bodies												A, B, C, D, E	  
	50 12 114	12	12	5 6	50	-	50	diam. 12	-	2			

Accessories					
 40 520 locating screw A > Page 171	 15 500 Torx-screwdriver B > Page 172	 TV 2-8 Screwdriver torque Vario®-S with window scale, C > Page 173	 T15 500 Torx interchangeable bit for Torque Vario® D > Page 173	 T15 502 Torx MagicSpring compatible bit f. Torque Vario®, E > Page 174	

Indexable inserts								
	Catalogue no.	DIN Specification	Carbide Grade	Coating	d	s	r	M
	12 835 V	ROHX 1233	HSC 05	PVTi	12	3.3	6	M 4.0
	12 836 V	ROHX 1233	HSC 05	PVTiH	12	3.3	6	M 4.0
	12 093 V R5	ROHX 1233	CBN for cast iron	uncoated	12	3.3	5	M 4.0
	12 835 V R5	ROHX 1233	HSC 05	PVTi	12	3.3	5	M 4.0
	12 836 V R5	ROHX 1233	HSC 05	PVTiH	12	3.3	5	M 4.0

Feed per tooth (fz) | d.o.c. (ap)

Material		Material					
Carbide grade Coating	Feed per tooth d.o.c.	steel		stainless steel		cast iron	
		non-ferrous materials		high-temperature alloys		hardened steel	
HSC 05 PVTi	f _z (mm) a _p (mm)	0.12-0.18 0.1-0.2	0.12 0.1	0.12-0.18 0.1-0.2	0.12-0.18 0.1-0.2	-	0.12 0.1
HSC 05 PVTiH	f _z (mm) a _p (mm)	0.12-0.18 0.1-0.2	0.12 0.1	0.12-0.18 0.1-0.2	0.12-0.18 0.1-0.2	-	0.12 0.1
CBN for cast iron uncoated	f _z (mm) a _p (mm)	-	-	0.1-0.2 0.1-0.2	-	-	-

Cutting speed (Vc in m/min)

Material		steel		stainless steel		cast iron		non-ferrous materials		high-temperature alloys		hardened steel	
Carbide grade	Application												
HSC 05 PVTi	roughing	150	225	300	-	150	225	300	200	500	800	-	-
	finishing	150	225	300	100 150 200	200	275	350	100	250	400	35	93 150
HSC 05 PVTiH	roughing	150	225	300	-	150	225	300	200	500	800	-	-
	finishing	150	225	300	100 150 200	200	275	350	200	500	800	35	108 180
CBN for cast iron uncoated	roughing	-	-	-	-	500	750	1000	-	-	-	-	-
	finishing	-	-	-	-	500	750	1000	-	-	-	-	-

UNIWORX®

diam. 16 mm - r7 | r8

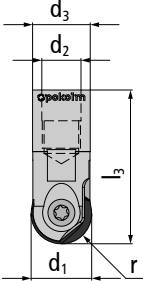
Our ball nose and bull end combi end mills provide maximum precision because of both the V-shaped insert seat and because the insert was ground in only one setup. The helix-shaped rake angle allows very easy cutting and extremely smooth operation.
Only for finishing and pre-finishing operations.



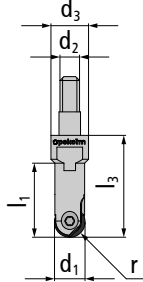
Milling cutter bodies

Milling cutter bodies												
Catalogue no.		d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z	Accessories	Features

DuoPlug®

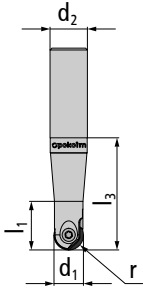
	16 214 SG	16	16	7 8	40	-	-	M 10	15	2	A, B, C, D, E	   

Threaded shank end mill bodies

	16 214	16	16	7 8	36.5	-	-	M 8	13.8	2	A, B, C, D, E	  

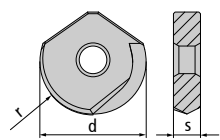
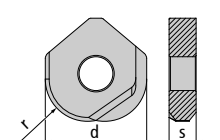
Milling cutter bodies												
Catalogue no.												
d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z	Accessories			Features

Plain shank ball nose end mill bodies

	60 16 114	16	16	7 8	60	-	26	diam. 20	-	2	A, B, C, D, E		

Accessories

 50 520 locating screw A > Page 171	 20 500 Torx-screwdriver B > Page 172	 TV 2-8 Screwdriver torque Vario®-S with window scale, C > Page 173	 T20 500 Torx interchangeable bit for Torque Vario® D > Page 173	 T20 502 Torx MagicSpring compatible bit f. Torque Vario®, E > Page 174	
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Indexable inserts		Catalogue no.	DIN Specification	Carbide Grade	Coating	d	s	r	M
	16 835 V	ROHX 16T3	HSC 05	PVTi	16	4	8	M 5.0	
	16 836 V	ROHX 16T3	HSC 05	PVTiH	16	4	8	M 5.0	
	16 093 V R7	ROHX 16T3	CBN for cast iron	uncoated	16	4	7	M 5.0	
	16 835 V R7	ROHX 16T3	HSC 05	PVTi	16	4	7	M 5.0	
	16 836 V R7	ROHX 16T3	HSC 05	PVTiH	16	4	7	M 5.0	

Feed per tooth (fz) | d.o.c. (ap)

Material		steel		stainless steel		cast iron		non-ferrous materials		high-temperature alloys		hardened steel	
Carbide grade	Feed per tooth d.o.c.												
HSC 05 PVTi	f _z (mm) a _p (mm)	0.16-0.24 0.1-0.3		0.16 0.1		0.16-0.24 0.1-0.3		0.16-0.24 0.1-0.3		-		0.16 0.1	
HSC 05 PVTiH	f _z (mm) a _p (mm)	0.16-0.24 0.1-0.3		0.16 0.1		0.16-0.24 0.1-0.3		0.16-0.24 0.1-0.3		-		0.16 0.1	
CBN for cast iron uncoated	f _z (mm) a _p (mm)	-		-		0.1-0.2 0.1-0.2		-		-		-	

Cutting speed (Vc in m/min)

Material		steel		stainless steel		cast iron		non-ferrous materials		high-temperature alloys		hardened steel	
Carbide grade	Application												
HSC 05 PVTi	roughing	150 225 300		-		150 225 300		200 500 800		-		-	
	finishing	150 225 300		100 150 200		200 275 350		100 250 400		-		35 93 150	
HSC 05 PVTiH	roughing	150 225 300		-		150 225 300		200 500 800		-		-	
	finishing	150 225 300		100 150 200		200 275 350		200 500 800		-		35 93 150	
CBN for cast iron uncoated	roughing	-		-		500 750 1000		-		-		-	
	finishing	-		-		500 750 1000		-		-		-	



UNIWORX®

diam. 20 mm - r8 | r10

Our ball nose and bull end combi end mills provide maximum precision because of both the V-shaped insert seat and because the insert was ground in only one setup. The helix-shaped rake angle allows very easy cutting and extremely smooth operation.

Only for finishing and pre-finishing operations.

Milling cutter bodies

Catalogue no.	d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z	Accessories	Features
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DuoPlug®

	20 214 SG	20	20	8 10	42.5	-	-	M 12	18.5	2	A, B, C, D, E	

Threaded shank end mill bodies

	20 214	20	20	8 10	37	-	-	M 10	18	2	A, B, C, D, E	

Milling cutter bodies

Catalogue no.	d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z	Accessories	Features
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Plain shank ball nose end mill bodies

	80 20 114	20	20	8 10	80	-	80	diam. 20	-	2	A, B, C, D, E	

Accessories

 50 520 locating screw A > Page 171	 20 500 Torx-screwdriver B > Page 172	 TV 2-8 Screwdriver torque Vario®-S with window scale, C > Page 173	 T20 500 Torx interchangeable bit for Torque Vario® D > Page 173	 T20 502 Torx MagicSpring compatible bit f. Torque Vario®, E > Page 174	
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Indexable inserts

Catalogue no.	DIN Specification	Carbide Grade	Coating	d	s	r	M
 20 835 V	ROHX 2050	HSC 05	PVTi	20	5	10	M 5.0
20 836 V	ROHX 2050	HSC 05	PVTiH	20	5	10	M 5.0
 20 836 V R8	ROHX 2050	HSC 05	PVTiH	20	5	8	M 5.0
20 093 V R8	ROHX 2050	CBN for cast iron	uncoated	20	5	8	M 5.0

Feed per tooth (fz) | d.o.c. (ap)

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade Coating	Feed per tooth d.o.c.						
HSC 05 PVTi	f _z (mm) a _p (mm)	0.08-0.12 0.1-0.2	0.08 0.1	0.08-0.12 0.1-0.2	0.08-0.12 0.1-0.2	-	0.08 0.1
HSC 05 PVTiH	f _z (mm) a _p (mm)	0.08-0.12 0.1-0.2	0.08 0.1	0.08-0.12 0.1-0.2	0.08-0.12 0.1-0.2	-	0.08 0.1
CBN for cast iron uncoated	f _z (mm) a _p (mm)	-	-	0.1-0.2 0.1-0.2	-	-	-

Cutting speed (Vc in m/min)

Material		steel		stainless steel		cast iron		non-ferrous materials		high-temperature alloys		hardened steel	
Carbide grade	Application												
HSC 05 PVTi	roughing	150	225	300	-	150	225	300	200	500	800	-	-
	finishing	150	225	300	100	150	200	200	275	350	100	250	400
HSC 05 PVTiH	roughing	150	225	300	-	150	225	300	200	500	800	-	-
	finishing	150	225	300	100	150	200	200	275	350	100	250	400
CBN for cast iron uncoated	roughing	-	-	-	-	500	750	1000	-	-	-	-	-
	finishing	-	-	-	-	500	750	1000	-	-	-	-	-

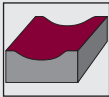
WAVEWORX® - BALL NOSE END MILL BODIES

Specialists for roughing steel

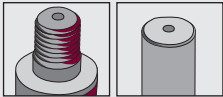
Properties

- ➡ Roughing, stock material removal and rough finishing in steel
- ➡ For large working depths and low speeds
- ➡ With two effective cutting edges for double economic efficiency
- ➡ Soft roughing cut
- ➡ Axial plunging

Machining types



Connection types



Sizes	Page
diam. 16 mm, r8	126
diam. 20 mm, r10	128
diam. 25 mm, r12.5	130
diam. 32 mm, r16	132



Cutting materials

Carbide grade Coating	ISO standard						feed per tooth d.o.c.		length	thickness	radius
	P	M	K	N	S	H	f _z (mm)	a _p (mm)	l (mm)	s (mm)	r (mm)
P25 PVML		-	-	-	-	-	0.1 - 0.6	0.6 - 3.0	15.6	3.18	8
							0.1 - 0.6	0.5 - 4.0	19.6	4.4	10
							0.2 - 0.8	0.5 - 4.0	24.5	5.0	12.5
							0.2 - 0.8	0.5 - 4.0	30.7	6.3	16



WAVEWORX®

diam. 16 mm - r8

This new generation of ball nose end mills was developed especially for roughing of steel:

- for roughing, removing residual material and pre-finishing of steel
- for deep cavities and low spindle revolutions
- two effective cutting edges double its efficiency

Cutting speed (Vc in m/min)

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade	Application						
Coating							
P25 PVML	roughing finishing	150 165 180	-	-	-	-	-

Milling cutter bodies												Accessories	Features
Catalogue no.													
d ₁	l	r	l ₃	l ₂	l ₁	d ₂	d ₃	z					

Threaded shank End Mill Bodies												
	16 275	16	15.6	8	24.7	-	-	M 8	13.8	2	A, B, C, D, E	

Accessories					
25 505 Torx screw for ball nose inserts A > Page 171	08 500 Torx-screwdriver B > Page 172	TV 08-2 Screwdriver torque Vario®-S with window scale, C > Page 173	T8 500 Torx interchangeable bit for Torque Vario® D > Page 173	T8 502 Torx MagicSpring compatible bit f. Torque Vario®, E > Page 174	

Indexable inserts								
	Catalogue no.	DIN Specification	Carbide Grade	Coating	l	s	r	M
	03 16 850		P25	PVML	15.6	3.18	8	M 2.5

Feed per tooth (fz) | d.o.c. (ap)

Material							
Carbide grade	Feed per tooth d.o.c.	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Coating							
P25 PVML	f _z (mm) a _p (mm)	0.1-0.6 0.5-3	-	-	-	-	-

diam. 20 mm - r10

- for roughing, removing residual material and pre-finishing of steel
- for deep cavities and low spindle revolutions
- two effective cutting edges double its efficiency

Milling cutter bodies

Milling cutter bodies

Catalogue no.

d_1 l r l_3 l_2 l_1 d_2 d_3 z

Accessories

Features

Threaded shank End Mill Bodies

[illegible]

Accessories

 30 505 Torx screw for ball nose inserts A > Page 171	 09 500 Torx-screwdriver B > Page 172	 TV 1-5 Screwdriver torque Vario®-S with window scale, C > Page 173	 T9 500 Torx interchangeable bit for Torque Vario® D > Page 173	 T9 502 Torx MagicSpring compatible bit f. Torque Vario®, E > Page 174
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Indexable inserts

Indexable inserts	Indexable inserts							
	Catalogue no.	DIN Specification	Carbide Grade	Coating	l	s	r	M
	04 20 850		P25	PVML	19.6	4.4	10	M 3.0

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade Coating	Feed per tooth d.o.c.						
P25 PVML	f _z (mm) a _p (mm)	0.1-0.6 0.5-4	-	-	-	-	-

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade Coating	Application						
P25 PVML	roughing finishing	150 165 180 -	-	-	-	-	-

diam. 25 mm - r12.5

- for roughing, removing residual material and pre-finishing of steel
- for deep cavities and low spindle revolutions
- two effective cutting edges double its efficiency

Catalogue no.

Accessories
Features

Technical drawing of a mechanical part, likely a piston or a similar component, showing dimensions d_1 , d_2 , d_3 , h , and r . The drawing includes a cross-section view and a side view. The cross-section view shows a central cavity with a semi-circular bottom of radius r . The side view shows the overall height h and the diameters d_1 , d_2 , and d_3 at different levels. The text "opakolm" is visible on the side view.

[illegible]

40 505 K
Torx screw
A > Page 171

POKOLM
15 500
Torx-screwdriver
B > Page 172

 TV 2-8
Screwdriver torque
Vario®-S with window
scale, C > Page 173

T15 500
Torx interchangeable bit
for Torque Vario®
D > Page 173

T15 502
Torx MagicSpring
compatible bit f. Torque
Vario®, E > Page 174

Catalogue no.

DIN Specification

Carbide Grade

Coating

S

 $\frac{1}{r}$

M

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade Coating	Feed per tooth d.o.c.						
P25 PVML	f _z (mm) a _p (mm)	0.2-0.8 0.5-4	-	-	-	-	-

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade Coating	Application						
P25 PVML	roughing finishing	150 165 180 -	-	-	-	-	-

diam. 32 mm - r16

- for roughing, removing residual material and pre-finishing of steel
- for deep cavities and low spindle revolutions
- two effective cutting edges double its efficiency

Milling cutter bodies

Milling cutter bodies

Catalogue no.

d_1 l r l_3 l_2 l_1 d_2 d_3 z

Accessories Features

Threaded shank end mill bodies

[illegible]

Accessories

 40 505 Torx screw A > Page 171	 15 500 Torx-screwdriver B > Page 172	 TV 2-8 Screwdriver torque Vario®-S with window scale, C > Page 173	 T15 500 Torx interchangeable bit for Torque Vario® D > Page 173	 T15 502 Torx MagicSpring compatible bit f. Torque Vario®, E > Page 174
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Indexable inserts

Indexable inserts	Indexable inserts							
	Catalogue no.	DIN Specification	Carbide Grade	Coating	l	s	r	M
	06 32 850		P25	PVML	30.7	6.3	16	M 4.0

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade Coating	Feed per tooth d.o.c.						
P25 PVML	f_z (mm) a_p (mm)	0.2-0.8 0.5-5	-	-	-	-	-

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade	Application						
P25 PVML	roughing finishing	150 165 180 -	-	-	-	-	-

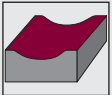
CUTTERS FOR INSERTS WITH 4 CUTTING EDGES

For finishing and rough finishing operations on HSC 5 axis machines

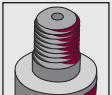
Properties

- ➡ Double economic efficiency due to reversible inserts
- ➡ Thanks to special insert geometry ideally suitable for finishing and rough finishing operations on modern HSC 5 axis machines
- ➡ Optimum utilisation at approach angle of spindle

Machining types



Connection types



Sizes	Page
diam. 10 mm, r5	136
diam. 12 mm, r6	138
diam. 16 mm, r8	140
diam. 20 mm, r10	142



Cutting materials

Carbide grade Coating	ISO standard						feed per tooth d.o.c.		length	thickness	radius
	P	M	K	N	S	H	f _z (mm)	a _p (mm)	l (mm)	s (mm)	r (mm)
K 05 PVTi							0.1 - 0.2	0.1 - 0.3	10	2.5	5
	▽	▽	▽	▽	▽	▽	0.12 - 0.24	0.1 - 0.3	12	3.0	6
							0.16 - 0.32	0.1 - 0.5	16	4.0	8
							0.2 - 0.4	0.1 - 0.5	20	5.0	10



CUTTERS FOR INSERTS WITH 4 CUTTING EDGES

diam. 10 mm - r5

The special insert geometry of these tools makes it ideally suited for finishing and pre-finishing operations on modern high-speed milling machines with 5 axes.
The advantage of the insert with 4 cutting edges is: it is reversible, thus it doubles its productivity.
Optimum cutting conditions can only be achieved with an approach angle of spindle.

