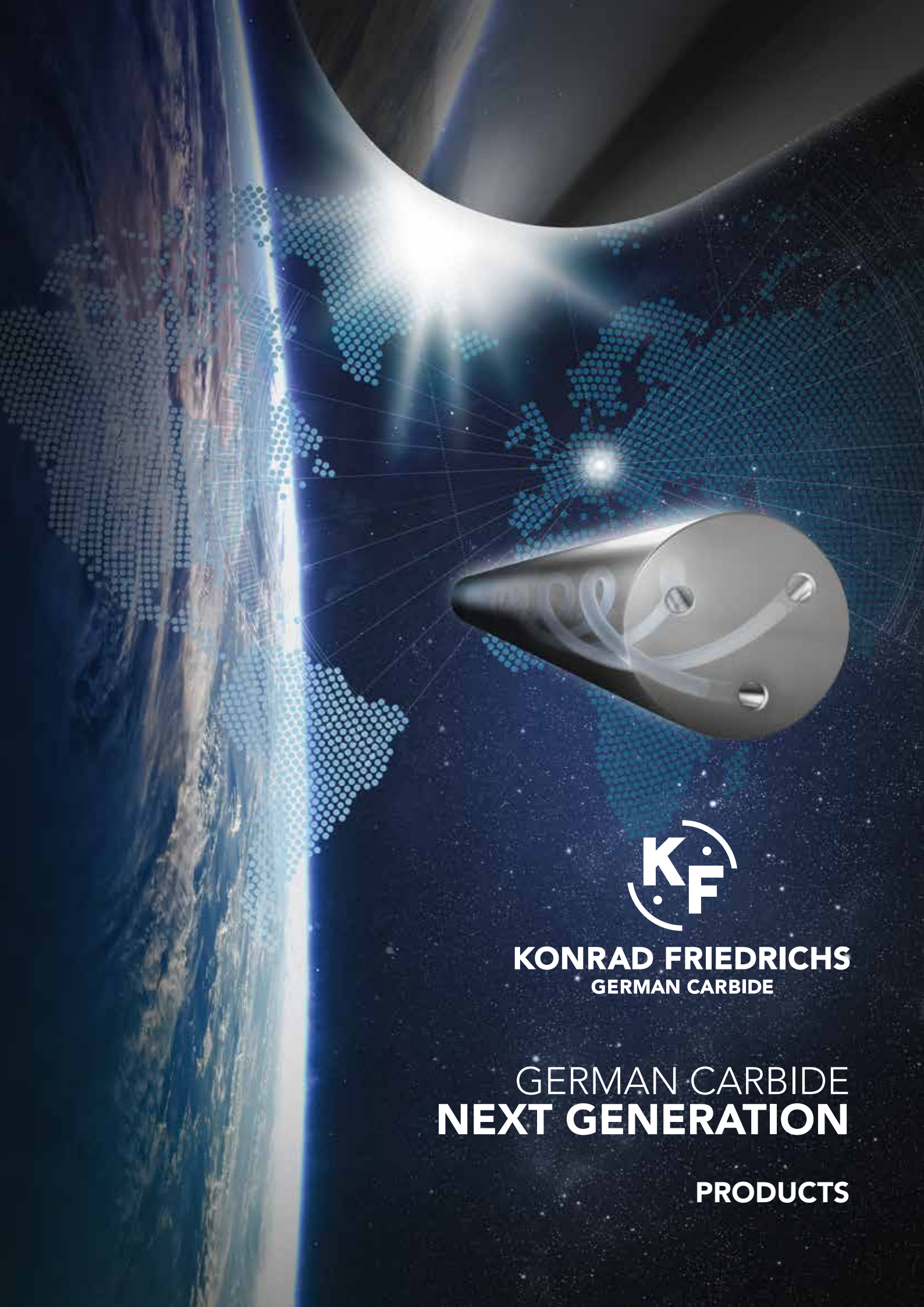


KONRAD FRIEDRICHS
GERMAN CARBIDE

GERMAN CARBIDE
NEXT GENERATION

PRODUCTS

OUR COMPANY

We are aiming high! Are you? Then challenge us!
Konrad Friedrichs GmbH & Co. KG (KF) produces innovative, future-oriented solutions in cemented carbide for you, which will precisely match your individual requirements. We challenge you to look forward to the passion and pride, with which we work, to find solutions for extraordinary projects. Our goal is a result that will inspire you. With our years of experience and our striving for the highest perfection you will raise the bar when you reach for the stars with us.
Will you join our journey?

Wir wollen hoch hinaus! Sie auch? Dann fordern Sie uns heraus! *Die Konrad Friedrichs GmbH & Co. KG (KF) produziert für Sie innovative, zukunftsfähige Hartmetall-Lösungen, die Ihre individuellen Anforderungen punktgenau erfüllen werden. Freuen Sie sich auf die Leidenschaft, mit der wir ans Werk gehen, um auch außergewöhnliche Projekte Realität werden zu lassen. Unser Ziel: ein Ergebnis, das Sie rundum begeistert – dank unserer jahrelangen Erfahrung und unserem Streben, für höchste Perfektion auch neue Wege einzuschlagen. Das alles und mehr werfen wir für Sie in die Waagschale, wenn Sie mit uns nach den Sternen greifen.*
Begeben Sie sich mit auf unsere Reise?

OUR JOURNEY

1987 — COMPANY FOUNDATION

1996 — FIRST PLANT EXPANSION
PATENT FOR EXTRUSION OF COOLANT DUCT RODS

1998 — SECOND PLANT EXPANSION

2000 — K55SF: SPECIAL GRADE FOR MACHINING ALUMINIUM

2005 — CHANGE OF MANAGEMENT
K6UF: BEST PERFORMANCE IN REAMING APPLICATIONS

2008 — THIRD PLANT EXPANSION

2009 — K88UF: THE MILLING SPECIALIST FOR HARD MATERIALS

2010 — K40XF: OUR TOUGHEST CARBIDE FOR TITANIUM AND NICKEL ALLOYS

2011 — OPENING KF CARBIDE ITALIA

2012 — PLANT 2: NEW LOGISTICS CENTER AND GRINDING DEPARTMENT
OPENING KF CARBIDE JAPAN

2013 — K5UF: FOR CHALLENGING APPLICATIONS IN COMPOSITE MATERIALS

2016 — AUTOMATION OF EXTRUSION DEPARTMENT

2017 — CHANGE OF MANAGEMENT
FULLY AUTOMATED HIGH-TECH MACHINING CENTRES FOR PREFORM-PRODUCTION

NEXT 30 YEARS

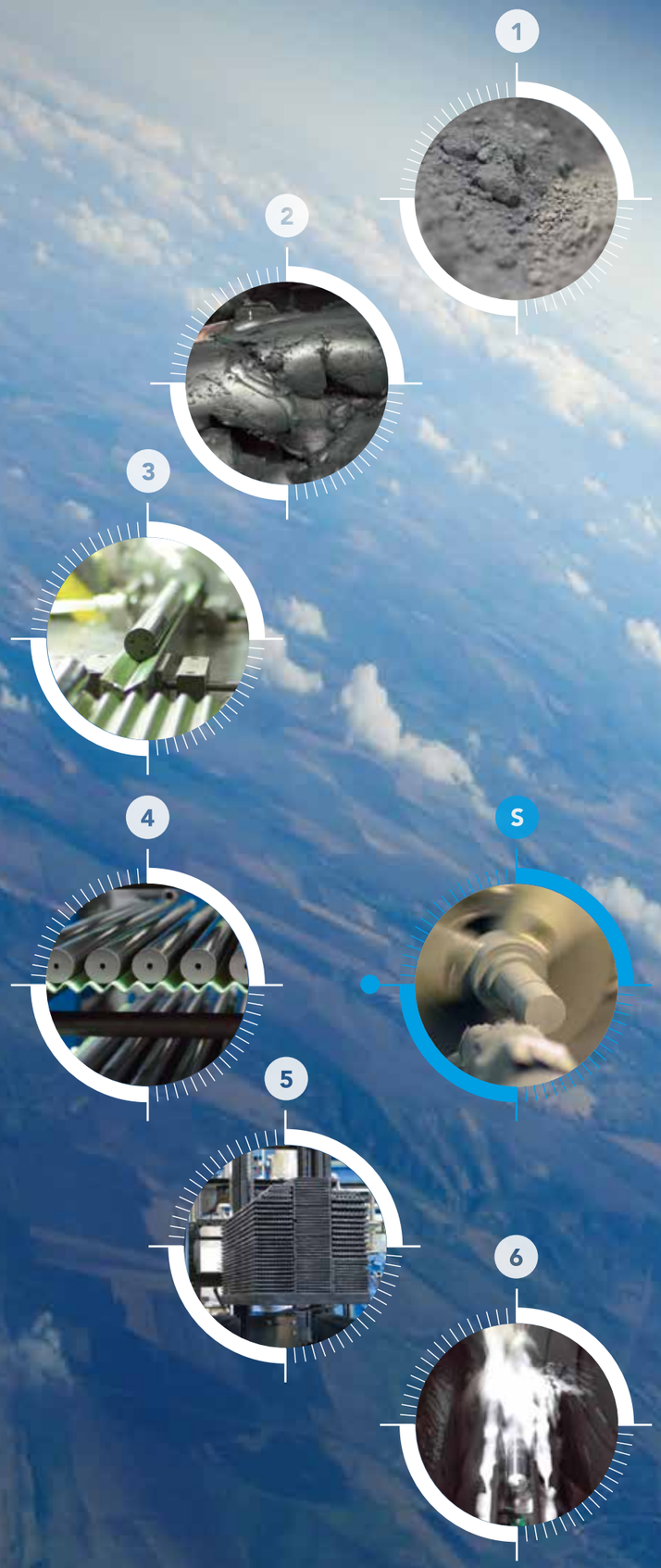
OUR VISION

Globalization, digitization, automation: To be successful in "industry 4.0", you have to actively face challenges such as these. We accomplish this – yet we remain firmly rooted in the Upper Franconian Kulmbach, as here lies the origin of our worldwide success. It is based on the qualification, perfectionism and team spirit of our staff, who are responsible for our products. In Kulmbach we enjoy an environment that is structural, yet scientific. Our interacting offers optimum conditions for healthy growth and development of new business while promoting personnel development and living conditions of our staff.

Globalisierung, Digitalisierung, Automatisierung: Um in der „Industrie 4.0" erfolgreich zu sein, muss man Herausforderungen wie diesen aktiv begegnen. Das tun wir – und doch sind und bleiben wir im oberfränkischen Kulmbach fest verwurzelt, denn hier liegt der Ursprung unseres weltweiten Erfolgs. Dieser gründet sich auf der Qualifikation, Perfektionslust und Teamfreude unserer Mitarbeiter, die für die hohen Qualitätsstandards unserer Produkte verantwortlich sind. In Kulmbach genießen wir ein Umfeld, das strukturell, landschaftlich und auch in Sachen Netzwerk beste Voraussetzungen bietet für gesundes Wachstum, die Erschließung neuer Geschäftsfelder, personelle Entwicklung sowie für die Lebensbedingungen unserer Mitarbeiter.

NEXT 30 YEARS

OUR PROCESS



At the beginning WC, Co and doping elements are mixed according to our special recipes. This mixture is then ball-milled for several hours and afterwards sieved for an outstanding homogenous distribution of carbide grains of the specific grade powder.

With the help of organic additives, the powder is plasticized in our kneaders into a clay like dough that can be extruded.

Through our patented production technology the plasticized mixture is then extruded. Thereby coolant ducts with different helical angles and geometries can be realized in our round rods.

Subsequently, part of the added liquids must be slowly removed from the product under strictly controlled conditions in our climate chamber and special drying-furnaces. The drying time depends on the outer diameter.

Main and counter spindle, two turrets, six linear and two round axes as well as a specially adapted bar loading and part removal system – with these prerequisites, preforms can be produced fast, economical and reliable to meet customer requirements.

At the beginning, the residual plasticizers evaporate during the dewaxing process. After further heating, the Co melts at about 1380 °C and flows into the free spaces between the WC grains. Through the hot-isostatic process, the remaining porosity is removed and the product subsequently cooled. The cemented carbide products lose up to 25% in volume during the whole Sinter-HIP process.

After passing a last rigorous inspection the rods are then either stocked in our warehouse or refined in our centerless-grinding department.

