Product Innovations

05/2021

2021 EN

ZCC Cutting Tools Europe GmbH

your Partner \ your Value

The Company

Zhuzhou Cemented Carbide Cutting Tools Co., Ltd. (ZCC-CT) is located in Zhuzhou, Hunan in the People's Republic of China is the largest Chinese manufacturer of carbide tools. ZCC-CT belongs to the Zhuzhou Cemented Carbide Group (ZCC), which manufactures carbide products and carbide powders. Both companies are part of the Minmetals Corporation, which Trades in mining metals and minerals.

Since its founding in 1953, ZCC Cutting Tools has become one of the world's leading carbide manufacturers and has more than 2,000 employees, thanks to its highly qualified staff and use of the latest technologies. As a Minmetals Corporation company, ZCC-CT can completely cover the entire value-added chain of modern carbide tool production from the extraction of raw materials to the coated final product and all the steps in between.

Based on the latest European production technologies, it is possible for us to offer products with a consistent high quality at all times. The extensive product range includes carbide indexable inserts, indexable inserts made from cermet, CBN, PKD and ceramic, solid carbide tools as well as turning tool holders and suitable tool systems. The products are produced in accordance with the current international standards, such as ISO, DIN, ANSI, JIS and BSI. In addition, ZCC Cutting Tools offer customer-specific solutions and special carbide products in accordance with specifications.

Research and development are a very high priority at ZCC-CT. In this area ZCC-CT use the world's most modern equipment and advanced machinery from Germany and Switzerland, for which the investments are higher than average. With highly trained engineers and a qualified international team, ZCC Cutting Tools researches the necessary foundations and is constantly developing new and improved products based on them. The company continuously strives to improve quality in order to meet customers' growing demands for new and innovative products and to be able to individually enhance customer benefits.

Both production and administration in China are subject to the ISO 9001:2008 standard. Environmental management is subject to the ISO 14001:2004 standard.

Since 2003, ZCC Cutting Tools has had a branch office in Europe.

The European head office and central warehouse are located in Düsseldorf, Germany. All European countries as well as Russia and Turkey are serviced from there. The company's quality management system is certified in the area of sales and logistics of tools for metal processing in accordance with DIN EN ISO 9001:2008.

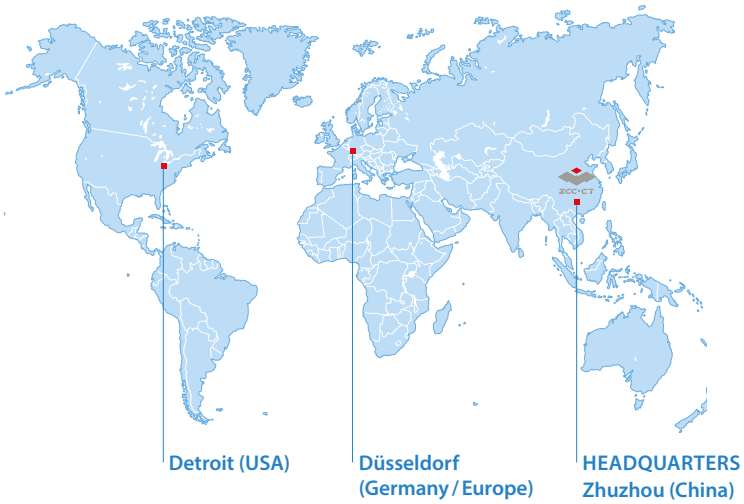
In order to meet our own high requirements for above-average customer service and in parallel with the growth of the company as a whole, the number of employees at ZCC Cutting Tools is growing in sales and internal sales, in technical support and application technology, research and development as well as in the areas of logistic, marketing, IT, human resources and accounting.

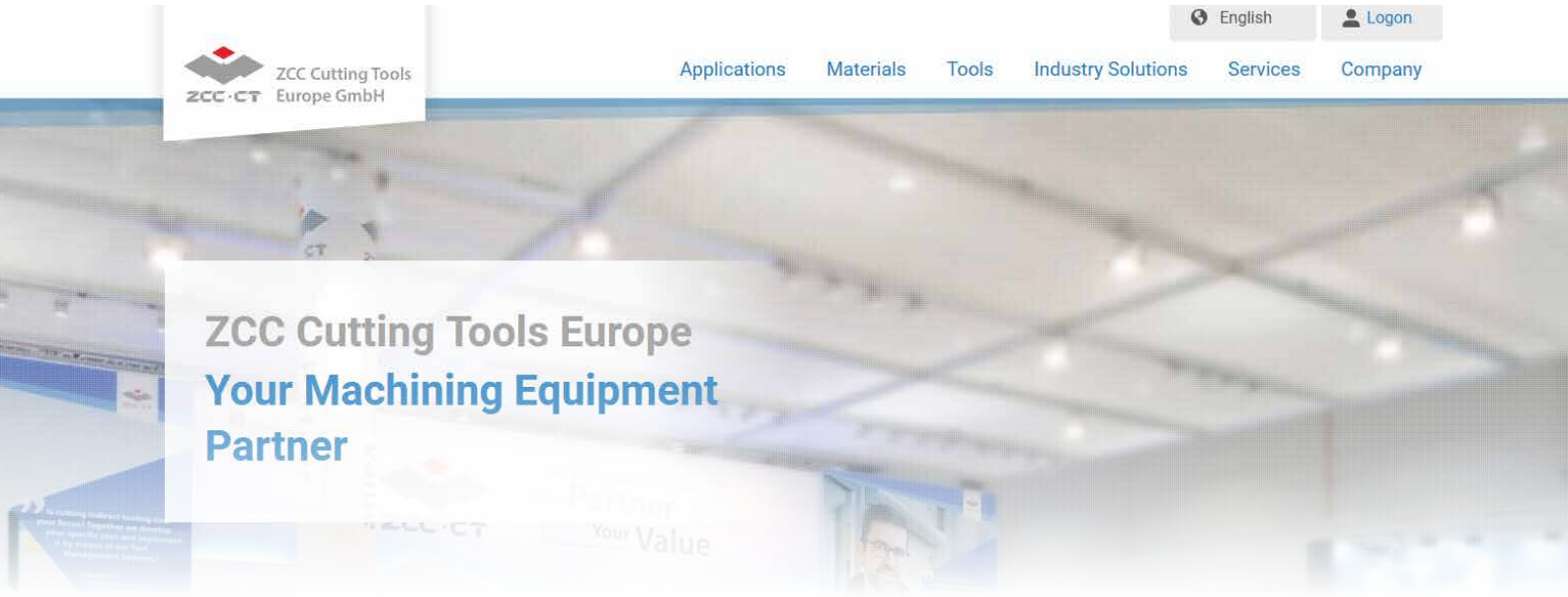
Our sales representatives and our sales partners in Europe together serve customers on site. ZCC-CT application engineers are furthermore available with all their expertise and experience by phone, email or personally in your production environment.

The internal sales team handles enquiries throughout Europe with native speakers and ensures together with the employees in logistics that all orders are delivered to you and all our customers as fast as possible.

All of us at ZCC Cutting Tools Europe are here for you and will support you as your competent partner in all questions of machining production. That is our definition of added value through partnership.

Member of Minmetals Group



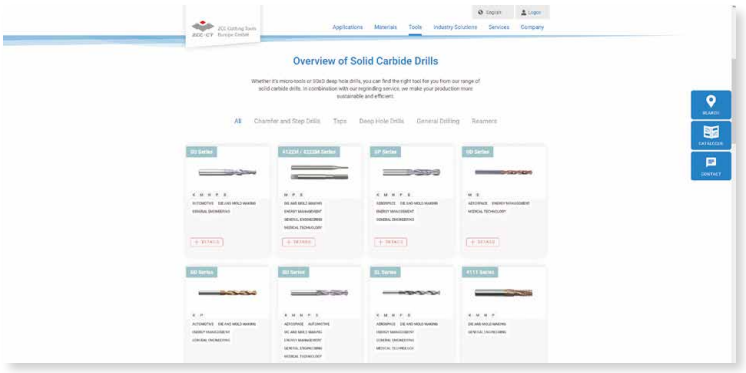


New website

Many ways to find the precision tool you need

ZCC Cutting Tools Europe designed and launched a new website in under one year to give users multiple options to find the right precision tool for their individual application. The website provides interesting facts and information on applications, materials, tools, industry solutions, services and our company.

Expert knowledge and tool recommendations

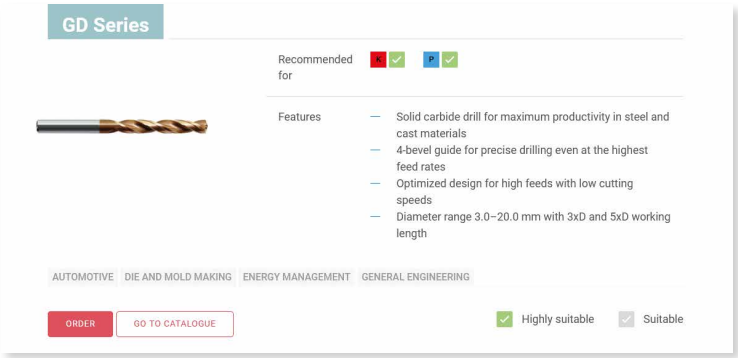


Overview of solid carbide drills

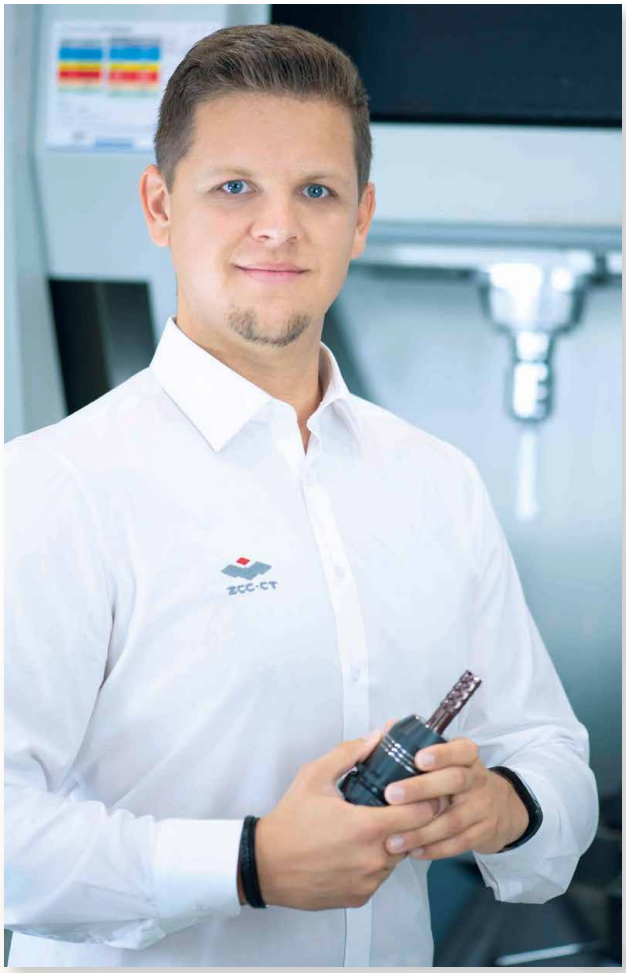
Users can find information on tool recommendations on the Applications, Materials and Industry Solutions pages. If you want to know what general turning is, what the specific challenges of working with steel are or what the latest trends in the automotive sector are, the expert team at ZCC Cutting Tools can provide the answers you need and give targeted support in helping you find the right tool for you. And if you already know what category of tool you are looking for, all you need to do is click Tools in the navigation bar at the top of the screen to view the selected product line.

Tool overview lists possible applications

Users are always shown a list of recommended tools at the end of the process. In a simple table, the tool overview lists the precision tool along with the ISO material group and industry it is suitable for. You can also find a link to the comprehensive, full-length catalogue in the tool's detailed view. Along with that, registered customers can use the online ordering system to order the tool. For added convenience, an online order form will be integrated in the Special Tools page; this option should be available in May.



Detailed view: GD series



Dennis H., Product Manager Solid Carbide Tools

Focus on customer service

ZCC Cutting Tools offers customers a wide range of services. This includes our in-house test and demonstration centre, a regrinding service, customer training as well as a distribution partner search. The company is singularly focused on delivering high-quality service. Click Contact to find the ZCC staff member who can assist you with more information about the tool or service on the current page. This blue button can be found in the quick navigation bar on every page on the website

See Company History, Resources, Locations, Careers, Contact Us, Events & Exhibitions and News under Company for important news and information about ZCC Cutting Tools.

Visit our new website to find the matching precision tool for your specific application, or contact our team of experts who'll assist you in making your choice.

www.zccct-europe.com

Modular grooving system

Modular grooving system

Advantages of system and mechanical design

The tool holder is compatible with all primary cartridges, meaning it can be used in any grooving operation

Interlocking system ensures the tool holder and cartridge fit together seamlessly

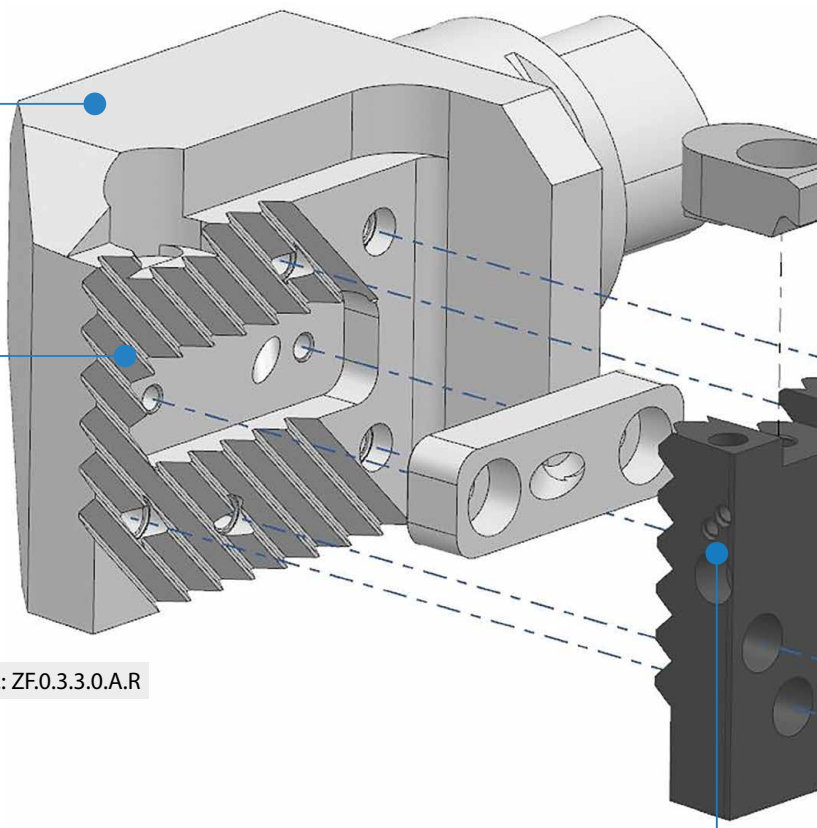


Fig.: ZF.0.3.3.0.A.R

ELI (External Like Internal) coolant supply system

YOUR BENEFITS

– Gain flexibility and save time in production
– Only one tool holder needed which keep costs down
– Minimal wear and tear on spare parts thanks to rugged design of tool system
– ELI coolant supply as an low-cost alternative to internal cooling
– Clamping function with no plastic deformation

Fig.: ZF.1.1.R.EC

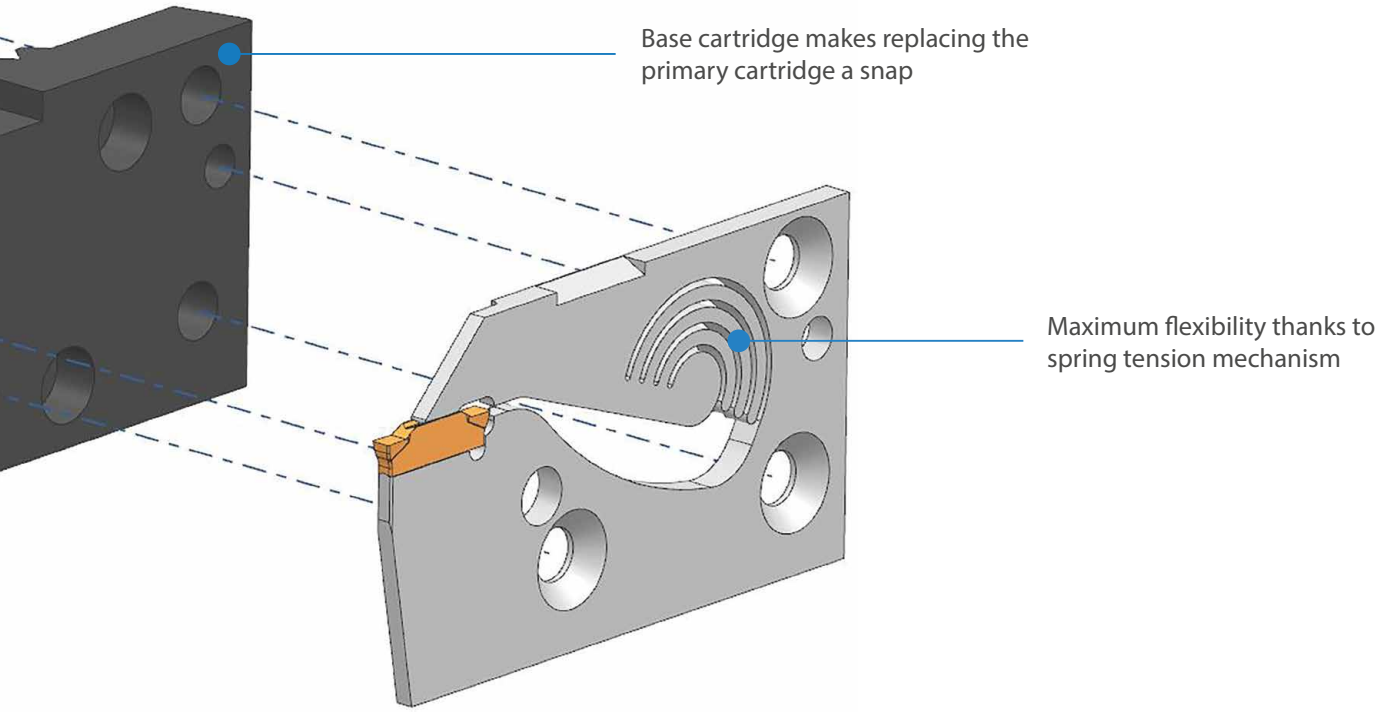
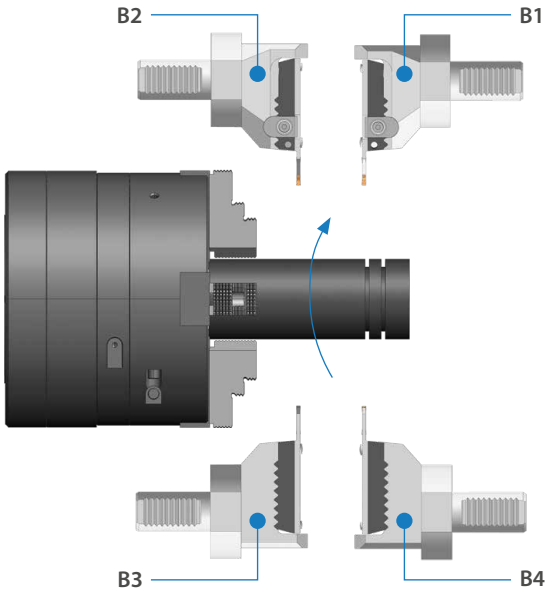