Milling cutter bodies											
Catalogue no.		d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z	Accessories Features

Threaded shank End Mill Bodies											
	10 210 M6	10	10	5	28.5	-	-	M 6	9.75	2	A, B, C, D, E

Accessories				
 35 520 locating screw A > Page 171	 10 500 Torx-screwdriver B > Page 172	 TV 1-5 Screwdriver torque Vario®-S with window scale, C > Page 173	 T10 500 Torx interchangeable bit for Torque Vario®, D > Page 173	 T10 502 Torx MagicSpring compatible bit f. Torque Vario®, E > Page 174

Indexable inserts								
Catalogue no.		DIN Specification	Carbide Grade	Coating	d	s	r	M
	10 10 860	ROHX 1002	K05	PVTi	10	2.5	5	M 3.5

Feed per tooth (fz) | d.o.c. (ap)

Material								
Carbide grade Coating	Feed per tooth d.o.c.	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel	
K05 PVTi	f _z (mm)	0.1	0.1	0.1	0.1	0.1	0.1	
	a _p (mm)	0.1	0.1	0.1	0.1	0.1	0.1	

Cutting speed (Vc in m/min)

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade Coating	Application						
K05 PVTi	roughing	-	-	-	-	-	-
	finishing	150 200 250	100 175 250	150 175 200	100 250 400	35 43 50	35 93 150

diam. 12 mm - r6

Milling cutter bodies

Catalogue no. d_1 d r l_3 l_2 l_1 d_2 d_3 z Accessories Features

Threaded shank End Mill Bodies

[illegible]

Accessories

 40 520 locating screw A > Page 171	 15 500 Torx-screwdriver B > Page 172	 TV 2-8 Screwdriver torque Vario®-S with window scale, C > Page 173	 T15 500 Torx interchangeable bit for Torque Vario® D > Page 173	 T15 502 Torx MagicSpring compatible bit f. Torque Vario®, E > Page 174
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Indexable inserts

[illegible][illegible]

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade Coating	Application						
K05 PVTi	roughing finishing	- 150 200 250	- 100 175 250	- 150 175 200	- 100 250 400	- 35 43 50	- 35 93 150



CUTTERS FOR INSERTS WITH 4 CUTTING EDGES

diam. 16 mm - r8

The special insert geometry of these tools makes it ideally suited for finishing and pre-finishing operations on modern high-speed milling machines with 5 axes.
The advantage of the insert with 4 cutting edges is: it is reversible, thus it doubles its productivity.
Optimum cutting conditions can only be achieved with an approach angle of spindle.

Milling cutter bodies											Accessories	Features
Catalogue no.		d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z		

Threaded shank End Mill Bodies												
	16 210	16	16	8	36.4	-	-	M 8	13.8	2	A, B, C, D, E	

Accessories					
 50 520 locating screw A > Page 171	 20 500 Torx-screwdriver B > Page 172	 TV 2-8 Screwdriver torque Vario®-S with window scale, C > Page 173	 T20 500 Torx interchangeable bit for Torque Vario® D > Page 173	 T20 502 Torx MagicSpring compatible bit f. Torque Vario®, E > Page 174	

Indexable inserts								
Catalogue no.		DIN Specification	Carbide Grade	Coating	d	s	r	M
	10 16 860	ROHX 16T3	K05	PVTi	16	4	8	M 5.0

Feed per tooth (fz) | d.o.c. (ap)

Material							
Carbide grade	Feed per tooth d.o.c.	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
K05 PVTi	f _z (mm)	0.16	0.16	0.16	0.16	0.16	0.16
	a _p (mm)	0.1	0.1	0.1	0.1	0.1	0.1

Cutting speed (Vc in m/min)

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade	Application						
K05 PVTi	roughing finishing	- 150 200 250	- 100 175 250	- 150 175 200	- 100 250 400	- 35 43 50	- 35 93 150



CUTTERS FOR INSERTS WITH 4 CUTTING EDGES

diam. 20 mm - r10

The special insert geometry of these tools makes it ideally suited for finishing and pre-finishing operations on modern high-speed milling machines with 5 axes. The advantage of the insert with 4 cutting edges is: it is reversible, thus it doubles its productivity. Optimum cutting conditions can only be achieved with an approach angle of spindle.

Milling cutter bodies											Accessories	Features
Catalogue no.		d ₁	d	r	l ₃	l ₂	l ₁	d ₂	d ₃	z		

Threaded shank End Mill Bodies												
	20 210	20	20	10	36.9	-	-	M 10	18	2	A, B, C, D, E	

Accessories					
 50 520 locating screw A > Page 171	 20 500 Torx-screwdriver B > Page 172	 TV 2-8 Screwdriver torque Vario®-S with window scale, C > Page 173	 T20 500 Torx interchangeable bit for Torque Vario® D > Page 173	 T20 502 Torx MagicSpring compatible bit f. Torque Vario®, E > Page 174	

Indexable inserts								
Catalogue no.		DIN Specification	Carbide Grade	Coating	d	s	r	M
	10 20 860	ROHX 2004	K05	PVTi	20	5	10	M 5.0

Feed per tooth (fz) | d.o.c. (ap)

Material								
Carbide grade	Feed per tooth d.o.c.	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel	
K05 PVTi	f _z (mm)	0,2	0,2	0,2	0,2	0,2	0,2	
	a _p (mm)	0,1	0,1	0,1	0,1	0,1	0,1	

Cutting speed (Vc in m/min)

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade	Application						
K05 PVTi	roughing finishing	- 150 200 250	- 100 175 250	- 150 175 200	- 100 250 400	- 35 43 50	- 35 93 150



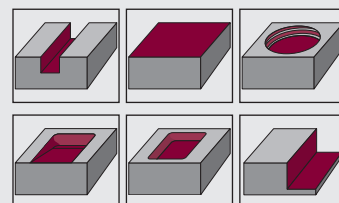
QUADWORX® HIGH FEED RATE CUTTERS

Feed rate squared - maximum economic efficiency for universal use

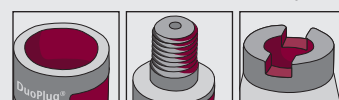
Properties

- ⊕ Universal use in high-feed rate cutters
- ⊕ Very high removal rates and extremely soft cutting for more machine capacity
- ⊕ 4 cutting edges / insert for highly economical use
- ⊕ Twisting is eliminated by positioning of the inserts via a second flank and 90° positioning
- ⊕ Maximum process reliability with uninterrupted cutting due to secure positioning of the inserts
- ⊕ With wiper edge and large radius very high surface qualities are achieved in the rough machining stage

Machining types



Connection types



Practical video

- ⊕ QUADWORX® M
in 1.2312 /
40CrMnMoS8-6



Sizes

Page

S:	diam. 14 - 25 mm	146
M:	diam. 22 - 52 mm	149
L:	diam. 35 - 80 mm	152

Cutting materials

Size	ISO standard						feed per tooth d.o.c.		length	corner radius to be programmed	Carbide grade coating
	P	M	K	N	S	H	f _z (mm)	a _p (mm)	l (mm)	r _p (mm)	
S				-			0.2 - 1.5	0.2 - 0.5	7.0	1.3	P40 PVTi M40 PVST HSC05 PVTi
M				-			0.3 - 2.0	0.2 - 1.2	9.0	1.5	P25 PVTi P40 PVTi P40 PVGO M40 PVST K10 PVTi
L				-			0.3 - 2.5	0.25 - 1.5	10.0	2.3	P25 PVTi P40 PVTi P40 PVGO M40 PVST K10 PVTi



QUADWORX®

Size S

- four cutting edges per insert for extremely efficient operations
- very big metal removal rates and extremely easy cutting
- as a standard, every tool has our patent protected incorporated insert seats and internal coolant supply
- allows extremely high feed rates per tooth up to $f_z = 1.5 \text{ mm}$

Milling cutter bodies

Catalogue no.	d_1	l	r_p^*	l_3	l_2	l_1	d_2	d_3	z	Accessories	Features
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DuoPlug®

	2 16 247 SG	16	7	1.3*	31	1	-	M 10	15	2	B, C, D, E, F	
	3 18 247 SG	18	7	1.3*	31	1	-	M 10	15	3	A, C, D, E, F	
	3 20 247 SG	20	7	1.3*	33	1	-	M 12	18.6	3	A, C, D, E, F	
	4 25 247 SG	25	7	1.3*	35	1	-	M 16	23.5	4	A, C, D, E, F	

Threaded shank end mill bodies

	2 14 247	14	7	1.3*	28.5	1	-	M 8	13.8	2	B, C, D, E, F	
	2 16 247	16	7	1.3*	28.5	1	-	M 8	13.8	2	B, C, D, E, F	
	3 18 247	18	7	1.3*	28.5	1	-	M 8	13.8	3	A, C, D, E, F	
	3 20 247	20	7	1.3*	28.5	1	-	M 10	18	3	A, C, D, E, F	
	4 25 247	25	7	1.3*	32.5	1	-	M 12	21	4	A, C, D, E, F	

Accessories

 25 500 Torx screw A > Page 171	 25 500 K Torx screw B > Page 171	 07 500 Torx-screwdriver C > Page 172	 TV 04-1 Screwdriver torque Vario®-S with window scale, D > Page 173	 T7 500 Torx interchangeable bit for Torque Vario® E > Page 173	 T7 502 Compatible bit f. Torque Vario® F > Page 174
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* corner radius to be programmed

latest items!

available as long as stock lasts

on request

stock item, subject to confirmation

Indexable inserts

	Catalogue no.	DIN Specification	Carbide Grade	Coating	l	s	r	M
	02 47 837	SDMX 070205 SN	HSC 05	PVTi	7	2.38	0.5	M 2.5
	02 47 842	SDMX 070205 SN	P40	PVTi	7	2.38	0.5	M 2.5
	02 47 896	SDMT 070205 SN	M40	PVST	7	2.38	0.5	M 2.5

Feed per tooth (f_z) | d.o.c. (a_p)

Material							
Carbide grade	Feed per tooth d.o.c.	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
HSC 05 PVTi	f_z (mm) a_p (mm)	-	-	0.2-1.5 0.2-0.5	-	-	0.1-1 0.1-0.5
P40 PVTi	f_z (mm) a_p (mm)	0.2-1.5 0.2-0.5	-	-	-	-	-
M40 PVST	f_z (mm) a_p (mm)	-	0.2-1 0.1-0.5	-	-	0.2-0.8 0.1-0.5	-

Cutting speed (V_c in m/min)

Material							
Carbide grade	Application	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
HSC 05 PVTi	roughing finishing	- -	- -	100 200 300 -	- -	- -	35 108 180 -
P40 PVTi	roughing finishing	100 175 250 -	- -	- -	- -	- -	- -
M40 PVST	roughing finishing	- -	80 145 210 120 185 250	- -	- -	40 65 90 60 90 120	- -

Extended operation data

Plunging			Ramping			Helix		
Cutter diam. d_1	D_p	X_{max}	Cutter diam. d_1	α°	y	Cutter diam. d_1	D_{min}	D_{max}
14	3.7	1	14	<13.5	4	14	18	28
16	5.7	1	16	<8.8	6	16	22	32
18	7.7	1	18	<6.6	8	18	26	36
20	9.7	1	20	<5.2	10	20	30	40
25	14.8	1	25	<3.3	15	25	40	50

major application

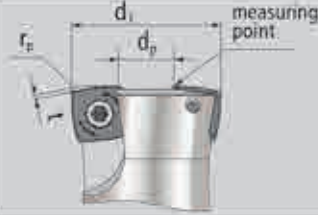
minor application

roughing

pre-finishing

finishing

Technical information



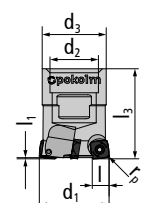
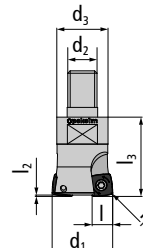
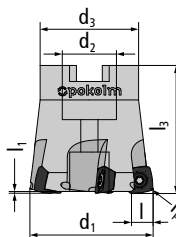
For the CAD/CAM set-up please program 1.3 mm corner radius (r_1).
The remainder of the material is theoretically 0.51 mm (t).
Please use „d_p“ for tool length measurement.

QUADWORX®

Size M

- four cutting edges per insert for extremely efficient operations
- very big metal removal rates and extremely easy cutting
- as a standard, every tool has our patent protected incorporated insert seats and internal coolant supply
- allows extremely high feed rates per tooth up to fz = 2.2 mm



Milling cutter bodies												Accessories	Features
Catalogue no.			d ₁	l	r _p *	l ₃	l ₂	l ₁	d ₂	d ₃	z		
DuoPlug®													
	2 22 248 SG	22	9	1.5*	35.5	1.5	-	M 12	18.5	2	A, B, C, D, E		
	3 25 248 SG	25	9	1.5*	40	1.5	-	M 16	23.5	3	A, B, C, D, E		
Threaded shank end mill bodies													
	2 22 248	22	9	1.5*	29	1.5	-	M 10	18	2	A, B, C, D, E		
	3 25 248	25	9	1.5*	33	1.5	-	M 12	21	3	A, B, C, D, E		
	4 30 248	30	9	1.5*	42	1.5	-	M 16	29	4	A, B, C, D, E		
	4 32 248	32	9	1.5*	42	1.5	-	M 16	29	4	A, B, C, D, E		
	4 35 248	35	9	1.5*	42	1.5	-	M 16	29	4	A, B, C, D, E		
	5 35 248	35	9	1.5*	42	1.5	-	M 16	29	5	A, B, C, D, E		
	5 42 248	42	9	1.5*	42	1.5	-	M 16	29	5	A, B, C, D, E		
Shell-type milling cutter bodies													
	5 42 348	42	9	1.5*	42.5	1.5	-	diam. 16	35	5	A, B, C, D, E		
	6 52 348	52	9	1.5*	52.5	1.5	-	diam. 22	40	6	A, B, C, D, E		
Accessories													
 30 500 Torx screw A > Page 171	 10 500 Torx-screwdriver B > Page 172	 TV 1-5 Screwdriver torque Vario®-S with window scale, C > Page 173	 T10 500 Torx interchangeable bit for Torque Vario® D > Page 173	 T10 502 Compatible bit f. Torque Vario® E > Page 174									

Indexable inserts		Catalogue no.	DIN Specification	Carbide Grade	Coating	l	s	r	M
		03 48 842	SDMX 09T307 SN	P40	PVTi	9	3.5	0.7	M 3.0
		03 48 846	SDMX 09T307 SN	P40	PVGO	9	3.5	0.7	M 3.0
		03 48 852	SDMX 09T307 SN	P25	PVTi	9	3.5	0.7	M 3.0
		03 48 860	SDHX 09T307 SN	K10	PVTi	9	3.5	0.7	M 3.0
		03 48 848	SDMT 09T307 SN	P40	PVGO	9	3.5	0.7	M 3.0
		03 48 896	SDMT 09T307 SN	M40	PVST	9	3.5	0.7	M 3.0

Feed per tooth (fz) | d.o.c. (ap)

Material							
Carbide grade	Feed per tooth d.o.c.	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
P40 PVTi	f _z (mm) a _p (mm)	0.5-2 0.3-1	-	-	-	-	-
P40 PVGO	f _z (mm) a _p (mm)	0.5-2 0.3-1	-	-	-	-	-
P25 PVTi	f _z (mm) a _p (mm)	0.5-2 0.3-1	-	-	-	-	-
K10 PVTi	f _z (mm) a _p (mm)	-	-	0.5-2.2 0.3-1.2	-	-	0.1-1.2 0.1-0.5
M40 PVST	f _z (mm) a _p (mm)	-	0.3-1.2 0.2-0.9	-	-	0.3-0.9 0.2-0.7	-

Cutting speed (Vc in m/min)

Material							
Carbide grade	Application	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
P40 PVTi	roughing finishing	100 175 250 -	-	-	-	-	-
P40 PVGO	roughing finishing	100 150 200 -	-	-	-	-	-
P25 PVTi	roughing finishing	100 140 180 -	-	-	-	-	-
K10 PVTi	roughing finishing	-	-	150 175 200 -	-	-	35 108 180 -
M40 PVST	roughing finishing	-	80 145 210 120 185 250	-	-	40 65 90 60 90 120	-

Extended operation data

Plunging			Ramping			Helix		
Cutter diam. d1	D _p	X _{max}	Cutter diam. d1	a	y	Cutter diam. d1	D _{min}	D _{max}
22	7.1	1.5	22	<13.7	6	22	28.5	44
25	9.8	1.5	25	<9.2	9	25	34.5	50
30	14.7	1.5	30	<5.8	14	30	44.5	60
32	16.7	1.5	32	<4.9	16	32	48.5	64
35	19.7	1.5	35	<4.3	19	35	54.5	70
42	26.5	1.5	42	<3.1	26	42	68.5	84
52	36.5	1.5	52	<2.1	36	52	88.5	104

Technical information

For the CAD/CAM set-up please program 1.5 mm corner radius (r_p).
The remainder of the material is theoretically 0.65 mm (t).
Please use „d_p“ for tool length measurement.