1 *Zu Beginn werden WC, Co und die Dotierkarbide nach speziellen Rezepturen eingewogen. Diese Mischungen werden mehrere Stunden in Attritoren gemahlen und anschließend gesiebt, um eine besonders homogene Verteilung der verschiedenen Bestandteile zu erreichen.*

2 *Mittels Zugabe von organischen Additiven wird das Pulver in unseren Knetern zu einer extrusionsfähigen Masse weiterverarbeitet.*

3 *Durch den Einsatz der patentierten KF-Herstelltechnik wird das plastifizierte Material extrudiert. Dabei können Kühlkanäle mit unterschiedlichen Steigungen und Geometrien in den Rundstab eingebracht werden.*

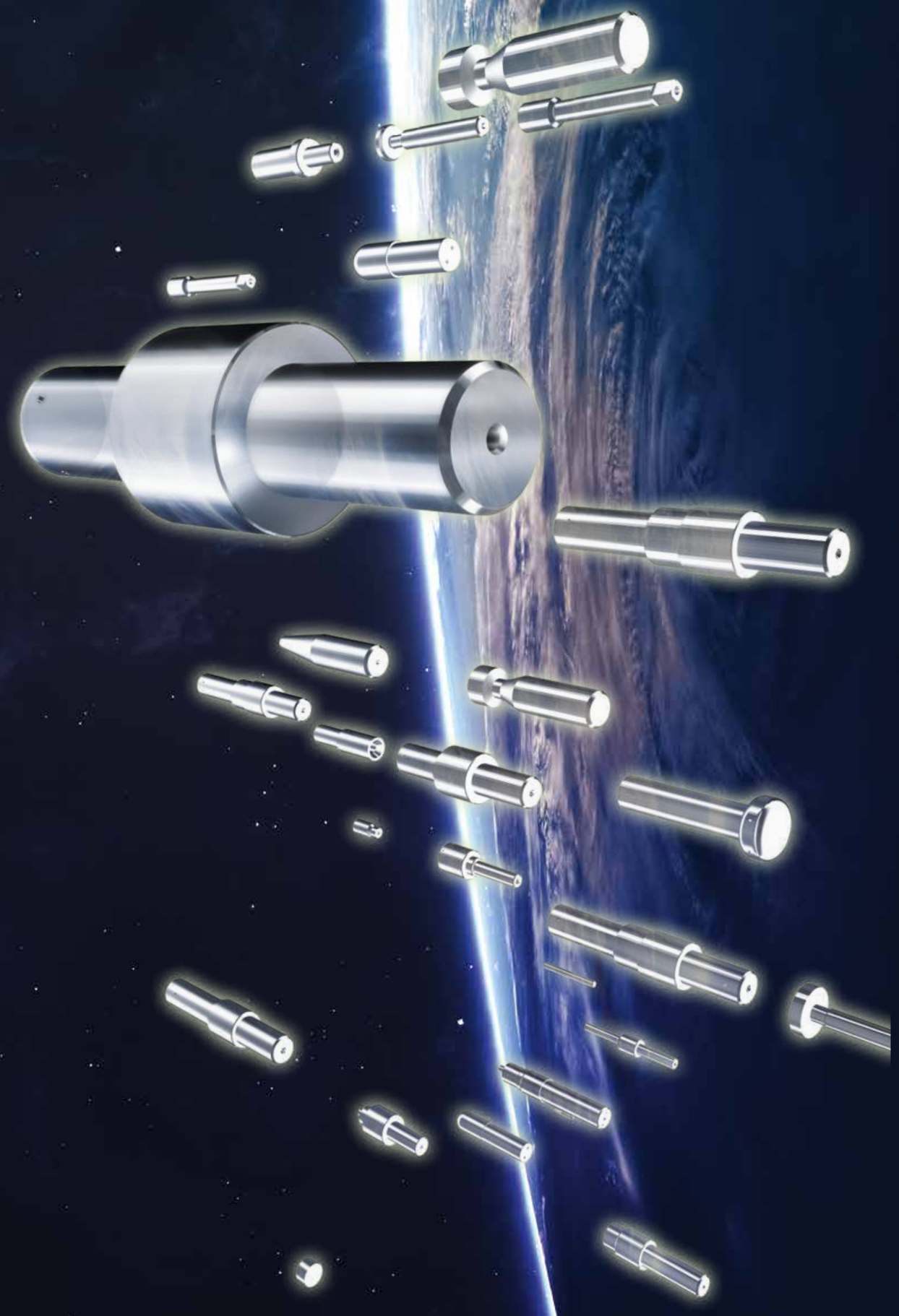
4 *Anschließend muss ein Teil der zugebenen Flüssigkeit unter streng kontrollierten Bedingungen in der Klimakammer und speziellen Trocknungsöfen langsam aus den Produkten entfernt werden. Die Trocknungsdauer ist abhängig vom Außendurchmesser.*

S *Haupt- und Gegenspindel, zwei Werkzeugrevolver, sechs Linear- und zwei Rundachsen sowie ein speziell angepasstes Stangenlade- und Teileabfuhrsystem – mit diesen Voraussetzungen können Preforms nach individuellen Kundenwünschen schnell, wirtschaftlich und prozesssicher gefertigt werden.*

5 *Zu Beginn verdampfen die verbliebenen Plastifizierungsmittel während dem Entwachsungsvorgang. Nach dem weiteren Aufheizen schmilzt das Co bei ca. 1380 °C und fließt in die Leerräume zwischen den WC-Körnern. Durch den heißisostatischen Prozess wird verbliebene Porosität entfernt und das Produkt anschließend abgekühlt. Die Hartmetallprodukte verlieren während dem gesamten Sinter-HIP-Prozess bis zu 25 % an Volumen.*

6 *Nach ausgiebigen Qualitätskontrollen werden die Stäbe entweder in das Logistikzentrum gebracht oder in der Centerless-Schleiferei veredelt.*

OUR TOMORROW'S REALITY



NON-CONTACT OPTICAL WAVE TECHNOLOGY
EFFICIENT AND TRANSPARENT QUALITY ASSURANCE

PRECISION | SYMMETRY | RELIABILITY

INNOVATIVE AUTOMATION SOLUTIONS | COMPLEX WORKPIECES | CUSTOM-SPECIFIC SOLUTIONS
MODERN TURNING AND MILLING TECHNOLOGY

BERÜHRUNGSLOSE OPTISCHE WELLENMESSTECHNIK
EFFIZIENTE UND TRANSPARENTE QUALITÄTSSICHERUNG

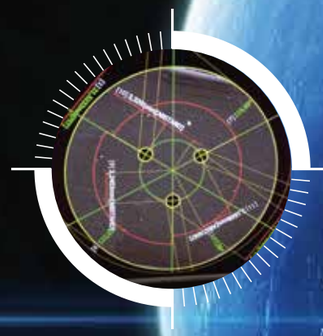
PRÄZISION | SYMMETRIE | ZUVERLÄSSIGKEIT

INNOVATIVE AUTOMATIONSLÖSUNG | KOMPLEXE WERKSTÜCKE | KUNDENSPEZIFISCHE LÖSUNGEN
MODERNE DREH- UND FRÄSTECHNOLOGIE

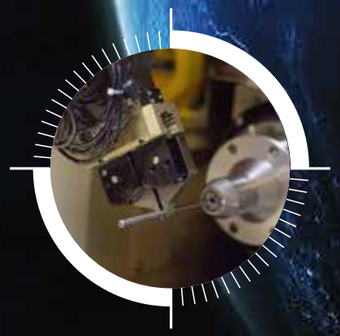
OUR MISSION

As KF we have high demands on ourselves, which can only be fulfilled if based on certain values. These not only serve ourselves, but especially our customers. Only the highest **PRECISION** allows for the accuracy that is necessary in the production of our rods. Our **PERFORMANCE** is defined by delivering the appropriate carbide grade, no matter your expectations. With our strong and tough carbide we offer you the **POWER** your tools deserve to break out into new spheres. Since 1987 we have produced our carbide with **PASSION** and constantly developed it to a new level in order to meet the challenges of the future.

*Als KF haben wir hohe Ansprüche an uns selbst, die sich nur erfüllen lassen, wenn ihnen gewisse Werte zugrunde liegen. Diese dienen nicht nur uns selbst, sondern vor allem unseren Kunden. Nur höchste **PRÄZISION** ermöglicht die Genauigkeit, die bei der Fertigung unserer Stäbe mit verdrallten Kühlkanälen nötig ist. Unsere **LEISTUNG** definiert sich durch die Lieferung der passenden Hartmetallsorte, ganz egal wie hoch Sie hinaus wollen. Mit unserem starken Hartmetall bieten wir Ihnen die **KRAFT,** die Ihre Werkzeuge brauchen, um auch in neue Sphären aufzubrechen. Seit 1987 stellen wir mit **LEIDENSCHAFT** unser Hartmetall her und entwickeln es ständig weiter, um auch den Herausforderungen der Zukunft gewachsen zu sein.*



PRECISION



PERFORMANCE

POWER

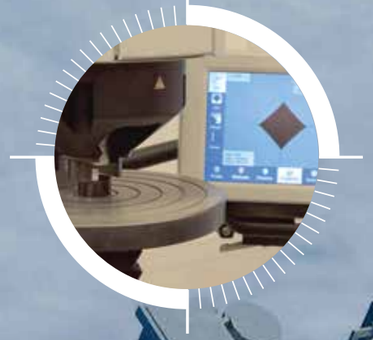
PASSION

OUR QUALITY

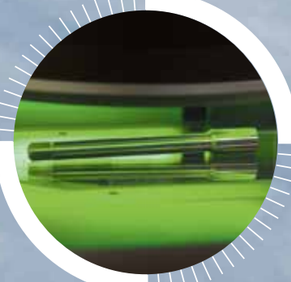
A product must be able to do many things, but above all: it must work reliably! Our **quality assurance** stands for inspection, process stability and precision right from the beginning.

Ein Produkt muss vieles können, aber vor allem muss es eines: Zuverlässig funktionieren! Unsere ***Qualitätssicherung*** *steht für Kontrolle, Sicherheit und Präzision von Anfang an.*

INCOMING QUALITY CONTROL



METALLURGICAL QUALITY CONTROL



GEOMETRICAL QUALITY CONTROL

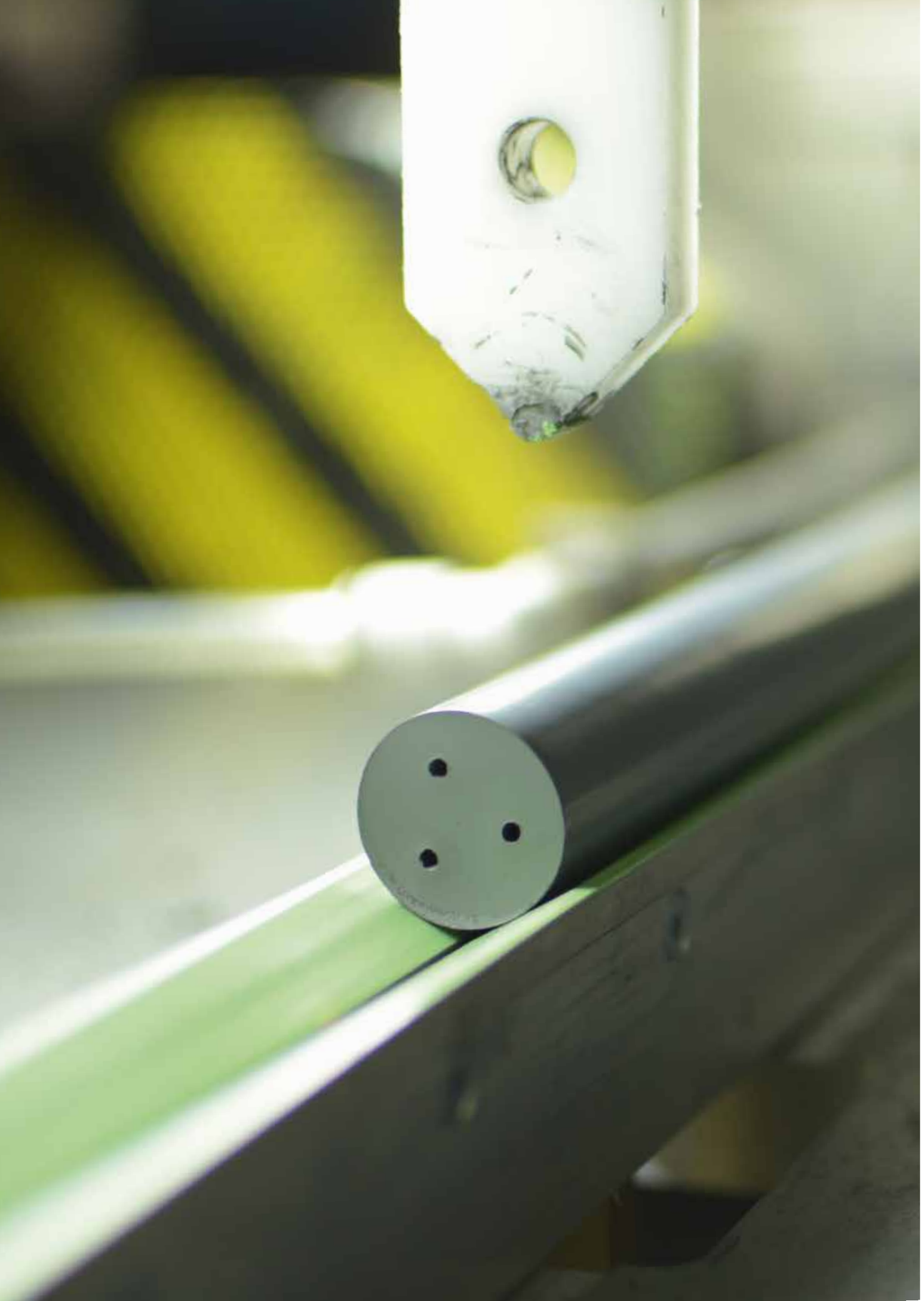
OUR CREW

WE HAVE THE RIGHT PRODUCT FOR YOUR APPLICATION: FIND IT !