Fig.: ZF.2.1.F.R23.EC

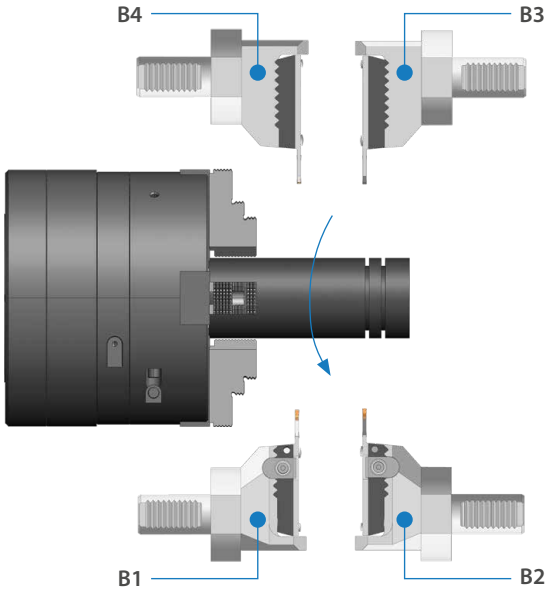
Tool orientation

VDI base adapter

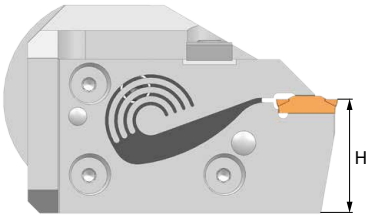
Radial tool orientation if spindle rotates **left**

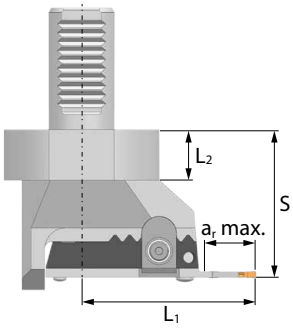


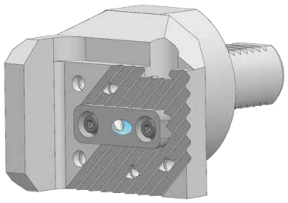
Radial tool orientation if spindle rotates **right**



Tool holder VDI – B1 and B4







Article	VDI	Stock	Tool arrangement	Dimensions [mm]	Base cartridge
				L_2	
ZF.0.1.1.1.A	VDI25	●	B1 and B4	18	ZF.1.1.L.**
ZF.0.1.2.1.A	VDI30	●	B1 and B4	22	ZF.1.1.L.**
ZF.0.1.3.1.A	VDI40	●	B1 and B4	22	ZF.1.1.L.**
ZF.0.1.4.1.A	VDI50	●	B1 and B4	30	ZF.1.1.L.**

● Ex stock ○ On demand

Primary cartridge

Article	❊	Stock	Dimensions [mm]				
			W	H	L_1	S	a_r max.
ZF.2.1.A.L17.EC	ext.	●	1,5	37,4	71	67,3	17
ZF.2.1.B.L17.EC	ext.	●	2,0	37,4	71	67,5	17
ZF.2.1.E.L23.EC	ext.	●	2,5	37,4	77	67,6	23
ZF.2.1.F.L23.EC	ext.	●	3,0	37,4	77	67,6	23
ZF.2.1.G.L27.EC	ext.	●	4,0	37,4	81	67	27
ZF.2.1.H.L27.EC	ext.	●	5,0	37,4	81	68	27
ZF.2.1.K.L27.EC	ext.	●	6,0	37,4	81	69	27
ZF.2.1.L.L31.EC	ext.	●	8,0	37,4	85	70,5	31

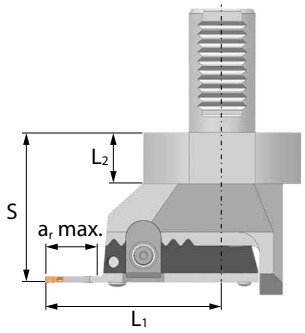
● Ex stock ○ On demand

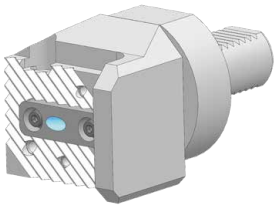
→ see A15 for dimensions of primary cartridge

Spare parts

		Article	Stock
	**Clamp**	ZF.0.C.0	●

Tool holder VDI – B2 and B3





Article	VDI	Stock	Tool arrangement	Dimensions [mm]	Base cartridge
				L_2	
ZF.0.1.1.2.A	VDI25	○	B2 and B3	18	ZF.1.1.R.**
ZF.0.1.2.2.A	VDI30	○	B2 and B3	22	ZF.1.1.R.**
ZF.0.1.3.2.A	VDI40	○	B2 and B3	22	ZF.1.1.R.**
ZF.0.1.4.2.A	VDI50	○	B2 and B3	30	ZF.1.1.R.**

● Ex stock ○ On demand

Primary cartridge

Article	❊	Stock	Dimensions [mm]				
			W	H	L_1	S	a_r max.
ZF.2.1.A.R17.EC	ext.	●	1,5	37,4	71	67,3	17
ZF.2.1.B.R17.EC	ext.	●	2,0	37,4	71	67,5	17
ZF.2.1.E.R23.EC	ext.	●	2,5	37,4	77	67,6	23
ZF.2.1.F.R23.EC	ext.	●	3,0	37,4	77	67,6	23
ZF.2.1.G.R27.EC	ext.	●	4,0	37,4	81	67	27
ZF.2.1.H.R27.EC	ext.	●	5,0	37,4	81	68	27
ZF.2.1.K.R27.EC	ext.	●	6,0	37,4	81	69	27
ZF.2.1.L.R31.EC	ext.	●	8,0	37,4	85	70,5	31

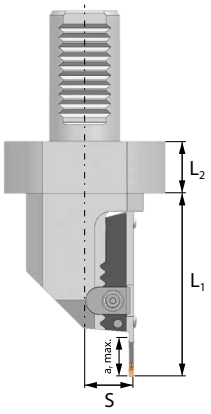
● Ex stock ○ On demand

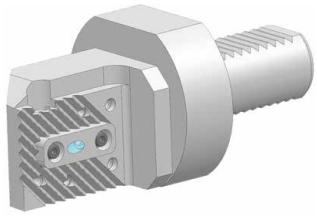
→ see A15 for dimensions of primary cartridge

Spare parts

		Article	Stock
	**Clamp**	ZF.0.C.0	●

Tool holder VDI – C1 and C4





Article	VDI	Stock	Tool arrangement	Dimensions [mm]	Base cartridge
				L_2	
ZF.0.1.1.3.A	VDI25	●	C1 and C4	18	ZF.1.1.R.**
ZF.0.1.2.3.A	VDI30	●	C1 and C4	22	ZF.1.1.R.**
ZF.0.1.3.3.A	VDI40	●	C1 and C4	22	ZF.1.1.R.**
ZF.0.1.4.3.A	VDI50	●	C1 and C4	30	ZF.1.1.R.**

● Ex stock ○ On demand

Primary cartridge

Article	❊	Stock	Dimensions [mm]				
			W	H	L_1	S	a_r max.
ZF.2.1.A.R17.EC	ext.	●	1,5	37,4	96	27,0	17
ZF.2.1.B.R17.EC	ext.	●	2,0	37,4	96	27,2	17
ZF.2.1.E.R23.EC	ext.	●	2,5	37,4	102	27,3	23
ZF.2.1.F.R23.EC	ext.	●	3,0	37,4	102	27,3	23
ZF.2.1.G.R27.EC	ext.	●	4,0	37,4	106	26,7	27
ZF.2.1.H.R27.EC	ext.	●	5,0	37,4	106	27,7	27
ZF.2.1.K.R27.EC	ext.	●	6,0	37,4	106	28,7	27
ZF.2.1.L.R31.EC	ext.	●	8,0	37,4	110	30,2	31

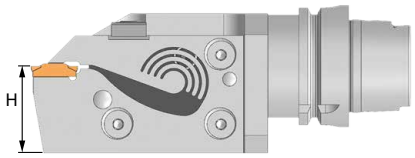
● Ex stock ○ On demand

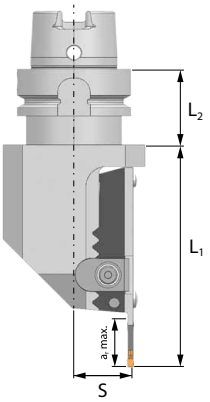
→ see A15 for dimensions of primary cartridge

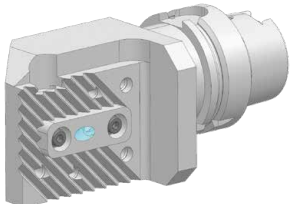
Spare parts

		Article	Stock
	**Clamp**	ZF.0.C.0	●

Tool holder HSK-A







Article	HSK-A	Stock		Dimensions [mm]	Base cartridge
		R	L	L_2	
ZF.0.2.1.0.A.R/L	HSK-A 32	○	○	36	ZF.1.1.R/L.**
ZF.0.2.2.0.A.R/L	HSK-A 40	●	●	36	ZF.1.1.R/L.**
ZF.0.2.3.0.A.R/L	HSK-A 63	●	●	42	ZF.1.1.R/L.**
ZF.0.2.4.0.A.R/L	HSK-A 80	○	○	42	ZF.1.1.R/L.**
ZF.0.2.5.0.A.R/L	HSK-A 100	○	○	45	ZF.1.1.R/L.**

● Ex stock ○ On demand

Primary cartridge

Article	❊	Stock		Dimensions [mm]				
		R	L	W	H	L_1	S	a_r max.
ZF.2.1.A.R/L17.EC	ext.	●	●	1,5	37,4	96	27,0	17
ZF.2.1.B.R/L17.EC	ext.	●	●	2,0	37,4	96	27,2	17
ZF.2.1.E.R/L23.EC	ext.	●	●	2,5	37,4	102	27,3	23
ZF.2.1.F.R/L23.EC	ext.	●	●	3,0	37,4	102	27,3	23
ZF.2.1.G.R/L27.EC	ext.	●	●	4,0	37,4	106	26,7	27
ZF.2.1.H.R/L27.EC	ext.	●	●	5,0	37,4	106	27,7	27
ZF.2.1.K.R/L27.EC	ext.	●	●	6,0	37,4	106	28,7	27
ZF.2.1.L.R/L31.EC	ext.	●	●	8,0	37,4	110	30,2	31

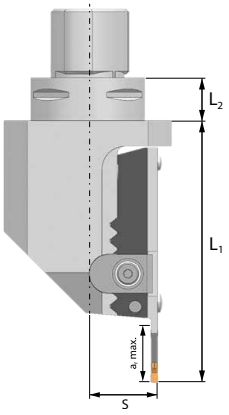
● Ex stock ○ On demand

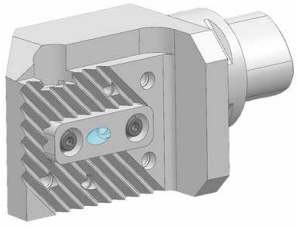
→ see A15 for dimensions of primary cartridge

Spare parts

		Article	Stock
	**Clamp**	ZF.0.C.0	●

Tool holder PSC





Article	PSC	Stock		Dimensions [mm]	Base cartridge
		R	L	L_2	
ZF.0.3.1.0.A.R/L	PSC40	○	○	20	ZF.1.1.R/L.**
ZF.0.3.2.0.A.R/L	PSC50	●	●	20	ZF.1.1.R/L.**
ZF.0.3.3.0.A.R/L	PSC63	●	●	22	ZF.1.1.R/L.**
ZF.0.3.4.0.A.R/L	PSC80	○	○	30	ZF.1.1.R/L.**

● Ex stock ○ On demand

Primary cartridge

Article	✻	Stock		Dimensions [mm]				
		R	L	W	H	L_1	S	a_r max.
ZF.2.1.A.R/L17.EC	ext.	●	●	1,5	37,4	96	27,0	17
ZF.2.1.B.R/L17.EC	ext.	●	●	2,0	37,4	96	27,2	17
ZF.2.1.E.R/L23.EC	ext.	●	●	2,5	37,4	102	27,3	23
ZF.2.1.F.R/L23.EC	ext.	●	●	3,0	37,4	102	27,3	23
ZF.2.1.G.R/L27.EC	ext.	●	●	4,0	37,4	106	26,7	27
ZF.2.1.H.R/L27.EC	ext.	●	●	5,0	37,4	106	27,7	27
ZF.2.1.K.R/L27.EC	ext.	●	●	6,0	37,4	106	28,7	27
ZF.2.1.L.R/L31.EC	ext.	●	●	8,0	37,4	110	30,2	31

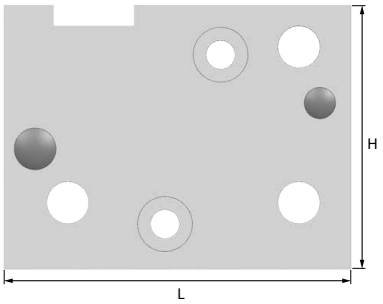
● Ex stock ○ On demand

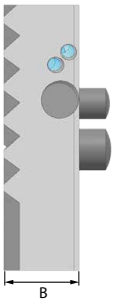
→ see A15 for dimensions of primary cartridge

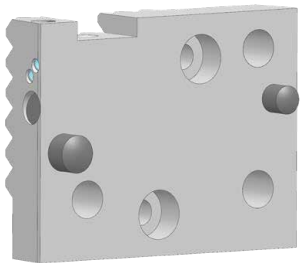
Spare parts

		Article	Stock
	**Clamp**	ZF.0.C.0	●

Base cartridge







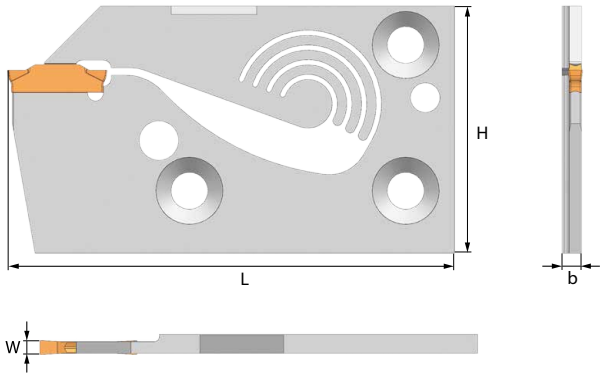
Article	*	Stock		Dimensions [mm]		
		R	L	B	L	H
ZF.1.1.R/L.EC	ext.	●	●	11,25	66,5	50,5

● Ex stock ○ On demand

Spare parts

		Article	Stock
	**Screw**	ZF.1.M5x25	●
	**Seal**	ZF.1.S.0	●
	**Wrench**	WH40L	●

Primary cartridge



Article	*	Stock		Dimensions [mm]					Insert
		R	L	W	H	a_r max.	L	b	
ZF.2.1.A.R/L17.EC	ext.	●	●	1,5	37,4	17	85,5	4,0	Z*AD01502
ZF.2.1.B.R/L17.EC	ext.	●	●	2,0	37,4	17	85,5	4,0	Z*BD02002
ZF.2.1.E.R/L23.EC	ext.	●	●	2,5	37,4	23	91,5	4,0	Z*ED02502
ZF.2.1.F.R/L23.EC	ext.	●	●	3,0	37,4	23	91,5	4,0	Z*FD0303
ZF.2.1.G.R/L27.EC	ext.	●	●	4,0	37,4	27	95,5	3,3	Z*GD0404
ZF.2.1.H.R/L27.EC	ext.	●	●	5,0	37,4	27	95,5	4,3	Z*HD0504
ZF.2.1.K.R/L27.EC	ext.	●	●	6,0	37,4	27	95,5	5,3	Z*KD0608
ZF.2.1.L.R/L31.EC	ext.	●	●	8,0	37,4	31	99,5	6,3	Z*LD0808

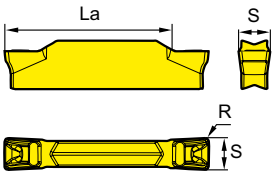
● Ex stock ○ On demand

Spare parts

		Article	Stock
	**Screw**	ZF.2.M6x28	●
	**Wrench**	WH40L	●

Ideal machining conditions
Normal machining conditions
Unfavourable machining conditions

Parting inserts

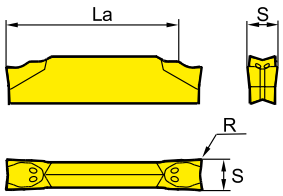
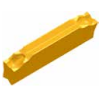
Parting & grooving insert (double sided)							HC[1] (CVD)	HC[1] (PVD)			HW
 Double cutting edge						P					
						M					
						K					
						N					
						S					
						H					
	ISO		S	R±0.1	La *max*	f		YB9320	YBG205	YBG202	YBG302
	**ZTBD02002-MM**		2,0	0,2	13	0,02-0,07		●	●	○	○
	ZTED02503-MM		2,5	0,3	17	0,03-0,1		●			
	ZTFD0303-MM		3,0	0,3	17	0,04-0,13		●			
	ZTGD0404-MM		4,0	0,4	22	0,06-0,18		●			
	ZTHD0504-MM		5,0	0,4	22	0,08-0,23		●			
	ZTKD0608-MM		6,0	0,8	22	0,12-0,27		●			
	ZTLD0808-MM		8,0	0,8	28	0,13-0,29		●	○		

● Ex stock ○ On demand

HC[1] Coated carbide
HW Uncoated carbide

Ideal machining conditions
Normal machining conditions
Unfavourable machining conditions

Parting inserts

Parting & grooving insert (double sided)							HC[1] (CVD)		HC[1] (PVD)			HW
 Double cutting edge						P						
						M						
						K						
						N						
						S						
						H						
	ISO		S±0.10	R±0.1	La *max*	f	YBC252	YBC251	YB9320	YBG202	YBG302	YD201
	**ZPED02502-MG**		2,5	0,2	17	0,03-0,1	●		●	●	●	
	ZPFD0302-MG		3,0	0,2	17	0,04-0,13	●		●	●	●	
	ZPGD0402-MG		4,0	0,2	22	0,07-0,18	●		●	●	●	○
	ZPHD0503-MG		5,0	0,3	22	0,1-0,24			●	●	●	
	ZPKD0604-MG		6,0	0,4	22	0,12-0,29	○		●	●	●	