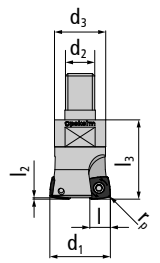


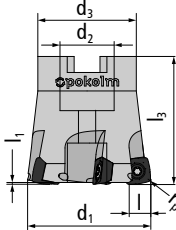
QUADWORX®

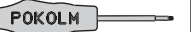
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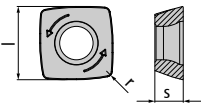
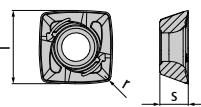
- four cutting edges per insert for extremely efficient operations
- very big metal removal rates and extremely easy cutting
- as a standard, every tool has our patent protected incorporated insert seats and internal coolant supply
- allows extremely high feed rates per tooth up to fz = 2.5 mm

Milling cutter bodies													Accessories	Features
Catalogue no.														

End mill bodies with thread connections												
	3 35 249	35	10	2.3*	42	2.5	-	M 16	29	3	A, B, C, D, E	
	4 42 249	42	10	2.3*	42	2.5	-	M 16	29	4	A, B, C, D, E	

Shell type milling cutter bodies												
	4 42 349	42	10	2.3*	42	2.5	-	diam. 16	35	4	A, C, E, F, H	
	5 52 349	52	10	2.3*	52	2.5	-	diam. 22	40	5	B, D, E, G, I	
	7 66 349	66	10	2.3*	52	2.5	-	diam. 27	48	7	B, D, E, G, I	
	8 80 349	80	10	2.3*	52	2.5	-	diam. 27	60	8	B, D, E, G, I	

Accessories						* corner radius to be programmed					
 40 505 K Torx screw A > Page 171	 40 505 P Torx screw B > Page 171	 15 500 Torx-screwdriver C > Page 172	 15 500 P Torx-screwdriver (Torx-Plus) D > Page 172	 TV 2-8 Screwdriver torque Vario®-S with window scale, E > Page 173	 T15 500 Torx interchangeable bit for Torque Vario® F > Page 173						
 T15 500 P Torx interchangeable bit for Torque Vario® G > Page 173	 T15 502 Torx MagicSpring compatible bit f. Torque Vario® H > Page 174	 T15 502 P Torx MagicSpring compatible bit f. Torque Vario® I > Page 174									

Indexable inserts	Catalogue no.	DIN Specification	Carbide Grade	Coating	l	s	r	M
	04 49 842	SDMX 100510 SN	P40	PVTi	10	5	1	M 4.0
	04 49 846	SDMX 100510 SN	P40	PVGO	10	5	1	M 4.0
	04 49 852	SDMX 100510 SN	P25	PVTi	10	5	1	M 4.0
	04 49 860	SDHX 100510 SN	K10	PVTi	10	5	1	M 4.0
	04 49 896	SDMT 100510 SN	M40	PVST	10	5	1	M 4.0

Feed per tooth (fz) | d.o.c. (ap)

Material							
Carbide grade Coating	Feed per tooth d.o.c.						
		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
P40 PVTi	f _z (mm)	0.5-2.5	-	-	-	-	-
	a _p (mm)	0.3-1.5	-	-	-	-	-
P40 PVGO	f _z (mm)	0.5-2.5	-	-	-	-	-
	a _p (mm)	0.3-1.5	-	-	-	-	-
P25 PVTi	f _z (mm)	0.5-2.5	-	-	-	-	-
	a _p (mm)	0.3-1.5	-	-	-	-	-
K10 PVTi	f _z (mm)	-	-	0.5-2.5	-	-	0.3-1.5
	a _p (mm)	-	-	0.3-1.7	-	-	0.3-0.8
M40 PVST	f _z (mm)	-	0.35-1.5	-	-	0.35-1	-
	a _p (mm)	-	0.25-1.5	-	-	0.25-0.9	-

Cutting speed (Vc in m/min)

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade Coating	Application						
P40 PVTi	roughing	100 175 250	-	-	-	-	-
	finishing	-	-	-	-	-	-
P40 PVGO	roughing	100 150 200	-	-	-	-	-
	finishing	-	-	-	-	-	-
P25 PVTi	roughing	100 140 180	-	-	-	-	-
	finishing	-	-	-	-	-	-
K10 PVTi	roughing	-	-	150 175 200	-	-	100 140 180
	finishing	-	-	-	-	-	-
M40 PVST	roughing	-	80 145 210	-	-	40 65 90	-
	finishing	-	120 185 250	-	-	60 90 120	-

Extended operation data

Plunging			Ramping			Helix		
Cutter diam. d1	D _p	X _{max}	Cutter diam. d1	α°	y	Cutter diam. d1	D _{min}	D _{max}
35	17.7	2.5	35	<8.3	17	35	52	70
42	24.7	2.5	42	<5.9	24	42	66	84
52	34.7	2.5	52	<4.2	34	52	86	104
66	48.7	2.5	66	<2.9	48	66	114	132
80	62.7	2.5	80	<2.3	62	80	142	160

Technical information

For the **CAD/CAM set-up** please program **2.3 mm** corner radius (r_p).
The remainder of the material is theoretically **0.83 mm** (t).
Please use „d_p“ for tool length measurement.

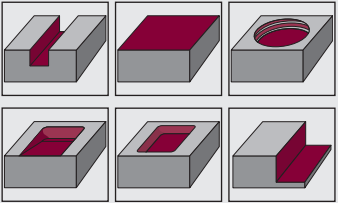
TRIGAWORX® HIGH FEED RATE CUTTERS

Specialist for maximum chip removal rates at extreme working depths

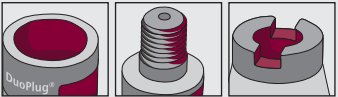
Properties

- ⊕ Extremely high feed rates for maximum chip removal rate
- ⊕ 3 cutting edges for effective use and optimum economic efficiency
- ⊕ Polygonal insert shape minimises vibrations
- ⊕ Extremely smooth running even at large working depths and in the deepest contours
- ⊕ Prevents wear on the machine and tool

Machining types



Connection types



Practical video

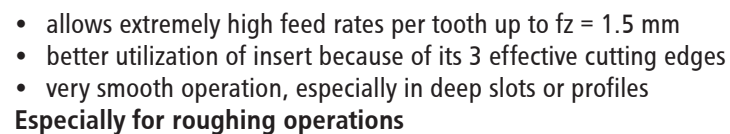
- ⊕ TRIGAWORX®
in 1.2343 / H11 /
X38CrMoV5-1



Sizes	Page
S: diam. 16 - 25 mm	156
M: diam. 25 - 52 mm	158
L: diam. 32 - 80 mm	161

Cutting materials

Size	ISO standard						feed per tooth d.o.c.		length	corner radius to be programmed	Carbide grade coating
	P	M	K	N	S	H	f _z (mm)	a _p (mm)	l (mm)	r _p (mm)	
S	▽	-	-	-	-	▽	0.3 - 1.5	0.15 - 0.6	7.0	1.5	HSC05 PVTi P40 PVTi
M	▽	-	-	-	-	▽	0.5 - 2.0	0.2 - 1.0	10.3	1.9	HSC05 PVTi P25 PVTi P40 PVTi
L	▽	-	-	-	-	-	0.5 - 3.0	0.3 - 1.2	14.3	4.6	P40 PVTi



Milling cutter bodies												
Catalogue no.		d_1	l	r_p^*	l_3	l_2	l_1	d_2	d_3	z	Accessories	Features

	2 16 272 SG	16	7	1.5*	38.5	1	-	M 10	15	2	A, B, C, D, E, F	

[illegible]

25 500 Torx screw A > Page 171	07 500 Torx-screwdriver B > Page 172	TV 04-1 Screwdriver torque Vario®-S with window scale, C > Page 173	T7 500 Torx interchangeable bit for Torque Vario® D > Page 173	T7 502 Torx MagicSpring compatible bit f. Torque Vario®, E > Page 174	12 510 clamping claw for Trigaworx® S F > Page 174
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	Catalogue no.	DIN Specification	Carbide Grade	Coating	l	s	r	M
	02 72 835	WDHX 070205 SN	HSC 05	PVTi	7	2.38	-	M 2.5
	02 72 840	WDHX 070205 SN	P40	PVTi	7	2.38	-	M 2.5

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade Coating	Feed per tooth d.o.c.						
HSC 05 PVTi	f_z (mm) a_p (mm)	0.3-0.9 0.3-0.45	-	-	-	-	0.1-0.6 0.1-0.35
P40 PVTi	f_z (mm) a_p (mm)	0.9-1.5 0.45-0.6	-	-	-	-	-

Material		steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade Coating	Application						
HSC 05 PVTi	roughing finishing	150 225 300 -	-	-	-	-	35 93 150 -
P40 PVTi	roughing finishing	100 125 150 -	-	-	-	-	-

Plunging

Ramping

Helix

Cutter diam. d1	D_p	X_{max}
16	8.8	1
20	12.8	1
25	17.8	1

Cutter diam. d1	α°	y
16	<14	4
20	<7.1	8
25	<4.4	13

Cutter diam. d1	D_{min}	D_{max}
16	20	32
20	28	40
25	38	50

For the **CAD/CAM set-up** please program **1.5 mm** corner radius (r_p).
 The remainder of the material is theoretically **1.0 mm** (t).
 Please use „d_p“ for tool length measurement.



TRIGAWORX®

Size M

- allows extremely high feed rates per tooth up to $f_z = 2.0 \text{ mm}$
 - better utilization of insert because of its 3 effective cutting edges
 - very smooth operation, especially in deep slots or profiles
- Especially for roughing operations**

Milling cutter bodies												Accessories	Features
Catalogue no.													
	d_1	l	r_p^*	l_3	l_2	l_1		d_2	d_3	z			

DuoPlug®													
	2 25 273 SG	25	10.3	1.9*	47.5	1.5	-	M 16	23.5	2	A, B, C, D, E, F		

Threaded shank end mill bodies													
	2 25 273	25	10.3	1.9*	32.5	1.5	-	M 12	22.5	2	A, B, C, D, E, F		
	3 30 273	30	10.3	1.9*	42.5	1.5	-	M 16	29	3	A, B, C, D, E, F		
	3 35 273	35	10.3	1.9*	42.5	1.5	-	M 16	29	3	A, B, C, D, E, F		
	4 35 273	35	10.3	1.9*	42.5	1.5	-	M 16	29	4	A, B, C, D, E, F		
	4 42 273	42	10.3	1.9*	42.5	1.5	-	M 16	29	4	A, B, C, D, E, F		

Shell type milling cutter bodies													
	4 42 373	42	10.3	1.9*	42.5	1.5	-	diam. 16	35	4	A, B, C, D, E, F		
	5 52 373	52	10.3	1.9*	52.5	1.5	-	diam. 22	40	5	A, B, C, D, E, F		

* corner radius to be programmed

Accessories					
30 500 Torx screw A > Page 171	35 511 locking screw B > Page 171	10 500 Torx-screwdriver C > Page 172	TV 1-5 Screwdriver torque Vario®-S with window scale, D > Page 173	T10 500 Torx interchangeable bit for Torque Vario® E > Page 173	T10 502 Compatible bit f. Torque Vario®, F > Page 174

Indexable inserts	Catalogue no.	DIN Specification	Carbide Grade	Coating	l	s	r	M
	03 73 835	WDHX 100310 SN	HSC 05	PVTi	10.3	3.4	-	M 3.0
	03 73 840	WDHX 100310 SN	P40	PVTi	10.3	3.4	-	M 3.0
	03 73 850	WDHX 100310 SN	P25	PVTi	10.3	3.4	-	M 3.0

Feed per tooth (fz) | d.o.c. (ap)

Material		Feed per tooth d.o.c.	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade	Coating							
HSC 05	PVTi	f_z (mm) a_p (mm)	0.5-1.25 0.3-0.65	-	-	-	-	0.1-0.75 0.1-0.4
P40	PVTi	f_z (mm) a_p (mm)	1.25-2 0.65-1	-	-	-	-	-
P25	PVTi	f_z (mm) a_p (mm)	1.25-2 0.65-1	-	-	-	-	-

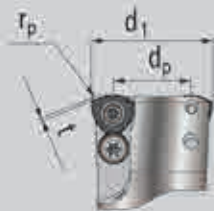
Cutting speed (Vc in m/min)

Material		Application	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Carbide grade	Coating							
HSC 05	PVTi	roughing finishing	150 225 300 -	-	-	-	-	35 93 150 -
P40	PVTi	roughing finishing	100 125 150 -	-	-	-	-	-
P25	PVTi	roughing finishing	150 165 180 -	-	-	-	-	-

Extended operation data

Plunging			Ramping			Helix		
Cutter diam. d_1	D_p	X_{max}	Cutter diam. d_1	α°	y	Cutter diam. d_1	D_{min}	D_{max}
25	16.2	1.5	25	<12	7	25	32	50
30	21.2	1.5	30	<7.1	12	30	42	60
35	26.2	1.5	35	<5	17	35	52	70
42	33.2	1.5	42	<3.6	24	42	66	84
52	43.2	1.5	52	<2.5	34	52	86	104

Technical information



For the **CAD/CAM set-up** please program **1.9 mm** corner radius (r_p).
The **remainder of the material** is theoretically **0.8 mm** (t).
Please use „ d_p “ for tool length measurement.

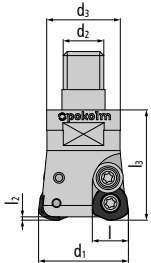
TRIGAWORX®

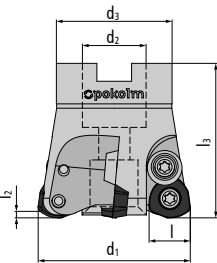
Size L

- allows extremely high feed rates per tooth up to $fz = 3.0\text{ mm}$
 - better utilization of insert because of its 3 effective cutting edges
 - very smooth operation, especially in deep slots or profiles
- Especially for roughing operations

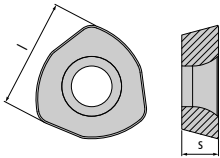


Milling cutter bodies													Accessories	Features
Catalogue no.			d_1	l	r_p^*	l_3	l_2	l_1	d_2	d_3	z			

Threaded shank end mill bodies														
	2 32 274	32	14.3	4.6*	42.5	2	-	M 16	29	2	A, B, C, D, E, F			

Shell type milling cutter bodies														
	4 52 374	52	14.3	4.6*	52.5	2	-	diam. 22	40	4	A, B, C, D, E, F			
	4 66 374	66	14.3	4.6*	52.5	2	-	diam. 27	48	4	A, B, C, D, E, F			
	5 80 374	80	14.3	4.6*	52.5	2	-	diam. 27	60	5	A, B, C, D, E, F			

Accessories					
 45 500 Torx screw A > Page 171	 10 510 locking washer B > Page 172	 20 500 Torx-screwdriver C > Page 172	 TV 2-8 Screwdriver torque Vario®-S with window scale, D > Page 173	 T20 500 Torx interchangeable bit for Torque Vario® E > Page 173	 T20 502 Compatible bit f. Torque Vario® F > Page 174

Indexable inserts									
	Catalogue no.		DIN Specification	Carbide Grade	Coating	l	s	r	M
	04 74 840	WDHX 140420 SR	P40		PVTi	14.3	4.76	-	M 4.5

Feed per tooth (fz) | d.o.c. (ap)

Material							
Carbide grade	Feed per tooth d.o.c.	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Coating	f_z (mm) a_p (mm)	1.75-3 0.3-1.2	-	-	-	-	-
P40 PVTi							

Cutting speed (Vc in m/min)

Material							
Carbide grade	Application	steel	stainless steel	cast iron	non-ferrous materials	high-temperature alloys	hardened steel
Coating		100 125 150	-	-	-	-	-
P40 PVTi	roughing finishing						

Extended operation data

Plunging			Ramping			Helix		
Cutter diam. d1	D_p	X_{max}	Cutter diam. d1	α°	y	Cutter diam. d1	D_{min}	D_{max}
32	17.4	2	32	<11.3	10	32	42	64
52	37.4	2	52	<3.8	30	52	82	104
66	51.4	2	66	<2.6	44	66	110	132
80	65.4	2	80	<2	58	80	138	160

Technical information

For the CAD/CAM set-up please program 4.6 mm corner radius (r_p).
The remainder of the material is theoretically 2.3 mm (t).
Please use „ d_p “ for tool length measurement.