RODS | *RUNDSTÄBE*

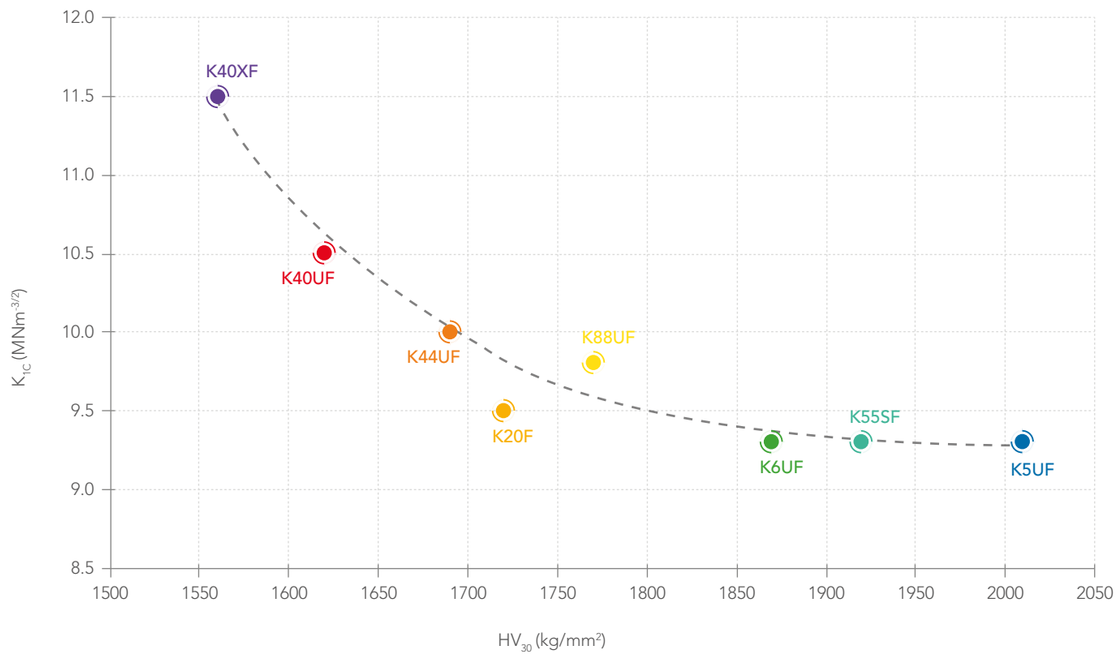
DRILL BLANKS | *BOHRER-ROHLINGE*

MILLING CUTTER BLANKS | *FRÄSER-ROHLINGE*



GRADE SPECIFICATIONS

Grade ***Sorte***		**K40XF**	**K40UF**	**K44UF**	**K20F**	**K88UF**	**K6UF**	**K55SF**	**K5UF**
ISO Classification *ISO Bereich*		K30–K40	K30–K40	K20–K30	K20–K30	K10–K20	K05–K10	K05–K10	K05–K10
Co	%	10.0	10.0	12.0	8.0	10.0	6.0	9.0	5.0
WC incl. doping	%	90.0	90.0	88.0	92.0	90.0	94.0	91.0	95.0
Density *Dichte*	g/cm^3	14.45	14.45	14.05	14.60	14.35	14.80	14.35	14.94
HV_{30}	kg/mm^2	1560 ± 50	1620 ± 50	1690 ± 50	1720 ± 50	1770 ± 50	1870 ± 50	1920 ± 50	2010 ± 50
HRA	ISO3738	91.7	92.1	92.6	92.7	93.0	93.6	93.7	94.0
K_{1C}	$MNm^{-3/2}$	11.5	10.5	10.0	9.5	9.8	9.3	9.3	9.3
TRS	N/mm^2	3700	4000	> 4000	3200	> 4000	3900	3800	3600
Porosity *Porosität*	A	< 02	< 02	< 02	< 02	< 02	< 02	< 02	< 02
	B	00	00	00	00	00	00	00	00
	C	00	00	00	00	00	00	00	00
WC grain size *WC-Korngröße*	µm	0.80	0.65	0.50	0.70	0.50	0.65	0.20	0.50

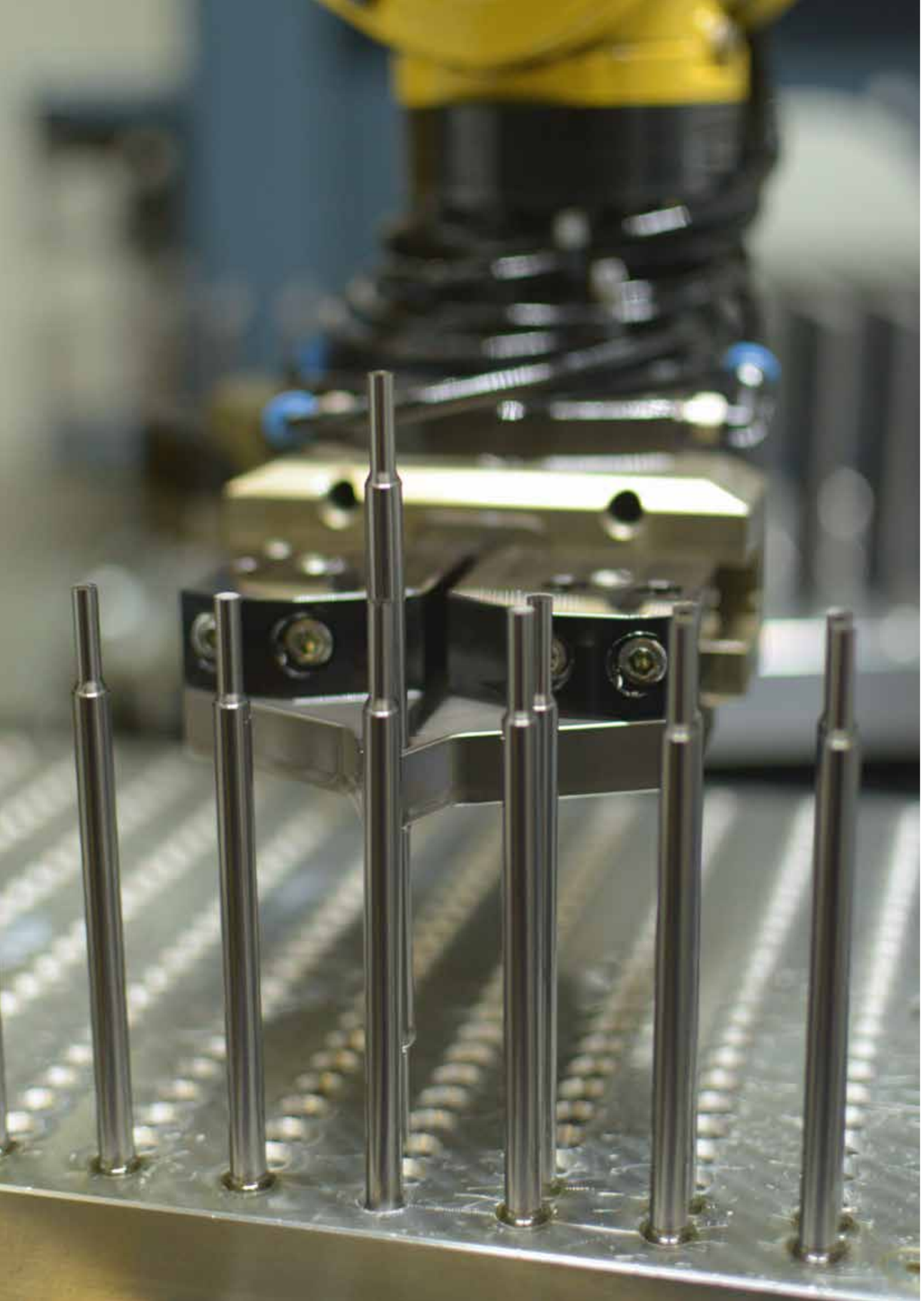


MATERIAL FOR INNOVATIVE TECHNOLOGIES

AEROSPACE | AUTOMOTIVE | CONSUMER ELECTRONICS | ENGINEERING

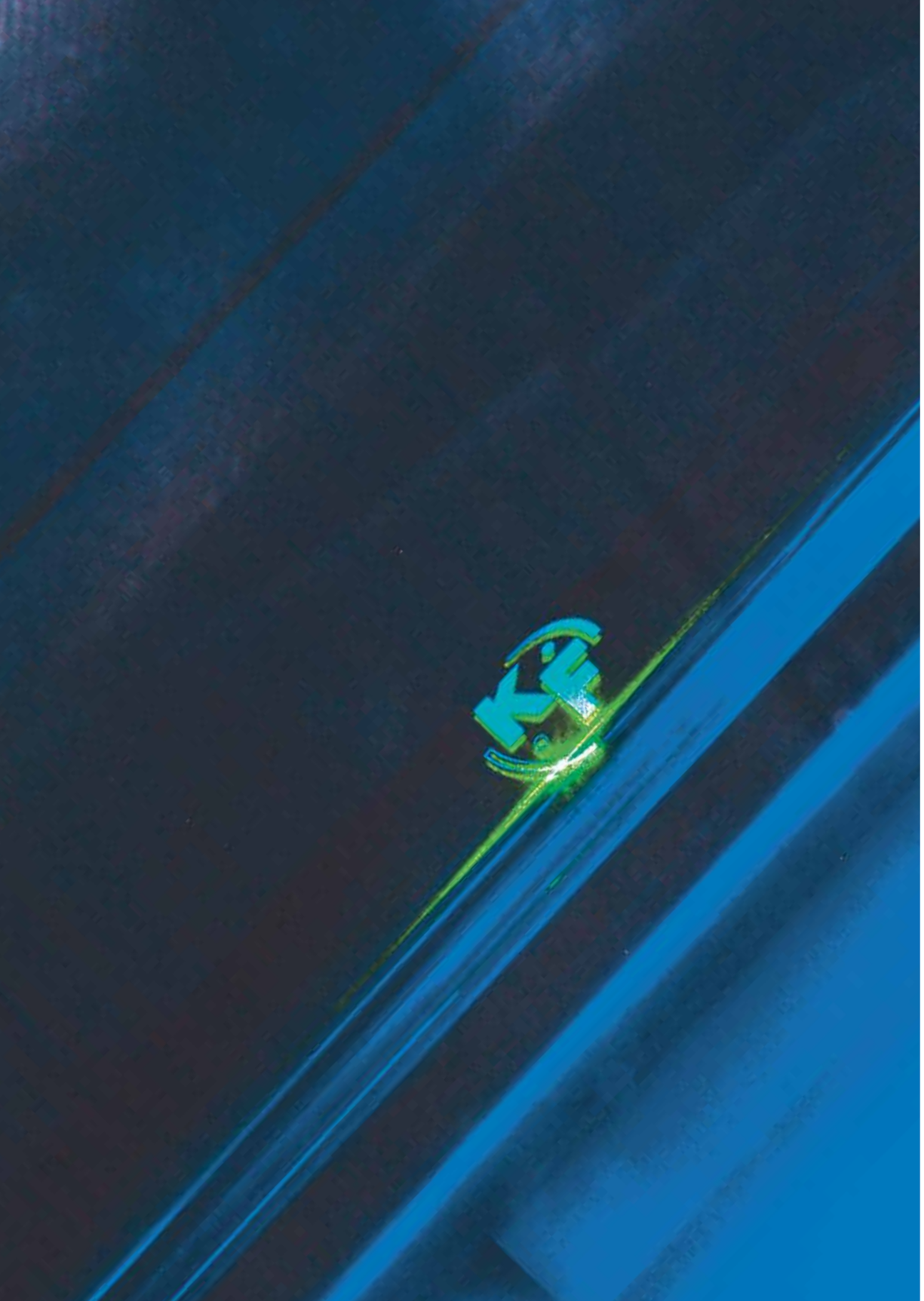
APPLICATIONS

Grade *Sorte*	K40XF	K40UF	K44UF	K20F	K88UF	K6UF	K55SF	K5UF
Drilling *Bohren*	•	•	•	•		•	•	•
End Milling *Fräsen*	•	•	•	•	•		•	
Reaming *Reiben*						•		
Tapping *Gewindeschneiden*			•					
Planing *Hobeln*							•	
Titanium alloys *Titanlegierungen*	•	•	•			•		
Nickel alloys *Nickellegierungen*	•		•					
Aluminium alloys *Aluminiumlegierungen*							•	
Heat resistant alloys *Hitzebeständige Legierungen*		•	•			•		
Stainless steels (<HRC 45) *Rostfreie Stähle (<HRC 45)*	•		•			•		
Austenitic stainless steel *Warmfeste Legierungen*		•						
Greycast iron *Stahl- und Gusswerkstoffe*		•	•	•		•		
Carbon steel (<HRC 45) *Unlegierte Stähle (<HRC 45)*	•							
Tempered steel *Getemperte Stähle*			•		•			
Hardened steel *Gehärtete Stähle*				•	•	•	•	
Tool steel *Werkzeugstahl*					•			
Tempered alloys *Vergütete Legierungen*					•			
Hard cast materials *Harte Gusswerkstoffe*					•			
Composite materials *Verbundwerkstoffe*			•			•	•	•
CFRP *CFK*		•	•			•	•	•
Graphite *Graphit*						•	•	
Kevlar *Kevlar*							•	
Chilled cast iron *Hartguss*				•				



OUR PRODUCTS

Grade ***Sorte***		**K40XF**	**K40UF**		**K44UF**		**K20F**		**K88UF**	**K6UF**	**K55SF**		**K5UF**
Length *Länge (mm)*		330	310	330	310	330	310	330	330	330	310	330	330
Solid *Vollstab*		7147	7180	7348	7175	7311	7172	7375	7146	7319	7186	7187	7144
Central *Zentralbohrung*			7043	7337	7041		7042			7150			
Parallel *Parallel*			7307	7326			7123						
Parallel (reduced bolt circle) *Parallel (eingeengter Teilkreis)*			7308	7334			7130						
2x30°			7305	7325	7321								
2x40°			7306	7329									
3x30°			7303	7346									
3x40°			7304	7347									
Drill blanks *Bohrer-Rohlinge*	3xD		7157										
	5xD		7159										
	7xD		7161										
Milling cutter blanks *Fräser-Rohlinge*			7127		7126					7200	7125		