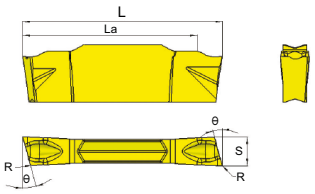
● Ex stock ○ On demand

HC[1] Coated carbide
HW Uncoated carbide

- Ideal machining conditions
- Normal machining conditions
- Unfavourable machining conditions

Parting inserts

Parting & grooving insert (double sided)



R type

	ISO	L	S	θ	R	La *max*	f	HC[1] (CVD) YBC252	HC[1] (PVD) YB9320	HC[1] (PVD) YBG202	HC[1] (PVD) YBG302	HW
P												
M												
K												
N												
S												
H												
	**ZPED02502-MG-6L**	20,0	2,35	6°	0,2	17	0,03-0,08			○	●	
	ZPED02502-MG-6R	20,0	2,35	6°	0,2	17	0,03-0,08		●	○	●	
	ZPED02502-MG-15L	20,0	2,35	15°	0,2	17	0,03-0,05			○	●	
	ZPED02502-MG-15R	20,0	2,35	15°	0,2	17	0,03-0,05			●	●	
	ZPFD0302-MG-6L	20,0	2,85	6°	0,2	17	0,04-0,1		●	●	●	
	ZPFD0302-MG-6R	20,0	2,85	6°	0,2	17	0,04-0,1		●	●	●	
	ZPFD0302-MG-15L	20,0	2,85	15°	0,2	17	0,04-0,08			●	●	
	ZPFD0302-MG-15R	20,0	2,85	15°	0,3	17	0,04-0,08	○	●	●	●	

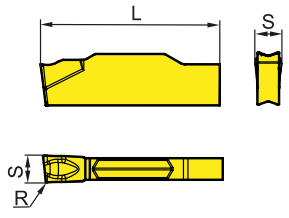
● Ex stock ○ On demand

HC[1] Coated carbide
HW Uncoated carbide

- Ideal machining conditions
- Normal machining conditions
- Unfavourable machining conditions

Parting inserts

Parting & grooving insert (single sided)



R type

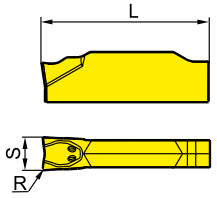
	ISO	L ±0.1	R±0.1	S±0.1	θ	f	HC[1] (PVD) YB9320	HW
P								
M								
K								
N								
S								
H								
	**ZPES02502-MG-6L NEW!**	19,9	0,2	2,5	6°	0,03-0,08	○	
	ZPES02502-MG-6R NEW!	19,9	0,2	2,5	6°	0,03-0,08	○	
	ZPFS0302-MG-6L NEW!	19,9	0,2	3	6°	0,04-0,1	○	
	ZPFS0302-MG-6R NEW!	19,9	0,2	3	6°	0,04-0,1	○	

● Ex stock ○ On demand

HC[1] Coated carbide
HW Uncoated carbide

Ideal machining conditions
Normal machining conditions
Unfavourable machining conditions

Parting inserts



Single cutting edge

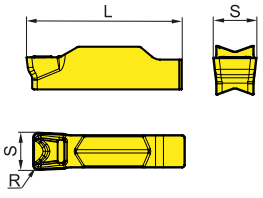
Parting & grooving insert (single sided)							HC¹ (CVD)			HC¹ (PVD)			HW
						P							
						M							
						K							
						N							
						S							
						H							
	ISO	L±0.1	R±0.1	S±0.10	f		YBC251			YB9320	YBG202	YBG302	YD201
	ZPES02502-MG	19,9	0,2	2,5	0,03-0,1						●	●	
	ZPFS0302-MG	19,9	0,2	3	0,04-0,13		●				●	●	
	ZPGS0402-MG	19,9	0,2	4	0,07-0,18		○				●	●	○
	**ZPGS0402-MG-25 NEW!**	24,6	0,2	4	0,07-0,18					○			
	ZPHS0503-MG	19,9	0,3	5	0,1-0,24						○	●	
	ZPHS0503-MG-25 NEW!	24,6	0,3	5	0,1-0,24					○			
	ZPKS0604-MG	19,9	0,4	6	0,12-0,29						●	●	
	ZPKS0604-MG-25 NEW!	24,6	0,4	6	0,12-0,29					○			

● Ex stock ○ On demand

HC¹ Coated carbide
HW Uncoated carbide

Ideal machining conditions
Normal machining conditions
Unfavourable machining conditions

Parting inserts



Parting & grooving insert (single sided)							HC¹ (CVD)	HC¹ (PVD)	HW
						P			
						M			
						K			
						N			
						S			
						H			
	ISO	L±0.1	R±0.1	S±0.10	f			YB9320	
	ZTES02503-MM NEW!	19,9	0,3	2,5	0,03-0,1			○	
	ZTFS0303-MM NEW!	19,9	0,3	3	0,04-0,13			○	
	**ZTGS0404-MM-25 NEW!**	24,6	0,4	4	0,06-0,18			○	
	ZTHS0504-MM-25 NEW!	24,6	0,4	5	0,08-0,23			○	
	ZTKS0608-MM-25 NEW!	24,6	0,8	6	0,12-0,27			○	

● Ex stock ○ On demand

HC¹ Coated carbide
HW Uncoated carbide

Notes

zFlex – Modular grooving system

Maintain flexibility in your production operations!

B

Indexable milling

Solid carbide milling

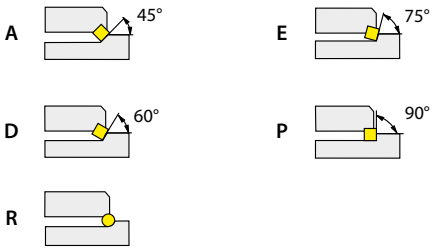
Indexable milling System code – milling bodies

FM	A	12	050	–	A22	O	–	N	06	–	04	(L)	(C)
1	2	3	4		5	6		7	8		9	10	11

Type	
Code	Description
BM	Profile milling
CM	Chamfer milling
EM	Square shoulder milling
FM	Face milling
HM	Helical milling
SM	Slot milling
TM	T-slot milling
XM	Special

1

Entering angle



2

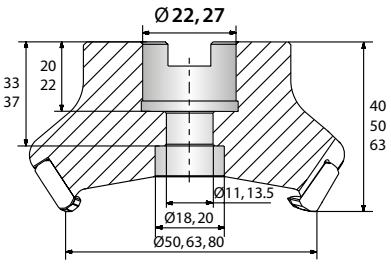
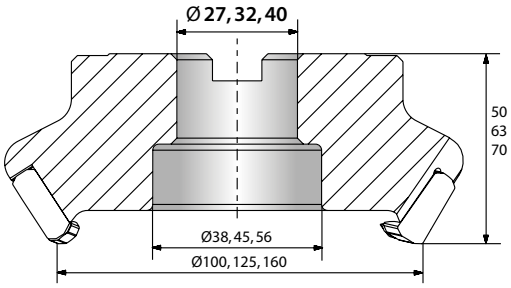
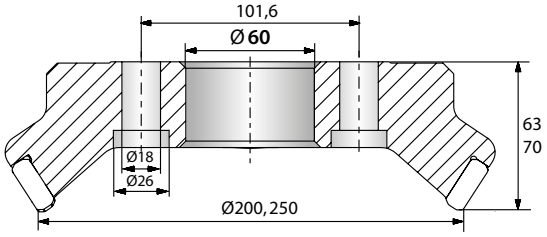
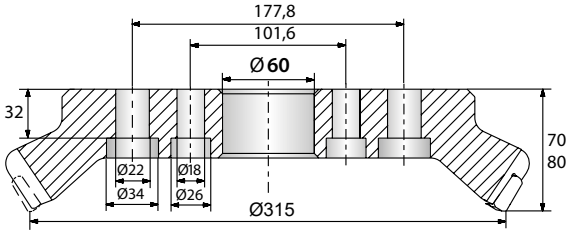
Serial number

3

Nominal diameter [mm]	
Code	Description
025	25
050	50
160	160
315	315
...	

4

Type and size of tool holders

Code	Type	Code	Type
A	Nominal diameter Ø50 – 80 mm 	**B**	Nominal diameter Ø100 – 160 mm 
C	Nominal diameter Ø200 – 250 mm 	**D**	Nominal diameter Ø315 mm 
G	Straight shank	**XP**	Weldon shank
K	Bore with keyway		

5

With respect to mounting please adhere to the information provided by the tool holder manufacturer.

Insert shape			
A		C	
H		L	
M		O	
P		R	
S		T	
W		X	Special
Z	Special		

6

Clearance angle			
B	5°	C	7°
D	15°	E	20°
F	25°	N	0°
P	11°		

7

Cutting edge length l [mm]	
Insert shape	
A	C, M
H, O, P	L
R	S
T	W

8

Number of teeth

9

Cutting direction	
Code	Description
L	Left

10

With inner cooling

11

Tools with B coupling and inner coolant supply require the following spare parts:

Coolant clamp screw

Coolant shower plate

Spare parts (B coupling with inner coolant supply)

		B27	B32	B40	B40
	Ø	**80**	**100**	**125**	**160**
	**Coolant clamp screw**	LDB27C	LDB32C	LDB40C	LDB40C
	**Coolant shower plate**	B27-002-CP	B32-002-CP	B40-002-CP	B40-003-CP

When purchasing tools with inner coolant supply and B coupling these spare parts are included in delivery.

Indexable milling ISO code – inserts

S	P	K	N	12	04	ED	T21K	R	–	DM
1	2	3	4	5	6	7	8	9		10

Insert shape

A		C	
H		L	
M		O	
P		R	
S		T	
W		X	Special
Z	Special		

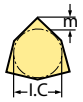
1

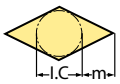
Clearance angle

B		C	
D		E	
F		N	
P			

2

Tolerance class





Code	I.C [mm]	m [mm]	S [mm]
A	±0,025	±0,005	±0,025
C	±0,025	±0,013	±0,025
E	±0,025	±0,025	±0,025
F	±0,013	±0,005	±0,025
G	±0,025	±0,025	±0,130
H	±0,013	±0,013	±0,025
J	±0,05–0,13	±0,005	±0,025
K	±0,05–0,13	±0,013	±0,025
L	±0,05–0,13	±0,025	±0,025
M	±0,05–0,13	±0,08–0,18	±0,130
N	±0,05–0,13	±0,08–0,18	±0,025
U	±0,08–0,25	±0,13–0,38	±0,130

3

Fastening features (metric)

Insert shape

A		B	
C		F	
G		H	
J		M	
N		Q	
R		T	
U		W	
X	Special		

4

Cutting edge length l [mm]

Insert shape

	
A	C, M
	
H, O, P	L
R	S
T	W

5

Insert thickness S [mm]

Code	S	Code	S
00	0,79	**05**	5,56
T0	0,99	**T5**	5,95
01	1,59	**06**	6,35
T1	1,98	**T6**	6,75
02	2,38	**07**	7,94
T2	2,58	**09**	9,52
03	3,18	**T9**	9,72
T3	3,97	**11**	11,11
04	4,76	**12**	12,70
T4	4,96		

6

Angle

Code	Kr	Code	αn
A	45°	**A**	3°
D	60°	**B**	5°
E	75°	**C**	7°
F	85°	**D**	15°
P	90°	**E**	20°
Z	Special	**F**	25°
		G	30°
		N	0°
		P	11°
		Z	Special

7

Chamfer

Code	Type	Code	Angle	Code	Width [mm]	Code	Position
F		**0**	5°	**0**	0,10	**K**	
E		**1**	10°	**1**	0,15		
T		**2**	15°	**2**	0,20	**P**	
S		**3**	20°	**3**	0,25		
		4	25°	**4**	0,30	**W**	
		5	30°	**5**	0,35		
				6	0,40		
				7	0,45	**–**	

8

Cutting direction

Code	Description
R	Right
L	Left
N	Right and left

9

Chip breaker overview (starting on page B20 in the main catalogue, version 2019)

10

FMA04 face milling system

Ideal choice when working under unstable conditions or on thin components

YOUR BENEFITS

– 45° milling system with positive inserts generates low cutting forces
– Available for wide range of finishing and medium machining applications
– New insert design improves stability and ensures process reliability
– Highly economical due to eight-edged indexable insert

Precision insert seat enables high surface qualities

Optimal chip removal
thanks to large chip pocket

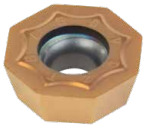
Fig.: **FMA04-063-A22-OD06-05C**

Diameter range: 50–160 mm

Insert grades

YBM253	YBG205	YB9320	YBD152	YBD252	YD101	YD201
CVD *P20 – P40* *M15 – M35*	*PVD* *P10 – P30* *M20 – M40*	*PVD* *P10 – P30* *M10 – M25*	*CVD* *K10 – K25*	*CVD* *K20 – K35*	*–* *N05 – N20*	*–* *N10 – N30*

Chip breaker

ODHT-GL	ODHT-GM	ODHT-GH	ODHT-LH
			
Finishing	General machining	Roughing	Aluminium machining

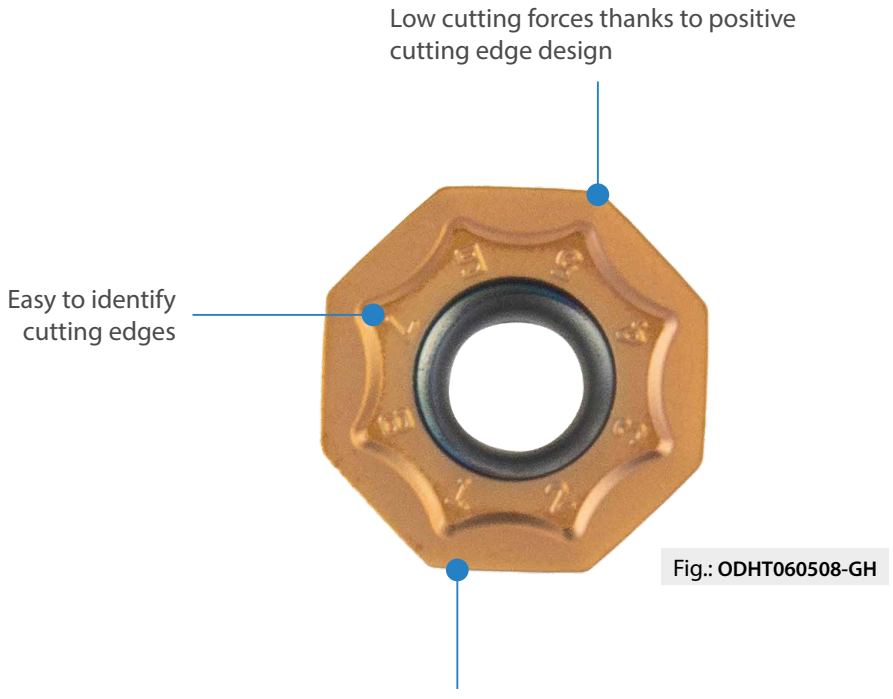
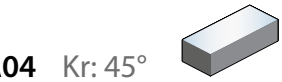
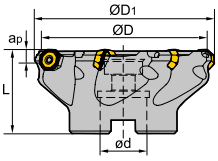


Fig.: **ODHT060508-GH**

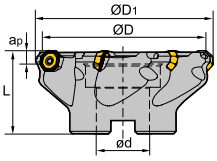
Face milling

FMA04 Kr: 45°

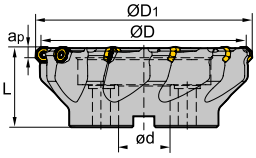




A



B



C

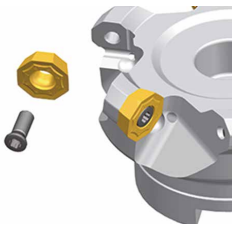
Article	✲	Stock	Dimensions [mm]					Teeth	Coupling	kg	Insert
			ØD	$ØD_1$	ød	L	$a_{p\,max}$				
FMA04-050-A22-OD06-04C	✲	●	50	60	22	40	4	4	A	0,284	ODHT0605
FMA04-063-A22-OD06-05C	✲	●	63	73	27	40	4	5	A	0,409	
FMA04-080-A27-OD06-06C	✲	●	80	90	27	50	4	6	A	1,017	
FMA04-100-A32-OD06-07C	✲	●	100	110	32	50	4	7	A	1,536	
FMA04-125-B40-OD06-08		●	125	135	40	63	4	8	B	2,931	
FMA04-160-C40-OD06-10		●	160	170	40	63	4	10	C	3,838	

● Ex stock ○ On demand

✲ With internal cooling

Spare parts

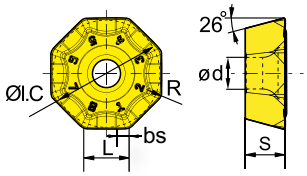
	Insert	**OD*T0605****
	ØD	**50–160**
	Screw (Insert)	I60M5*13 (5,0 Nm)
	Wrench (Insert)	WT20IP
	Wrench (Insert)	WT20IS



Ideal machining conditions
Normal machining conditions
Unfavourable machining conditions

ODHT	L	I.C	S	d
06 05	6,50	15,875	5,56	5,40

Milling insert



OD*T milling insert				HC¹ (CVD)		HC¹ (PVD)		HT	HC²	HW	
			P								
			M								
			K								
			N								
			S								
			H								
ISO		r	bs	YBM253	YBD252 YBD152	YB9320	YBG205			YD101	YD201
	**ODHT060508-GL**	0,8		●	●	●	●				
	**ODMT060512-GM**	1,2	1,6	●	●	●	●				
	ODHT060508-GM	0,8		●	●	●	●				
	**ODHT060508-GH**	0,8		●	●	●	●				
	**ODHT060508-LH**	0,8								●	●

● Ex stock ○ On demand

HC¹ Coated carbide
HT Uncoated cermet
HC² Coated cermet
HW Uncoated carbide

FMWX face milling system

Maximum precision and ultra-high surface qualities

YOUR BENEFITS

– High surface qualities made possible thanks to precision-ground wiper indexable insert
– Ultra-high precision insert seats ensure high repeatability
– Wide range of applications possible thanks to CVD/PVD coated indexable inserts
– No adjustments necessary because seats are compatible with inserts
– Reserve insert seats increase longevity of milling body

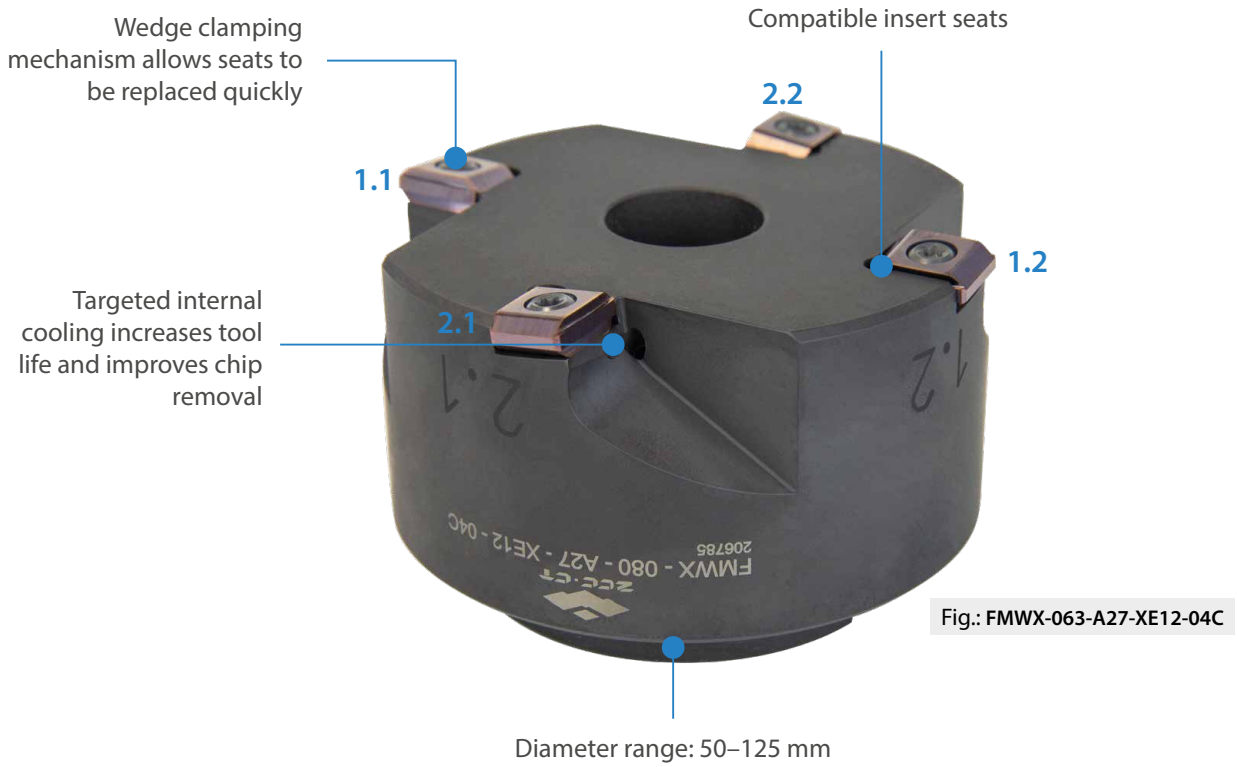


Fig.: **FMWX-063-A27-XE12-04C**

The milling body is only equipped with two opposing inserts.