SLOTWORX® HIGH FEED RATE CUTTERS

With highly modern cutting edge geometry for universal applications

Properties

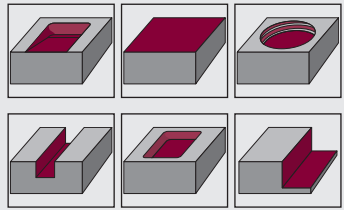
- ⌚ For high-feed hard machining of all materials up to 60+2HRC
- ⌚ PVTiH coating especially suitable for machining die steels such as 1.2714
- ⌚ Extremely long tool life and smooth running due to adapted rake face geometry

Practical video

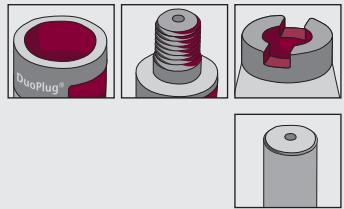


SLOTWORX® M
High Feed
in 1.2738

Machining types



Connection types



Sizes

M: diam. 16 - 52 mm

Page

164



Cutting materials

Carbide grade Coating	ISO standard						feed per tooth d.o.c.		length	thickness	corner radius to be programmed
	P	M	K	N	S	H	f_z (mm)	a_p (mm)	l (mm)	s (mm)	r_p (mm)
HSC 05 PVTi	▽	-	▽	-	-	▽	0.3 - 1.8	0.1 - 0.7	10	3.58	1.4
HSC 05 PVTiH	▽	-	▽	-	-	▽	0.3 - 1.8	0.1 - 0.7	10	3.58	1.4
P40 PVGO	▽	-	-	-	-	-	0.3 - 1.5	0.5 - 1.6	10	3.58	1.4
K10 PVGP	-	-	▽	-	-	▽	0.15 - 1.2	0.2 - 1.5	10	3.58	1.4



SLOTWORX® - K15°

Size M - diam. 16 - 52 mm

Exceptionally suitable for High Feed Machining of hardened materials up to 60+2HRC. PVTiH Coating well suited for milling of die steels, f.e. 1.2714. Extremely long life time and high running smoothness because of the adapted cutting surface geometry.

Milling cutter bodies

Milling cutter bodies											
Catalogue no.										Accessories	Features
	d ₁	l	r	l ₃	l ₂	l ₁	d ₂	d ₃	z		

DuoPlug®

	2 16 267 SG	16	10	1.4	38	2.5	-	M 10	15	2	A, C, D, E, F	
	2 20 267 SG	20	10	1.4	40	2.5	-	M 12	18.6	2	A, C, D, E, F	
	3 25 267 SG	25	10	1.4	43	2.5	-	M 16	23.5	3	A, C, D, E, F	

Threaded shank end mill bodies

	2 16 267	16	10	1.4	29	2.5	-	M 8	13.8	2	A, C, D, E, F	
	2 20 267	20	10	1.4	29	2.5	-	M 10	18	2	A, C, D, E, F	
	3 20 267	20	10	1.4	29	2.5	-	M 10	18	3	A, C, D, E, F	
	3 25 267	25	10	1.4	33	2.5	-	M 12	21	3	A, C, D, E, F	
	4 25 267	25	10	1.4	33	2.5	-	M 12	21	4	A, C, D, E, F	
	4 32 267	32	10	1.4	43	2.5	-	M 16	29	4	B, C, D, E, F	
	5 32 267	32	10	1.4	43	2.5	-	M 16	29	5	B, C, D, E, F	
	5 42 267	42	10	1.4	43	2.5	-	M 16	29	5	B, C, D, E, F	

Plain shank end mill bodies

	2 32 16 167 G	16	10	1.4	32	2.5	165	diam. 16	-	2	A, C, D, E, F	
	3 40 20 167 G	20	10	1.4	40	2.5	165	diam. 20	-	3	A, C, D, E, F	
	3 50 25 167 G	25	10	1.4	50	2.5	225	diam. 25	-	3	A, C, D, E, F	
	4 50 25 167 G	25	10	1.4	50	2.5	225	diam. 25	-	4	A, C, D, E, F	

Milling cutter bodies

Milling cutter bodies										
Catalogue no.										
d ₁	l	r	l ₃	l ₂	l ₁	d ₂	d ₃	z	Accessories	Features

Shell type milling cutter bodies

	5 42 367	42	10	1.4	43	2.5	-	diam. 16	35	5	B, C, D, E, F	
	6 52 367	52	10	1.4	53	2.5	-	diam. 22	40	6	B, C, D, E, F	

Accessories

 25 505 KP Torx screw A > Page 171	 25 505 P Torx screw for Slotworx M B > Page 171	 08 500 P Torx-screwdriver (Torx-Plus) C > Page 172	 TV 08-2 Screwdriver torque Vario®-S with window scale, D > Page 173	 T8 500 P Torx interchangeable bit for Torque Vario® E > Page 173	 T8 502 P Compatible bit f. Torque Vario®, F > Page 174
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Indexable inserts

Catalogue no.	DIN Specification	Carbide Grade	Coating	l	s	r	M
	04 67 835 HF	XDEW 10T3 SR	HSC 05	PVTi	10	3.58	1.4 M 2.5
	04 67 836 HF	XDEW 10T3 SR	HSC 05	PVTiH	10	3.58	1.4 M 2.5
	04 67 848 HF	XDMT 10 T3 TR	P40	PVGO	10	3.58	1.4 M 2.5
	04 67 862 HF	XDMT 10 T3 TR	K10	PVGP	10	3.58	1.4 M 2.5

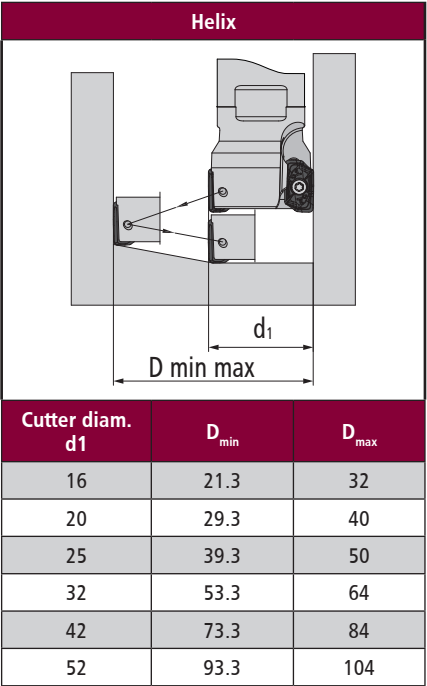
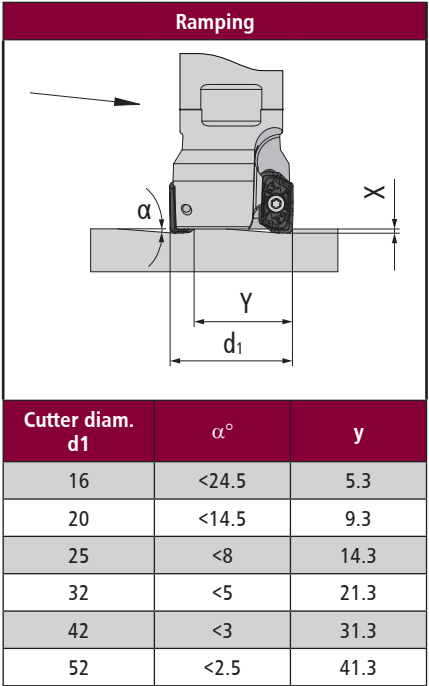
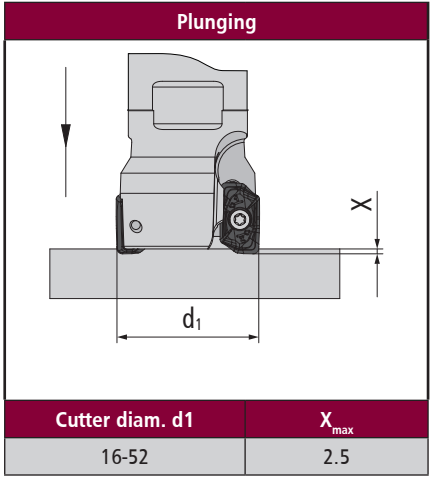
Feed per tooth (fz) | d.o.c. (ap)

Material							
Carbide grade Coating	Feed per tooth d.o.c.	steel		stainless steel	cast iron	non-ferrous materials	high-temperature alloys
							hardened steel
HSC 05 PVTi	f _z (mm)	0.5-1.6		-	0.4-1.8	-	0.3-1
	a _p (mm)	0.15-0.7		-	0.15-0.7	-	0.1-0.5
HSC 05 PVTiH	f _z (mm)	0.5-1.6		-	0.4-1.8	-	0.3-1
	a _p (mm)	0.15-0.7		-	0.15-0.7	-	0.1-0.5
P40 PVGO	f _z (mm)	0.3-1.5		-	-	-	-
	a _p (mm)	0.5-1.6		-	-	-	-
K10 PVGP	f _z (mm)	-		-	0.3-1.2	-	0.15-1
	a _p (mm)	-		-	0.2-1.5	-	0.2-1

Cutting speed (Vc in m/min)

Material							
Carbide grade Coating	Application	steel		stainless steel	cast iron	non-ferrous materials	high-temperature alloys
							hardened steel
HSC 05 PVTi	roughing	120 210 300		-	100 200 300	-	35 93 150
	finishing	-		-	-	-	-
HSC 05 PVTiH	roughing	120 210 300		-	100 200 300	-	35 93 150
	finishing	-		-	-	-	-
P40 PVGO	roughing	100 150 200		-	-	-	-
	finishing	-		-	-	-	-
K10 PVGP	roughing	-		-	150 185 220	-	80 130 180
	finishing	-		-	-	-	-

Extended operation data



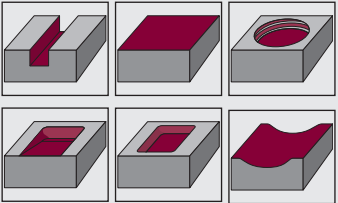
SLOTWORX® HP HIGH FEED RATE CUTTERS

High performance chip removal rates in hard machining

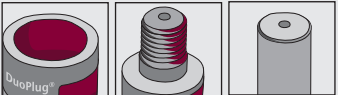
Properties

- ⊕ One insert carbide grade for soft and hard machining
- ⊕ Real corner radius for true to contour machining
- ⊕ High-precision ground indexable inserts
- ⊕ Maximum cutter body stability due to negative axial angle
- ⊕ High number of teeth on smallest tool diameter
- ⊕ Can replace solid carbide tools in some areas

Machining types



Connection types



Sizes	Page
S: diam. 10 - 25 mm	168



Cutting materials

Carbide grade Coating	ISO standard						feed per tooth d.o.c.		length	thickness	radius
	P	M	K	N	S	H	f _z (mm)	a _p (mm)	l (mm)	s (mm)	r _p (mm)
HSC 05 PVTi	▽	-	▽	-	-	▽	0.05 - 0.7	0.05 - 0.4	6.2	2.2	2
HSC 05 PVTiH	▽	-	▽	-	-	▽	0.05 - 0.7	0.05 - 0.4	6.2	2.2	2
HSC 05 PVDiaN	-	-	-	▽	-	-	0.05 - 0.7	0.05 - 1.0	6.2	2.2	2

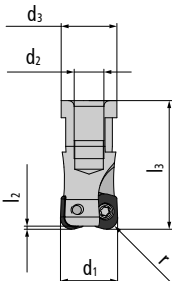


SLOTWORX®HP

Size S - HP

- Excellent for use on small HSC machines and machining centers.
- due to high number of flutes very high feedrates are possible
 - offers a real corner radius for close contour work

Milling cutter bodies												Accessories	Features
Catalogue no.													
		d ₁	l	r	l ₃	l ₂	l ₁	d ₂	d ₃	z			

DuoPlug®													
	3 12 266 SG	12	6.2	2	28	0.7	-	M 7	10.8	3	A, B, C, D, E, F		3°
	4 16 266 SG	16	6.2	2	31	0.7	-	M 10	15	4	A, B, C, D, E, F		3°
	5 20 266 SG	20	6.2	2	33	0.7	-	M 12	18.6	5	A, B, C, D, E, F		3°
	5 25 266 SG	25	6.2	2	35	0.7	-	M 16	23.5	5	A, B, C, D, E, F		3°

Threaded shank end mill bodies															
	2 10 266 M6	10	6.2	2	22.5	0.7	-	M 6	9.75	2	A, B, C, D, E, F		3°		
	3 12 266 M6	12	6.2	2	22.5	0.7	-	M 6	11.5	3	A, B, C, D, E, F		3°		
	4 16 266	16	6.2	2	27.5	0.7	-	M 8	13.8	4	A, B, C, D, E, F		3°		
	5 20 266	20	6.2	2	27.5	0.7	-	M 10	18	5	A, B, C, D, E, F		3°		
	5 25 266	25	6.2	2	32	0.7	-	M 12	18	5	A, B, C, D, E, F		3°		

Milling cutter bodies

Catalogue no.												Accessories	Features
		d ₁	l	r	l ₃	l ₂	l ₁	d ₂	d ₃	z			

Plain shank end mill bodies

	2 30 10 166 G	10	6.2	2	30	0.7	70	diam. 10	9.75	2	A, B, C, D, E, F		3°
	3 36 12 166 G	12	6.2	2	36	0.7	81	diam. 12	11.5	3	A, B, C, D, E, F		3°
	4 48 16 166 G	16	6.2	2	48	0.7	96	diam. 16	15.5	4	A, B, C, D, E, F		3°

Accessories

 21 500 P Torx screw A > Page 171	 06 500 P Torx-screwdriver B > Page 172	 TV 08-2 Screwdriver torque Vario®-S with window scale, C > Page 173	 TV 500 Torque Vario® setter adjusting tool D > Page 173	 T6 500 P Torx interchangeable bit for Torque Vario® E > Page 173	 T6 502 P null F > Page 174
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Indexable inserts

		Catalogue no.	DIN Specification	Carbide Grade	Coating	l	s	r	M
		02 66 835 R20	XCHW 062220 EN	HSC 05	PVTi	6.2	2.2	2	M 2.0
		02 66 835 R20 D	XCHW 062220 EN	HSC 05	PVDiaN	6.2	2.2	2	M 2.0
		02 66 836 R20	XCHW 062220 EN	HSC 05	PVTiH	6.2	2.2	2	M 2.0

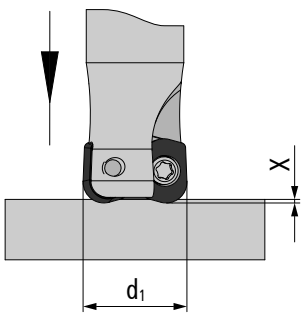
Feed per tooth (fz) | d.o.c. (ap)

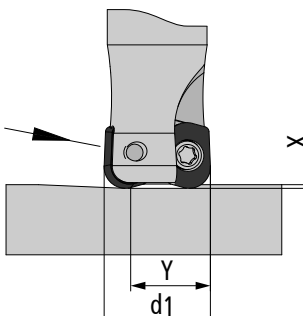
Material							
Carbide grade Coating	Feed per tooth d.o.c.	steel		stainless steel		cast iron	
HSC 05 PVTi	f _z (mm) a _p (mm)	0.05-0.7 0.05-0.4	-	0.05-0.7 0.05-0.4	-	-	0.05-0.6 0.05-0.4
HSC 05 PVDiaN	f _z (mm) a _p (mm)	-	-	-	0.05-0.7 0.05-1	-	-
HSC 05 PVTiH	f _z (mm) a _p (mm)	0.05-0.7 0.05-0.4	-	0.05-0.7 0.05-0.4	-	-	0.05-0.6 0.05-0.4

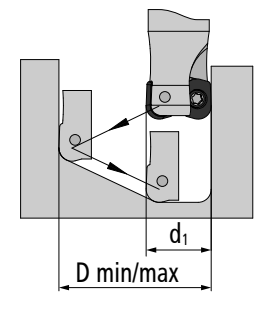
Cutting speed (Vc in m/min)

Material							
Carbide grade Coating	Application	steel		stainless steel		cast iron	
HSC 05 PVTi	roughing finishing	120 210 300 150 225 300	-	100 200 300 200 275 350	-	-	35 93 150 35 93 150
HSC 05 PVDiaN	roughing finishing	-	-	-	200 500 800 200 500 800	-	-
HSC 05 PVTiH	roughing finishing	120 210 300 150 225 300	-	100 200 300 200 275 350	-	-	35 93 150 35 93 150