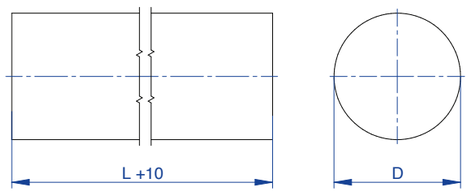
RODS

SOLID, LENGTH: 310 mm

D mm	D h6 mm	K40UF 7180	K44UF 7175	K20F 7172	K55SF 7186
1.2 +0.20		▫	▫		
1.7 +0.20		▫	▫	▫	
2.2 +0.20		▫	▫	▫	▫
2.7 +0.20		▫	▫	▫	
3.2 +0.20	3.0	▫ ●	▫ ●	▫	▫
3.7 +0.20	3.5	▫ ●	▫	▫	
4.2 +0.20	4.0	▫ ●	▫ ●	▫	▫
4.7 +0.20	4.5	▫ ●	▫	▫	
5.2 +0.20	5.0	▫ ●	▫ ●	▫	▫
5.7 +0.20	5.5	▫ ●	▫	▫	
6.2 +0.20	6.0	▫ ●	▫ ●	▫	▫ ●
6.7 +0.20	6.5	▫ ●	▫	▫	
7.2 +0.20	7.0	▫ ●	▫	▫	▫
7.7 +0.20		▫			
8.2 +0.30	8.0	▫ ●	▫ ●	▫	▫ ●
8.7 +0.30		▫	▫		
9.2 +0.30	9.0	▫ ●	▫	▫	▫
9.7 +0.30		▫	▫	▫	▫
10.2 +0.30	10.0	▫ ●	▫ ●	▫	▫ ●
10.7 +0.30		▫	▫	▫	
11.2 +0.30	11.0	▫ ●	▫	▫	
11.7 +0.30		▫		▫	
12.2 +0.30	12.0	▫ ●	▫ ●	▫	▫ ●
12.7 +0.30		▫	▫	▫	
13.2 +0.30	13.0	▫ ●	▫	▫	▫
13.7 +0.30		▫		▫	
14.2 +0.30	14.0	▫ ●	▫ ●	▫	▫
14.7 +0.30		▫		▫	
15.2 +0.30	15.0	▫ ●	▫		
15.7 +0.30		▫			
16.2 +0.40	16.0	▫ ●	▫ ●	▫	▫ ●
16.7 +0.40		▫			

D mm	D h6 mm	K40UF 7180	K44UF 7175	K20F 7172	K55SF 7186
17.2 +0.40	17.0	▫ ●	▫		
17.7 +0.40		▫			
18.2 +0.40	18.0	▫ ●	▫ ●	▫	▫ ●
18.7 +0.40		▫			
19.2 +0.40	19.0	▫ ●	▫		
19.7 +0.40		▫			
20.2 +0.50	20.0	▫ ●	▫ ●	▫	▫ ●
20.7 +0.50		▫			
21.2 +0.50	21.0	▫ ●			
21.7 +0.50		▫			
22.2 +0.50	22.0	▫ ●	▫	▫	▫
22.7 +0.50		▫			
23.2 +0.50	23.0	▫ ●			
23.7 +0.50		▫			
24.2 +0.50	24.0	▫ ●	▫		
25.2 +0.50	25.0	▫ ●	▫ ●		▫ ●
25.7 +0.50		▫			
26.2 +0.50	26.0	▫ ●	▫		
27.2 +0.50	27.0	▫ ●			
28.2 +0.50	28.0	▫ ●	▫		
29.2 +0.50		▫			
30.2 +0.50	30.0	▫ ●	▫		
31.2 +0.70		▫			
32.2 +0.70	32.0	▫ ●	▫		▫
33.2 +0.70		▫			
34.2 +0.70		▫			
35.2 +0.70		▫			
36.2 +0.70		▫			
38.2 +0.70		▫			
40.2 +0.70		▫	▫		▫

▫ raw | ● ground



RODS

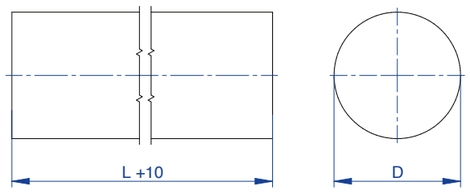
SOLID, LENGTH: 330 mm

D mm	D h6 mm	K40XF 7147	K40UF 7348	K44UF 7311	K20F 7375	K88UF 7146	K6UF 7319	K55SF 7187	K5UF 7144
1.2 +0.20			▫	▫	▫		▫	▫	
1.7 +0.20			▫	▫	▫		▫	▫	
2.2 +0.20			▫	▫	▫		▫	▫	
2.7 +0.20			▫	▫	▫		▫	▫	
3.2 +0.20	3.0	▫	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫
Inch Size	3.175		●						
3.7 +0.20	3.5		▫ ●	▫	▫		▫	▫	
4.2 +0.20	4.0	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫
4.7 +0.20		▫	▫	▫	▫	▫	▫	▫	
Inch Size	4.763		●						
5.2 +0.20	5.0	▫	▫ ●	▫ ●	▫ ●	▫ ●	▫	▫ ●	▫
5.7 +0.20	5.5		▫ ●	▫	▫		▫		
6.2 +0.20	6.0	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫
Inch Size	6.350		●						
6.7 +0.20	6.5		▫ ●	▫	▫		▫	▫	
7.2 +0.20	7.0	▫	▫ ●	▫ ●	▫ ●	▫	▫	▫ ●	
7.7 +0.20	7.5		▫ ●	▫	▫		▫		
Inch Size	7.938		●						
8.2 +0.30	8.0	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫
8.7 +0.30	8.5		▫ ●	▫	▫		▫		
9.2 +0.30	9.0		▫ ●	▫ ●	▫ ●		▫	▫	
9.7 +0.30			▫	▫	▫		▫	▫	
Inch Size	9.525		●						
10.2 +0.30	10.0	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫
10.7 +0.30			▫	▫	▫		▫	▫	
11.2 +0.30	11.0		▫ ●	▫ ●	▫		▫	▫	
Inch Size	11.113		●						
11.7 +0.30			▫		▫		▫		
12.2 +0.30	12.0	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫
12.7 +0.30	12.5		▫ ●	▫			▫		
Inch Size	12.700		●						
13.2 +0.30	13.0	▫ ●	▫ ●	▫ ●	▫		▫	▫	▫
13.7 +0.30			▫				▫	▫	
14.2 +0.30	14.0	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫
Inch Size	14.288		●						
14.7 +0.30			▫						
15.2 +0.30	15.0		▫ ●	▫	▫		▫	▫	
15.7 +0.30			▫						
Inch Size	15.875		●						
16.2 +0.40	16.0	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫

▫ raw | • ground

D mm	D h6 mm	K40XF 7147	K40UF 7348	K44UF 7311	K20F 7375	K88UF 7146	K6UF 7319	K55SF 7187	K5UF 7144
16.7 +0.40			▫	▫					
17.2 +0.40	17.0		▫ ●	▫	▫ ●		▫	▫	
17.7 +0.40			▫						
18.2 +0.40	18.0		▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	
18.7 +0.40			▫	▫					
19.2 +0.40	19.0	▫	▫ ●	▫	▫		▫	▫	
Inch Size	19.050		●						
19.7 +0.40			▫						
20.2 +0.50	20.0	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫
20.7 +0.50			▫	▫			▫		
21.2 +0.50	21.0		▫ ●	▫	▫				
21.7 +0.50			▫						
22.2 +0.50	22.0		▫ ●	▫ ●	▫	▫	▫	▫ ●	
Inch Size	22.225		●						
22.7 +0.50			▫						
23.2 +0.50	23.0		▫ ●	▫					
23.7 +0.50			▫						
24.2 +0.50	24.0		▫ ●	▫			▫		
25.2 +0.50	25.0	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	▫ ●	
Inch Size	25.400		●						
25.7 +0.50			▫	▫					
26.2 +0.50	26.0		▫ ●	▫			▫		
27.2 +0.50	27.0		▫ ●						
28.2 +0.50	28.0		▫ ●	▫	▫		▫		
29.2 +0.50	29.0		▫ ●						
30.2 +0.50	30.0		▫ ●	▫ ●	▫		▫		
31.2 +0.70	31.0		▫ ●						
32.2 +0.70	32.0		▫ ●	▫ ●	▫		▫ ●		
34.2 +0.70			▫						
35.2 +0.70			▫						
36.2 +0.70	36.0	▫	▫ ●	▫					
38.2 +0.70			▫						
40.2 +0.70	40.0		▫ ●	▫					

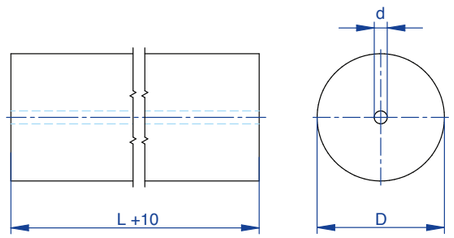
▫ raw | • ground

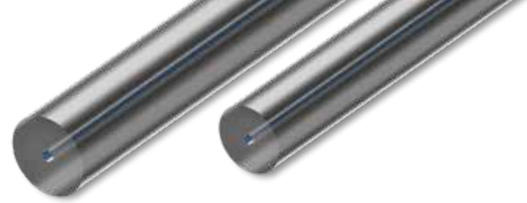


RODS

CENTRAL COOLANT DUCT, LENGTH: 310 mm

D mm	D h6 mm	d mm	CO | *MVS* mm	K40UF 7043	K44UF 7041	K20F 7042
4.5 +0.30		0.6 ±0.10	0.07	▫	▫	▫
6.3 +0.30	6.0	1.0 ±0.15	0.07	▫ ●	▫	▫
8.3 +0.30	8.0	1.3 ±0.15	0.07	▫ ●	▫	▫
10.3 +0.40	10.0	2.0 ±0.20	0.10	▫ ●	▫	▫
12.3 +0.40	12.0	2.0 ±0.20	0.10	▫ ●	▫	▫
14.3 +0.40	14.0	2.0 ±0.20	0.12	▫ ●	▫	▫
16.3 +0.50	16.0	2.0 ±0.20	0.12	▫ ●	▫	▫
18.3 +0.50		3.0 ±0.25	0.15	▫	▫	▫
20.3 +0.50	20.0	3.0 ±0.25	0.15	▫ ●	▫	▫
22.3 +0.50	22.0	3.0 ±0.25	0.15	▫ ●	▫	▫
24.3 +0.50		4.0 ±0.30	0.15	▫		▫
25.3 +0.50		4.0 ±0.30	0.15			▫
26.3 +0.50	26.0	4.0 ±0.30	0.15	▫ ●		▫
28.3 +0.50		4.0 ±0.30	0.15	▫		▫
30.3 +0.50		5.0 ±0.35	0.15	▫		▫
32.3 +0.50		5.0 ±0.35	0.15	▫		▫

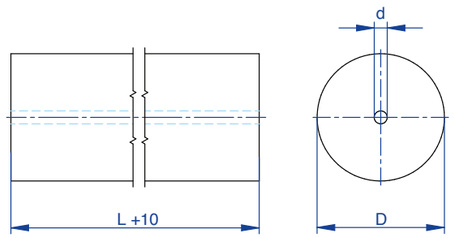




RODS

CENTRAL COOLANT DUCT, LENGTH: 330 mm

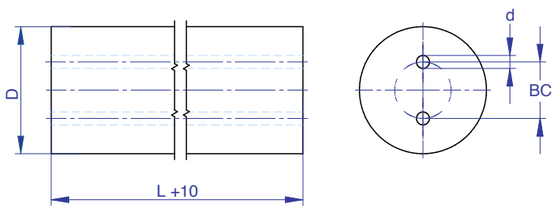
D mm	D h6 mm	d mm	CO | *MVS* mm	K40UF 7337	K6UF 7150
4. 5 +0.30		0.60 ±0.10	0.07	▫	▫
4.501 +0.30		1.00 ±0.15	0.07		▫
6.3 +0.30	6.0	1.00 ±0.15	0.07	▫ ●	▫
6.301 +0.30		1.80 ±0.15	0.07	▫	▫
8.3 +0.30	8.0	1.30 ±0.15	0.07	▫ ●	▫
8.301 +0.30		2.50 ±0.20	0.07	▫	▫
8.302 +0.30		1.80 ±0.15	0.07		▫
10.3 +0.40	10.0	2.00 ±0.20	0.10	▫ ●	▫
10.301 +0.40		3.00 ±0.25	0.10	▫	▫
12.3 +0.40	12.0	2.00 ±0.20	0.10	▫ ●	▫
12.301 +0.40		3.00 ±0.25	0.10	▫	▫
14.3 +0.40	14.0	2.00 ±0.20	0.12	▫ ●	▫
14.301 +0.40		3.00 ±0.25	0.12	▫	▫
16.3 +0.50	16.0	2.00 ±0.20	0.12	▫ ●	▫
16.301 +0.50		2.50 ±0.20	0.12	▫	▫
16.302 +0.50		4.00 ±0.30	0.12	▫	▫
16.303 +0.50		3.00 ±0.25	0.12	▫	
18.3 +0.50	18.0	3.00 ±0.25	0.15	▫ ●	▫
18.301 +0.50		4.00 ±0.30	0.15		▫
20.3 +0.50	20.0	3.00 ±0.25	0.15	▫ ●	▫
20.301 +0.50		4.00 ±0.30	0.15		▫
22.3 +0.50	22.0	3.00 ±0.25	0.15	▫ ●	▫
24.3 +0.50	24.0	4.00 ±0.30	0.15	▫ ●	▫
25.3 +0.50	25.0	4.00 ±0.30	0.15	▫ ●	▫
26.3 +0.50	26.0	4.00 ±0.30	0.15	▫ ●	▫
28.3 +0.50	28.0	4.00 ±0.30	0.15	▫ ●	▫
30.3 +0.50	30.0	5.00 ±0.35	0.15	▫ ●	▫
32.3 +0.50	32.0	5.00 ±0.35	0.15	▫ ●	▫