Insert grades

YBG105
PVD
S05 – S20

YBD152
CVD
K10 – K25

Wiper indexable insert

XEEC

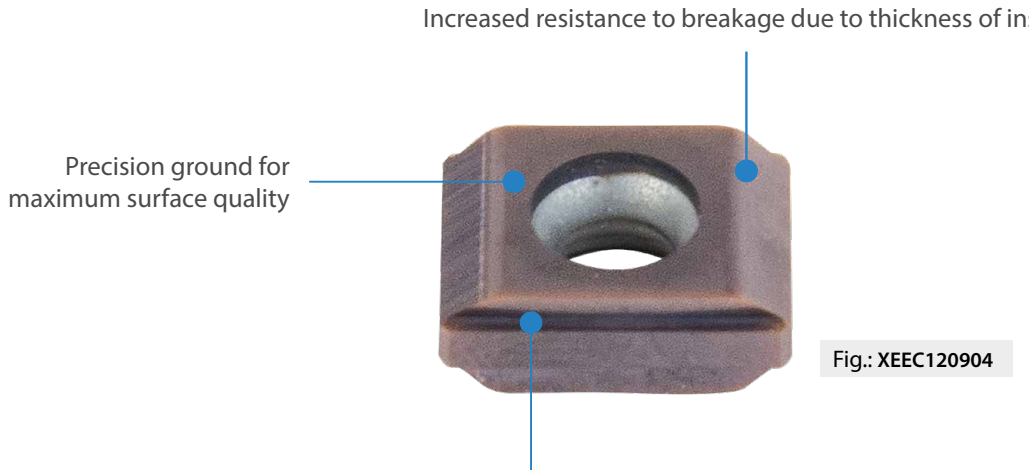


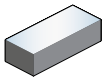
Fig.: **XEEC120904**

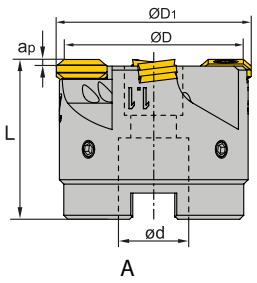
Cutting data

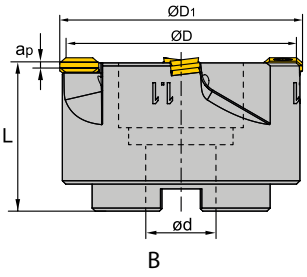
ISO group	Material	v_c (m/min)	F_n	a_p
P	Low-alloy steel	300–400	3,50–5,00	0,02–0,05
M	Stainless steels	280–300	3,50–5,00	0,02–0,05
K	Cast steel	300–400	3,50–5,00	0,02–0,05

Face milling

FMWX







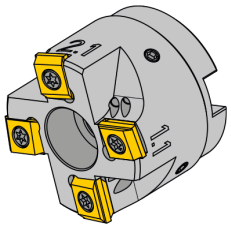
Article	✻	Stock	Dimensions [mm]					Teeth	Coupling	kg	Insert
			ØD	$ØD_1$	ød	L	$a_{p\,max}$				
FMWX-050-A22-XE12-04C	✻	●	46	50	22	40	0,1	2 (4)	A	0,3	
FMWX-063-A27-XE12-04C	✻	●	59	63	27	40	0,1	2 (4)	A	0,5	
FMWX-080-A27-XE12-04C	✻	●	76	80	27	50	0,1	2 (4)	A	1	XEEC120904
FMWX-100-B32-XE12-06C	✻	●	96	100	32	50	0,1	2 (6)	B	1,9	
FMWX-125-B40-XE12-06C	✻	●	121	125	40	63	0,1	2 (6)	B	3,5	

● Ex stock ○ On demand

✻ With internal cooling

Spare parts

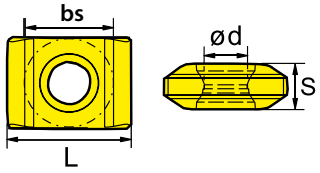
	Insert	**XEEC1209**
	ØD	**50–125**
	Screw (Insert)	I60M4*10 (3,4 Nm)
	Wrench (Insert)	WT15IS
	Grub screw	DIN913 M4*4
	Wrench (Grub screw)	WH20L



Ideal machining conditions
Normal machining conditions
Unfavourable machining conditions

XEEC	L	I.C	S	d
12 09	12,7	9,525	4,76	4,40

Milling insert

XEEC milling insert			HC¹ (CVD)	HC¹ (PVD)	HT	HC²	HW
		**P**					
		M					
		K					
		N					
		S					
		H					
ISO		bs	YBD152	YBG105			
	**XEEC120904**	**7,3**	●	●			

● Ex stock ○ On demand

HC¹ Coated carbide
HT Uncoated cermet
HC² Coated cermet
HW Uncoated carbide

Notes

EMP09 Kr: 90°

Square shoulder mill with tangential inserts

- Sharp cutting edge geometry combined with robust tangential inserts
- First choice for large cutting depths with high feed rates
- Very good competitiveness

Insert grades

YBC302	YBM253	YB9320	YBD152	YBD252
CVD	*CVD*	*PVD*	*CVD*	*CVD*
P15 – P35	*P20 – P40*	*P10 – P30*	*K05 – K25*	*K15 – K35*
	M10 – M30	*M20 – M30*		

YBS303
PVD
S25 – P35

Chip breaker

-GM

-GL

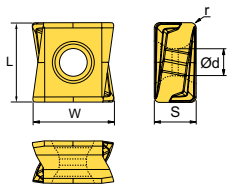
– Sharp cutting edge geometry for lower cutting forces
– Highly suitable for difficult-to-machine materials and stainless steels

Indexable milling Square shoulder milling

Milling insert

- Ideal machining conditions
- Normal machining conditions
- Unfavourable machining conditions

LNKT	L	S
08 04	8,75	4,45
12 06	12,7	6,75
16 07	16,05	7,35



LN** milling insert				HC[1] (CVD)				HC[1] (PVD)		HT	HC[2]	HW
				YBM253	YBD152	YBD252	YBC302	YB9320	YBS303			
	ISO	W	r									
P				⊛	⊛		⊛	⊛				
M				⊛				⊛	⊛			
K					⊛	⊛	⊛					
N								⊛				
S									⊛			
H												
	**LNKT080404PNR-GL NEW!**	8,75	0,4			●		●	●			
	LNKT080408PNR-GL NEW!	8,75	0,8									
	LNKT120608PNR-GL NEW!	12,7	0,8			●		●	●			
	LNKT160708PNR-GL NEW!	16,05	0,8			●		●	●			
	LNKT080404PNR-GM	8,75	0,4	●		●		●	●			
	LNKT080408PNR-GM	8,75	0,8				●	●				
	LNKT080412PNR-GM	8,75	1,2				●					
	LNKT120608PNR-GM	12,7	0,8	●	●	●		●				
	**LNKT120612PNR-GM**	12,7	1,2	●		●	●	●				
	LNKT120616PNR-GM	12,7	1,6				●	●				
	LNKT120624PNR-GM	12,7	2,4					●				
	LNKT120632PNR-GM	12,7	3,2					●				
	LNKT160708PNR-GM	16,05	0,8	●	●	●		●				
	LNKT160716PNR-GM	16,05	1,6					●				
	LNKT160732PNR-GM	16,05	3,2					●				

● Ex stock ○ On demand

HC[1] Coated carbide
HT Uncoated cermet
HC[2] Coated cermet
HW Uncoated carbide

Notes

Indexable milling – group 1 (FMA07/11/12, FMD02, EMP09/13)

Material group		Composition / structure / heat treatment			Machining group	Starting values for cutting speed v_c [m/min]							
						HC (CVD)							
						YBC302		YBC401		YBD152		YBD252	
						a_e / D		a_e / D		a_e / D		a_e / D	
						1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5
P	Unalloyed steel	approx. 0,15 % C	annealed	125	1	260	300	225	260				
		approx. 0,45 % C	annealed	190	2	225	255	195	225				
		approx. 0,45 % C	tempered	250	3	210	240	180	210				
		approx. 0,75 % C	annealed	270	4	185	210	160	185				
		approx. 0,75 % C	tempered	300	5	170	195	150	170				
	Low-alloyed steel		annealed	180	6	225	255	195	225				
			tempered	275	7	185	210	160	185				
			tempered	300	8	170	195	150	170				
			tempered	350	9	145	165	125	145				
	High-alloyed steel and high-alloyed tool steel		annealed	200	10	130	150	115	130				
			hardened and tempered	325	11	95	105	80	95				
M	Stainless steel	ferritic/martensitic	annealed	200	12								
		martensitic	tempered	240	13								
		austenitic	quench hardened	180	14								
		austenitic-ferritic		230	15								
K	Grey cast iron	perlitic/ferritic		180	16					370	430	320	370
		perlitic (martensitic)		260	17					220	255	190	220
	Cast iron with spheroidal graphite	ferritic		160	18					255	295	220	255
		perlitic		250	19					170	200	145	170
	Malleable cast iron	ferritic		130	20					305	355	265	305
		perlitic		230	21					205	240	175	205
N	Aluminium wrought alloys	cannot be hardened		60	22								
		hardenable	hardened	100	23								
	Cast aluminium alloys	≤ 12 % Si, cannot be hardened		75	24								
		≤ 12 % Si, hardenable	hardened	90	25								
		> 12 % Si, cannot be hardened		130	26								
	Copper and copper alloys (bronze/brass)	machining steel, PB> 1%		110	27								
		CuZn, CuSnZn		90	28								
		CuSn, Pb-free copper, electrolytic copper		100	29								
S	Heat-resistant alloys	Fe-based alloys	annealed	200	30								
			hardened	280	31								
		Ni or Co bass	annealed	250	32								
			hardened	350	33								
			cast	320	34								
	Titanium alloys	pure titanium		R_m 400	35								
		α and β alloys	hardened	R_m 1050	36								
H	Hardened steel		hardened and tempered	55 HRC	37								
			hardened and tempered	60 HRC	38								
	Hard cast iron		cast	400	39								
	Hardened cast iron		hardened and tempered	55 HRC	40								
X	Non-metallic materials	Thermoplasts			41								
		Thermosetting plastics			42								
		Plastic, glass-fibre reinforced GFRP			43								
		Plastic, carbon fibre reinforced CFRP			44								
		Graphite			45								
		Wood			46								

Note: The given cutting values are guide values, which were determined under ideal conditions.
The values have to be adapted in individual cases.
Feed rate recommendations on page B248.
For examples of material for cutting tool groups view page D22.

	Starting values for cutting speed v_c [m/min]																
	HC (CVD)		HC (PVD)										HW				
	YBM253		YBG102		YB9320		YBG205		YBG252		YBG302		YD101		YD201		
	a_e / D		a_e / D		a_e / D		a_e / D		a_e / D		a_e / D		a_e / D		a_e / D		
	1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5	
	260	300	270	315	245	285	235	275	230	265	225	260					
	225	255	230	270	210	245	200	235	200	230	195	225					
	210	240	220	255	200	230	190	220	185	215	180	210					
	185	210	190	225	175	200	165	195	165	190	160	185					
	170	195	180	205	160	190	155	180	150	175	150	170					
	225	255	230	270	210	245	200	235	200	230	195	225					
	185	210	190	225	175	200	165	195	165	190	160	185					
	170	195	180	205	160	190	155	180	150	175	150	170					
	145	165	150	175	135	160	130	155	130	150	125	145					
	130	150	135	160	125	145	120	140	115	135	115	130					
	95	105	95	115	90	100	85	100	85	95	80	95					
	130	150	135	160	125	145	120	140	115	135	115	130					
	110	130	115	135	105	120	100	120	100	115	95	110					
	140	160	145	170	130	155	125	150	125	145	120	140					
	110	130	115	135	105	120	100	120	100	115	95	110					
			300	345	270	315	260	300	255	295	250	290					
			180	205	160	190	155	180	150	175	150	170					
			205	240	185	215	180	210	175	200	170	195					
			135	160	125	145	120	140	115	135	115	130					
			245	285	225	260	215	250	210	240	205	235					
			165	190	150	175	145	165	140	160	135	160					
													1505	1735	1450	1670	
													1225	1420	1180	1370	
													540	620	515	600	
													435	505	420	485	
													220	255	215	250	
													170	195	160	190	
													210	245	205	235	
													385	445	370	430	

HC Coated carbide
HT Uncoated carbide, main component (TiC) o. (TiN), cermet
HC_1 Coated cermet
HW Uncoated carbide, main component (WC)

Indexable milling – group 2 (FMA01/02/03/04, FME01/02, EMP01/02/03/04)

Material group		Composition / structure / heat treatment			Machining group	Starting values for cutting speed v_c [m/min]							
						HC (CVD)							
						YBC302		YBC401		YBD152		YBD252	
						a_e / D		a_e / D		a_e / D		a_e / D	
						1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5
P	Unalloyed steel	approx. 0,15 % C	annealed	125	1	245	285	210	245				
		approx. 0,45 % C	annealed	190	2	210	245	180	210				
		approx. 0,45 % C	tempered	250	3	200	230	170	200				
		approx. 0,75 % C	annealed	270	4	175	200	150	175				
		approx. 0,75 % C	tempered	300	5	160	190	140	160				
	Low-alloyed steel		annealed	180	6	210	245	180	210				
			tempered	275	7	175	200	150	175				
			tempered	300	8	160	190	140	160				
			tempered	350	9	135	160	120	135				
	High-alloyed steel and high-alloyed tool steel		annealed	200	10	125	145	105	125				
			hardened and tempered	325	11	90	100	75	90				
M	Stainless steel	ferritic/martensitic	annealed	200	12								
		martensitic	tempered	240	13								
		austenitic	quench hardened	180	14								
		austenitic-ferritic		230	15								
K	Grey cast iron	perlitic/ferritic		180	16					315	365	270	315
		perlitic (martensitic)		260	17					185	215	160	190
	Cast iron with spheroidal graphite	ferritic		160	18					215	250	185	215
		perlitic		250	19					145	170	125	145
	Malleable cast iron	ferritic		130	20					260	300	225	260
		perlitic		230	21					175	205	150	175
N	Aluminium wrought alloys	cannot be hardened		60	22								
		hardenable	hardened	100	23								
	Cast aluminium alloys	≤ 12 % Si, cannot be hardened		75	24								
		≤ 12 % Si, hardenable	hardened	90	25								
		> 12 % Si, cannot be hardened		130	26								
	Copper and copper alloys (bronze/brass)	machining steel, PB> 1%		110	27								
		CuZn, CuSnZn		90	28								
		CuSn, Pb-free copper, electrolytic copper		100	29								
S	Heat-resistant alloys	Fe-based alloys	annealed	200	30								
			hardened	280	31								
		Ni or Co bass	annealed	250	32								
			hardened	350	33								
			cast	320	34								
	Titanium alloys	pure titanium		R_m 400	35								
		α and β alloys	hardened	R_m 1050	36								
H	Hardened steel		hardened and tempered	55 HRC	37								
			hardened and tempered	60 HRC	38								
	Hard cast iron		cast	400	39								
	Hardened cast iron		hardened and tempered	55 HRC	40								
X	Non-metallic materials	Thermoplasts			41								
		Thermosetting plastics			42								
		Plastic, glass-fibre reinforced GFRP			43								
		Plastic, carbon fibre reinforced CFRP			44								
		Graphite			45								
		Wood			46								

Note: The given cutting values are guide values, which were determined under ideal conditions.
The values have to be adapted in individual cases.
Feed rate recommendations on page B248.
For examples of material for cutting tool groups view page D22.