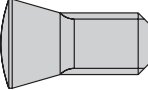
Extended operation data

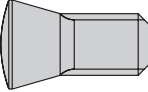
Plunging	
	
Cutter diam. d1	X_{max}
10-25	0.7

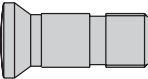
Ramping		
		
Cutter diam. d1	α°	y
10	<2.5	4
12	<2	6
16	<1.6	10
20	<1.2	14
25	<1	19

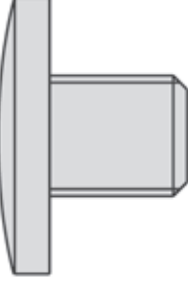
Helix		
		
Cutter diam. d1	D_{min}	D_{max}
10	13	20
12	17	24
16	25	32
20	33	39
25	43	49

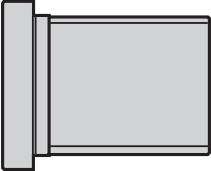
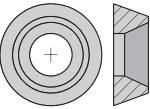
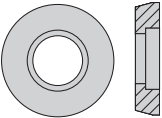
Accessories	Catalogue no.		Description			

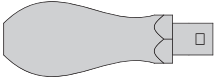
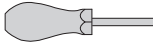
Torx@screws Torx@screws						
	18 500	Torx screw M 1.8 L 3.7 T 6	M 1.8	L 3.7	T 6	
	21 500	Torx screw M 2.0 L 4 T 6	M 2.0	L 4	T 6	
	21 500 P	Torx screw M 2.0 L 4 T 6 Plus	M 2.0	L 4	T 6 Plus	
	25 500	Torx screw M 2.5 L 5.0 T 7	M 2.5	L 5.0	T 7	
	25 500 K	Torx screw M 2.5 L 4.5 T 7	M 2.5	L 4.5	T 7	
	25 505 KP	Torx screw M 2.5 L 5.3 T 8 Plus	M 2.5	L 5.3	T 8 Plus	
	25 505 P	Torx screw for Slotworx M M 2.5 L 7.3 T 8 Plus	M 2.5	L 7.3	T 8 Plus	
	30 500	Torx screw M 3.0 L 7.0 T 10	M 3.0	L 7.0	T 10	
	35 500	Torx screw M 3.5 L 7.5 T 15	M 3.5	L 7.5	T 15	
	35 500 L	Torx screw M 3.5 11 T 15	M 3.5	11	T 15	
	40 505 K	Torx screw M 4.0 L 9.35 T 15 Plus	M 4.0	L 9.35	T 15 Plus	
	40 505 P	Torx screw M 4.0 L 10.58 T 15 Plus	M 4.0	L 10.58	T 15 Plus	
	45 500	Torx screw M 4.5 L 10.0 T 20	M 4.5	L 10.0	T 20	
	45 500 L	Torx screw M 4.5 14.5 T 20	M 4.5	14.5	T 20	

Torx@screws Torx screws for ball nose inserts						
	25 505	Torx screw for ball nose inserts M 2.5 L 6.36 T 8 Plus	M 2.5	L 6.36	T 8 Plus	
	30 505	Torx screw for ball nose inserts M 3.0 L 7.25 T 9 Plus	M 3.0	L 7.25	T 9 Plus	
	40 505	Torx screw M 4.0 L 10.58 T 15	M 4.0	L 10.58	T 15	

Torx@screws Locating screws						
	30 522	locating screw M 3.0 L 6.9 T 8	M 3.0	L 6.9	T 8	
	35 520	locating screw M 3.5 L 7.6 T 10	M 3.5	L 7.6	T 10	
	40 520	locating screw M 4.0 L 10.2 T 15	M 4.0	L 10.2	T 15	
	50 520	locating screw M 5.0 L 13.5 T 20	M 5.0	L 13.5	T 20	

Torx@screws Locking screws						
	35 510	locking screw M 3.5 T 15	M 3.5		T 15	
	35 511	locking screw M 3.5 T 10	M 3.5		T 10	

Accessories	Catalogue no.	Description				
Additional screws and washers threaded and tapped bush						
	35 500 I	threaded and tapped bush intern.M 3.5 extern.M 5 x 0.5 hexa.size 3.5	intern.M 3.5	extern.M 5 x 0.5	hexa.size 3.5	
	45 500 I	threaded and tapped bush intern.M 4.5 extern.M 6 x 0.75 hexa.size 4.5	intern.M 4.5	extern.M 6 x 0.75	hexa.size 4.5	
Additional screws and washers hexagon socket set screw						
	GWSTPS8ISK	hexagon socket set screw M 8x1.25 M8x0.75 hexa. size 4	M 8x1.25	M8x0.75	hexa. size 4	
Additional screws and washers Locking washers						
	10 510	locking washer diam. 11 for M 4.5	diam. 11	for M 4.5		
Additional screws and washers shim						
	09 511	Shim for RDHX 12T3 diam. 10	diam. 10			
	10 511	Shim for RDHX 1604 diam. 14	diam. 14			
Spanners / screwdrivers Torx-screwdriver						
	06 500	Torx-screwdriver T 6	T 6			
	06 500 P	Torx-screwdriver (Torx-Plus) T 6 Plus	T 6 Plus			
	07 500	Torx-screwdriver T 7	T 7			
	08 500	Torx-screwdriver T 8	T 8			
	08 500 P	Torx-screwdriver (Torx-Plus) T 8 Plus	T 8 Plus			
	09 500	Torx-screwdriver T 9	T 9			
	10 500	Torx-screwdriver T 10	T 10			
	15 500	Torx-screwdriver T 15	T 15			
	15 500 P	Torx-screwdriver (Torx-Plus) T 15 Plus	T 15 Plus			
	20 500	Torx-screwdriver T 20	T 20			

Accessories	Catalogue no.	Description				
Torque screwdrivers and accessories Torque screwdrivers						
	TV 1-5	Screwdriver torque Vario®-S with window scale from Nm 1.0 up to 5,0 Nm with scale	from Nm 1.0	up to 5,0 Nm	with scale	
	TV 2-8	Screwdriver torque Vario®-S with window scale from Nm 2.0 up to 8,0 Nm with scale	from Nm 2.0	up to 8,0 Nm	with scale	
	TV 04-1	Screwdriver torque Vario®-S with window scale from Nm 0.4 up to 1,0 Nm with scale	from Nm 0.4	up to 1,0 Nm	with scale	
	TV 08-2	Screwdriver torque Vario®-S with window scale from Nm 0.8 up to 2,0 Nm with scale	from Nm 0.8	up to 2,0 Nm	with scale	
	T10-1,4NM	Torque Vario® - S torque screwdriver Torque fixed at 1.4Nm suitable for SPINWORX® tools System DR10 / DR12	fixed 1.4Nm	System DR10	System DR12	
Torque screwdrivers and accessories Torque Vario® setter adjusting tool						
	TV 500	Torque Vario® setter adjusting tool				
Torque screwdrivers and accessories Torx bits, standard						
	T6 500	Torx interchangeable bit for Torque Vario® T 6 L 175 max. 0.6 Nm	T 6	L 175	max. 0.6 Nm	
	T6 500 P	Torx interchangeable bit for Torque Vario® T 6 IP L 175 max. 0.6 Nm	T 6 IP	L 175	max. 0.6 Nm	
	T7 500	Torx interchangeable bit for Torque Vario® T 7 L 175 max. 0.9 Nm	T 7	L 175	max. 0.9 Nm	
	T8 500	Torx interchangeable bit for Torque Vario® T 8 L 175 max. 1.3 Nm	T 8	L 175	max. 1.3 Nm	
	T8 500 P	Torx interchangeable bit for Torque Vario® T 8 IP L 175 max. 1.3 Nm	T 8 IP	L 175	max. 1.3 Nm	
	T9 500	Torx interchangeable bit for Torque Vario® T 9 L 175 max. 2.5 Nm	T 9	L 175	max. 2.5 Nm	
	T10 500	Torx interchangeable bit for Torque Vario® T 10 L 175 max. 3.8 Nm	T 10	L 175	max. 3.8 Nm	
	T15 500	Torx interchangeable bit for Torque Vario® T 15 L 175 max. 5.5 Nm	T 15	L 175	max. 5.5 Nm	
	T15 500 P	Torx interchangeable bit for Torque Vario® T 15 IP L 175 max. 5.5 Nm	T 15 IP	L 175	max. 5.5 Nm	
	T20 500	Torx interchangeable bit for Torque Vario® T 20 L 175 max. 8.0 Nm	T 20	L 175	max. 8.0 Nm	

Accessories		Catalogue no.	Description			
Torque screwdrivers and accessories Torx bits with retaining spring						
	T6 502	Torx MagicSpring compatible bit f. Torque Vario® T 6 L 175 max. 0.6 Nm	T 6	L 175	max. 0.6 Nm	
	T6 502 P	Torx MagicSpring compatible bit f. Torque Vario® T 6 IP L 175 max. 0.6 Nm	T 6 IP	L 175	max. 0.6 Nm	
	T7 502	Torx MagicSpring compatible bit f. Torque Vario® T 7 L 175 max. 0.9 Nm	T 7	L 175	max. 0.9 Nm	
	T8 502	Torx MagicSpring compatible bit f. Torque Vario® T 8 L 175 max. 1.3 Nm	T 8	L 175	max. 1.3 Nm	
	T8 502 P	Torx MagicSpring compatible bit f. Torque Vario® T 8 IP L 175 max. 1.3 Nm	T 8 IP	L 175	max. 1.3 Nm	
	T9 502	Torx MagicSpring compatible bit f. Torque Vario® T 9 L 175 max. 2.5 Nm	T 9	L 175	max. 2.5 Nm	
	T10 502	Torx MagicSpring compatible bit f. Torque Vario® T 10 L 175 max. 3.8 Nm	T 10	L 175	max. 3.8 Nm	
	T15 502	Torx MagicSpring compatible bit f. Torque Vario® T 15 L 175 max. 5.5 Nm	T 15	L 175	max. 5.5 Nm	
	T20 502	Torx MagicSpring compatible bit f. Torque Vario® T 20 L 175 max. 8.0 Nm	T 20	L 175	max. 8.0 Nm	
	T15 502 P	Torx MagicSpring compatible bit f. Torque Vario® T 15 IP L 175 max. 5.5 Nm	T 15 IP	L 175	max. 5.5 Nm	
Clamping claws						
	12 510	clamping claw for Trigaworx® S for M 2.5	for M 2.5			
Clamping finger						
	10 514	clamping finger for CBN with screw M 4.0 T 15	with screw M 4.0	T 15		
Cleaning paste / copper paste						
	Z 00043	HTC ceramic paste WS 600 005 Tube 5 grams	Tube 5 grams			

STARTING TORQUES FOR TORX® SCREWS

with the Pokolm Torque Screwdriver



**Allowable starting torques for Torx® screws
in the Pokolm range of accessories.**

Thread	Torx® size	max. starting torque* [Nm]	recommended starting torque* [Nm]
M 1,8	T 6	0,4	0,28
M 2,0	T 6	0,62	0,43
M 2,5	T 7 / T 8	1,28	0,90
M 3,0	T 9 / T 10	2,25	1,57
M 3,5	T 10 / T 15	3,45	2,40
M 4	T 15	5,15	3,60
M 4,5	T 20	7,60	5,30
M 5	T 20	10,20	7,10

* Starting torques apply to screws of strength category 12.9 and result in a load factor of 90% of yield point and are based on a mean friction coefficient of 0.14 µm.

The new Pokolm torque screwdrivers let you adjust your required starting torque quickly and easily.

Our adjustable torque screwdrivers can be safely operated because of the easily readable scale. With interchangeable bits for universal use.

The new TORX®
Torque-screwdrivers are placed
in chapter "Accessories".

Your advantage:

The defined and reproducible fixture of indexable inserts and clamping elements in our milling cutter bodies ensures optimum retention forces, thus preventing damage to milling cutters, inserts, and screws.

High Standard of Quality: Pokolm uses quality screws and screwdrivers made by leading manufacturers. They are optimally coordinated with the high-performance capability of our products. All accessories can be found on the following pages.

HIGH-SPEED SPINDLE SYSTEMS

MODERN SPINDLE UNITS FOR EFFECTIVE MILLINGS RESULTS

Many milling machines – both old and new – have a relatively low maximum speed. Low maximum speed does have advantages in roughing operations, but are a big drawback for achieving effective feed rates. Low speed also greatly limits the advantages of modern CNC applications. The results: much longer machining times and loss of valuable production capacities.

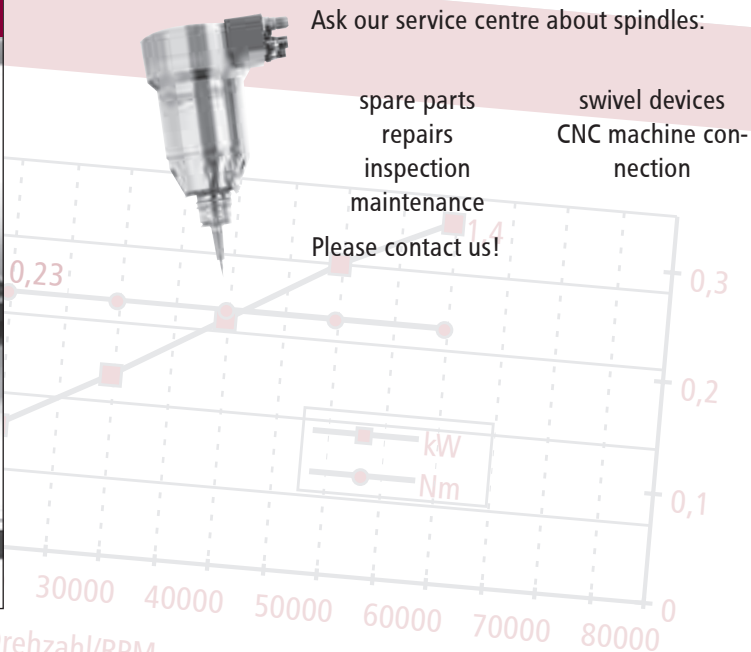
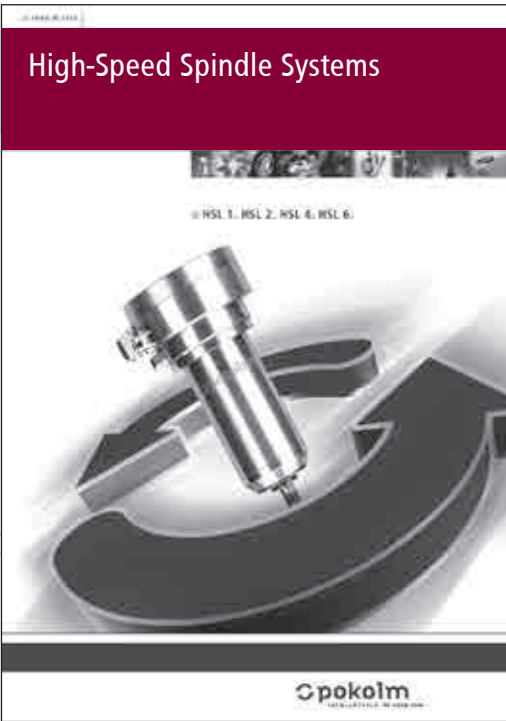
We offer a convincing solution for this situation: Pokolm high-speed spindle systems for the most profitable machining results.

BETTER SURFACE FINISH RESULTS AND GREATLY IMPROVED CYCLE TIME

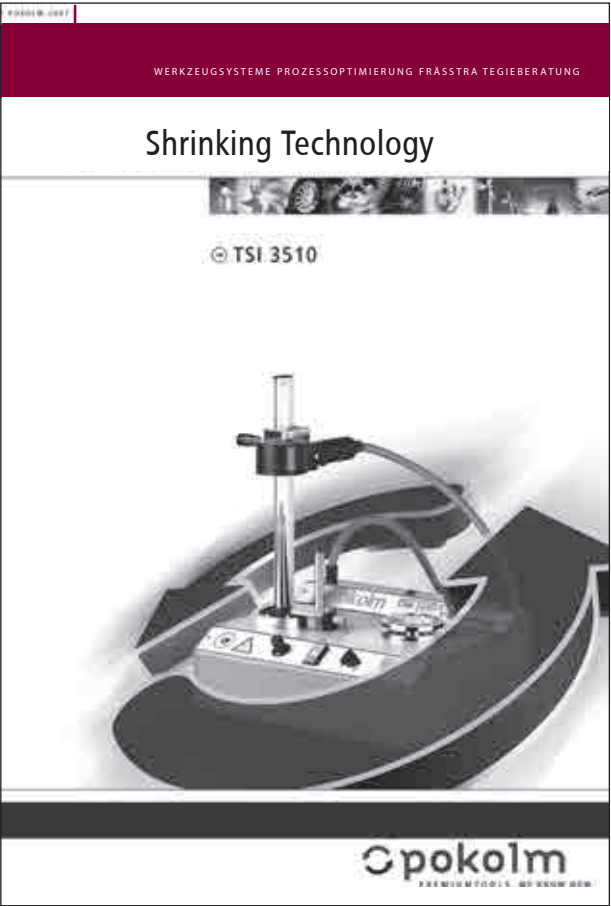
The advantages are impressive: higher cutting speeds, utilization of maximum feed rates – even with the smallest end mills – better surface finish and a great reduction in the need for EDM. Results: much shorter machining times and full utilization of the CNC advantages.