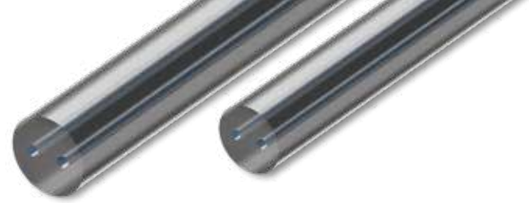


RODS

2 PARALLEL COOLANT DUCTS, LENGTH: 310 mm

D mm	D h6 mm	BC | *TK* mm	d mm	CO | *MVS* mm	K40UF 7307	K20F 7123
4.2 +0.30		1.80 -0.15	0.80 ±0.10	0.10	▫	
5.2 +0.30		2.00 -0.15	0.80 ±0.10	0.13	▫	
6.3 +0.30	6.0	3.00 -0.20	1.00 ±0.10	0.15	▫ ●	▫
7.3 +0.30		3.50 -0.20	1.00 ±0.15	0.15	▫	▫
8.3 +0.30	8.0	4.00 -0.30	1.00 ±0.15	0.15	▫ ●	▫
9.3 +0.30		4.00 -0.30	1.40 ±0.15	0.20	▫	▫
10.3 +0.30	10.0	5.00 -0.30	1.40 ±0.15	0.20	▫ ●	▫
11.3 +0.40		5.00 -0.30	1.40 ±0.15	0.28	▫	▫
12.3 +0.40	12.0	6.00 -0.30	1.75 ±0.15	0.30	▫ ●	▫
13.3 +0.40		6.00 -0.30	1.75 ±0.15	0.34	▫	▫
14.3 +0.40	14.0	7.00 -0.30	1.75 ±0.15	0.37	▫ ●	▫
15.3 +0.40		7.00 -0.30	2.00 ±0.20	0.40	▫	
16.3 +0.40	16.0	8.00 -0.30	2.00 ±0.20	0.40	▫ ●	▫
17.3 +0.50		8.00 -0.30	2.00 ±0.20	0.47	▫	
18.3 +0.50	18.0	9.00 -0.30	2.00 ±0.20	0.50	▫ ●	▫
19.3 +0.50		9.00 -0.30	2.00 ±0.20	0.50	▫	
20.4 +0.50	20.0	10.00 -0.40	2.50 ±0.25	0.50	▫ ●	▫
21.4 +0.50		10.00 -0.40	2.50 ±0.25	0.50	▫	
22.4 +0.50	22.0	11.00 -0.40	2.50 ±0.25	0.50	▫ ●	▫
23.4 +0.50		11.00 -0.40	2.50 ±0.25	0.50	▫	
24.4 +0.50		12.00 -0.50	3.00 ±0.25	0.50	▫	
25.4 +0.50	25.0	12.00 -0.50	3.00 ±0.25	0.50	▫ ●	▫
26.4 +0.50		13.00 -0.50	3.00 ±0.25	0.50	▫	
28.4 +0.50		14.00 -0.50	3.00 ±0.25	0.50	▫	
30.4 +0.50		14.00 -0.50	3.00 ±0.25	0.50	▫	
32.4 +0.50		14.00 -0.50	3.00 ±0.25	0.50	▫	
34.4 +0.50		14.00 -0.50	3.00 ±0.25	0.50	▫	

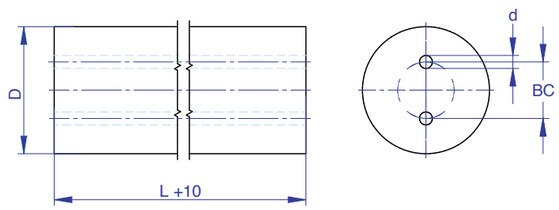




RODS

2 PARALLEL COOLANT DUCTS, LENGTH: 330 mm

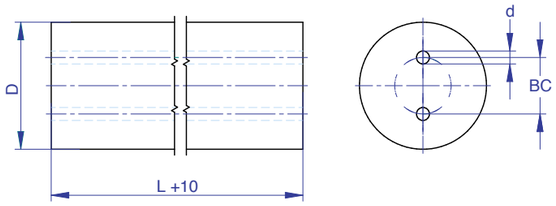
D mm	D h6 mm	BC | *TK* mm	d mm	CO | *MVS* mm	K40UF 7326
4.2 + 0.30		1.80 -0.15	0.80 ±0.10	0.10	▫
5.2 + 0.30		2.00 -0.15	0.80 ±0.10	0.13	▫
6.3 + 0.30	6.0	3.00 -0.20	1.00 ±0.10	0.15	▫ ●
7.3 + 0.30		3.50 -0.20	1.00 ±0.15	0.15	▫
8.3 + 0.30	8.0	4.00 -0.30	1.00 ±0.15	0.15	▫ ●
9.3 + 0.30		4.00 -0.30	1.40 ±0.15	0.20	▫
10.3 + 0.30	10.0	5.00 -0.30	1.40 ±0.15	0.20	▫ ●
11.3 + 0.40		5.00 -0.30	1.40 ±0.15	0.28	▫
12.3 + 0.40	12.0	6.00 -0.30	1.75 ±0.15	0.30	▫ ●
13.3 + 0.40		6.00 -0.30	1.75 ±0.15	0.34	▫
14.3 + 0.40	14.0	7.00 -0.30	1.75 ±0.15	0.37	▫ ●
15.3 + 0.40		7.00 -0.30	2.00 ±0.20	0.40	▫
16.3 + 0.40	16.0	8.00 -0.30	2.00 ±0.20	0.40	▫ ●
17.3 + 0.50		8.00 -0.30	2.00 ±0.20	0.47	▫
18.3 + 0.50	18.0	9.00 -0.30	2.00 ±0.20	0.50	▫ ●
19.3 + 0.50		9.00 -0.30	2.00 ±0.20	0.50	▫
20.4 + 0.50	20.0	10.00 -0.40	2.50 ±0.25	0.50	▫ ●
21.4 + 0.50		10.00 -0.40	2.50 ±0.25	0.50	▫
22.4 + 0.50		11.00 -0.40	2.50 ±0.25	0.50	▫
23.4 + 0.50		11.00 -0.40	2.50 ±0.25	0.50	▫
24.4 + 0.50		12.00 -0.50	3.00 ±0.25	0.50	▫
25.4 + 0.50	25.0	12.00 -0.50	3.00 ±0.25	0.50	▫ ●
26.4 + 0.50		13.00 -0.50	3.00 ±0.25	0.50	▫
30.4 + 0.50		14.00 -0.50	3.00 ±0.25	0.50	▫

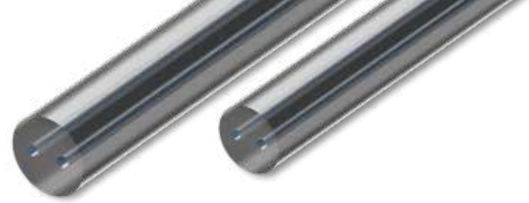


RODS

2 PARALLEL COOLANT DUCTS, LENGTH: 310 mm (REDUCED BOLT CIRCLE)

D mm	D h6 mm	BC | *TK* mm	d mm	CO | *MVS* mm	K40UF 7308	K20F 7130
6.3 +0.30	6.0	1.50 -0.20	0.80 ±0.10	0.15	▫ ●	▫
7.3 +0.30		1.50 -0.20	0.80 ±0.10	0.15	▫	
8.3 +0.30	8.0	2.60 -0.30	1.00 ±0.10	0.15	▫ ●	▫
8.315 +0.30		1.50 -0.20	0.80 ±0.10	0.15	▫	
8.320 +0.30		2.00 -0.30	0.80 ±0.10	0.15	▫	
9.3 +0.30		2.60 -0.30	1.00 ±0.10	0.20	▫	▫
10.3 +0.30	10.0	2.60 -0.30	1.00 ±0.10	0.20	▫ ●	▫
11.3 +0.40		3.50 -0.30	1.20 ±0.15	0.28	▫	
12.3 +0.40	12.0	3.50 -0.30	1.20 ±0.15	0.30	▫ ●	▫
13.3 +0.40		3.50 -0.30	1.20 ±0.15	0.34	▫	
14.3 +0.40	14.0	5.00 -0.30	1.50 ±0.15	0.37	▫ ●	▫
15.3 +0.40		5.00 -0.30	1.50 ±0.15	0.40	▫	
16.3 +0.40	16.0	5.00 -0.30	1.50 ±0.15	0.40	▫ ●	▫
17.3 +0.50		6.20 -0.30	2.00 ±0.20	0.47	▫	
18.3 +0.50	18.0	6.20 -0.30	2.00 ±0.20	0.50	▫ ●	▫
19.3 +0.50		6.20 -0.30	2.00 ±0.20	0.50	▫	
20.4 +0.50	20.0	6.20 -0.40	2.00 ±0.20	0.50	▫ ●	▫
21.4 +0.50		6.20 -0.40	2.00 ±0.20	0.50	▫	▫
22.4 +0.50	22.0	6.20 -0.40	2.00 ±0.20	0.50	▫ ●	▫
23.4 +0.50		7.50 -0.40	2.00 ±0.20	0.50	▫	
24.4 +0.50		7.50 -0.40	2.00 ±0.20	0.50	▫	
25.4 +0.50		7.50 -0.40	2.00 ±0.20	0.50	▫	
26.4 +0.50		7.50 -0.40	2.00 ±0.20	0.50	▫	

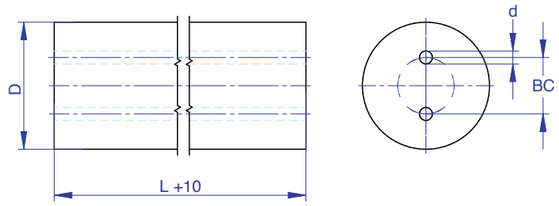




RODS

2 PARALLEL COOLANT DUCTS, LENGTH: 330 mm (REDUCED BOLT CIRCLE)

D mm	D h6 mm	BC | *TK* mm	d mm	CO | *MVS* mm	K40UF 7334
6.3 +0.30	6.0	1.50 -0.20	0.80 ±0.10	0.15	▫ ●
8.3 +0.30	8.0	2.60 -0.30	1.00 ±0.10	0.15	▫ ●
8.315 +0.30		1.50 -0.20	0.80 ±0.10	0.15	▫
8.320 +0.30		2.00 -0.30	0.80 ±0.10	0.15	▫
9.3 +0.30		2.60 -0.30	1.00 ±0.10	0.20	▫
10.3 +0.30	10.0	2.60 -0.30	1.00 ±0.10	0.20	▫ ●
11.3 +0.40		3.50 -0.30	1.20 ±0.15	0.28	▫
12.3 +0.40	12.0	3.50 -0.30	1.20 ±0.15	0.30	▫ ●
13.3 +0.40		3.50 -0.30	1.20 ±0.15	0.34	▫
14.3 +0.40	14.0	5.00 -0.30	1.50 ±0.15	0.37	▫ ●
15.3 +0.40		5.00 -0.30	1.50 ±0.15	0.40	▫
16.3 +0.40	16.0	5.00 -0.30	1.50 ±0.15	0.40	▫ ●
17.3 +0.50		6.20 -0.30	2.00 ±0.20	0.47	▫
18.3 +0.50	18.0	6.20 -0.30	2.00 ±0.20	0.50	▫ ●
20.4 +0.50	20.0	6.20 -0.40	2.00 ±0.20	0.50	▫ ●
21.4 +0.50		6.20 -0.40	2.00 ±0.20	0.50	▫
22.4 +0.50	22.0	6.20 -0.40	2.00 ±0.20	0.50	▫ ●
24.4 +0.50		7.50 -0.40	2.00 ±0.20	0.50	▫
25.4 +0.50	25.0	7.50 -0.40	2.00 ±0.20	0.50	▫ ●

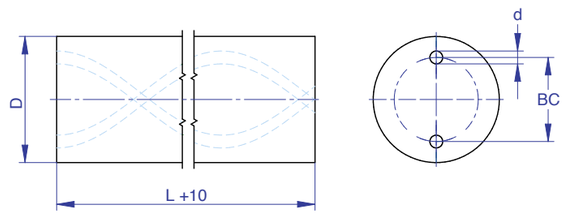


RODS

2 COOLANT DUCTS, 30° HELIX, LENGTH: 310 mm

D mm	D h6 mm	BC | *TK* mm	d mm	CO | *MVS* mm	30° ±0.5° mm	K40UF 7305	K44UF 7321
3.3 +0.30	3.0	1.60 -0.20	0.40 ±0.10	0.08	16.32 -0.32 / +0.33	▫ ●	▫
3.8 +0.30		1.90 -0.20	0.50 ±0.10	0.09	19.04 -0.38 / +0.39	▫	
4.3 +0.30	4.0	2.20 -0.20	0.60 ±0.10	0.10	21.77 -0.43 / +0.45	▫ ●	▫
4.8 +0.30		2.40 -0.30	0.70 ±0.10	0.10	24.49 -0.49 / +0.50	▫	
5.3 +0.30	5.0	2.60 -0.40	0.70 ±0.10	0.13	27.21 -0.54 / +0.56	▫ ●	▫
5.8 +0.30		2.60 -0.40	0.70 ±0.10	0.14	29.93 -0.59 / +0.61	▫	
6.3 +0.30	6.0	2.60 -0.40	0.70 ±0.10	0.15	32.65 -0.65 / +0.67	▫ ●	▫
6.8 +0.30		3.50 -0.40	1.00 ±0.15	0.15	35.37 -0.70 / +0.72	▫	
7.3 +0.30		3.70 -0.40	1.00 ±0.15	0.15	38.09 -0.76 / +0.78	▫	▫
7.8 +0.30		4.00 -0.40	1.00 ±0.15	0.15	40.81 -0.81 / +0.84	▫	
8.3 +0.30	8.0	4.00 -0.40	1.00 ±0.15	0.15	43.53 -0.86 / +0.89	▫ ●	▫
8.8 +0.30		4.50 -0.60	1.00 ±0.15	0.20	46.25 -0.92 / +0.95	▫	
9.3 +0.30		4.80 -0.60	1.40 ±0.15	0.20	48.97 -0.97 / +1.00	▫	
9.8 +0.30		4.80 -0.60	1.40 ±0.15	0.20	51.69 -1.03 / +1.06	▫	
10.3 +0.30	10.0	4.80 -0.60	1.40 ±0.15	0.20	54.41 -1.08 / +1.11	▫ ●	▫
10.8 +0.40		4.80 -0.60	1.40 ±0.15	0.28	57.13 -1.13 / +1.17	▫	
11.3 +0.40		5.30 -0.80	1.40 ±0.15	0.28	59.86 -1.19 / +1.22	▫	
11.8 +0.40		5.80 -0.80	1.40 ±0.15	0.30	62.58 -1.24 / +1.28	▫	
12.3 +0.40	12.0	6.25 -0.80	1.40 ±0.15	0.30	65.30 -1.30 / +1.34	▫ ●	▫
12.8 +0.40		6.25 -0.80	1.75 ±0.20	0.33	68.02 -1.35 / +1.39	▫	
13.3 +0.40		6.50 -0.80	1.75 ±0.20	0.34	70.74 -1.40 / +1.45	▫	
13.8 +0.40		6.80 -0.80	1.75 ±0.20	0.35	73.46 -1.46 / +1.50	▫	
14.3 +0.40	14.0	7.10 -0.80	1.75 ±0.20	0.37	76.18 -1.51 / +1.56	▫ ●	▫
14.8 +0.40		7.40 -0.80	1.75 ±0.20	0.39	78.90 -1.57 / +1.61	▫	
15.3 +0.40		7.70 -0.80	1.75 ±0.20	0.40	81.62 -1.62 / +1.67	▫	
15.8 +0.40		8.00 -0.80	1.75 ±0.20	0.40	84.34 -1.67 / +1.73	▫	