	Starting values for cutting speed v_c [m/min]																					
	HC (CVD)		HC (PVD)														HW				HT	
	YBM253		YBG101		YBG102		YBG152		YB9320		YBG205		YBG252		YBG302		YD101		YD201		YNG151	
	a_e / D		a_e / D		a_e / D		a_e / D		a_e / D		a_e / D		a_e / D		a_e / D		a_e / D		a_e / D		a_e / D	
	1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5	1/1 | 3/4	1/5
	245	285			255	295	240	280	230	265	220	255	215	250	210	245					270	315
	210	245			220	255	205	240	200	230	190	220	185	215	180	210					235	270
	200	230			205	240	195	225	185	215	180	205	175	200	170	200					220	255
	175	200			180	210	170	200	165	190	155	180	155	175	150	175					195	220
	160	190			170	195	160	185	150	175	145	170	140	165	140	160					180	210
	210	245			220	255	205	240	200	230	190	220	185	215	180	210					235	270
	175	200			180	210	170	200	165	190	155	180	155	175	150	175					195	220
	160	190			170	195	160	185	150	175	145	170	140	165	140	160					180	210
	135	160			145	165	135	155	130	150	125	145	120	140	120	135					150	180
	125	145			130	150	120	140	115	135	110	130	110	125	105	125					140	160
	90	100			90	105	85	100	85	95	80	90	80	90	75	90					100	110
	125	145			130	150	120	140	115	135	110	130	110	125	105	125					135	160
	105	120			110	125	105	120	100	115	95	110	95	105	90	105					115	135
	130	155			140	160	130	150	125	145	120	140	115	135	115	130					145	170
	105	120			110	125	105	120	100	115	95	110	95	105	90	105					115	135
					285	330	265	305	255	295	245	285	240	280	235	275						
					170	195	160	185	150	175	145	170	140	165	140	160						
					195	225	180	210	175	200	165	195	165	190	160	185						
					130	150	120	140	115	135	110	130	110	125	105	125						
					230	270	220	255	210	240	200	230	195	225	190	225						
					155	180	145	170	140	160	135	155	130	150	130	150						
			1505	1735													1205	1390	1040	1200		
			1225	1420													980	1140	850	980		
			540	620													435	500	375	435		
			435	505													350	405	300	350		
			220	255													180	205	155	180		
			170	195													140	160	120	140		
			210	245													170	200	150	170		
			385	445													310	360	265	310		
					75	85	70	80	65	75	65	75	65	75	60	70						
					50	55	50	55	45	50	45	50	45	50	40	45						
					60	70	55	65	55	65	50	55	50	55	50	55						
					35	40	35	40	30	35	30	35	30	35	30	35						
					45	50	45	50	40	45	40	45	40	45	40	45						
					75	85	70	80	65	75	65	75	65	75	60	70						
					75	85	70	80	65	75	65	75	65	75	60	70						

HC Coated carbide
HT Uncoated carbide, main component (TiC) o. (TiN), cermet
HC_1 Coated cermet
HW Uncoated carbide, main component (WC)

Recommended feed rate

Indexable milling – group1 (FMA07/11/12, FMD02, EMP09/13)

Material group		Feed rate per cutting edge [mm]																	
		EMP09			EMP09			EMP13			EMP13			FMA07			FMA07		
		LNKT08/12			LNKT16			ANGX11			ANGX15			ONHU06			ONHU08		
		Application																	
		F	M	R	F	M	R	F	M	R	F	M	R	F	M	R	F	M	R
P	Unalloyed steel		0,25	0,50		0,28	0,55		0,23			0,25		0,19	0,23		0,19	0,23	
	Low-alloyed steel		0,23	0,47		0,26	0,51		0,22			0,23		0,17	0,22		0,17	0,22	
	High-alloyed steel and high-alloyed tool steel		0,22	0,44		0,24	0,48		0,20			0,22		0,16	0,20		0,16	0,20	
M	Stainless steel		0,18	0,35		0,19	0,39		0,16			0,18							
K	Grey cast iron		0,28	0,55		0,30	0,61		0,26			0,28		0,20	0,26		0,20	0,26	
	Cast iron with spheroidal graphite		0,25	0,50		0,28	0,55		0,23			0,25		0,19	0,23		0,19	0,23	
	Malleable cast iron		0,25	0,50		0,28	0,55		0,23			0,25		0,19	0,23		0,19	0,23	
N	Aluminum wrought alloys								0,20			0,21							
	Aluminum cast alloys								0,20			0,21							
	Copper and copper alloys (bronze/brass)								0,18			0,19							
S	Heat-resistant alloys																		
	Titanium alloys																		
H	Hardened steel																		
	Hard cast iron																		
	Hardened cast iron																		
X	Non-metallic materials																		

Note: The given cutting values are guide values, which were determined under ideal conditions.
The values have to be adapted in individual cases.

Indexable milling – group 2 (FMA01/02/03/04, FME01/02, EMP01/02/03/04)

Material group		Feed rate per cutting edge [mm]																	
		FMA01 | FMA02			FMA03			FMA03			FMA04			FMA04			FMA04		
		SEET12			SEKN12			SEKN15			OFKT05			OFKR07			ODHT06		
		Application																	
		F	M	R	F	M	R	F	M	R	F	M	R	F	M	R	F	M	R
P	Unalloyed steel	0,15	0,20	0,25		0,18			0,20		0,20	0,25		0,20	0,25		0,20	0,25	
	Low-alloyed steel	0,14	0,19	0,23		0,17			0,19		0,19	0,23		0,19	0,23		0,19	0,23	
	High-alloyed steel and high-alloyed tool steel	0,13	0,18	0,22		0,16			0,18		0,18	0,22		0,18	0,22		0,18	0,22	
M	Stainless steel	0,11	0,14	0,18		0,13			0,14		0,14	0,18		0,14	0,18		0,14	0,18	
K	Grey cast iron	0,17	0,22	0,28		0,20			0,22		0,22	0,28		0,22	0,28		0,22	0,28	
	Cast iron with spheroidal graphite	0,15	0,20	0,25		0,18			0,20		0,20	0,25		0,20	0,25		0,20	0,25	
	Malleable cast iron	0,15	0,20	0,25		0,18			0,20		0,20	0,25		0,20	0,25		0,20	0,25	
N	Aluminium wrought alloys	0,13	0,17	0,21							0,17	0,21		0,17	0,21		0,17	0,21	
	Aluminum cast alloys	0,13	0,17	0,21							0,17	0,21		0,17	0,21		0,17	0,21	
	Copper and copper alloys (bronze/brass)	0,11	0,15	0,19							0,15	0,19		0,15	0,19		0,15	0,19	
S	Heat-resistant alloys	0,11	0,14	0,18							0,14	0,18		0,14	0,18		0,14	0,18	
	Titanium alloys	0,11	0,14	0,18							0,14	0,18		0,14	0,18		0,14	0,18	
H	Hardened steel																		
	Hard cast iron																		
	Hardened cast iron																		
X	Non-metallic materials																		

Note: The given cutting values are guide values, which were determined under ideal conditions.
The values have to be adapted in individual cases.

	Feed rate per cutting edge [mm]																							
	FMA11			FMA11			FMA11			FMA12			FMD02			FMD02			FMP12			FMP12		
	SNEG12			SNEG15			SNEG19			ONHU08			PNEG11			HNEX09			WNHU06			WNHU08		
	Application																							
	F	M	R	F	M	R	F	M	R	F	M	R	F	M	R	F	M	R	F	M	R	F	M	R
		0,20	0,23		0,22	0,25			0,29		0,23		0,15	0,20	0,30					0,23			0,25	
		0,19	0,21		0,20	0,24			0,27		0,22		0,14	0,19	0,28					0,22			0,23	
		0,18	0,20		0,19	0,22			0,26		0,20		0,13	0,18	0,26					0,20			0,22	
		0,14	0,16		0,15	0,18			0,20		0,16									0,16			0,18	
		0,22	0,25		0,24	0,28			0,32		0,26		0,17	0,22	0,33	0,17	0,22	0,33		0,26			0,28	
		0,20	0,23		0,22	0,25			0,29		0,23		0,15	0,20	0,30	0,15	0,20	0,30		0,23			0,25	
		0,20	0,23		0,22	0,25			0,29		0,23		0,15	0,20	0,30	0,15	0,20	0,30		0,23			0,25	

F Finishing
M Medium machining
R Roughing

	Feed rate per cutting edge [mm]																							
	FME02			FME03			FME03			FMP01			FMP02			EMP01 | EMP02			EMP01 | EMP02			EMP03 | EMP04		
	SPK*12			SPK*12			SPK*15			TPKN22			SEET12			APKT11			APKT16			APKT11		
	Application																							
	F	M	R	F	M	R	F	M	R	F	M	R	F	M	R	F	M	R	F	M	R	F	M	R
		0,20			0,19			0,20			0,20		0,15	0,20	0,25	0,10	0,15	0,20	0,12	0,17	0,23	0,10	0,20	0,25
		0,19			0,17			0,19			0,19		0,14	0,19	0,23	0,09	0,14	0,19	0,11	0,16	0,21	0,09	0,19	0,23
		0,18			0,16			0,18			0,18		0,13	0,18	0,22	0,09	0,13	0,18	0,10	0,15	0,20	0,09	0,18	0,22
		0,14			0,13			0,14			0,14		0,11	0,14	0,18	0,07	0,11	0,14	0,08	0,12	0,16	0,07	0,14	0,18
		0,22			0,20			0,22			0,22		0,17	0,22	0,28	0,11	0,17	0,22	0,13	0,19	0,25	0,11	0,22	0,28
		0,20			0,19			0,20			0,20		0,15	0,20	0,25	0,10	0,15	0,20	0,12	0,17	0,23	0,10	0,20	0,25
		0,20			0,19			0,20			0,20		0,15	0,20	0,25	0,10	0,15	0,20	0,12	0,17	0,23	0,10	0,20	0,25
													0,13	0,17	0,21	0,09	0,13	0,17	0,10	0,15	0,20	0,09	0,17	0,21
													0,13	0,17	0,21	0,09	0,13	0,17	0,10	0,15	0,20	0,09	0,17	0,21
													0,11	0,15	0,19	0,08	0,11	0,15	0,09	0,13	0,18	0,08	0,15	0,19

F Finishing
M Medium machining
R Roughing

Solid carbide milling System code – JIS series

GM	–	2	E	L	P	–	D12	R0.5	–	M08
1		2	3	4	5		6	7		8

Application	
Code	Description
GR	General roughing
GM	Semi-finishing
GF	Finishing
PM	High-performance machining
HM	Hard machining
HH	High-speed hard machining
NM	General machining of non-ferrous metals
AL	General machining of Al and Al alloys
ALP	High-performance machining of Al and Al alloys
ALG	General machining of Al and Al alloys
UM	HSC/HPC machining
VSM	General machining of heat-resistant alloys

1

Number of teeth

2

Cutting edge type	
Code	Description
E	Square shoulder mill with protective chamfer
F	Square shoulder mill with sharp cutting edges
B	Ball nose cutter
R	Torus mill
W	Ripper
H	High-feed mill

3

Cutting edge length	
Code	Description
L	Long
X	Extra long
F	Short

4

Type	
Code	Description
S	Mini diameter
P	Ground neck
C	Conical neck

5

Diameter [mm]	
Code	Description
D3.0	3,0
D8.0	8,0
D20.0	20,0
...	

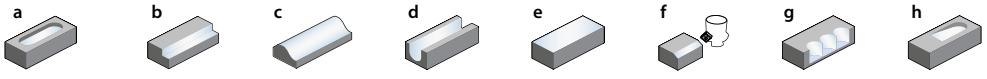
6

Radius [mm]	
Code	Description
R0.5	0,5
R1.0	1,5
R3.0	3,0
...	

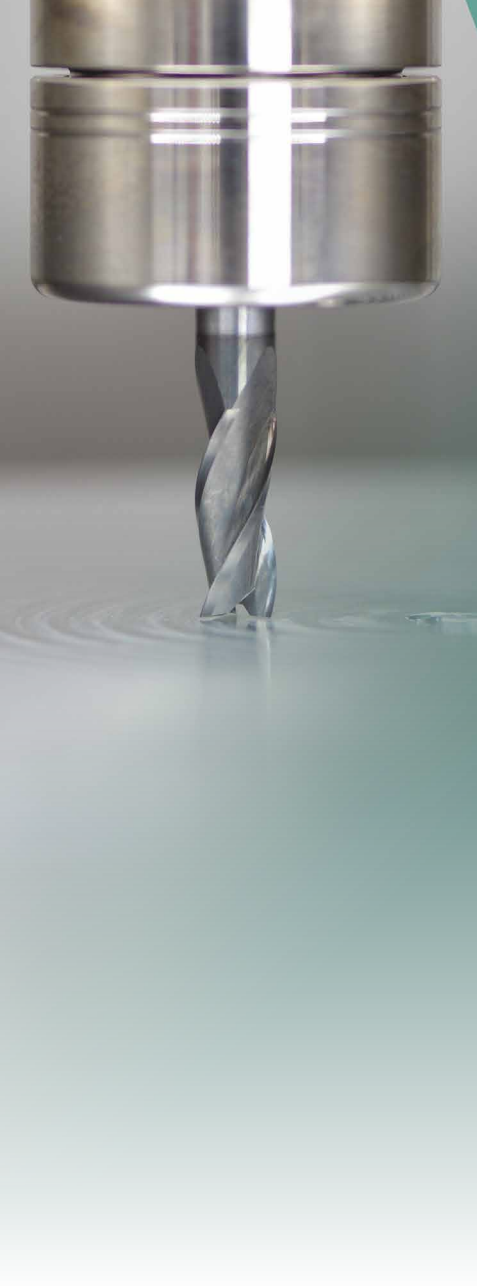
7

Features	
Code	Description
G	Spiral angle 30°
M	Neck length [mm]
S	Thin shank
AIR	For aerospace industry

8



a Groove milling **b Square shoulder milling** **c Profile milling** **d Slot milling** **e Face milling** **f Chamfer milling** **g Plunge milling** **h Circular milling/Ramping**



ALP/ALG series

For high-performance aluminium machining

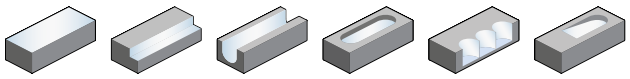
New **ALP-1EP: single-edged tools for full-slot machining and profiling**

- Optimised Geometrys for top results in aluminium machining operations
  - **ALP series** optimised for roughing operations with maximal chip removal rates
  - **ALG series** specially designed for finishing operations with high surface qualities
- Available with optional DLC coating (KMD401) for improved performance and reduced wear
- End/torus mills
- Diameter range: 1.0–20.0 mm

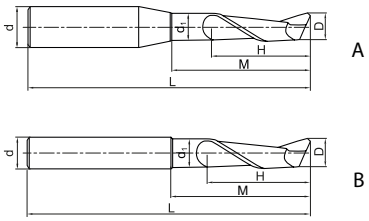
End mill General machining of Al and Al alloys

New

ALP-1EP



– Factory standard
– Centre cutting
– Helix angle 23°



Article	✻	Dimensions [mm]						Teeth	Geometry	Grade	
		D	d (h5)	d_1	H	M	L			KMD401	YK40F
ALP-1EP-D2.0-M08S		2	4	1,8	6	8	45	1	A	○	○
ALP-1EP-D2.0-M12S		2	4	1,8	6	12	45	1	A	○	○
ALP-1EP-D3.0-M12S		3	4	2,8	8	12	45	1	A	○	○
ALP-1EP-D3.0-M18S		3	4	2,8	8	18	45	1	A	○	○
ALP-1EP-D4.0-M16S		4	4	3,8	10	16	45	1	B	○	○
ALP-1EP-D4.0-M24S		4	4	3,8	10	24	45	1	B	○	○
ALP-1EP-D2.0-M08		2	6	1,8	6	8	45	1	A	●	●
ALP-1EP-D2.0-M12		2	6	1,8	6	12	45	1	A	●	●
ALP-1EP-D3.0-M12		3	6	2,8	8	12	45	1	A	●	●
ALP-1EP-D3.0-M18		3	6	2,8	8	18	45	1	A	●	●
ALP-1EP-D4.0-M16		4	6	3,8	10	16	45	1	A	●	●
ALP-1EP-D4.0-M24		4	6	3,8	10	24	55	1	A	●	●
ALP-1EP-D5.0-M20		5	6	4,8	13	20	55	1	A	●	●
ALP-1EP-D5.0-M30		5	6	4,8	13	30	65	1	A	●	●
ALP-1EP-D6.0-M24		6	6	5,8	16	24	55	1	B	●	●
ALP-1EP-D6.0-M36		6	6	5,8	16	36	75	1	B	●	●
ALP-1EP-D8.0-M32		8	8	7,7	22	32	75	1	B	●	●
ALP-1EP-D8.0-M48		8	8	7,7	22	48	90	1	B	●	●
ALP-1EP-D10.0-M40		10	10	9,6	27	40	80	1	B	●	●
ALP-1EP-D10.0-M60		10	10	9,6	27	60	100	1	B	●	●

● Ex stock ○ On demand

✻ With internal cooling

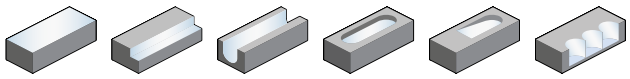
Application field

P	M	K	N	S	H
			✔		

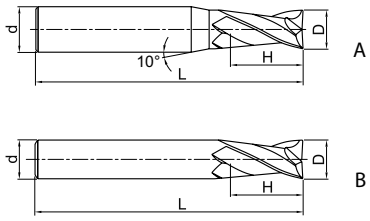
✔ Very suitable
✔ Suitable

End mill General machining of Al and Al alloys

ALG-2E



– Factory standard
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm]				Teeth	Geometry	Grade
		D	d (h6)	H	L			YK40F
ALG-2E-D1.0		1	4	3	50	2	A	●
ALG-2E-D1.5		1,5	4	4	50	2	A	○
ALG-2E-D2.0		2	4	6	50	2	A	●
ALG-2E-D2.5		2,5	4	8	50	2	A	○
ALG-2E-D3.0S		3	4	8	50	2	A	●
ALG-2E-D3.5S		3,5	4	10	50	2	A	○
ALG-2E-D4.0S		4	4	11	50	2	B	○
ALG-2E-D3.0		3	6	8	50	2	A	●
ALG-2E-D3.5		3,5	6	10	50	2	A	○
ALG-2E-D4.0		4	6	11	50	2	A	●
ALG-2E-D4.5		4,5	6	11	50	2	A	○
ALG-2E-D5.0		5	6	13	50	2	A	●
ALG-2E-D5.5		5,5	6	16	50	2	A	○
ALG-2E-D6.0		6	6	16	50	2	B	●
ALG-2E-D7.0		7	8	20	60	2	A	○
ALG-2E-D8.0		8	8	20	60	2	B	●
ALG-2E-D9.0		9	10	22	75	2	A	○
ALG-2E-D10.0		10	10	25	75	2	B	●
ALG-2E-D11.0		11	12	26	75	2	A	○
ALG-2E-D12.0		12	12	30	75	2	B	●
ALG-2E-D14.0		14	14	32	75	2	B	●
ALG-2E-D16.0		16	16	45	100	2	B	●
ALG-2E-D18.0		18	18	45	100	2	B	○
ALG-2E-D20.0		20	20	45	100	2	B	●