Pokolm provides various spindle systems for individual adaptation to existing machines and operation requirements. Operating with an approach angle of these spindles in A and C direction by using our swivel device, increases the variety of applications of your milling machine.

Get the maximum speed from your machines with Pokolm-spindle systems. The result: You save time!



INDUCTIVE SHRINKING TECHNOLOGY



FIRST OPERATION: SHRINKING, THEN MILLING

Shrinking Technology convinces everybody compared with conventional chucking methods from the past. What counts? Absolute concentricity and highest precision with extensive extended tool life. Shrinking technology offers a safe friction-locked connection between tool and tool holder and provides an increased transferable torque. And the qualification for maximum revolutions is the best precondition for an optimum surface finish and for reducing costs for expensive finishing processes.

Compared to conventional milling chucks, shrinking arbors allow the use of distinctly slim adaptors for machining components with narrow situations, which would be unexchangeable with other tool-holding systems.

Pokolm offers a substantial range of tooling for shrinking technology: several top-class Induction Shrinking Units, shrinking arbors for all possible machine connections and our patent-protected connection system DuoPlug® in combination with our "zero-reach"-shrinking arbors.

MATERIAL GROUP
CROSS REFERENCES

		M. No.	DIN	European Standard	France AFNOR	Great Britain BS	Japan JIS	Italia UNI	Sweden SS	Spain U.N.E./I.H.A	USA AISI/SAE
Steel	Free Machining Steel/ Mild Steel	1.0037	St37-2	S235JR	E34-2	37/23 HR	SN 400 B	Fe 360 B FU	1311	AE 235 B	1015
		1.0044	St44-2	S275JR	E28-2	43/25 HR	SN 400 B	Fe 430 B FN	1412	AE 275 B	1020
		1.0050	St50-2G	E295	A50-2	4360	SS 490	Fe 490	1550/2172	A 490	-
		1.0070	St70-2G	E360	A70-2	4360	-	Fe 690	1655	A 690	-
		1.0570	St52-3	S355J2G3	E36-3	50/35 HR	SM490 A;B;C;YA;YB	Fe 510/Fe52B FN/Fe52 CFN	2132/2134	AE 355 D	1024
		1.1141	Ck15	C15E	XC 18	080 M 15	S15C	C16	1370	C15K	1015 / 1017
		1.1191	Ck45	C45E	XC 45	080 M 46	S45C	C45	1672	C45E	1042 / 1045
		1.1730	C45W	C45U	Y3 42 / Y3 48	EN 43 B	-	-	1672	F.114	1045
	Tools Steels, Chrome-Nickel Alloys, Steel castings, difficult to machine	1.7131	16MnCr5	16MnCr5	16 MC 5	527 M 17	-	16MnCr5	2173/2511	F.1516	5115 / 5117
		1.2067	100Cr6	102Cr6	Y100C6	BL 3	SUJ 2	-	-	100Cr6	L3
		1.2162	21MnCr5	21MnCr5	-	-	-	-	-	-	-
		1.2307	29CrMoV9	29CrMoV9	-	-	-	-	-	-	-
		1.2311	40CrMnMo7	35CrMo 8	-	-	-	35CrMo8KU	-	F.5263	P20
		1.2312	40CrMn MoS8-6	-	-	-	-	-	-	X210CrW12	P20+1
		1.2323	48CrMoV6-7	-	-	-	-	-	-	-	-
		1.2341	6CrMo15-5	5CrMo16	-	-	-	-	-	-	P4
		1.2343	X37CrMoV5-1	X37CrMoV5-1	Z38CDV5	BH 11	SKD 6	X37Cr MoV51KU	X37CrMo V5-1	X37Cr MoV5-1	H11
		1.2344	X40CrMoV5-1	X40CrMoV5-1	Z40CDV5	BH 13	SKD 61	X40CrMo V511KU	2242	X40Cr MoV5-1	H13
		1.2842	90MnCrV8	90MnCrV8	90MV 8	BO 2	-	90 MnCrV 8 KU	-	F.5229	O2
		1.2080	X210Cr12	X210Cr12	Z200C12	BD 3	SKD 1	-	X210Cr12	X210Cr12	D3
		1.2363	X100CrMoV5	X100CrMoV5	Z100CDV5	BA 2	SKD 12	X205 Cr12KU	2260	X100CrMoV5	A2
		1.2369	81MoCr V42-16	-	-	-	-	X100CrMoV5 1KU	-	-	613
		1.2379	X153CrMoV12	X153CrMoV12	Z 160 CDV 12	BD 2	SKD10/ SKD11	X155CrV Mo121KU	2310	X153CrMoV12	D2
		1.2567	30WCrV17-2	X30WCrV53	-	-	SKD 4	-	-	-	-
		1.2708	54NiCrMoS 6	-	-	-	-	-	-	-	-
		1.2713	55NiCrMoV6	55 NiCrMoV 7	-	-	(SKT4)	-	-	F.520.S	L6

		M.-No.	DIN	European Standard	France AFNOR	Großbritanni-en BS	Japan JIS	Italia UNI	Sweden SS	Spain U.N.E./I.H.A	USA AISI/SAE	
Steel	Tools Steels, Chrome-Ni-cke Alloys, Steel Castings	1.2738	40CrMnNi Mo8-6-4	40CrMnNi Mo8-6-4	-	-	-	-	-	-	-	
		1.2767	45NiCrMo16	45NiCrMo16	-	-	SKT 6	40NiCrMo V16KU	-	-	-	
		1.6358	XNiCo Mo18-9-5	-	-	-	-	-	-	-	-	
High-temperature Alloys	Heat-resistance Alloys	1.3401	X120Mn12	-	Z120M12	BW 10	SCMnH 1	G-X120Mn12	2183	F.8251	-	
		1.4865	GX40NiCr Si38-19	GX40NiCr Si38-19	GX40NiCr Si38-19	3330 C 11 / 331 C 40	SCH 15	GX40NiCr Si38-19	GX40NiCr Si38-19	GX40NiCr Si38-19	-	
		2.4375	NiCu30Al (Monel K-500)	-	(NU30AT)	NA 18	-	-	-	-	-	Monel K-500
		2.4610	NiMo16Cr16Ti (Almenit 4610)	-	-	NA 45	-	-	-	-	-	Hastelloy C-4
		2.4619	NiCr22Mo7Cu (Coralloy 4619)	-	-	-	-	-	-	-	-	Hastelloy G-3
		2.4631	NiCr20TiAl (Nimonic 80A)	Ni-P95-HAT (AECMA)	NC 20 TA	(2HR201; HR401,601)	NCF 80A	-	-			Nimonic 80 A; HEV 5
		2.4636	NiCo15Cr15Mo AlTi (Dux 4636)	-	-	HR 4	-	-	-	-	-	Nimonic 115
		2.4648	EL-NiCr19Nb (FoxNibas 70/20)	-	-	-	-	-	-	-	-	-
		2.4668	NiCr19NbMo (Inconel 718)	NiCr19Fe19 Nb5Mo3	NC19FeNb	NiCr19Fe19 Nb5Mo3	NCF 718	NiCr19Fe19 Nb5Mo3	NiCr19Fe19 Nb5Mo3	NiCr19Fe19 Nb5Mo3	Inconel 718 XEV-I	
		2.4856	NiCr22Mo9Nb (Inconel 625)	NiCr22Mo9Nb	NC22FeDNb	NA 43/Na 21	NCF 625	NiCr22Mo9Nb	NiCr22Mo9Nb	NiCr22Mo9Nb	Inconel 625	
	Titanium Alloys	-	Ti99,5 HB 30-200	-	-	-	-	-	-	-	-	-
		-	Ti99,6 HB 30-170	-	-	-	-	-	-	-	-	-
		-	Ti99,7 HB 30-150	-	-	-	-	-	-	-	-	-
		-	Ti99,8 HB 30-120	-	-	-	-	-	-	-	-	-
		-	TiAl6V4ELI	-	-	TA11	-	-	-	-	-	AMS R56401
		-	TiAl5Sn2.5	-	T-A5E	TA14/17	-	-	-	-	-	AMS 54520
		3.7025	Ti 1	-	-	2 TA 1	-	-	-	-	-	AMS R50250
		3.7124	TiCu2	-	-	2 TA21-24	-	-	-	-	-	-
		3.7145	TiAl6Sn2 Zr4Mo2Si	-	-	-	-	-	-	-	-	AMS R54620
		3.7165	TiAl6V4	-	T-A6V	TA10-13 / TA28	-	-	-	-	-	AMS R56400
		3.7175	TiAl6V6Sn2	-	-	-	-	-	-	-	-	-
		3.7184	TiAl4Mo4Sn2	-	-	-	-	-	-	-	-	-
		3.7185	TiAl4Mo4Sn2	-	-	TA 45-51; TA57	-	-	-	-	-	-
3.7225	Ti 1 Pd	-	-	TP1	-	-	-	-	-	AMS 52250		

MATERIAL GROUP

CROSS REFERENCES

(continued)

		M.-No.	DIN	European Standard	France AFNOR	Great Britain BS	Japan JIS	Italia UNI	Sweden SS	Spain U.N.E./I.H.A	USA AISI/SAE
Stainless Steel	all sorts	1.2316	X36CrMo17	X38CrMo16	Z38CD16-01	X38CrMo16	-	X38CrMo16	-	F.5267	-
		1.2367	X38CrMoV5-3	X38CrMoV5-3	Z38CDV5-3	X38CrMoV5-3	-	X38CrMoV5-3	X38CrMoV5-3	X38CrMoV5-3	-
		1.3543	X102CrMo17	X108CrMo17	Z100CD17	X108CrMo17	SUS 440C	X105CrMo17	X108CrMo17	F.3425	440 C
		1. 4059	GX22CrNi17	-	Z20CN 17.2M	ANC 2	-	-	-	-	-
		1.4122	GX35CrMo17	X39CrMo17-1	Z38CD 16.1CI	X39CrMo17-1	-	X39CrMo17-1	X39CrMo17-1	X39CrMo17-1	-
		1.4301	X5CrNi18-10	X5CrNi18-10	Z6CN18.09	304 S 15	SUS 304	X5CrNi1810	2332	F.3504	304
		1.4305	X12CrNiS18-8	X8CrNiS18-9	Z8CNF18-09	303 S 31	SUS 303	X10CrNiS18-9	2346	F.310.C	303
		1.4340	GX40CrNi27-4	-	-	-	-	G X 35 CrNi 28 05	-	-	-
		1.4401	X5CrNiMo 17-12-2	X5CrNiMo 17-12-2	Z7CND 17-11-02	316 S 33	SUS 316	X5CrNiMo 17 12	2347	F.3534	316
		1.4462	X2CrNiMoN 22-5-3	X2CrNiMoN 22-5-3	Z2CND 22-06-03	318 S 13	SUS 329J3L	X2CrNiMoN 22-5-3	2377	X2CrNiMoN 22-5-3	S31803/ S32205
		1.4541	X10CrNiTi18-9	X6CrNiTi18-10	Z6CNT 18-10	321 S 31	SUS 321	X6CrNiTi18-10	2337	F.3523	321
		1.4551	X10CrNi 18-9	X5CrNiNb 20 10 KE	Z6CNNb 20-10	-	SUS Y 374	-	-	-	-
		1.4571	X10CrNiMo Ti18-10	X6CrNiMo Ti17-12-2	Z6 CNDT 17-12	320 S 31	SUS 316Ti	X6CrNiMo Ti17-12	2350	F.3535	316Ti
		1.4712	X10CrSi6	-	-	-	-	-	-	-	-
		1.4742	X10CrAl18	X10CrSi18	Z10CAS18	430 S 15	SUS 430	X8Cr17	-	F.3113	430
Cast Iron	Grey Cast Iron	0.6010	GG10	EN-GJL-100	Ft10D	GRADE100	FC 10	G10	0110-00	FG 10	N0 20 B
		0.6020	GG20	EN-GJL-200	Ft20D	GRADE200	FC 20	G20	0120-00	FG 20	No 30 B
		0.6030	GG30	EN-GJL-300	Ft30D	GRADE300	FC 30	G30	0130-00	FG 30	No 45 B
		0.6040	GG40	EN-GJL-350	Ft35D	GRADE350	FC 35	G35	0135-00	FG 35	-
	Spheroidal Graphite	0.7040	GGG-40	EN-GJS-400-15	FGS 400-12	SNG 420/12	FCD 400	GS 400/12	07 17-02	FGE 38-17	60-40-18
		0.7050	GGG-50	EN-GJS-500-7	FGS 500-7	SNG 500/7	FCD 500	GS 500/7	07 27-02	FGD 50-7	65-45-12
		0.7060	GGG-60	EN-GJS-600-3	FGS 600-7	SNG 600/3	FCD 600	GS 600/3	07 32-03	FGE 60-2	80-55-06
		0.7070	GGG-70	EN-GJS-700-2U	FGS 700-2	SNG 700/2	FCD 700	GS 700/2	07 37-01	FGS 70-2	100-70-03
		0.7080	GGG-80	E8N-GJS-800-2	FGS 800-2	SNG 800/2	FCD 800	GS 800/2	-	-	120-90-02
	Tempered Castings	GTS 35-10	EN-GJMB-350-10	MN 35-10	B 340/12	-	-	08 15	-	32510	-
		GTS 45-06	EN-GJMB-450-6	-	P 440/7	-	-	08 52	-	40010	-
		GTS 55-04	EN-GJMB-550-4	MP 50-5	P 510/4	-	-	08 54	-	50005	-
		GTS 65-02	EN-GJMB-650-2	MP 60-3	P 570/3	-	-	08 85	-	70003	-

		M.-No.	DIN	European Standard	France AFNOR	Great Britain BS	Japan JIS	Italia UNI	Sweden SS	Spain U.N.E./I.H.A	USA AISI/SAE
Non-ferrous Materials	Aluminum	3.0255	Al99.5	EN-AW-1050A	A59050C	L31/L34/L36	-	-	-	-	1000
		3.1325	AlCuMg1	EN-AW-2017A	-	-	-	-	-	-	-
		3.2163	G-AlSi9Cu3	EN-AC-46200	-	-	-	-	-	-	-
		3.2315	AlMgSi1	EN-AW-6082	-	-	-	-	-	-	-
		3.2383	G-AlSi10Mg	-	-	LM 9	-	-	4253	-	A 360.2
		3.2581	G-AlSi12	EN-AW-2017A	-	LM 6	-	-	4261	-	A 413.2
		3.3535	AlMg3	EN-AW-5754	-	-	-	-	-	-	-
		3.4345	AlZnMgCu0,5	EN-AW-7022	AZ4GU/9051	L 86	-	-	-	-	7050
		3.5105	GMgZn4 SE1Zr1	-	G-Z4TR	MAG 5	-	-	-	-	ZE 41
		3.5812	G-MgAl8Zn1	-	G-A9	MAG 1	-	-	-	-	AZ 81
	Copper	-	CuMn5F36	-	-	-	-	-	-	-	-
		-	CuSi2MnF34	-	-	-	-	-	-	-	-
		-	E-Cu57	-	-	-	-	-	-	-	-
		-	CuZn15	-	CuZn 15	CZ 102	-	-	-	-	C 23000
		-	CuZn30	-	CuZn 30	CZ 106	-	-	-	-	C 26000
		-	CuZn37	-	CuZn 37	CZ 108	-	C2720	-	-	C 27700
		-	CuZn36Pb3	-	-	-	-	-	-	-	-
		-	G-CuZn34Al2	-	U-Z36N 3	HTB 1	-	-	-	-	C 86200
		-	G-CuSn5ZnPb	-	U-E5Pb5Z5	LG 2	-	-	-	-	C 83600
		-	G-CuPb10Sn	-	U-E10Pb10	LB 2	-	-	-	-	C 93700
		-	CuCrZr	-	U-Cr 0,8 Zr	CC 102	-	-	-	-	C 18200
	Graphite	-	ISO-63	-	-	-	-	-	-	-	-
		-	ISO-90	-	-	-	-	-	-	-	-
		-	ISO-93	-	-	-	-	-	-	-	-
	Plastics	-	ISO-95	-	-	-	-	-	-	-	-
		-	Ureol® 5211 A/B	-	-	-	-	-	-	-	-
		-	Ureol® 5212 A/B	-	-	-	-	-	-	-	-
		-	Ureol® 5213 A/B	-	-	-	-	-	-	-	-
		-	Ureol® 5214 A/B	-	-	-	-	-	-	-	-
		-	Ureol® 5215 A/B	-	-	-	-	-	-	-	-
		-	Ureol® 5216 A/B	-	-	-	-	-	-	-	-
		-	Ureol® 5217 A/B	-	-	-	-	-	-	-	-
		-	Ureol® 5218 A/B	-	-	-	-	-	-	-	-
		-	Ureol® 5219 A/B	-	-	-	-	-	-	-	-