D mm	D h6 mm	BC | *TK* mm	d mm	CO | *MVS* mm	30° ±0.5° mm	K40UF 7305	K44UF 7321
16.3 +0.40	16.0	8.30 -0.80	1.75 ±0.20	0.40	87.06 -1.73 / +1.78	▫ ●	▫
16.8 +0.50		8.60 -0.80	1.75 ±0.20	0.45	89.78 -1.78 / +1.84	▫	
17.3 +0.50		8.90 -0.80	1.75 ±0.20	0.47	92.50 -1.84 / +1.89	▫	
17.8 +0.50		9.20 -0.80	1.75 ±0.20	0.48	95.22 -1.89 / +1.95	▫	
18.3 +0.50	18.0	9.55 -0.80	2.00 ±0.25	0.50	97.95 -1.94 / +2.00	▫ ●	▫
18.8 +0.50		9.75 -0.80	2.00 ±0.25	0.50	100.67 -2.00 / +2.06	▫	
19.3 +0.50		10.10 -0.80	2.00 ±0.25	0.50	103.39 -2.05 / +2.12	▫	
20.3 +0.50	20.0	10.40 -1.00	2.00 ±0.25	0.50	108.83 -2.16 / +2.23	▫ ●	▫
21.3 +0.50		11.15 -1.00	2.00 ±0.25	0.50	114.27 -2.27 / +2.34	▫	
22.3 +0.50	22.0	11.60 -1.00	2.00 ±0.25	0.50	119.71 -2.38 / +2.45	▫ ●	▫
23.3 +0.50		12.20 -1.00	2.00 ±0.25	0.50	125.15 -2.48 / +2.56	▫	
24.3 +0.50		12.80 -1.00	2.00 ±0.25	0.50	130.59 -2.59 / +2.67	▫	
25.3 +0.50	25.0	13.30 -1.00	2.00 ±0.25	0.50	136.03 -2.70 / +2.78	▫ ●	
26.3 +0.50		13.80 -1.00	2.00 ±0.25	0.50	141.48 -2.81 / +2.90	▫	
27.3 +0.50		14.30 -1.20	2.50 ±0.30	0.60	146.92 -2.92 / +3.01	▫	
28.3 +0.50		14.80 -1.20	2.50 ±0.30	0.60	152.36 -3.02 / +3.12	▫	
29.3 +0.50		15.40 -1.20	2.50 ±0.30	0.60	157.80 -3.13 / +3.23	▫	
30.3 +0.50		16.00 -1.20	2.50 ±0.30	0.70	163.24 -3.24 / +3.34	▫	
32.3 +0.50		17.20 -1.20	3.00 ±0.30	0.80	174.12 -3.46 / +3.56	▫	

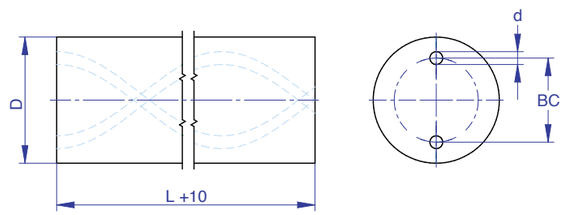


RODS

2 COOLANT DUCTS, 30° HELIX, LENGTH: 330 mm

D mm	D h6 mm	BC | *TK* mm	d mm	CO | *MVS* mm	30° ±0.5° mm	K40UF 7325	
3.3 +0.30	3.0	1.60 -0.20	0.40 ±0.10	0.08	16.32 -0.32 / +0.33	▫	●
3.8 +0.30		1.90 -0.20	0.50 ±0.10	0.09	19.04 -0.38 / +0.39	▫	
4.3 +0.30	4.0	2.20 -0.20	0.60 ±0.10	0.10	21.77 -0.43 / +0.45	▫	●
4.8 +0.30		2.40 -0.30	0.70 ±0.10	0.10	24.49 -0.49 / +0.50	▫	
5.3 +0.30	5.0	2.60 -0.40	0.70 ±0.10	0.13	27.21 -0.54 / +0.56	▫	●
5.8 +0.30		2.60 -0.40	0.70 ±0.10	0.14	29.93 -0.59 / +0.61	▫	
6.3 +0.30	6.0	2.60 -0.40	0.70 ±0.10	0.15	32.65 -0.65 / +0.67	▫	●
6.8 +0.30		3.50 -0.40	1.00 ±0.15	0.15	35.37 -0.70 / +0.72	▫	
7.3 +0.30	7.0	3.70 -0.40	1.00 ±0.15	0.15	38.09 -0.76 / +0.78	▫	●
7.8 +0.30		4.00 -0.40	1.00 ±0.15	0.15	40.81 -0.81 / +0.84	▫	
8.3 +0.30	8.0	4.00 -0.40	1.00 ±0.15	0.15	43.53 -0.86 / +0.89	▫	●
8.8 +0.30		4.50 -0.60	1.00 ±0.15	0.20	46.25 -0.92 / +0.95	▫	
9.3 +0.30	9.0	4.80 -0.60	1.40 ±0.15	0.20	48.97 -0.97 / +1.00	▫	●
9.8 +0.30		4.80 -0.60	1.40 ±0.15	0.20	51.69 -1.03 / +1.06	▫	
10.3 +0.30	10.0	4.80 -0.60	1.40 ±0.15	0.20	54.41 -1.08 / +1.11	▫	●
10.8 +0.40		4.80 -0.60	1.40 ±0.15	0.28	57.13 -1.13 / +1.17	▫	
11.3 +0.40	11.0	5.30 -0.80	1.40 ±0.15	0.28	59.86 -1.19 / +1.22	▫	●
11.8 +0.40		5.80 -0.80	1.40 ±0.15	0.30	62.58 -1.24 / +1.28	▫	
12.3 +0.40	12.0	6.25 -0.80	1.40 ±0.15	0.30	65.30 -1.30 / +1.34	▫	●
12.8 +0.40		6.25 -0.80	1.75 ±0.20	0.33	68.02 -1.35 / +1.39	▫	
13.3 +0.40	13.0	6.50 -0.80	1.75 ±0.20	0.34	70.74 -1.40 / +1.45	▫	●
13.8 +0.40		6.80 -0.80	1.75 ±0.20	0.35	73.46 -1.46 / +1.50	▫	

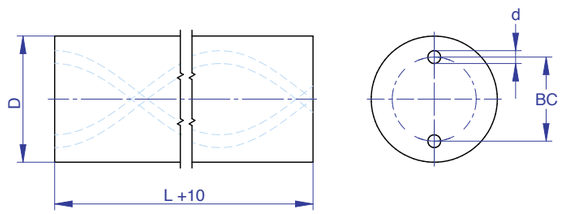
D mm	D h6 mm	BC | *TK* mm	d mm	CO | *MVS* mm	30° ±0.5° mm	K40UF 7325	
14.3 +0.40	14.0	7.10 -0.80	1.75 ±0.20	0.37	76.18 -1.51 / +1.56	▫	●
15.3 +0.40	15.0	7.70 -0.80	1.75 ±0.20	0.40	81.62 -1.62 / +1.67	▫	●
16.3 +0.40	16.0	8.30 -0.80	1.75 ±0.20	0.40	87.06 -1.73 / +1.78	▫	●
16.8 +0.50		8.60 -0.80	1.75 ±0.20	0.45	89.78 -1.78 / +1.84	▫	
17.3 +0.50		8.90 -0.80	1.75 ±0.20	0.47	92.50 -1.84 / +1.89	▫	
18.3 +0.50	18.0	9.55 -0.80	2.00 ±0.25	0.50	97.95 -1.94 / +2.00	▫	●
18.8 +0.50		9.75 -0.80	2.00 ±0.25	0.50	100.67 -2.00 / +2.06	▫	
19.3 +0.50		10.10 -0.80	2.00 ±0.25	0.50	103.39 -2.05 / +2.12	▫	
20.3 +0.50	20.0	10.40 -1.00	2.00 ±0.25	0.50	108.83 -2.16 / +2.23	▫	●
21.3 +0.50		11.15 -1.00	2.00 ±0.25	0.50	114.27 -2.27 / +2.34	▫	
22.3 +0.50	22.0	11.60 -1.00	2.00 ±0.25	0.50	119.71 -2.38 / +2.45	▫	●
23.3 +0.50		12.20 -1.00	2.00 ±0.25	0.50	125.15 -2.48 / +2.56	▫	
24.3 +0.50		12.80 -1.00	2.00 ±0.25	0.50	130.59 -2.59 / +2.67	▫	
25.3 +0.50	25.0	13.30 -1.00	2.00 ±0.25	0.50	136.03 -2.70 / +2.78	▫	●
26.3 +0.50		13.80 -1.00	2.00 ±0.25	0.50	141.48 -2.81 / +2.90	▫	
27.3 +0.50		14.30 -1.20	2.50 ±0.30	0.60	146.92 -2.92 / +3.01	▫	
28.3 +0.50		14.80 -1.20	2.50 ±0.30	0.60	152.36 -3.02 / +3.12	▫	
30.3 +0.50		16.00 -1.20	2.50 ±0.30	0.70	163.24 -3.24 / +3.34	▫	
32.3 +0.50		17.20 -1.20	3.00 ±0.30	0.80	174.12 -3.46 / +3.56	▫	
34.3 +0.50		18.00 -1.20	3.00 ±0.30	0.80	185.01 -3.67 / +3.79	▫	
35.3 +0.50		18.00 -1.20	3.00 ±0.30	0.80	190.45 -3.78 / +3.90	▫	



RODS

2 COOLANT DUCTS, 40° HELIX, LENGTH: 310 mm

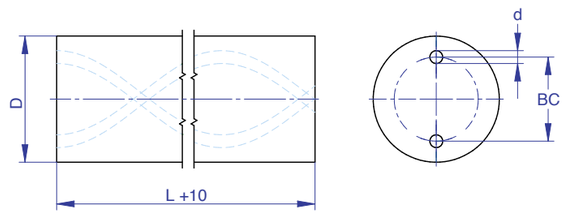
D mm		D h6 mm	BC | *TK* mm		d mm		CO | *MVS* mm	40° ±0.5° mm		K40UF 7306	
6.3	+0.30	6.0	2.20	-0.40	0.50	±0.15	0.15	22.46	-0.39 / +0.40	▫	●
6.8	+0.30		2.30	-0.40	0.50	±0.15	0.15	24.34	-0.43 / +0.44	▫	
7.3	+0.30		2.40	-0.40	0.65	±0.15	0.15	26.21	-0.46 / +0.47	▫	
7.8	+0.30		2.50	-0.40	0.65	±0.15	0.15	28.08	-0.49 / +0.50	▫	
8.3	+0.30	8.0	2.70	-0.60	0.65	±0.15	0.15	29.95	-0.53 / +0.54	▫	●
8.8	+0.30		2.90	-0.60	0.65	±0.15	0.15	31.82	-0.56 / +0.57	▫	
9.3	+0.30		3.20	-0.60	0.75	±0.15	0.20	33.70	-0.59 / +0.60	▫	
9.8	+0.30		3.50	-0.60	0.75	±0.15	0.20	35.57	-0.62 / +0.64	▫	
10.3	+0.40	10.0	3.50	-0.80	0.80	±0.15	0.20	37.44	-0.66 / +0.67	▫	●
10.8	+0.40		3.50	-0.80	0.80	±0.15	0.28	39.31	-0.69 / +0.70	▫	
11.3	+0.40		3.70	-0.80	0.80	±0.15	0.28	41.18	-0.72 / +0.74	▫	
12.3	+0.40	12.0	4.20	-0.80	0.90	±0.20	0.30	44.93	-0.79 / +0.80	▫	●
12.8	+0.40		4.35	-0.80	0.90	±0.20	0.33	46.80	-0.82 / +0.84	▫	
13.3	+0.40		4.40	-0.80	0.90	±0.20	0.34	48.67	-0.85 / +0.87	▫	
14.3	+0.40	14.0	4.70	-0.80	1.00	±0.20	0.37	52.42	-0.92 / +0.94	▫	●
14.8	+0.40		4.90	-0.80	1.10	±0.20	0.39	54.29	-0.95 / +0.97	▫	
15.3	+0.50		5.10	-0.80	1.10	±0.20	0.40	56.16	-0.99 / +1.01	▫	
15.8	+0.50		5.30	-0.80	1.10	±0.20	0.40	58.03	-1.02 / +1.04	▫	
16.3	+0.50	16.0	5.50	-0.80	1.20	±0.20	0.40	59.90	-1.05 / +1.07	▫	●
16.8	+0.50		5.75	-0.80	1.20	±0.20	0.45	61.78	-1.08 / +1.11	▫	
17.3	+0.50		5.90	-0.80	1.20	±0.25	0.47	63.65	-1.12 / +1.14	▫	
18.3	+0.50	18.0	6.30	-0.80	1.40	±0.25	0.50	67.39	-1.18 / +1.21	▫	●
19.3	+0.50		6.70	-1.00	1.40	±0.25	0.50	71.14	-1.25 / +1.27	▫	
20.3	+0.50	20.0	7.10	-1.00	1.50	±0.25	0.50	74.88	-1.31 / +1.34	▫	●
22.3	+0.50	22.0	7.70	-1.00	1.70	±0.25	0.50	82.37	-1.44 / +1.48	▫	●
24.3	+0.50		8.00	-1.00	1.75	±0.25	0.50	89.86	-1.58 / +1.61	▫	
25.3	+0.50	25.0	8.10	-1.00	1.75	±0.25	0.50	93.60	-1.64 / +1.68	▫	●
26.3	+0.50		8.20	-1.00	1.75	±0.25	0.50	97.34	-1.71 / +1.74	▫	
28.3	+0.50		9.00	-1.20	2.00	±0.30	0.50	104.83	-1.84 / +1.88	▫	
30.3	+0.50		10.00	-1.20	2.00	±0.30	0.50	112.32	-1.97 / +2.01	▫	