● Ex stock ○ On demand
✻ With internal cooling

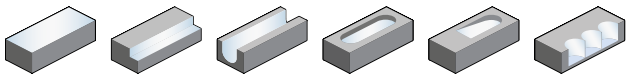
Application field

P	M	K	N	S	H
			✔		

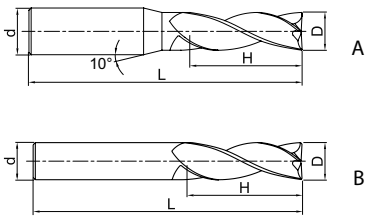
✔ Very suitable
✔ Suitable

End mill General machining of Al and Al alloys

ALG-3E



– Factory standard
– Centre cutting
– Helix angle 45°



Article	✻	Dimensions [mm]				Teeth	Geometry	Grade	
		D	d (h6)	H	L			KMD401	YK40F
ALG-3E-D1.0		1	4	3	50	3	A	○	●
ALG-3E-D1.5		1,5	4	4	50	3	A	○	●
ALG-3E-D2.0		2	4	6	50	3	A	○	●
ALG-3E-D2.5		2,5	4	8	50	3	A	○	○
ALG-3E-D3.0S		3	4	8	50	3	A	○	●
ALG-3E-D3.5S		3,5	4	10	50	3	A	○	○
ALG-3E-D4.0S		4	4	11	50	3	B	○	●
ALG-3E-D3.0		3	6	8	50	3	A	●	●
ALG-3E-D3.5		3,5	6	10	50	3	A	●	○
ALG-3E-D4.0		4	6	11	50	3	A	●	●
ALG-3E-D4.5		4,5	6	11	50	3	A	●	○
ALG-3E-D5.0		5	6	13	50	3	A	●	●
ALG-3E-D5.5		5,5	6	16	50	3	A	●	○
ALG-3E-D6.0		6	6	16	50	3	B	●	●
ALG-3E-D7.0		7	8	20	60	3	A	●	○
ALG-3E-D8.0		8	8	20	60	3	B	●	●
ALG-3E-D9.0		9	10	22	75	3	A	●	○
ALG-3E-D10.0		10	10	25	75	3	B	●	●
ALG-3E-D11.0		11	12	26	75	3	A	●	○
ALG-3E-D12.0		12	12	30	75	3	B	●	●
ALG-3E-D14.0		14	14	32	75	3	B	●	●
ALG-3E-D16.0		16	16	45	100	3	B	●	●
ALG-3E-D18.0		18	18	45	100	3	B	●	○
ALG-3E-D20.0		20	20	45	100	3	B	○	●

● Ex stock ○ On demand
✻ With internal cooling

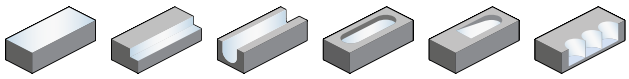
Application field

P	M	K	N	S	H
			✔		

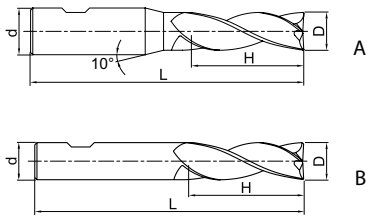
✔ Very suitable
✔ Suitable

End mill General machining of Al and Al alloys

ALG-3E-W



– Factory standard
– Centre cutting
– Helix angle 45°



Article	✻	Dimensions [mm]				Teeth	Geometry	Grade
		D	d (h6)	H	L			KMD401
ALG-3E-D3.0-W		3	6	8	50	3	A	●
ALG-3E-D3.5-W		3,5	6	10	50	3	A	●
ALG-3E-D4.0-W		4	6	11	50	3	A	●
ALG-3E-D4.5-W		4,5	6	11	50	3	A	●
ALG-3E-D5.0-W		5	6	13	50	3	A	●
ALG-3E-D5.5-W		5,5	6	16	50	3	A	●
ALG-3E-D6.0-W		6	6	16	50	3	B	●
ALG-3E-D7.0-W		7	8	20	60	3	A	●
ALG-3E-D8.0-W		8	8	20	60	3	B	●
ALG-3E-D9.0-W		9	10	22	75	3	A	●
ALG-3E-D10.0-W		10	10	25	75	3	B	●
ALG-3E-D11.0-W		11	12	26	75	3	A	●
ALG-3E-D12.0-W		12	12	30	75	3	B	●
ALG-3E-D14.0-W		14	14	32	75	3	B	●
ALG-3E-D16.0-W		16	16	45	100	3	B	●
ALG-3E-D18.0-W		18	18	45	100	3	B	●
ALG-3E-D20.0-W		20	20	45	100	3	B	●

● Ex stock ○ On demand
✻ With internal cooling

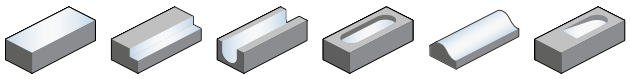
Application field

P	M	K	N	S	H
			✔		

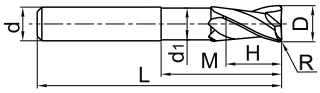
✔ Very suitable
✔ Suitable

End mill General machining of Al and Al alloys

ALG-2R



– Factory standard
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm]							Teeth	Grade	
		R	D	d (h6)	d_1	H	M	L		KMD401	YK40F
ALG-2R-D6.0R0.3		0,3	6	6	5,7	8	16	75	2	●	●
ALG-2R-D6.0R0.5		0,5	6	6	5,7	8	16	75	2	●	●
ALG-2R-D6.0R1.0		1	6	6	5,7	8	16	75	2	●	●
ALG-2R-D8.0R0.3		0,3	8	8	7,4	10	20	75	2	●	●
ALG-2R-D8.0R0.5		0,5	8	8	7,4	10	20	75	2	●	●
ALG-2R-D8.0R1.0		1	8	8	7,4	10	20	75	2	●	●
ALG-2R-D10.0R0.5		0,5	10	10	9,4	12	35	100	2	●	●
ALG-2R-D10.0R1.0		1	10	10	9,4	12	35	100	2	●	●
ALG-2R-D10.0R1.6		1,6	10	10	9,4	12	35	100	2	●	●
ALG-2R-D10.0R2.5		2,5	10	10	9,4	12	35	100	2	●	●
ALG-2R-D12.0R0.5		0,5	12	12	11,4	15	35	100	2	●	●
ALG-2R-D12.0R1.0		1	12	12	11,4	15	35	100	2	●	●
ALG-2R-D12.0R1.6		1,6	12	12	11,4	15	35	100	2	●	●
ALG-2R-D12.0R2.5		2,5	12	12	11,4	15	35	100	2	●	●
ALG-2R-D12.0R3.2		3,2	12	12	11,4	15	35	100	2	●	●
ALG-2R-D12.0R4.0		4	12	12	11,4	15	35	100	2	●	●
ALG-2R-D16.0R1.0		1	16	16	15,4	15	45	125	2	●	●
ALG-2R-D16.0R1.6		1,6	16	16	15,4	15	45	125	2	●	●
ALG-2R-D16.0R2.5		2,5	16	16	15,4	15	45	125	2	●	●
ALG-2R-D16.0R3.2		3,2	16	16	15,4	15	45	125	2	●	●
ALG-2R-D16.0R4.0		4	16	16	15,4	15	45	125	2	●	●
ALG-2R-D16.0R6.3		6,3	16	16	15,4	15	45	125	2	○	○
ALG-2R-D20.0R1.0		1	20	20	18	20	50	125	2	●	●
ALG-2R-D20.0R1.6		1,6	20	20	18	20	50	125	2	●	●
ALG-2R-D20.0R2.5		2,5	20	20	18	20	50	125	2	●	●
ALG-2R-D20.0R3.2		3,2	20	20	18	20	50	125	2	●	●
ALG-2R-D20.0R4.0		4	20	20	18	20	50	125	2	●	●
ALG-2R-D20.0R6.3		6,3	20	20	18	20	50	125	2	○	○
ALG-2R-D25.0R6.3		6,3	25	25	23	25	75	150	2	○	○

● Ex stock ○ On demand
✻ With internal cooling

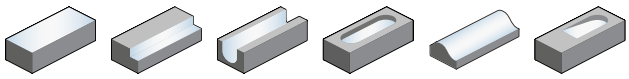
Application field

P	M	K	N	S	H
			✔		

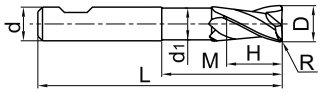
✔ Very suitable
✔ Suitable

End mill — General machining of Al and Al alloys

ALG-2R-W



– Factory standard
– Centre cutting
– Helix angle 30°



Article	✻	Dimensions [mm]							Teeth	Grade
		R	D	d (h6)	d_1	H	M	L		KMD401
ALG-2R-D6.0R0.3-W		0,3	6	6	5,7	8	16	75	2	●
ALG-2R-D6.0R0.5-W		0,5	6	6	5,7	8	16	75	2	●
ALG-2R-D6.0R1.0-W		1	6	6	5,7	8	16	75	2	●
ALG-2R-D8.0R0.3-W		0,3	8	8	7,4	10	20	75	2	●
ALG-2R-D8.0R0.5-W		0,5	8	8	7,4	10	20	75	2	●
ALG-2R-D8.0R1.0-W		1	8	8	7,4	10	20	75	2	●
ALG-2R-D10.0R0.5-W		0,5	10	10	9,4	12	35	100	2	●
ALG-2R-D10.0R1.0-W		1	10	10	9,4	12	35	100	2	●
ALG-2R-D10.0R1.6-W		1,6	10	10	9,4	12	35	100	2	●
ALG-2R-D10.0R2.5-W		2,5	10	10	9,4	12	35	100	2	●
ALG-2R-D12.0R0.5-W		0,5	12	12	11,4	15	35	100	2	●
ALG-2R-D12.0R1.0-W		1	12	12	11,4	15	35	100	2	●
ALG-2R-D12.0R1.6-W		1,6	12	12	11,4	15	35	100	2	●
ALG-2R-D12.0R2.5-W		2,5	12	12	11,4	15	35	100	2	●
ALG-2R-D12.0R3.2-W		3,2	12	12	11,4	15	35	100	2	●
ALG-2R-D12.0R4.0-W		4	12	12	11,4	15	35	100	2	●
ALG-2R-D16.0R1.0-W		1	16	16	15,4	15	45	125	2	●
ALG-2R-D16.0R1.6-W		1,6	16	16	15,4	15	45	125	2	●
ALG-2R-D16.0R2.5-W		2,5	16	16	15,4	15	45	125	2	●
ALG-2R-D16.0R3.2-W		3,2	16	16	15,4	15	45	125	2	●
ALG-2R-D16.0R4.0-W		4	16	16	15,4	15	45	125	2	●
ALG-2R-D16.0R6.3-W		6,3	16	16	15,4	15	45	125	2	○
ALG-2R-D20.0R1.0-W		1	20	20	18	20	50	125	2	●
ALG-2R-D20.0R1.6-W		1,6	20	20	18	20	50	125	2	●
ALG-2R-D20.0R2.5-W		2,5	20	20	18	20	50	125	2	●
ALG-2R-D20.0R3.2-W		3,2	20	20	18	20	50	125	2	●
ALG-2R-D20.0R4.0-W		4	20	20	18	20	50	125	2	●
ALG-2R-D20.0R6.3-W		6,3	20	20	18	20	50	125	2	○
ALG-2R-D25.0R6.3-W		6,3	25	25	23	25	75	150	2	○

● Ex stock ○ On demand
✻ With internal cooling

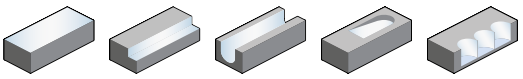
Application field

P	M	K	N	S	H
			✔		

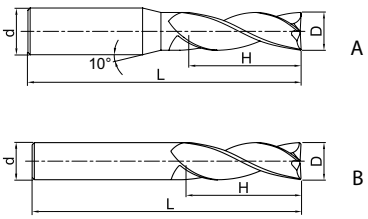
✔ Very suitable
✔ Suitable

End mill General machining of Al and Al alloys

ALP-3E



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm]				Teeth	Geometry	Grade	
		D	d (h6)	H	L			KMD401	YK40F
ALP-3E-D1.0		1	4	3	50	3	A	○	○
ALP-3E-D1.5		1,5	4	4	50	3	A	○	●
ALP-3E-D2.0		2	4	6	50	3	A	○	●
ALP-3E-D2.5		2,5	4	8	50	3	A	○	○
ALP-3E-D3.0S		3	4	8	50	3	A	○	●
ALP-3E-D4.0S		4	4	11	50	3	B	○	●
ALP-3E-D3.0		3	6	8	50	3	A	●	●
ALP-3E-D4.0		4	6	11	50	3	A	●	●
ALP-3E-D4.5		4,5	6	11	50	3	A	●	○
ALP-3E-D5.0		5	6	13	50	3	A	●	●
ALP-3E-D5.5		5,5	6	16	50	3	A	●	○
ALP-3E-D6.0		6	6	16	50	3	B	●	●
ALP-3E-D7.0		7	8	20	60	3	B	●	○
ALP-3E-D8.0		8	8	20	60	3	B	●	●
ALP-3E-D9.0		9	10	22	75	3	B	●	○
ALP-3E-D10.0		10	10	25	75	3	B	●	●
ALP-3E-D11.0		11	12	26	75	3	B	●	●
ALP-3E-D12.0		12	12	30	75	3	B	●	●
ALP-3E-D14.0		14	14	32	75	3	B	●	●
ALP-3E-D16.0		16	16	45	100	3	B	●	●
ALP-3E-D20.0		20	20	45	100	3	B	●	○

● Ex stock ○ On demand
✻ With internal cooling

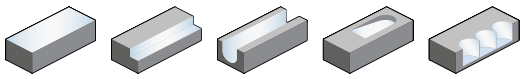
Application field

P	M	K	N	S	H
			✔		

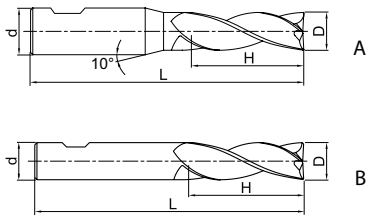
✔ Very suitable
✔ Suitable

End mill — General machining of Al and Al alloys

ALP-3E-W



– Factory standard
– Centre cutting
– Helix angle 35°



Article	✻	Dimensions [mm]				Teeth	Geometry	Grade
		D	d (h6)	H	L			KMD401
ALP-3E-D3.0-W		3	6	8	50	3	A	●
ALP-3E-D4.0-W		4	6	11	50	3	A	●
ALP-3E-D4.5-W		4,5	6	11	50	3	A	●
ALP-3E-D5.0-W		5	6	13	50	3	A	●
ALP-3E-D5.5-W		5,5	6	16	50	3	A	●
ALP-3E-D6.0-W		6	6	16	50	3	B	●
ALP-3E-D7.0-W		7	8	20	60	3	B	●
ALP-3E-D8.0-W		8	8	20	60	3	B	●
ALP-3E-D9.0-W		9	10	22	75	3	B	●
ALP-3E-D10.0-W		10	10	25	75	3	B	●
ALP-3E-D11.0-W		11	12	26	75	3	B	●
ALP-3E-D12.0-W		12	12	30	75	3	B	●
ALP-3E-D14.0-W		14	14	32	75	3	B	●
ALP-3E-D16.0-W		16	16	45	100	3	B	●
ALP-3E-D20.0-W		20	20	45	100	3	B	●

● Ex stock ○ On demand
✻ With internal cooling

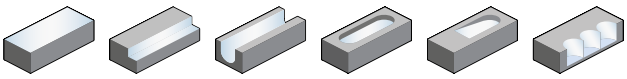
Application field

P	M	K	N	S	H
			✔		

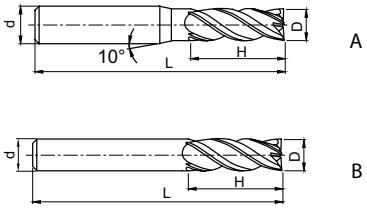
✔ Very suitable
✔ Suitable

End mill General machining of Al and Al alloys

ALP-4E



– Factory standard
– Centre cutting
– Helix angle 38°



Article	✻	Dimensions [mm]				Teeth	Geometry	Grade	
		D	d (h6)	H	L			KMD401	YK40F
ALP-4E-D3.0S		3	4	9	50	4	A	○	●
ALP-4E-D4.0S		4	4	11	50	4	B	○	●
ALP-4E-D3.0		3	6	9	50	4	A	●	●
ALP-4E-D4.0		4	6	11	50	4	A	●	●
ALP-4E-D5.0		5	6	13	50	4	A	●	●
ALP-4E-D6.0		6	6	16	50	4	B	●	●
ALP-4E-D8.0		8	8	20	60	4	B	●	●
ALP-4E-D10.0		10	10	25	75	4	B	●	●
ALP-4E-D12.0		12	12	30	75	4	B	●	●
ALP-4E-D16.0		16	16	45	100	4	B	●	●
ALP-4E-D18.0		18	18	45	100	4	B	●	○
ALP-4E-D20.0		20	20	45	100	4	B	●	●

● Ex stock ○ On demand
✻ With internal cooling

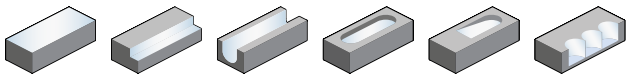
Application field

P	M	K	N	S	H
			✔		

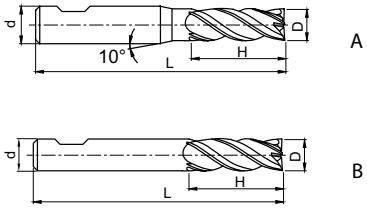
✔ Very suitable
✔ Suitable

End mill General machining of Al and Al alloys

ALP-4E-W



– Factory standard
– Centre cutting
– Helix angle 38°



Article	✻	Dimensions [mm]				Teeth	Geometry	Grade
		D	d (h6)	H	L			KMD401
ALP-4E-D3.0-W		3	6	9	50	4	A	●
ALP-4E-D4.0-W		4	6	11	50	4	A	●
ALP-4E-D5.0-W		5	6	13	50	4	A	●
ALP-4E-D6.0-W		6	6	16	50	4	B	●
ALP-4E-D8.0-W		8	8	20	60	4	B	●
ALP-4E-D10.0-W		10	10	25	75	4	B	●
ALP-4E-D12.0-W		12	12	30	75	4	B	●
ALP-4E-D16.0-W		16	16	45	100	4	B	●
ALP-4E-D18.0-W		18	18	45	100	4	B	●
ALP-4E-D20.0-W		20	20	45	100	4	B	●

● Ex stock ○ On demand
✻ With internal cooling

Application field

P	M	K	N	S	H
			✔		

✔ Very suitable
✔ Suitable

End mill – AL series, ALP/ALG series

Material group		Composition / structure / heat treatment		Brinell hardness HB	Machining group	Starting values for cutting speed v_c [m/min]							
						ALP-1EP				AL-1E, AL-2E, AL-3E (W), ALG-2E			
						Slot milling		Shoulder milling		Slot milling		Shoulder milling	
						Ø [mm]	$a_{p\,max}$	Ø [mm]	$a_{e\,max}$	Ø [mm]	$a_{p\,max}$	Ø [mm]	$a_{e\,max}$
						0<x<6	1xD	0<x≤12	<1xD	0<x<12	0,5xD	0<x≤20	<0,5xD
						6≤x≤12	1,5xD			12≤x≤20	1,0xD		
						YK40F / KMD401				YK30F / YK40F			
										a_e / D			
						1/1	1/2	1/10	f-group	1/1	1/2	1/10	f-group
P	Unalloyed steel	approx. 0,15 % C	annealed	125	1								
		approx. 0,45 % C	annealed	190	2								
		approx. 0,45 % C	tempered	250	3								
		approx. 0,75 % C	annealed	270	4								
		approx. 0,75 % C	tempered	300	5								
	Low-alloyed steel		annealed	180	6								
			tempered	275	7								
			tempered	300	8								
			tempered	350	9								
	High-alloyed steel and high-alloyed tool steel		annealed	200	10								
			hardened and tempered	325	11								
M	Stainless steel	ferritic/martensitic	annealed	200	12								
		martensitic	tempered	240	13								
		austenitic	quench hardened	180	14								
		austenitic-ferritic		230	15								
K	Grey cast iron	perlitic/ferritic		180	16								
		perlitic (martensitic)		260	17								
	Cast iron with spheroidal graphite	ferritic		160	18								
		perlitic		250	19								
	Malleable cast iron	ferritic		130	20								
		perlitic		230	21								
N	Aluminium wrought alloys	cannot be hardened		60	22	300	345	375	12	920	1100	1200	4
		hardenable	hardened	100	23	250	290	315	12	555	660	720	4
	Cast aluminium alloys	≤ 12 % Si, cannot be hardened		75	24	250	280	315	12	370	440	480	4
		≤ 12 % Si, hardenable	hardened	90	25	210	240	265	12	460	550	600	4
		> 12 % Si, cannot be hardened		130	26	180	210	225	12	140	165	180	4
	Copper and copper alloys (bronze/brass)	machining steel, PB> 1%		110	27	280	320	350	12	280	330	360	4
		CuZn, CuSnZn		90	28	310	360	390	12	325	385	420	4
		CuSn, Pb-free copper, electrolytic copper		100	29	280	320	350	12	280	330	360	4
S	Heat-resistant alloys	Fe-based alloys	annealed	200	30								
			hardened	280	31								
		Ni or Co bass	annealed	250	32								
			hardened	350	33								
			cast	320	34								
	Titanium alloys	pure titanium		R_m 400	35								
		α and β alloys	hardened	R_m 1050	36								
H	Hardened steel		hardened and tempered	55 HRC	37								
			hardened and tempered	60 HRC	38								
	Hard cast iron		cast	400	39								
	Hardened cast iron		hardened and tempered	55 HRC	40								
X	Non-metallic materials	Thermoplasts			41								
		Thermosetting plastics			42								
		Plastic, glass-fibre reinforced GFRP			43								
		Plastic, carbon fibre reinforced CFRP			44								
		Graphite			45								
		Wood			46								

Note: The given cutting values are guide values, which were determined under ideal conditions.
The values have to be adapted in individual cases.
Feed rate recommendations on page B460.
For examples of material for cutting tool groups view page D22.