MATERIAL GROUP
CROSS REFERENCES (continued)

		M.-No.	DIN	European Standard	France AFNOR	Great Britain BS	Japan JIS	Italia UNI	Sweden SS	Spain U.N.E./I.H.A	USA AISI/SAE
Hardened Steel	up to 48HRC	1.2311	40CrMnMo7	35CrMo 8	-	-	-	35CrMo 8 KU	-	-	-
		1.2312	40CrMn-MoS8-6	-	-	-	-	-	-	-	-
		1.2323	48CrMoV6-7	-	-	-	-	-	-	-	-
		1.2343	X38CrMoV5-1	X37CrMoV5-1	Z38CDV 5	BH 11	SKD 6	X37CrMo V51 KUa	X37CrMoV5-1	F.520.G	H 11
		1.2344	X40CrMoV51	X40CrMoV5-1	Z40CDV 5	BH 13	SKD 61	X40CrMo V 5 1 1 KU	2242	X40CrMo V 5-1	H 13
		1.2708	54NiCrMoS6	-	-	-	-	-	-	-	-
	up to 55HRC	1.2842	90MnCrV8	90MnCrV8	90Mv8	BO 2	-	90MnVCr 8 KU	90MnCrV8	F.5229	O 2
		1.2080	X210Cr12	X210Cr12	Z200C12	BD 3	SKD 1	X210Cr12	X210Cr12	F.521	D 3
		1.2323	48CrMoV6-7	-	-	-	-	-	-	-	-
		1.2344	X40CrMoV5-1	X40CrMoV5-1	Z40CDV5	BH 13	SKD 61	X40CrMoV5-1	2242	X40CrMoV5-1	H 13
		1.2363	X100CrMoV51	X100CrMoV5	Z100CDV5	BA 2	SKD 12	X100CrMoV5	2260	X100CrMoV5	A 2
		1.2369	81MoCrV 42-16	-	-	-	-	-	-	-	613
		1.2379	X155CrV-Mo12-1	X153CrMoV12	Z160CDV12	BD 2	SKD 11	X153CrMoV12	2310	X153CrMoV12	D 2
		1.2567	30WCrV17-2	X30WCrV53	-	-	SKD 4	-	-	-	-
		1.2708	54NiCrMoS6	-	-	-	-	-	-	-	-
		1.2713	55NiCrMoV6	55NiCrMoV7	55NCDV7	-	SKT 4	-	-	F.520.S	L 6
		1.2738	40CrMnNi Mo8-6-4	40CrMnNi Mo8-6-4	40CrMnNi Mo8-6-4	40CrMnNi Mo8-6-4	40CrMnNi Mo8-6-4	40CrMnNi Mo8-6-4	40CrMnNi Mo8-6-4	40CrMnNi Mo8-6-4	40CrMnNi Mo8-6-4
		1.2767	X45NiCrMo4	45NiCrMo16	45NiCrMo16	45NiCrMo16	SKT 6	45NiCrMo16	45NiCrMo16	45NiCrMo16	-
		1.2842	90MnCrV8	90MnCrV8	90MnCrV8	BO 2	-	90MnCrV8	90MnCrV8	90MnCrV8	O 2
	up to 65HRC	1.2080	X210Cr12	X210Cr12	Z200C12	BD 3	SKD 1	X210Cr12	X210Cr12	X210Cr12	D 3
		1.2363	X100CrMoV5	X100CrMoV5	Z100CDV5	BA 2	SKD 12	X100CrMoV5	2260	X100CrMoV5	A 2
		1.2369	81MoCrV 42-16	-	-	-	-	-	-	-	613
		1.2379	X153CrMoV12	X153CrMoV12	Z160CDV12	BD 2	SKD 10	X153CrMoC12	2310	X153CrMoC12	D 2
		1.2767	45NiCrMo16	45NiCrMo16	45NiCrMo16	45NiCrMo16	SKT 6	45NiCrMo16	45NiCrMo16	45NiCrMo16	-
		1.2842	90MnCrV8	90MnCrV8	90MnCrV8	BO 2	-	90MnCrV8	90MnCrV8	90MnCrV8	O2

HARDNESS CONVERSION TABLE
Tensile Strength, Vickers-, Brinell- und Rockwell Hardness

Tensile Strength R _m N/mm²	Vickers Hardness HV10	Brinell Hardness HB	Rockwell Hardness HRC
255	80	76,0	
270	85	80,7	
285	90	85,5	
305	95	90,2	
320	100	95,0	
335	105	99,8	
350	110	105	
370	115	109	
385	120	114	
400	125	119	
415	130	124	
430	135	128	
450	140	133	
465	145	138	
480	150	143	
495	155	147	
510	160	152	
530	165	156	
545	170	162	
560	175	166	
575	180	171	
595	185	176	
610	190	181	
625	195	185	
640	200	190	
660	205	195	
675	210	199	
690	215	204	
705	220	209	
720	225	214	
740	230	219	
755	235	223	
770	240	228	20,3
785	245	233	21,3
800	250	238	22,2
820	255	242	23,1
835	260	247	24,0
850	265	252	24,8
865	270	257	25,6
880	275	261	26,4
900	280	266	27,1
915	285	271	27,8
930	290	276	28,5
950	295	280	29,2
965	300	285	29,8
995	310	295	310
1030	320	304	32,2
1060	330	314	33,3
1095	340	323	34,4
1125	350	333	35,5

Tensile Strength R _m N/mm²	Vickers Hardness HV10	Brinell Hardness HB	Rockwell Hardness HRC
1155	360	342	36,6
1190	370	352	37,7
1220	380	361	38,8
1255	390	371	39,8
1290	400	380	40,8
1320	410	390	41,8
1350	420	399	42,7
1385	430	409	43,6
1420	440	418	44,5
1455	450	428	45,3
1485	460	437	46,1
1520	470	447	46,9
1555	480	456*	47,7
1595	490	466*	48,4
1630	500	475*	49,1
1665	510	485*	49,8
1700	520	494*	50,5
1740	530	504*	51,1
1775	540	513*	51,7
1810	550	523*	52,3
1845	560	532*	53,0
1880	570	542*	53,6
1920	580	551*	54,1
1955	590	561*	54,7
1995	600	570*	55,2
2030	610	580*	55,7
2070	620	589*	56,3
2105	630	599*	56,8
2145	640	608*	57,3
2180	650	618*	57,8
	660		58,3
	670		58,8
	680		59,2
	690		59,7
	700		60,1
	720		61,0
	740		61,8
	760		62,5
	780		63,3
	800		64,0
	820		64,7
	840		65,3
	860		65,9
	880		66,4
	900		67,0
	920		67,5
	940		68,0

CLASSIFICATION OF CARBIDE MATERIAL GRADES INDEXABLE INSERTS FOR MILLING

Designation of main groups of chip removal and groups of application according to ISO 513

DESIGNATION	RANGE OF APPLICATION										MATERIAL TO BE MACHINED						
	1	5	10	15	20	25	30	35	40	45	50	P	M	K	N	S	H
CBN Steel																	
BN-K10																	
CBN Cast Iron																	
BN-K20																	
HSC 05 PVTi																	
HC-P10																	
HC-K05																	
HSC 05 PVFN																	
HC-P10																	
HC-K05																	
K 10																	
HW-M15																	
HW-K10																	
K10 PVTi																	
HC-M15																	
HC-K10																	
P25 PVGO																	
HC-P25																	
HC-M25																	
P25 PVTi																	
HC-P25																	
HC-K20																	
P40 PVTi																	
HC-P40																	
P40 PVGO																	
HC-P35																	
HC-M35																	
HC-K30																	
P40 PVSR																	
HC-P30																	
HC-K25																	
P40 PVML																	
HC-P35																	
HC-M35																	
P40 PVGM																	
HC-P40																	
HC-M40																	
M40 PVST																	
HC-P40																	
HC-M40																	

● Major application
○ Minor application

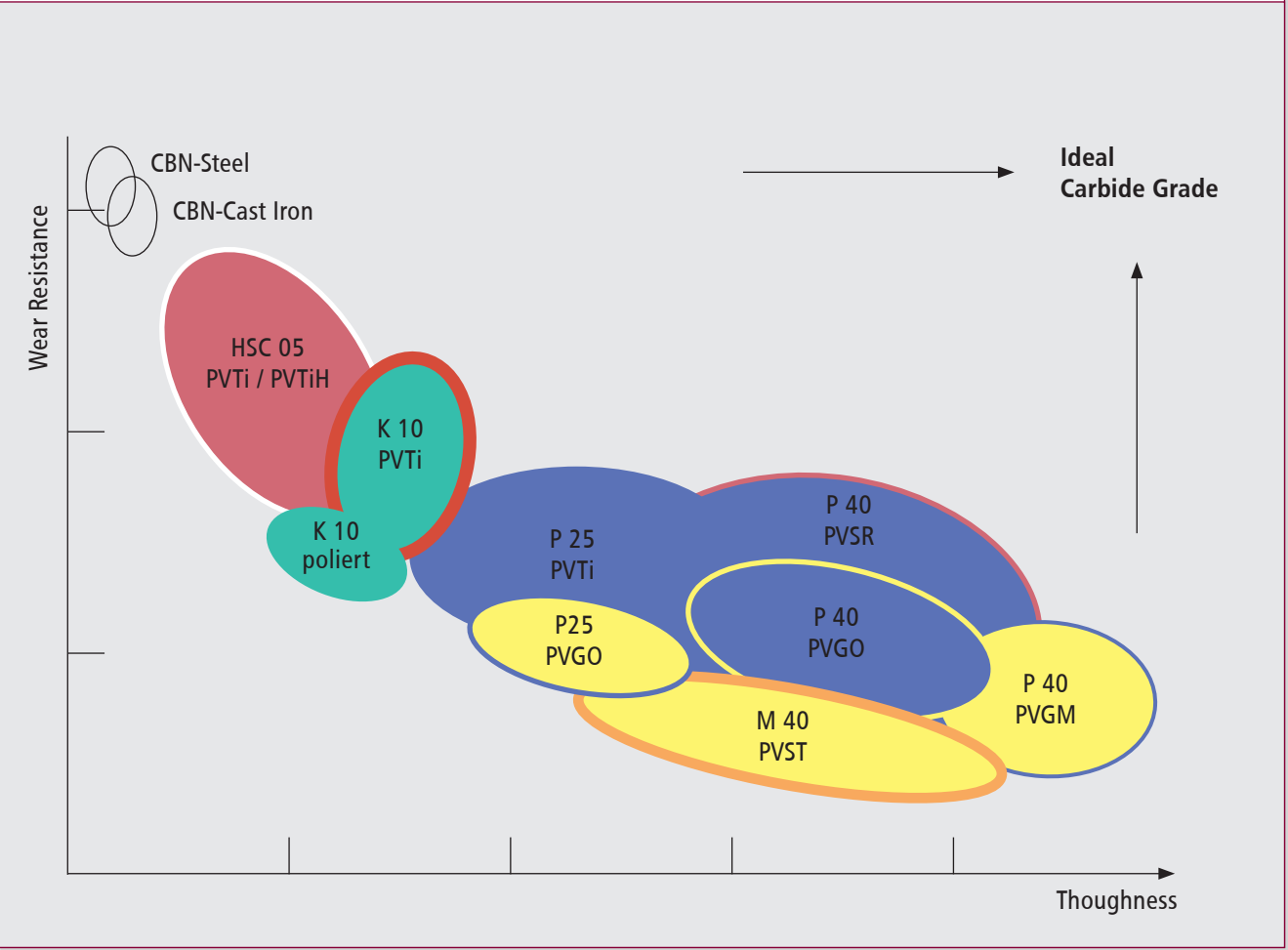
Full colour circle symbols represent:
The upper point of the pentagon-symbol indicates major applications. Sloping sides to the right or left indicate minor applications.
Hollow colour circle symbols represent:

Major applications for materials to be machined.
Minor applications for materials to be machined. II

DIAGRAM WEAR RESISTANCE

For classification of the main carbide grades for milling according to its wear resistance and toughness

This diagram shows the ratio of wear resistance to toughness of our main carbide grades for milling applications. It displays extended operative ranges, shows possibilities of supplementary use and alternatives of main grades in case of different kinds of tool wear. It also illustrates the multiplicity of the operative range.



[illegible]

COATING SUMMARY



Description		Colour	Vickers Hardness HV	Maximum Temperature in Centigrade	Type of Coating	Thickness of Coating in µm
PVTi	TiAlN	blue/grey	3600	up to 850°	PVD	2 to 4
PVDiaN	Diamond-coating, normal	dull grey	10000	up to 600°	CVD	6 to 8
PVSR	-	black	1420 HV30	up to 1000°	CVD	4 to 6,5
PVML	TiAlSiN	gold	3300	800° to 850°	PVD	2,5 to 5
PVFN	TiAlN	blue/grey	3300	up to 950°	PVD	2 to 4
PVGO	TiAlN + TiN	yellow/gold	3150	900°	PVD	2 to 4,5
PVTiH	TiAlN Multilayer	violet/brown	3600	up to 1100°	PVD	4 to 5
PVST	AlTiN	blue/grey	3300	up to 950°	PVD	2 to 4

CUTTING MATERIALS

Material		Coatings	Steel	High-temperature Alloys	Stainless Steel	Cast Iron	Non-ferrous Materials	Hardened Steel	
P40	PVTi								Coated very tough standard carbide grade for roughing of steel with medium surface speed and increased tool life.
P40	PVGO								Coated, very tough high performance special carbide grade for pre-finishing and roughing steel, suitable for medium up to high speed values, partial suitable for cutting cast iron and stainless steel.
P40	PVSR								Coated extremely tough special carbide grade for pre-finishing and roughing of steel, with medium surface speed and extremely high feed rates.
P40	PVGM								Coated very tough high performance special carbide grade for pre-finishing and roughing of stainless steel, high temperature alloys and titanium.
P40	PVML								Coated, tough special carbide grade for pre-finishing and roughing steel at medium and high cutting speeds; in part suitable for finishing and for cast iron and stainless steel machining.
P25	PVTi								Coated tough standard carbide grade for pre-finishing and finishing of steel with medium and higher cutting speed and increased tool life.
K10	poliert								Uncoated standard carbide grade for medium surface speed for milling of cast iron, non-ferrous-materials and graphite.
K10	PVTi								Coated standard carbide grade for medium surface speed-for milling of cast iron, non-ferrous-materials and graphite and increased tool life.
K10	PVDiaN								Diamond-coated standard carbide grade for high-speedfinishing of non-ferrous-materials and graphite.
K05	PVTi								Coated standard carbide grade for finishing of steel, hardened steel and steel castings with increased surface speed.
HSC05	PVTi PVTiH								Coated high performance special carbide grade for high-speed finishing of steel, hardened steel and steel castings as well as graphite and plastics.
HSC05	PVFN								Extremely wear resistant special carbide grade for cutting steel, hardened steel and cast iron suitable for high- and very high-speed applications.
CBN C for cast iron									CBN-grade for high-speed finishing of cast iron.
CBN S for steel									CBN-grade for high speed finishing of hardened steel over 48 HRC.
PCD									Universal PCD-grade for high speed finishing of non-ferrous-materials and plastics.