RODS

2 COOLANT DUCTS, 40° HELIX, LENGTH: 330 mm

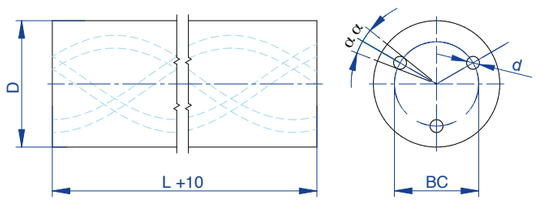
D mm		D h6 mm	BC | *TK* mm		d mm		CO | *MVS* mm	40° ±0.5° mm		K40UF 7329	
6.3	+0.30	6.0	2.20	-0.40	0.50	±0.15	0.15	22.46	-0.39 / +0.40	▫	●
6.8	+0.30		2.30	-0.40	0.50	±0.15	0.15	24.34	-0.43 / +0.44	▫	
7.3	+0.30		2.40	-0.40	0.65	±0.15	0.15	26.21	-0.46 / +0.47	▫	
7.8	+0.30		2.50	-0.40	0.65	±0.15	0.15	28.08	-0.49 / +0.50	▫	
8.3	+0.30	8.0	2.70	-0.60	0.65	±0.15	0.15	29.95	-0.53 / +0.54	▫	●
8.8	+0.30		2.90	-0.60	0.65	±0.15	0.15	31.82	-0.56 / +0.57	▫	
9.3	+0.30		3.20	-0.60	0.75	±0.15	0.20	33.70	-0.59 / +0.60	▫	
9.8	+0.30		3.50	-0.60	0.75	±0.15	0.20	35.57	-0.62 / +0.64	▫	
10.3	+0.40	10.0	3.50	-0.80	0.80	±0.15	0.20	37.44	-0.66 / +0.67	▫	●
10.8	+0.40		3.50	-0.80	0.80	±0.15	0.28	39.31	-0.69 / +0.70	▫	
11.3	+0.40		3.70	-0.80	0.80	±0.15	0.28	41.18	-0.72 / +0.74	▫	
12.3	+0.40	12.0	4.20	-0.80	0.90	±0.20	0.30	44.93	-0.79 / +0.80	▫	●
12.8	+0.40		4.35	-0.80	0.90	±0.20	0.33	46.80	-0.82 / +0.84	▫	
13.3	+0.40	13.0	4.40	-0.80	0.90	±0.20	0.34	48.67	-0.85 / +0.87	▫	●
14.3	+0.40	14.0	4.70	-0.80	1.00	±0.20	0.37	52.42	-0.92 / +0.94	▫	●
15.3	+0.50		5.10	-0.80	1.10	±0.20	0.40	56.16	-0.99 / +1.01	▫	
16.3	+0.50	16.0	5.50	-0.80	1.20	±0.20	0.40	59.90	-1.05 / +1.07	▫	●
17.3	+0.50		5.90	-0.80	1.20	±0.25	0.47	63.65	-1.12 / +1.14	▫	
18.3	+0.50	18.0	6.30	-0.80	1.40	±0.25	0.50	67.39	-1.18 / +1.21	▫	●
18.8	+0.50		6.50	-0.80	1.40	±0.25	0.50	69.26	-1.21 / +1.24	▫	
19.3	+0.50		6.70	-1.00	1.40	±0.25	0.50	71.14	-1.25 / +1.27	▫	
20.3	+0.50	20.0	7.10	-1.00	1.50	±0.25	0.50	74.88	-1.31 / +1.34	▫	●
21.3	+0.50		7.40	-1.00	1.50	±0.25	0.50	78.62	-1.38 / +1.41	▫	
22.3	+0.50	22.0	7.70	-1.00	1.70	±0.25	0.50	82.37	-1.44 / +1.48	▫	●
24.3	+0.50		8.00	-1.00	1.75	±0.25	0.50	89.86	-1.58 / +1.61	▫	
25.3	+0.50	25.0	8.10	-1.00	1.75	±0.25	0.50	93.60	-1.64 / +1.68	▫	●
26.3	+0.50		8.20	-1.00	1.75	±0.25	0.50	97.34	-1.71 / +1.74	▫	
28.3	+0.50		9.00	-1.20	2.00	±0.30	0.50	104.83	-1.84 / +1.88	▫	
30.3	+0.50		10.00	-1.20	2.00	±0.30	0.50	112.32	-1.97 / +2.01	▫	
32.3	+0.50		11.00	-1.20	2.00	±0.30	0.50	119.81	-2.10 / +2.15	▫	



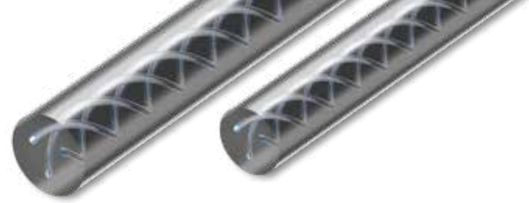
RODS

3 COOLANT DUCTS, 30° HELIX, LENGTH: 310 mm

D mm	D h6 mm	BC | *TK* mm	d mm	α	30° ±0.5° mm	K40UF 7303	
5.3 +0.30		2.60 -0.30	0.40 ±0.10	±4°	27.21 -0.54 / +0.56	▫	
6.3 +0.30		2.90 -0.30	0.50 ±0.10	±4°	32.65 -0.65 / +0.67	▫	
7.3 +0.30		4.00 -0.30	0.65 ±0.10	±4°	38.09 -0.76 / +0.78	▫	
8.3 +0.30	8.0	4.00 -0.30	0.70 ±0.10	±4°	43.53 -0.86 / +0.89	▫	•
9.3 +0.30		5.10 -0.30	0.85 ±0.15	±4°	48.97 -0.97 / +1.00	▫	
10.3 +0.30	10.0	5.10 -0.30	0.85 ±0.15	±4°	54.41 -1.08 / +1.11	▫	•
11.3 +0.40		5.70 -0.50	1.10 ±0.15	±4°	59.86 -1.19 / +1.22	▫	
12.3 +0.40	12.0	6.30 -0.50	1.10 ±0.15	±4°	65.30 -1.30 / +1.34	▫	•
13.3 +0.40		6.80 -0.50	1.20 ±0.15	±4°	70.74 -1.40 / +1.45	▫	
14.3 +0.40	14.0	7.30 -0.50	1.40 ±0.15	±4°	76.18 -1.51 / +1.56	▫	•
15.3 +0.40		7.80 -0.50	1.40 ±0.15	±4°	81.62 -1.62 / +1.67	▫	
16.3 +0.40	16.0	8.30 -0.50	1.60 ±0.15	±4°	87.06 -1.73 / +1.78	▫	•
17.3 +0.50		8.60 -0.50	1.60 ±0.20	±4°	92.50 -1.84 / +1.89	▫	
18.3 +0.50	18.0	9.50 -0.50	1.70 ±0.20	±4°	97.95 -1.94 / +2.00	▫	•
20.3 +0.50	20.0	10.20 -0.70	1.90 ±0.25	±4°	108.83 -2.16 / +2.23	▫	•
22.3 +0.50		11.50 -0.70	2.00 ±0.25	±4°	119.71 -2.38 / +2.45	▫	
23.3 +0.50		11.80 -0.70	2.00 ±0.25	±4°	125.15 -2.48 / +2.56	▫	
24.3 +0.50		12.10 -0.70	2.00 ±0.25	±4°	130.59 -2.59 / +2.67	▫	
25.3 +0.50	25.0	12.50 -0.70	2.00 ±0.25	±4°	136.03 -2.70 / +2.78	▫	•
26.3 +0.50		13.10 -0.70	2.00 ±0.25	±4°	141.48 -2.81 / +2.90	▫	
28.3 +0.50		14.10 -0.90	2.50 ±0.30	±4°	152.36 -3.02 / +3.12	▫	
32.3 +0.50		16.10 -1.20	3.00 ±0.30	±4°	174.12 -3.46 / +3.56	▫	



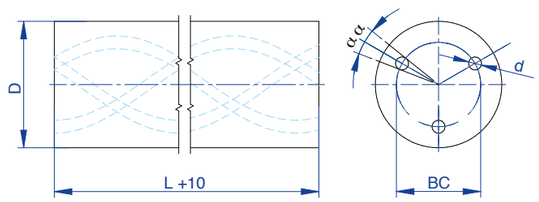
▫ raw | • ground



RODS

3 COOLANT DUCTS, 30° HELIX, LENGTH: 330 mm

D mm	D h6 mm	BC | *TK* mm	d mm	α	30° ±0.5° mm	K40UF 7346	
6.3 +0.30	6.0	2.90 -0.30	0.50 ±0.10	±4°	32.65 -0.65 / +0.67	▫	•
6.8 +0.30		2.90 -0.30	0.50 ±0.10	±4°	35.37 -0.70 / +0.72	▫	
7.3 +0.30		4.00 -0.30	0.65 ±0.10	±4°	38.09 -0.76 / +0.78	▫	
7.8 +0.30		4.00 -0.30	0.70 ±0.10	±4°	40.81 -0.81 / +0.84	▫	
8.3 +0.30	8.0	4.00 -0.30	0.70 ±0.10	±4°	43.53 -0.86 / +0.89	▫	•
8.8 +0.30		4.00 -0.30	0.70 ±0.10	±4°	46.25 -0.92 / +0.95	▫	
9.3 +0.30		5.10 -0.30	0.85 ±0.15	±4°	48.97 -0.97 / +1.00	▫	
9.8 +0.30		5.10 -0.30	0.85 ±0.15	±4°	51.69 -1.03 / +1.06	▫	
10.3 +0.30	10.0	5.10 -0.30	0.85 ±0.15	±4°	54.41 -1.08 / +1.11	▫	•
10.8 +0.40		5.10 -0.30	0.85 ±0.15	±4°	57.13 -1.13 / +1.17	▫	
11.3 +0.40		5.70 -0.50	1.10 ±0.15	±4°	59.86 -1.19 / +1.22	▫	
11.8 +0.40		6.10 -0.50	1.10 ±0.15	±4°	62.58 -1.24 / +1.28	▫	
12.3 +0.40	12.0	6.30 -0.50	1.10 ±0.15	±4°	65.30 -1.30 / +1.34	▫	•
12.8 +0.40		6.30 -0.50	1.10 ±0.15	±4°	68.02 -1.35 / +1.39	▫	
13.3 +0.40		6.80 -0.50	1.20 ±0.15	±4°	70.74 -1.40 / +1.45	▫	
13.8 +0.40		7.00 -0.50	1.20 ±0.15	±4°	73.46 -1.46 / +1.50	▫	
14.3 +0.40	14.0	7.30 -0.50	1.40 ±0.15	±4°	76.18 -1.51 / +1.56	▫	•
15.3 +0.40		7.80 -0.50	1.40 ±0.15	±4°	81.62 -1.62 / +1.67	▫	
15.8 +0.40		7.80 -0.50	1.40 ±0.15	±4°	84.34 -1.67 / +1.73	▫	
16.3 +0.40	16.0	8.30 -0.50	1.60 ±0.15	±4°	87.06 -1.73 / +1.78	▫	•
17.3 +0.50		8.60 -0.50	1.60 ±0.20	±4°	92.50 -1.84 / +1.89	▫	
18.3 +0.50	18.0	9.50 -0.50	1.70 ±0.20	±4°	97.95 -1.94 / +2.00	▫	•
19.3 +0.50		10.20 -0.50	1.70 ±0.20	±4°	103.39 -2.05 / +2.12	▫	
20.3 +0.50	20.0	10.20 -0.70	1.90 ±0.25	±4°	108.83 -2.16 / +2.23	▫	•
21.3 +0.50		11.10 -0.70	2.00 ±0.25	±4°	114.27 -2.27 / +2.34	▫	
22.3 +0.50		11.50 -0.70	2.00 ±0.25	±4°	119.71 -2.38 / +2.45	▫	
24.3 +0.50		12.10 -0.70	2.00 ±0.25	±4°	130.59 -2.59 / +2.67	▫	
25.3 +0.50	25.0	12.50 -0.70	2.00 ±0.25	±4°	136.03 -2.70 / +2.78	▫	•
26.3 +0.50		13.10 -0.70	2.00 ±0.25	±4°	141.48 -2.81 / +2.90	▫	
28.3 +0.50		14.10 -0.90	2.50 ±0.30	±4°	152.36 -3.02 / +3.12	▫	
30.3 +0.50	30.0	15.10 -1.20	2.50 ±0.30	±4°	163.24 -3.24 / +3.34	▫	•
32.3 +0.50	32.0	16.10 -1.20	3.00 ±0.30	±4°	174.12 -3.46 / +3.56	▫	•