	Starting values for cutting speed v_c [m/min]																			
	AL-2EL AL-3EL				ALG-3E ALP-3E ALP-4E				ALG-3E (W) ALP-3E (W) ALP-4E (W)				5566R302NH AL-2B				AL-2R-AIR AL-3R-AIR			
	Slot milling		Shoulder milling		Slot milling		Shoulder milling		Slot milling		Shoulder milling		Slot milling		Shoulder milling		Slot milling		Shoulder milling	
	Ø [mm]	$a_{p\,max}$	Ø [mm]	$a_{e\,max}$	Ø [mm]	$a_{p\,max}$	Ø [mm]	$a_{e\,max}$	Ø [mm]	$a_{p\,max}$	Ø [mm]	$a_{e\,max}$	Ø [mm]	$a_{p\,max}$	Ø [mm]	$a_{e\,max}$	Ø [mm]	$a_{p\,max}$	Ø [mm]	$a_{e\,max}$
	0<x<12	0,5xD	0<x≤20	<0,5xD	0<x<12	0,5xD	0<x≤20	<0,5xD	0<x<12	0,5xD	0<x≤20	<0,5xD	0<x<12	0,5xD	0<x≤20	<0,5xD	0<x<12	0,5xD	0<x≤20	<0,5xD
	12≤x≤20	1,0xD			12≤x≤20	1,0xD			12≤x≤20	1,0xD			12≤x≤20	1,0xD			12≤x≤20	1,0xD		
	YK30F				YK40F				KMD401				YK30F / YK40F				YK40F			
	a_e / D				a_e / D				a_e / D				a_e / D				a_e / D			
	1/1	1/2	1/10	f-group	1/1	1/2	1/10	f-group	1/1	1/2	1/10	f-group	1/1	1/10	1/20	f-group	1/1	1/2	1/10	f-group
	830	990	1080	4	920	1100	1200	4	1200	1430	1560	4		1400	1550	4	1150	1380	1500	8
	500	595	650	4	555	660	720	4	725	860	940	4		840	930	4	690	830	900	8
	335	400	435	4	370	440	480	4	485	575	625	4		560	620	4	460	555	600	8
	415	495	540	4	460	550	600	4	600	715	780	4		700	775	4	575	690	750	8
	125	150	165	4	140	165	180	4	185	215	235	4		210	235	4	175	210	225	8
	250	300	325	4	280	330	360	4	365	430	470	4		420	465	4	345	415	450	8
	295	350	380	4	325	385	420	4	425	505	550	4		490	545	4	405	485	525	8
	250	300	325	4	280	330	360	4	365	430	470	4		420	465	4	345	415	450	8

Solid carbide milling Recommended cutting data

End mill – AL series, ALP/ALG series

Material group		Composition / structure / heat treatment		Brinell hardness HB	Machining group	Starting values for cutting speed v_c [m/min]							
						ALG-2R (W)				AL-2RL-AIR AL-3RL-AIR			
						Slot milling		Shoulder milling		Slot milling		Shoulder milling	
						Ø [mm]	$a_{p\,max}$	Ø [mm]	$a_{e\,max}$				
						0<x<12	0,5xD	0<x≤20	<0,5xD	0<x<12	0,5xD	0<x≤20	<0,5xD
						12≤x≤20	1,0xD			12≤x≤20	1,0xD		
						KMD401				YK40F			
						ae / D				a_e / D			
						1/1	1/2	1/10	f-group	1/1	1/2	1/10	f-group
P	Unalloyed steel	approx. 0,15 % C	annealed	125	1								
		approx. 0,45 % C	annealed	190	2								
		approx. 0,45 % C	tempered	250	3								
		approx. 0,75 % C	annealed	270	4								
		approx. 0,75 % C	tempered	300	5								
	Low-alloyed steel		annealed	180	6								
			tempered	275	7								
			tempered	300	8								
			tempered	350	9								
	High-alloyed steel and high-alloyed tool steel		annealed	200	10								
			hardened and tempered	325	11								
M	Stainless steel	ferritic/martensitic	annealed	200	12								
		martensitic	tempered	240	13								
		austenitic	quench hardened	180	14								
		austenitic-ferritic		230	15								
K	Grey cast iron	perlitic/ferritic		180	16								
		perlitic (martensitic)		260	17								
	Cast iron with spheroidal graphite	ferritic		160	18								
		perlitic		250	19								
	Malleable cast iron	ferritic		130	20								
		perlitic		230	21								
N	Aluminium wrought alloys	cannot be hardened		60	22	1495	1795	1950	8	1035	1250	1350	8
		hardenable	hardened	100	23	900	1080	1170	8	625	750	810	8
	Cast aluminium alloys	≤ 12 % Si, cannot be hardened		75	24	600	725	780	8	415	500	540	8
		≤ 12 % Si, hardenable	hardened	90	25	750	900	975	8	520	625	675	8
		> 12 % Si, cannot be hardened		130	26	230	275	295	8	160	190	205	8
	Copper and copper alloys (bronze/brass)	machining steel, PB> 1%		110	27	450	540	585	8	315	375	405	8
		CuZn, CuSnZn		90	28	530	635	685	8	365	440	475	8
		CuSn, Pb-free copper, electrolytic copper		100	29	450	540	585	8	315	375	405	8
S	Heat-resistant alloys	Fe-based alloys	annealed	200	30								
			hardened	280	31								
		Ni or Co bass	annealed	250	32								
			hardened	350	33								
			cast	320	34								
	Titanium alloys	pure titanium		R_m 400	35								
		α and β alloys	hardened	R_m 1050	36								
H	Hardened steel		hardened and tempered	55 HRC	37								
			hardened and tempered	60 HRC	38								
	Hard cast iron		cast	400	39								
	Hardened cast iron		hardened and tempered	55 HRC	40								
X	Non-metallic materials	Thermoplasts			41								
		Thermosetting plastics			42								
		Plastic, glass-fibre reinforced GFRP			43								
		Plastic, carbon fibre reinforced CFRP			44								
		Graphite			45								
		Wood			46								

Note: The given cutting values are guide values, which were determined under ideal conditions.
The values have to be adapted in individual cases.
Feed rate recommendations on page B460.
For examples of material for cutting tool groups view page D22.

Recommended feed rate

Solid carbide milling group 8 – High feed mills AL series, ALP/ALG series

	a_e / D	Feed rate per cutting edge (f_z) [mm]																			
		Ø 6	Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 18	Ø 20												
N	1/1	0,04	0,05	0,08	0,09	0,11	0,13	0,16	0,18												
	3/4	0,05	0,07	0,10	0,12	0,14	0,16	0,20	0,23												
	1/10	0,08	0,11	0,16	0,19	0,22	0,25	0,31	0,36												

Note: The given cutting values are guide values, which were determined under ideal conditions.
The values have to be adapted in individual cases.

Solid carbide milling group 12 – ALP-1EP single-edged cutters

	a_e / D	Feed rate per cutting edge (f_z) [mm]																			
		Ø 2	Ø 3	Ø 4	Ø 5	Ø 6	Ø 8	Ø 10													
N	1/1	0,03	0,05	0,07	0,09	0,11	0,14	0,18													
	1/2	0,04	0,07	0,10	0,13	0,15	0,20	0,25													
	1/10	0,06	0,11	0,15	0,19	0,23	0,29	0,38													

Note: The given cutting values are guide values, which were determined under ideal conditions.
The values have to be adapted in individual cases.

Solid carbide drilling

C

Solid carbide drills

System code – solid carbide drills

1	5	3	6	SU	05	(C)	–	0850	(S)
1	2	3	4	5	6	7		8	9

Type	
Code	Description
1	Forets

1

Shank type	
Code	Description
1	Straight shank
2	Square shank DIN 10
3	Double flattened straight shank DIN 1809
5	Straight shank DIN 6535 HA
6	Weldon shank DIN 6535 HB
7	Whistle Notch shank DIN 6535 HE
9	Morse taper shank

2

Drill type	
Code	Description
0	Twist drill
3	Universal twist drill
4	NC tapping device
5	Step drill
6	Three-lips drill
7	Straight flute drill
8	Deep hole drill

3

Tool length	
Code	Description
1	DIN 338
2	DIN 1897
3	QJ/ZZQ(TO)01.001.002
4	DIN 6537 K
5	DIN 6539
6	DIN 6537 L
7	Factory standard ZCC-C
8	Factory standard ZCC-D
9	Factory standard ZCC-E

4

Application	
Code	Description
UD	Twist drills for tough materials
GD	Twist drills for high feeds
SU	Twist drill for general machining
SUK	Twist drill for cast iron
SL	Twist drill for deep hole drilling
SLK	Deep hole drill for cast iron
SP	Pilot drill
ST	Twist drill for soft steel and stainless steel
SH	Twist drill for hardened materials
SC	Twist drill for non-ferrous metals and cast iron
PA	Three-lips drill for non-ferrous metals and cast iron
PC	Straight flute drill for non-ferrous metals and cast iron

5

L/D relation		Angle	
Drill		NC tapping device	
Code	Description	Code	Description
03	3 x D	**90**	90°
05	5 x D	**120**	120°
08	8 x D		
10	10 x D		
12	12 x D		
15	15 x D		
20	20 x D		
30	30 x D		

6

With inner cooling

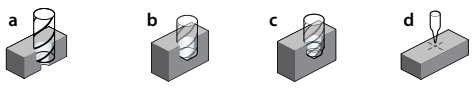
7

Bore diameter [mm]	
Code	Description
0200	2,0
0850	8,5
1800	18,0
...	

8

Shank diameter [mm]	
Code	Description
S	4,0

9



a Boring **b** Drilling **c** Profile drilling **d** Centering

Notes

GD series

Solid carbide drills for high feeds

New **Expanded product line: now also available in 3xD and with Weldon surface**

- For machining of steel and cast iron materials
- 4 guide chamfer design offers increased stability at high feed rates
- Special chip flute design allows a significantly increased metal removed rate
- Multi-layer PVD coating with low risk of cracking and increased thermal stability
- Up to 2.5 higher productivity due to high feed rates at low cutting speeds
- Diameter range 3.0–20.0 mm (5xD)

Straight cut

New grade KDG304:

- PVD coated carbide substrate for machining cast steel and cast iron
- Optimised toughness for high feeds

Feed calculator

ISO group	Material	Cutting speed v_c (m/min)	Feed factor* F_m
P	Low-alloy steel	130	0,04
	High-alloy steel	100	0,03
K	Cast iron	160	0,04
	Cast steel	130	0,03

Formula:	feed per revolution (F_n)	$D \times F_m$
Example:	drill diameter (D)	10 mm
	material	high-alloy steel

$$F_n = 10\ mm \times 0{,}03 = 0{,}3\ mm/r$$

*The stated values are maximum values. For unstable clamping set-ups or low-powered machines, we recommend reducing the feed by around 30% for a drill diameter of Ø12 mm or greater.

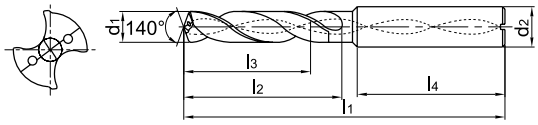
GD drill 3xD

Steel, cast iron

1534GD03C

– Shank type: DIN 6535HA
– Coolant exit, axial concentric

Internal coolant



Article	✻	Dimensions [mm]						Grade
		d_1 (m7)	d_2 (h6)	l_1	l_2	l_3	l_4	KDG304
1534GD03C-0300	✻	3	6	62	20	14	36	●
1534GD03C-0310	✻	3,1	6	62	20	14	36	●
1534GD03C-0320	✻	3,2	6	62	20	14	36	●
1534GD03C-0330	✻	3,3	6	62	20	14	36	●
1534GD03C-0340	✻	3,4	6	62	20	14	36	●
1534GD03C-0350	✻	3,5	6	62	20	14	36	●
1534GD03C-0360	✻	3,6	6	62	20	14	36	●
1534GD03C-0370	✻	3,7	6	62	20	14	36	●
1534GD03C-0380	✻	3,8	6	66	24	17	36	●
1534GD03C-0390	✻	3,9	6	66	24	17	36	●
1534GD03C-0400	✻	4	6	66	24	17	36	●
1534GD03C-0410	✻	4,1	6	66	24	17	36	●
1534GD03C-0420	✻	4,2	6	66	24	17	36	●
1534GD03C-0430	✻	4,3	6	66	24	17	36	●
1534GD03C-0440	✻	4,4	6	66	24	17	36	●
1534GD03C-0450	✻	4,5	6	66	24	17	36	●
1534GD03C-0460	✻	4,6	6	66	24	17	36	●
1534GD03C-0465	✻	4,65	6	66	24	17	36	●
1534GD03C-0470	✻	4,7	6	66	24	17	36	●
1534GD03C-0480	✻	4,8	6	66	28	20	36	●
1534GD03C-0490	✻	4,9	6	66	28	20	36	●
1534GD03C-0500	✻	5	6	66	28	20	36	●
1534GD03C-0510	✻	5,1	6	66	28	20	36	●
1534GD03C-0520	✻	5,2	6	66	28	20	36	●
1534GD03C-0530	✻	5,3	6	66	28	20	36	●
1534GD03C-0540	✻	5,4	6	66	28	20	36	●
1534GD03C-0550	✻	5,5	6	66	28	20	36	●
1534GD03C-0560	✻	5,6	6	66	28	20	36	●
1534GD03C-0570	✻	5,7	6	66	28	20	36	●
1534GD03C-0580	✻	5,8	6	66	28	20	36	●
1534GD03C-0590	✻	5,9	6	66	28	20	36	●
1534GD03C-0600	✻	6	6	66	28	20	36	●
1534GD03C-0610	✻	6,1	8	79	34	24	36	●
1534GD03C-0620	✻	6,2	8	79	34	24	36	●
1534GD03C-0630	✻	6,3	8	79	34	24	36	●

● Ex stock ○ On demand
✻ With internal cooling

Application field

Type	P	M	K	N	S	H
1534GD*	✔		✔			

✔ Very suitable
✔ Suitable

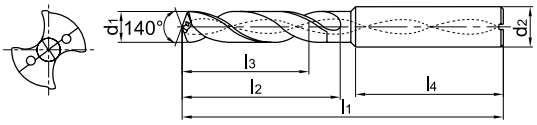
GD drill 3xD

Steel, cast iron

1534GD03C

– Shank type: DIN 6535HA
– Coolant exit, axial concentric

Internal coolant



Article	✻	Dimensions [mm]						Grade
		d_1 (m7)	d_2 (h6)	l_1	l_2	l_3	l_4	KDG304
1534GD03C-0640	✻	6,4	8	79	34	24	36	●
1534GD03C-0650	✻	6,5	8	79	34	24	36	●
1534GD03C-0660	✻	6,6	8	79	34	24	36	●
1534GD03C-0670	✻	6,7	8	79	34	24	36	●
1534GD03C-0680	✻	6,8	8	79	34	24	36	●
1534GD03C-0690	✻	6,9	8	79	34	24	36	●
1534GD03C-0700	✻	7	8	79	34	24	36	●
1534GD03C-0710	✻	7,1	8	79	41	29	36	●
1534GD03C-0720	✻	7,2	8	79	41	29	36	●
1534GD03C-0730	✻	7,3	8	79	41	29	36	●
1534GD03C-0740	✻	7,4	8	79	41	29	36	●
1534GD03C-0750	✻	7,5	8	79	41	29	36	●
1534GD03C-0760	✻	7,6	8	79	41	29	36	●
1534GD03C-0770	✻	7,7	8	79	41	29	36	●
1534GD03C-0780	✻	7,8	8	79	41	29	36	●
1534GD03C-0790	✻	7,9	8	79	41	29	36	●
1534GD03C-0800	✻	8	8	79	41	29	36	●
1534GD03C-0810	✻	8,1	10	89	47	35	40	●
1534GD03C-0820	✻	8,2	10	89	47	35	40	●
1534GD03C-0830	✻	8,3	10	89	47	35	40	●
1534GD03C-0840	✻	8,4	10	89	47	35	40	●
1534GD03C-0850	✻	8,5	10	89	47	35	40	●
1534GD03C-0860	✻	8,6	10	89	47	35	40	●
1534GD03C-0870	✻	8,7	10	89	47	35	40	●
1534GD03C-0880	✻	8,8	10	89	47	35	40	●
1534GD03C-0890	✻	8,9	10	89	47	35	40	●
1534GD03C-0900	✻	9	10	89	47	35	40	●
1534GD03C-0910	✻	9,1	10	89	47	35	40	●
1534GD03C-0920	✻	9,2	10	89	47	35	40	●
1534GD03C-0930	✻	9,3	10	89	47	35	40	●
1534GD03C-0940	✻	9,4	10	89	47	35	40	●
1534GD03C-0950	✻	9,5	10	89	47	35	40	●
1534GD03C-0960	✻	9,6	10	89	47	35	40	●
1534GD03C-0970	✻	9,7	10	89	47	35	40	●
1534GD03C-0980	✻	9,8	10	89	47	35	40	●