TEST REPORT OF MILLING CONDITIONS

Company:

Street:

City:

Contact:

Machine:HP:[kW]

Type:n(s):[min-1]

Arbor System:V_f: [mm/min]

Material No.:Date:

DIN Code:Analysis [%]

C	Si	Mn	P	S	Cr	Ni	Mo	V	W		
N/mm²			HB		HV			HRC			

CNC Control:

	Test	Actual Status	Test 1	Test 2	Test 3
Tool	Milling conditions				
	Manufacturer				
	Type				
	Arbor				
	Overhang				
	Kind of cooling (air / water?)				
Cutting Mater.	Kind				
	Manufacturer				
	Cutting Material Code				
	Coating				
Operation Data	V _c [m/min]				
	V _f [mm/min]				
	n(s) [min ⁻¹]				
	D _c [mm]				
	f _z [mm/Zahn]				
	a _p [mm]				
	a _e [mm]				
	T [min]				
Results	No. of tests				
	Tool life [min]				
	Life in length [m]				
	Chip volume [cm3/min]				
	Energy consumption [kW]				
	Performance Evaluation:	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10
Illlustration / Remarks:					

FORMULAS AND CALCULATION EXAMPLES

Formulas			
Calculation of revolutions of main spindle in [min-1]:* $n = \frac{V_c \cdot 1000}{\pi \cdot D_{c/eff}}$	Calculation of feed per tooth in [mm/tooth]: $f_z = \frac{V_f}{n \cdot z}$	Calculation of feed per min. in [mm/min]: $V_f = n \cdot z \cdot f_z$	Calculation of power requirement in [kW]:* $P = \frac{a_e \cdot a_p \cdot V_f}{18000}$
Calculation of cutting speed in [m/min]:* $V_c = \frac{\pi \cdot D_{c/eff} \cdot n}{1000}$ * Please note: For flat contours use true mill diameter to calculate cutting speed (see Surface Finish section).	Calculation of machining time in [min]: $f_n = z \cdot f_z$ $f_n = \frac{V_f}{n}$	Calculation of machining time in [min]: $T = \frac{l_f}{V_f}$	Calculation of chip volume in [cm3/min]: $Q = \frac{a_e \cdot a_p \cdot V_f}{1000}$ * Please note: The formula given for calculating the power requirement is valid for machining steel only.
Definitions: a_e width of cut [mm] a_p depth of cut in [mm] D_c cutter diameter in [mm] D_{c/eff} true tool diameter in [mm] f_z feed per tooth in [mm] l_f milling length in [mm] f_n feed per revolution in [mm/U] n revolution in [rpm] P power requirement in [kW] Q chip volume in [cm3/min] T machining time in [min] V_c cutting speed in [m/min] V_f feed per min. in [mm/min] z no. of effective teeth			

formulas for calculating the true mill diameter can be found in the Surface Finish selection.

Calculation Example		
Milling cutter:	35200	Calculation of revolutions
Selected insert: (see Cutting Material p. 421)	0312840 (P40, PVTi coated)	$n = \frac{250 \cdot 1000}{\pi \cdot 35} = 2275 \text{ U/min}$
Size of insert:	Ø 12 x 3,97 mm	Calculation of feed per min.:
Milling cutter diam.:	35 mm	$V_f = 2275 \cdot 3 \cdot 0,6 = 4095 \text{ mm/min}$
no. of effective teeth:	3	Calculation of chip volume:
Depth of cut: (see Operation Data Table)	1,5 mm	$Q = \frac{(25 \cdot 1,5 \cdot 4095)}{1000} = 154 \text{ cm}^3/\text{min}$
Width of cut:	25 mm	Calculation of power requirement:
Material to be machined:	1.1730, roughing	$P = \frac{(25 \cdot 1,5 \cdot 4095)}{18000} = 8,5 \text{ kW}$
Selected cutting speed: (see Operation Data pp. 392, 393, 408)	V _c = 250 m/min	
Selected feed per tooth: (see Operation Data pp. 394-401 + 410-417)	fz = 0,6 mm	

ASSEMBLING INSTRUCTIONS

DuoPlug®

To guarantee optimum results and safe operation of our DuoPlug® system, please follow the instructions below carefully.

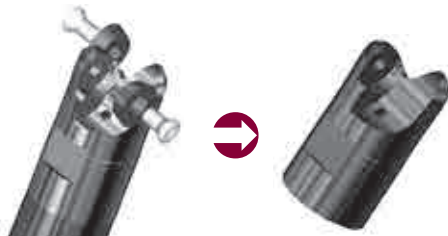
Assembling:

Preparations

Get all the accessories and equipment ready at the workstation before starting heating procedure! (appropriate spanner, safety glasses, protective gloves)

Step 1

Remove inserts and their screws from the milling cutter body.



Step 2

Attention: All surfaces carrying special fits must be absolutely grease-free and dust-free. Please screw the DuoPlug® milling cutter body onto the DuoPlug® adaptor by hand up to the fit zone. Do not use a tool or too much strength.



Step 3

Heat this connection now with the Pokolm Inductive Shrinking Unit TSI 3510 for 6 to 15 seconds, depending on diameter, then start Step 4 immediately.

Attention: Adaptor and milling cutter body are very hot after this process! Danger of burning hands or fingers! Protective gloves MUST be worn!



Step 4

Inductive heating expands the fitted bore in the cutter body. Only then can you totally screw the body onto the end face of your adaptor with the appropriate spanner. This step must be possible without using too much strength. If there is still some resistance, please heat the DuoPlug® cutter body once more for a few seconds and try again.



Step 5

Make sure that the body and adaptor fit together perfectly. There should be no gap.

Perform these steps with only moderate strength.



Step 6

Do not shock cool your shrunk combination; use the air-cooling equipment of your Shrinking Unit TSI 3510 to cool it evenly. During cooling, the DuoPlug® cutter body contracts and you get a safe load transmission.



Step 7

Mount the desired inserts onto the body with their screws. After checking the diameter and length of your tool, you can start your operation.



Dismantling:

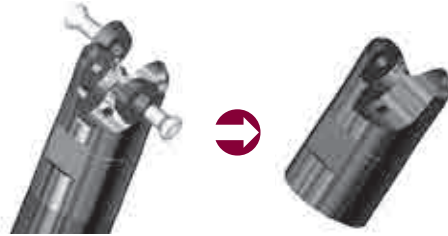
Preparations

Get all the necessary accessories and equipment together at the workstation before starting heating procedure! (appropriate spanner, safety glasses, protective gloves)

Attention: You absolutely **MUST** wear your safety glasses when dismantling! Used tools carry swarf and cooling fluid residues which could spray out during operation!

Step 1

Remove inserts and screws from milling cutter body.



Step 2

Heat your used combination with the Pokolm Inductive Shrinking Unit TSI 3510 for 6 to 15 seconds, depending on diameter.

Attention: Adaptor and milling cutter body are still very hot! Danger of burning hands or fingers! Protective gloves MUST be worn!



Step 3

Inductive heating expands the fitted bore in your cutter body. Only after heating should you unscrew your cutter body from your adaptor using an appropriate spanner. This step must be possible to perform without strength. If there is still some resistance, please heat the cutter body once more for a few seconds and try again.



Step 4

Do not shock cool your unshrunk dismantled parts; use the air-cooling equipment of your shrinking unit TSI 3510 to cool it slowly, or use the deposit box.

Attention: Adaptor and milling cutter body are still very hot! Danger of burning hands or fingers! Protective gloves MUST be worn!



For further inquiries concerning the DuoPlug® system, please do not hesitate to contact us.

ASSEMBLING INSTRUCTIONS

for Milling cutter bodies with round inserts and shim

In order to maintain optimum and safe use of these tools, you should pay attention to following notice:

Assembling Indexable Inserts

Step 1.1

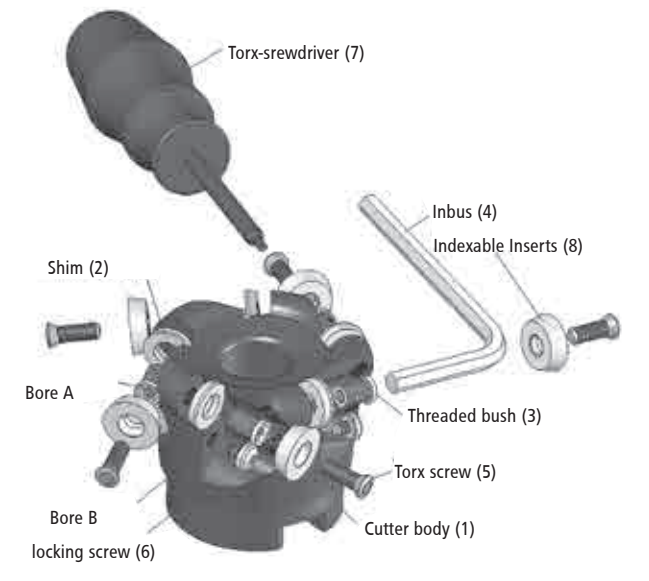
Remove Torx-screw (5) from cutter body (1) with Torx-screwdriver (7) and check correct fit of threaded bush (3) in threaded bore (A), using provided Allen-key (4).

Step 1.2

Pay attention, that the shoulder of the threaded bush (3) sinks completely into the recess of the shim (2). If not, please fix it with the Allen-key (4).

Step 1.3

Assemble indexable inserts (8) first by means of Torx-screw (5), using Torx-screwdriver (7) and fasten finally with the locking screw (6) in threaded bore (B).



Replace Shim

Step 2.1

For replacing shim, please prepare for Torx-screwdriver (7) and Allen-key (4).

Step 2.2

Unscrew locking screw (6) in threaded bore (B) and after that Torx-screws (5) fixing inserts (8) with Torx-screwdriver (7).

Step 2.3

Using Allen-key (4), unscrew and remove threaded bush (3) from threaded bore (A). Remove shim (2) from cutter body (1). Clean insert seat from swarf and grease, before you put new shims back to cutter body.

Step 2.4

Put new shims (2) into insert seats and fix it into threaded bore (A) with threaded bush (3) using Allen-key (4) and copper paste from our accessories selection. Pay attention, that the shoulder of the threaded bush (3) sinks completely into the recess of the shims (2).

Step 2.5

Now, indexable inserts (8) can be fixed as usually, using Torx-screws (5) and Torx-screwdriver (7). Finally, fasten locking screw (6) for secure insert fixing into threaded bore (B).

ASSEMBLING INSTRUCTIONS

Set-screw for shell type milling cutter bodies diam. 40 up to 42 mm

In order to maintain optimum and safe use of these tools, you should pay attention to following notice if you assemble set-screws GWSTPS815K:

Assembling set-screw:

Step 1

Screw set-screw into cutter body up to limit-stop contact. This is guaranteed for every tool in Pokolm's warehouse. In rare exceptional cases, this set-screw can become unfastened during transport. In that case, the set-screw has to be re-adjusted prior to usage.

Step 2

For assembling, put milling cutter body on to arbor. Make sure, there is a remaining gap of 4 mm between milling cutter body and arbor. (this is guaranteed, when using genuine Pokolm-arbors).

Step 3

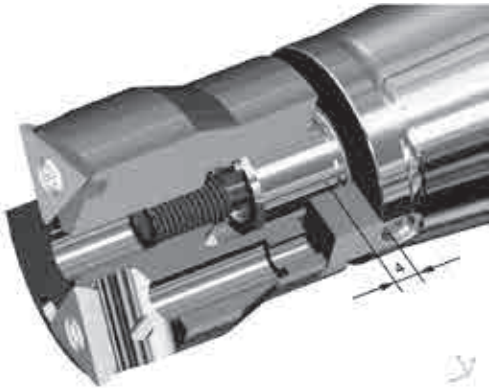
Now, please screw the set-screw into the arbor uniformly, until there is no remaining gap between arbor and milling cutter body by using an Allen-key 5 mm opening.

Step 4

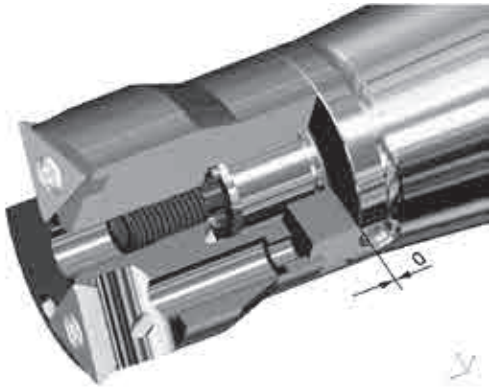
If, beyond expectations, a gap remains, please dismantle your cutter body from the arbor . Unscrew the set-screw by ½ revolution . Continue with step 2.



Please consider:
Maximum torque = 10 Nm



Step 1 and 2



Step 3 and 4

If you have any further question regarding milling systems with set-screw please do not hesitate to contact us.

ASSEMBLING INSTRUCTIONS

Fitting of SPINWORX® inserts in the tool

In order to maintain optimum and safe use of these tools, you should pay attention to following notice:

Step 1: placing inserts into the seat

Place the inserts (1) into the seat provided. Apply the paste included (4) to the thread of the pin (2) and make sure no paste (catalogue number „Z 00043“) gets onto the contact surface. Remove any surplus before using the tool.

Step 2: inserting the pin

Insert the pin (2) into the screw attachment from behind and use the torque key to tighten according to the specified tightening torque. We recommend using the pre-set torque key with the catalogue number „T10-1,4 NM“.

Tightening torques

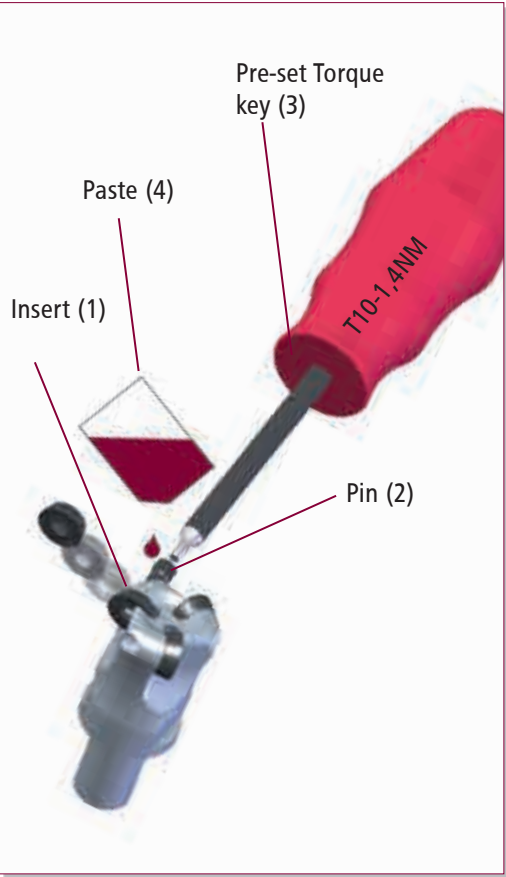
Insert	Torx´size	Tightening torque
DR10-8 DR12-8	T10	1.4 Nm

CAUTION! Please note!

SIMPLE HANDLING THANKS TO CONVENIENT TOOL
We recommend our torque key „T10-1.4 NM“ with pre-set tightening torque as a convenient and safe alternative to conventional Torx or torque keys.



For optimum results with the SPINWORX®-tooling system we recommend using internal coolant supply air, emulsion or MMS for chip removal in the tool!
Wet machining up to max speed Vc of 140 m/min!



PURCHASE

Your purchase order by fax
(please copy prior to completion)



Please fax to:
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You can of course also place your order with one of our applications engineers.

Catalogue no.	Description of item	Quantity	Price per item	Total price
Total				

Address:

Different delivery address

Company:	customer number (if known)	Company:
Department:	street	street
name	zip code, city	zip code, city

Our terms of sale are valid for this faxed purchase order.

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QUICKFINDER

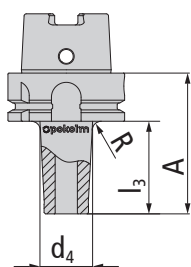
Fit zone diam. of threaded shank end mill bodies:

Thread size	M 5	M 6	M 8	M 10	M 12	M 16
Length fit zone in mm	5,5	6,5	8,5	10,5	12,5	17,0
Starting torque in Nm	7	10	15	30	50	100

Thread sizes for Shell-type arbors:

Pilot diameter in mm	16	22	27	32	40
Fixing screw	M 8	M 10	M 12	M 16	M 20

Theoretical d4 and l3:



The arbor dimensions d4 and l3 (see illustration at left) are calculated up to the theoretical point of intersection between arbor taper and collar.
Please take the radius R (5-8 mm depending on arbor type) into account for practical use.

Theoretical usable end mill length of Solid carbide end mills in mm*:

	diam. of shank (DIN 6535) d2 h6	2 - 5	6 + 8	10	12 + 14	16 + 18
	length of shank (DIN 6535) l2 $\begin{smallmatrix} +2 \\ -0 \end{smallmatrix}$	28	36	40	45	48
	diam. of shank (DIN 6535) d2 h6	20	25	32 + 36		
	length of shank (DIN 6535) l2 $\begin{smallmatrix} +2 \\ -0 \end{smallmatrix}$	50	56	60		
*this usable length appears through deduction of the DIN-shank-length (l2 according to DIN 6535) from the overall length l1 of the end mill or of the solid carbide adapters. See table above.						

Features:

	toric tool		incorporated insert		arbors with zero reach
	7° positive axial rake angle		clamping flat		DuoPlug®
	12° positive axial rake angle		concave moulding		shim
	17° positive axial rake angle		working depth		internal coolant supply
	Solid Carbide		suitable for high-speed machining		especially suitable f. non-ferr. materials
	chamfer		wet machining possible		on request
	2-point contact milling		dry machining possible		stock item, subject to confirmation
	wet machining required		for direct spindle mounting		available as long as stock lasts
	dry machining required		long series		stainless- acid- and heat resistant
	balance grade		dense antivibration material		



Pokolm
Frästechnik GmbH & Co. KG

Adam-Opel-Straße 5
33428 Harsewinkel
Germany

fon: +49 5247 9361-0
fax: +49 5247 9361-99

info@pokolm.de
www.pokolm.de