● Ex stock ○ On demand
✻ With internal cooling

Application field

Type	P	M	K	N	S	H
1534GD*	✔		✔			

✔ Very suitable
✔ Suitable

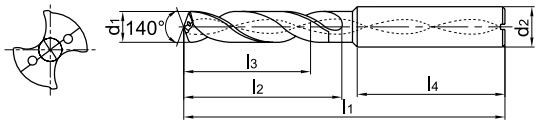
GD drill 3xD

Steel, cast iron

1534GD03C

– Shank type: DIN 6535HA
– Coolant exit, axial concentric

Internal coolant



Article	✲	Dimensions [mm]						Grade
		d_1 (m7)	d_2 (h6)	l_1	l_2	l_3	l_4	KDG304
1534GD03C-0990	✲	9,9	10	89	47	35	40	●
1534GD03C-1000	✲	10	10	89	47	35	40	●
1534GD03C-1020	✲	10,2	12	102	55	40	45	●
1534GD03C-1050	✲	10,5	12	102	55	40	45	●
1534GD03C-1100	✲	11	12	102	55	40	45	●
1534GD03C-1140	✲	11,4	12	102	55	40	45	●
1534GD03C-1150	✲	11,5	12	102	55	40	45	●
1534GD03C-1200	✲	12	12	102	55	40	45	●
1534GD03C-1250	✲	12,5	14	107	60	43	45	●
1534GD03C-1300	✲	13	14	107	60	43	45	●
1534GD03C-1350	✲	13,5	14	107	60	43	45	●
1534GD03C-1400	✲	14	14	107	60	43	45	●
1534GD03C-1450	✲	14,5	16	115	65	45	48	●
1534GD03C-1500	✲	15	16	115	65	45	48	●
1534GD03C-1550	✲	15,5	16	115	65	45	48	●
1534GD03C-1600	✲	16	16	115	65	45	48	●
1534GD03C-1650	✲	16,5	18	123	73	51	48	●
1534GD03C-1700	✲	17	18	123	73	51	48	●
1534GD03C-1750	✲	17,5	18	123	73	51	48	●
1534GD03C-1800	✲	18	18	123	73	51	48	●
1534GD03C-1850	✲	18,5	20	131	79	55	50	●
1534GD03C-1900	✲	19	20	131	79	55	50	●
1534GD03C-1950	✲	19,5	20	131	79	55	50	●
1534GD03C-2000	✲	20	20	131	79	55	50	●

● Ex stock ○ On demand
✲ With internal cooling

Application field

Type	P	M	K	N	S	H
1534GD*	✔		✔			

✔ Very suitable
✔ Suitable

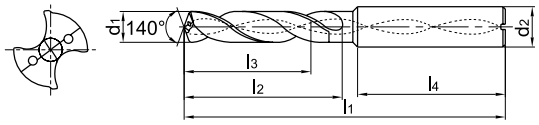
GD drill 5xD

Steel, cast iron

1536GD05C

– Shank type: DIN 6535HA
– Coolant exit, axial concentric

Internal coolant



Article	✻	Dimensions [mm]						Grade
		d_1 (m7)	d_2 (h6)	l_1	l_2	l_3	l_4	KDG304
1536GD05C-0300	✻	3	6	66	28	23	36	●
1536GD05C-0310	✻	3,1	6	66	28	23	36	●
1536GD05C-0320	✻	3,2	6	66	28	23	36	●
1536GD05C-0330	✻	3,3	6	66	28	23	36	●
1536GD05C-0340	✻	3,4	6	66	28	23	36	●
1536GD05C-0350	✻	3,5	6	66	28	23	36	●
1536GD05C-0360	✻	3,6	6	66	28	23	36	●
1536GD05C-0370	✻	3,7	6	66	28	23	36	●
1536GD05C-0380	✻	3,8	6	74	36	29	36	●
1536GD05C-0390	✻	3,9	6	74	36	29	36	●
1536GD05C-0400	✻	4	6	74	36	29	36	●
1536GD05C-0410	✻	4,1	6	74	36	29	36	●
1536GD05C-0420	✻	4,2	6	74	36	29	36	●
1536GD05C-0430	✻	4,3	6	74	36	29	36	●
1536GD05C-0440	✻	4,4	6	74	36	29	36	●
1536GD05C-0450	✻	4,5	6	74	36	29	36	●
1536GD05C-0460	✻	4,6	6	74	36	29	36	●
1536GD05C-0465	✻	4,65	6	74	36	29	36	●
1536GD05C-0470	✻	4,7	6	74	36	29	36	●
1536GD05C-0480	✻	4,8	6	82	44	35	36	●
1536GD05C-0490	✻	4,9	6	82	44	35	36	●
1536GD05C-0500	✻	5	6	82	44	35	36	●
1536GD05C-0510	✻	5,1	6	82	44	35	36	●
1536GD05C-0520	✻	5,2	6	82	44	35	36	●
1536GD05C-0530	✻	5,3	6	82	44	35	36	●
1536GD05C-0540	✻	5,4	6	82	44	35	36	●
1536GD05C-0550	✻	5,5	6	82	44	35	36	●
1536GD05C-0560	✻	5,6	6	82	44	35	36	●
1536GD05C-0570	✻	5,7	6	82	44	35	36	●
1536GD05C-0580	✻	5,8	6	82	44	35	36	●
1536GD05C-0590	✻	5,9	6	82	44	35	36	●
1536GD05C-0600	✻	6	6	82	44	35	36	●
1536GD05C-0610	✻	6,1	8	91	53	43	36	●
1536GD05C-0620	✻	6,2	8	91	53	43	36	●
1536GD05C-0630	✻	6,3	8	91	53	43	36	●

● Ex stock ○ On demand
✻ With internal cooling

Application field

Type	P	M	K	N	S	H
1536GD*	✔		✔			

✔ Very suitable
✔ Suitable

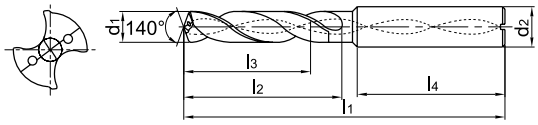
GD drill 5xD

Steel, cast iron

1536GD05C

– Shank type: DIN 6535HA
– Coolant exit, axial concentric

Internal coolant



Article	✻	Dimensions [mm]						Grade
		d_1 (m7)	d_2 (h6)	l_1	l_2	l_3	l_4	KDG304
1536GD05C-0640	✻	6,4	8	91	53	43	36	●
1536GD05C-0650	✻	6,5	8	91	53	43	36	●
1536GD05C-0660	✻	6,6	8	91	53	43	36	●
1536GD05C-0670	✻	6,7	8	91	53	43	36	●
1536GD05C-0680	✻	6,8	8	91	53	43	36	●
1536GD05C-0690	✻	6,9	8	91	53	43	36	●
1536GD05C-0700	✻	7	8	91	53	43	36	●
1536GD05C-0710	✻	7,1	8	91	53	43	36	●
1536GD05C-0720	✻	7,2	8	91	53	43	36	●
1536GD05C-0730	✻	7,3	8	91	53	43	36	●
1536GD05C-0740	✻	7,4	8	91	53	43	36	●
1536GD05C-0750	✻	7,5	8	91	53	43	36	●
1536GD05C-0760	✻	7,6	8	91	53	43	36	●
1536GD05C-0770	✻	7,7	8	91	53	43	36	●
1536GD05C-0780	✻	7,8	8	91	53	43	36	●
1536GD05C-0790	✻	7,9	8	91	53	43	36	●
1536GD05C-0800	✻	8	8	91	53	43	36	●
1536GD05C-0810	✻	8,1	10	103	61	49	40	●
1536GD05C-0820	✻	8,2	10	103	61	49	40	●
1536GD05C-0830	✻	8,3	10	103	61	49	40	●
1536GD05C-0840	✻	8,4	10	103	61	49	40	●
1536GD05C-0850	✻	8,5	10	103	61	49	40	●
1536GD05C-0860	✻	8,6	10	103	61	49	40	●
1536GD05C-0870	✻	8,7	10	103	61	49	40	●
1536GD05C-0880	✻	8,8	10	103	61	49	40	●
1536GD05C-0890	✻	8,9	10	103	61	49	40	●
1536GD05C-0900	✻	9	10	103	61	49	40	●
1536GD05C-0910	✻	9,1	10	103	61	49	40	●
1536GD05C-0920	✻	9,2	10	103	61	49	40	●
1536GD05C-0930	✻	9,3	10	103	61	49	40	●
1536GD05C-0940	✻	9,4	10	103	61	49	40	●
1536GD05C-0950	✻	9,5	10	103	61	49	40	●
1536GD05C-0960	✻	9,6	10	103	61	49	40	●
1536GD05C-0970	✻	9,7	10	103	61	49	40	●
1536GD05C-0980	✻	9,8	10	103	61	49	40	●

● Ex stock ○ On demand
✻ With internal cooling

Application field

Type	P	M	K	N	S	H
1536GD*	✔		✔			

✔ Very suitable
✔ Suitable

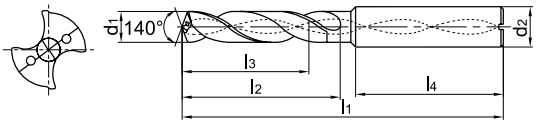
GD drill 5xD

Steel, cast iron

1536GD05C

– Shank type: DIN 6535HA
– Coolant exit, axial concentric

Internal coolant



Article	✲	Dimensions [mm]						Grade
		d_1 (m7)	d_2 (h6)	l_1	l_2	l_3	l_4	KDG304
1536GD05C-0990	✲	9,9	10	103	61	49	40	●
1536GD05C-1000	✲	10	10	103	61	49	40	●
1536GD05C-1010	✲	10,1	12	118	71	56	45	●
1536GD05C-1020	✲	10,2	12	118	71	56	45	●
1536GD05C-1030	✲	10,3	12	118	71	56	45	●
1536GD05C-1040	✲	10,4	12	118	71	56	45	●
1536GD05C-1050	✲	10,5	12	118	71	56	45	●
1536GD05C-1060	✲	10,6	12	118	71	56	45	●
1536GD05C-1070	✲	10,7	12	118	71	56	45	●
1536GD05C-1080	✲	10,8	12	118	71	56	45	●
1536GD05C-1090	✲	10,9	12	118	71	56	45	●
1536GD05C-1100	✲	11	12	118	71	56	45	●
1536GD05C-1140	✲	11,4	12	118	71	56	45	●
1536GD05C-1150	✲	11,5	12	118	71	56	45	●
1536GD05C-1200	✲	12	12	118	71	56	45	●
1536GD05C-1250	✲	12,5	14	124	77	60	45	●
1536GD05C-1300	✲	13	14	124	77	60	45	●
1536GD05C-1350	✲	13,5	14	124	77	60	45	●
1536GD05C-1400	✲	14	14	124	77	60	45	●
1536GD05C-1450	✲	14,5	16	133	83	63	48	●
1536GD05C-1500	✲	15	16	133	83	63	48	●
1536GD05C-1510	✲	15,1	16	133	83	63	48	●
1536GD05C-1550	✲	15,5	16	133	83	63	48	●
1536GD05C-1600	✲	16	16	133	83	63	48	●
1536GD05C-1650	✲	16,5	18	143	93	71	48	●
1536GD05C-1700	✲	17	18	143	93	71	48	●
1536GD05C-1750	✲	17,5	18	143	93	71	48	●
1536GD05C-1800	✲	18	18	143	93	71	48	●
1536GD05C-1850	✲	18,5	20	153	101	77	50	●
1536GD05C-1900	✲	19	20	153	101	77	50	●
1536GD05C-1950	✲	19,5	20	153	101	77	50	●
1536GD05C-2000	✲	20	20	153	101	77	50	●

● Ex stock ○ On demand
✲ With internal cooling

Application field

Type	P	M	K	N	S	H
1536GD*	✔		✔			

✔ Very suitable
✔ Suitable

GD drill 5xD

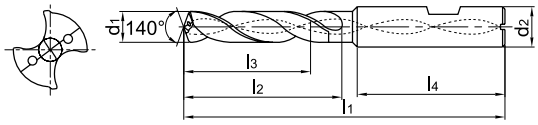
Steel, cast iron

New

1636GD05C

– Shank type: DIN 6535HA
– Coolant exit, axial concentric

Internal coolant



Article	✻	Dimensions [mm]						Grade
		d_1 (m7)	d_2 (h6)	l_1	l_2	l_3	l_4	KDG304
1636GD05C-0500	✻	5	6	82	44	35	36	●
1636GD05C-0550	✻	5,5	6	82	44	35	36	●
1636GD05C-0600	✻	6	6	82	44	35	36	●
1636GD05C-0650	✻	6,5	8	91	53	43	36	●
1636GD05C-0680	✻	6,8	8	91	53	43	36	●
1636GD05C-0700	✻	7	8	91	53	43	36	●
1636GD05C-0740	✻	7,4	8	91	53	43	36	●
1636GD05C-0750	✻	7,5	8	91	53	43	36	●
1636GD05C-0780	✻	7,8	8	91	53	43	36	●
1636GD05C-0800	✻	8	8	91	53	43	36	●
1636GD05C-0850	✻	8,5	10	103	61	49	40	●
1636GD05C-0880	✻	8,8	10	103	61	49	40	●
1636GD05C-0900	✻	9	10	103	61	49	40	●
1636GD05C-0930	✻	9,3	10	103	61	49	40	●
1636GD05C-0950	✻	9,5	10	103	61	49	40	●
1636GD05C-0980	✻	9,8	10	103	61	49	40	●
1636GD05C-1000	✻	10	10	103	61	49	40	●
1636GD05C-1020	✻	10,2	12	118	71	56	45	●
1636GD05C-1050	✻	10,5	12	118	71	56	45	●
1636GD05C-1080	✻	10,8	12	118	71	56	45	●
1636GD05C-1100	✻	11	12	118	71	56	45	●
1636GD05C-1150	✻	11,5	12	118	71	56	45	●
1636GD05C-1180	✻	11,8	12	118	71	56	45	●
1636GD05C-1200	✻	12	12	118	71	56	45	●
1636GD05C-1250	✻	12,5	14	124	77	60	45	●
1636GD05C-1280	✻	12,8	14	124	77	60	45	●
1636GD05C-1300	✻	13	14	124	77	60	45	●
1636GD05C-1350	✻	13,5	14	124	77	60	45	●
1636GD05C-1380	✻	13,8	14	124	77	60	45	●
1636GD05C-1400	✻	14	14	124	77	60	45	●
1636GD05C-1450	✻	14,5	16	133	83	63	48	●
1636GD05C-1480	✻	14,8	16	133	83	63	48	●
1636GD05C-1500	✻	15	16	133	83	63	48	●
1636GD05C-1550	✻	15,5	16	133	83	63	48	●
1636GD05C-1580	✻	15,8	16	133	83	63	48	●

● Ex stock ○ On demand
✻ With internal cooling

Application field

Type	P	M	K	N	S	H
1636GD*	✔		✔			

✔ Very suitable
✔ Suitable

GD drill 5xD

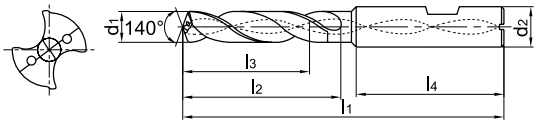
Steel, cast iron

New

1636GD05C

– Shank type: DIN 6535HA
– Coolant exit, axial concentric

Internal coolant



Article	✲	Dimensions [mm]						Grade
		d_1 (m7)	d_2 (h6)	l_1	l_2	l_3	l_4	KDG304
1636GD05C-1600	✲	16	16	133	83	63	48	●
1636GD05C-1650	✲	16,5	18	143	93	71	48	●
1636GD05C-1680	✲	16,8	18	143	93	71	48	●
1636GD05C-1700	✲	17	18	143	93	71	48	●
1636GD05C-1750	✲	17,5	18	143	93	71	48	●
1636GD05C-1780	✲	17,8	18	143	93	71	48	●
1636GD05C-1800	✲	18	18	143	93	71	48	●
1636GD05C-1850	✲	18,5	20	153	101	77	50	●
1636GD05C-1880	✲	18,8	20	153	101	77	50	●
1636GD05C-1900	✲	19	20	153	101	77	50	●
1636GD05C-1950	✲	19,5	20	153	101	77	50	●
1636GD05C-1980	✲	19,8	20	153	101	77	50	●
1636GD05C-2000	✲	20	20	153	101	77	50	●

● Ex stock ○ On demand
✲ With internal cooling

Application field

Type	P	M	K	N	S	H
1636GD*	✔		✔			

✔ Very suitable
✔ Suitable

Notes

Notes

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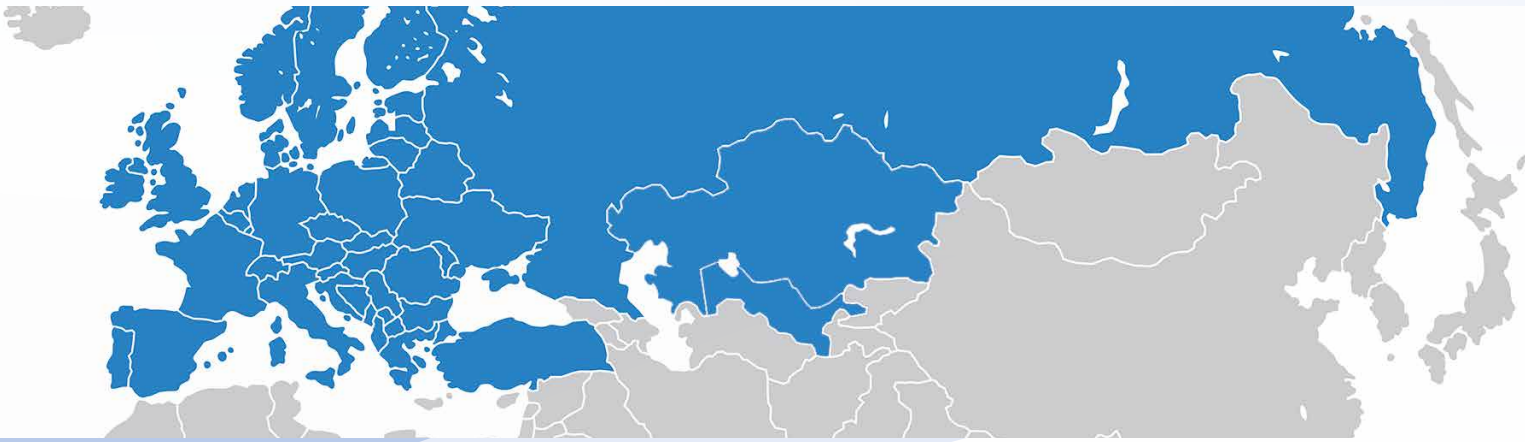

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