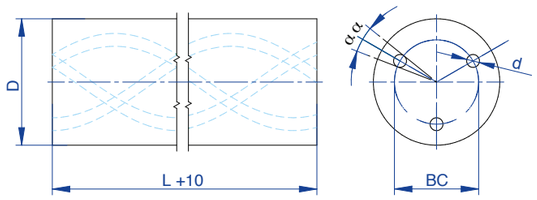


▫ raw | • ground

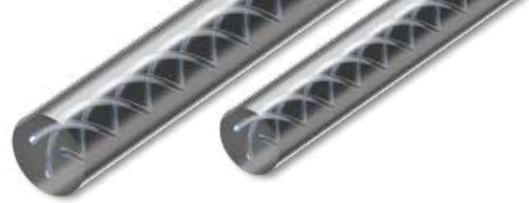
RODS

3 COOLANT DUCTS, 40° HELIX, LENGTH: 310 mm

D mm		BC | *TK* mm		d mm		α	40° ±0.5° mm		K40UF 7304
6.3	+0.30	2.20	-0.30	0.50	±0.15	±4°	22.46	-0.39 / +0.40	▫
8.3	+0.30	2.70	-0.30	0.65	±0.15	±4°	29.95	-0.53 / +0.54	▫
8.8	+0.30	2.90	-0.30	0.65	±0.15	±4°	31.82	-0.56 / +0.57	▫
10.3	+0.40	3.50	-0.30	0.80	±0.15	±4°	37.44	-0.66 / +0.67	▫
10.8	+0.40	3.50	-0.50	0.80	±0.15	±4°	39.31	-0.69 / +0.70	▫
12.3	+0.40	4.20	-0.50	0.90	±0.20	±4°	44.93	-0.79 / +0.80	▫
12.8	+0.40	4.35	-0.50	0.90	±0.20	±4°	46.80	-0.82 / +0.84	▫
14.8	+0.40	4.90	-0.50	1.10	±0.20	±4°	54.29	-0.95 / +0.97	▫
16.3	+0.50	5.50	-0.50	1.20	±0.20	±4°	59.90	-1.05 / +1.07	▫
16.8	+0.50	5.75	-0.50	1.20	±0.20	±4°	61.78	-1.08 / +1.11	▫
19.3	+0.50	6.70	-0.70	1.40	±0.25	±4°	71.14	-1.25 / +1.27	▫
20.3	+0.50	7.10	-0.70	1.50	±0.25	±4°	74.88	-1.31 / +1.34	▫
22.3	+0.50	7.70	-0.70	1.70	±0.25	±4°	82.37	-1.44 / +1.48	▫
24.3	+0.50	8.00	-0.90	1.75	±0.25	±4°	89.86	-1.58 / +1.61	▫
25.3	+0.50	8.10	-0.90	1.75	±0.25	±4°	93.60	-1.64 / +1.68	▫
26.3	+0.50	8.20	-0.90	1.75	±0.25	±4°	97.34	-1.71 / +1.74	▫
32.3	+0.50	11.00	-1.10	2.00	±0.30	±4°	119.81	-2.10 / +2.15	▫



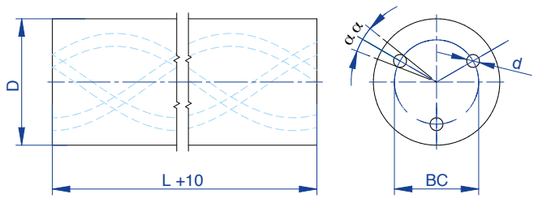
▫ raw | • ground



RODS

3 COOLANT DUCTS, 40° HELIX, LENGTH: 330 mm

D mm		D h6 mm	BC | *TK* mm		d mm		α	40° ±0.5° mm		K40UF 7347	
6.3	+0.30	6.0	2.20	-0.30	0.50	±0.15	±4°	22.46	-0.39 / +0.40	▫	•
6.8	+0.30		2.30	-0.30	0.50	±0.15	±4°	24.34	-0.43 / +0.44	▫	
7.3	+0.30		2.40	-0.30	0.65	±0.15	±4°	26.21	-0.46 / +0.47	▫	
7.8	+0.30		2.50	-0.30	0.65	±0.15	±4°	28.08	-0.49 / +0.50	▫	
8.3	+0.30	8.0	2.70	-0.30	0.65	±0.15	±4°	29.95	-0.53 / +0.54	▫	•
8.8	+0.30		2.90	-0.30	0.65	±0.15	±4°	31.82	-0.56 / +0.57	▫	
9.3	+0.30		3.20	-0.30	0.75	±0.15	±4°	33.70	-0.59 / +0.60	▫	
9.8	+0.30		3.50	-0.30	0.75	±0.15	±4°	35.57	-0.62 / +0.64	▫	
10.3	+0.40	10.0	3.50	-0.30	0.80	±0.15	±4°	37.44	-0.66 / +0.67	▫	•
10.8	+0.40		3.50	-0.50	0.80	±0.15	±4°	39.31	-0.69 / +0.70	▫	
11.3	+0.40		3.70	-0.50	0.80	±0.15	±4°	41.18	-0.72 / +0.74	▫	
11.8	+0.40		4.00	-0.50	0.85	±0.15	±4°	43.06	-0.76 / +0.77	▫	
12.3	+0.40	12.0	4.20	-0.50	0.90	±0.20	±4°	44.93	-0.79 / +0.80	▫	•
12.8	+0.40		4.35	-0.50	0.90	±0.20	±4°	46.80	-0.82 / +0.84	▫	
13.3	+0.40		4.40	-0.50	0.90	±0.20	±4°	48.67	-0.85 / +0.87	▫	
14.3	+0.40		4.70	-0.50	1.00	±0.20	±4°	52.42	-0.92 / +0.94	▫	
15.3	+0.50		5.10	-0.50	1.10	±0.20	±4°	56.16	-0.99 / +1.01	▫	
16.3	+0.50	16.0	5.50	-0.50	1.20	±0.20	±4°	59.90	-1.05 / +1.07	▫	•
17.3	+0.50		5.90	-0.50	1.20	±0.25	±4°	63.65	-1.12 / +1.14	▫	
18.3	+0.50	18.0	6.30	-0.50	1.40	±0.25	±4°	67.39	-1.18 / +1.21	▫	•
19.3	+0.50		6.70	-0.70	1.40	±0.25	±4°	71.14	-1.25 / +1.27	▫	
20.3	+0.50	20.0	7.10	-0.70	1.50	±0.25	±4°	74.88	-1.31 / +1.34	▫	•
21.3	+0.50		7.40	-0.70	1.50	±0.25	±4°	78.62	-1.38 / +1.41	▫	
22.3	+0.50		7.70	-0.70	1.70	±0.25	±4°	82.37	-1.44 / +1.48	▫	
24.3	+0.50		8.00	-0.90	1.75	±0.25	±4°	89.86	-1.58 / +1.61	▫	
25.3	+0.50	25.0	8.10	-0.90	1.75	±0.25	±4°	93.60	-1.64 / +1.68	▫	•
26.3	+0.50		8.20	-0.90	1.75	±0.25	±4°	97.34	-1.71 / +1.74	▫	
28.3	+0.50		9.00	-0.90	2.00	±0.30	±4°	104.83	-1.84 / +1.88	▫	
30.3	+0.50	30.0	10.00	-1.10	2.00	±0.30	±4°	112.32	-1.97 / +2.01	▫	•
32.3	+0.50		11.00	-1.10	2.00	±0.30	±4°	119.81	-2.10 / +2.15	▫	



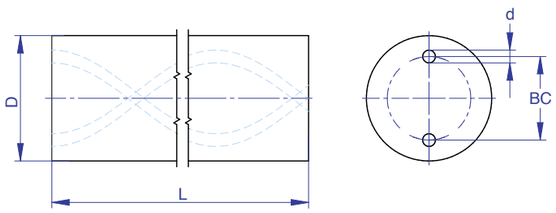
▫ raw | • ground

MICRO-TWISTED RODS

2 COOLANT DUCTS

D mm	BC | *TK* mm	d mm	Pitch | *Steig.* mm	L
3.3	0.45	0.16	5.44	–
3.3	0.50	0.20	5.44	–
3.3	0.40	0.15	6.00	–
3.3	0.60	0.20	6.80	–
3.3	0.75	0.20	7.60	–
3.3	0.70	0.25	8.16	–
3.3	0.90	0.30	9.00	–
3.3	0.75	0.20	9.80	–
3.3	0.50	0.20	10.10	–
3.3	0.90	0.25	10.76	——
3.3	0.30	0.15	11.23	–
3.3	1.30	0.30	11.23	——
3.3	1.00	0.30	12.20	——
3.3	1.40	0.30	13.49	——
3.3	1.20	0.30	13.60	——
3.3	1.25	0.35	14.20	——
3.3	1.10	0.25	14.50	——
3.3	1.20	0.30	15.00	——
3.3	1.20	0.50	15.00	——
3.3	0.70	0.24	15.44	——
3.3	0.50	0.20	16.32	–
3.3	1.00	0.30	16.32	——
3.3	1.50	0.40	16.32	——
3.3	1.60	0.50	16.32	——
3.3	1.60	0.60	16.32	——
3.3	1.47	0.42	19.10	——
3.3	0.90	0.30	29.30	——
3.3	1.40	0.40	35.17	——
4.3	0.45	0.13	7.25	–
4.3	1.20	0.30	10.50	——
4.3	0.90	0.25	10.76	——
4.3	1.00	0.30	12.20	——

D mm	BC | *TK* mm	d mm	Pitch | *Steig.* mm	L
4.3	1.00	0.40	13.00	——
4.3	1.20	0.30	13.50	——
4.3	1.50	0.40	13.50	——
4.3	0.50	0.20	14.98	–
4.3	1.00	0.30	14.98	——
4.3	1.50	0.40	14.98	——
4.3	1.60	0.40	14.98	——
4.3	1.90	0.50	16.00	——
4.3	0.90	0.26	17.00	——
4.3	1.60	0.45	17.95	——
4.3	1.50	0.50	19.04	——
4.3	1.60	0.50	19.04	——
4.3	1.57	0.42	19.10	——
4.3	1.15	0.30	19.50	——
4.3	1.25	0.34	21.50	——
4.3	1.70	0.40	21.77	——
4.3	1.75	0.40	21.77	——
4.3	2.20	0.60	21.77	——
4.3	1.70	0.60	21.77	——
4.3	2.10	0.60	21.77	——
4.3	2.20	0.60	21.77	——
4.3	1.30	0.80	22.46	——
4.3	1.40	0.40	24.50	——
4.3	1.47	0.42	25.76	——
4.3	1.50	0.42	28.00	——
4.3	1.70	0.47	32.00	——
4.3	1.40	0.40	46.90	——
6.3	1.00	0.30	10.88	——
6.3	1.40	0.40	32.65	——

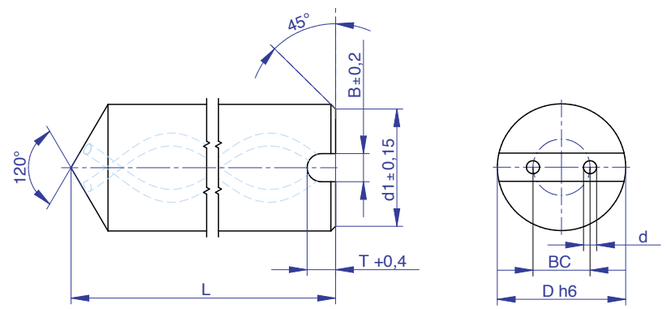


—— Available in length 330 mm and as fix lengths
– Only available as fix length

DRILL BLANKS

GROUND (h6), WITH POINT, CHAMFER AND COOLANT CONNECTION SLIT

D h6 mm	d1 mm	L mm	BC | TK mm	d mm	30° ±0.5° mm	B mm	T mm	K40UF 7157	K40UF 7159	K40UF 7161
6.0	4.80	67.0 +1.50	2.60 -0.40	0.70 ±0.10	32.65 -0.65 / +0.67	1.50	0.90	•		
8.0	6.80	80.5 +1.50	4.00 -0.40	1.00 ±0.15	43.53 -0.86 / +0.89	2.00	1.40	•		
10.0	8.80	90.5 +1.50	4.80 -0.60	1.40 ±0.15	54.41 -1.08 / +1.11	2.50	1.65	•		
12.0	10.50	104.0 +1.50	6.25 -0.80	1.40 ±0.15	65.30 -1.30 / +1.34	2.50	1.75	•		
14.0	12.50	109.0 +1.50	7.10 -0.80	1.75 ±0.20	76.18 -1.51 / +1.56	3.00	2.15	•		
16.0	14.50	117.5 +1.50	8.30 -0.80	1.75 ±0.20	87.06 -1.73 / +1.78	3.00	2.30	•		
18.0	16.50	125.5 +2.00	9.55 -0.80	2.00 ±0.25	97.95 -1.94 / +2.00	3.50	2.50	•		
20.0	18.50	134.0 +2.00	10.40 -1.00	2.00 ±0.25	108.83 -2.16 / +2.23	3.50	2.70	•		
6.0	4.80	83.0 +1.50	2.60 -0.40	0.70 ±0.10	32.65 -0.65 / +0.67	1.50	0.90		•	
8.0	6.80	92.5 +1.50	4.00 -0.40	1.00 ±0.15	43.53 -0.86 / +0.89	2.00	1.40		•	
10.0	8.80	104.5 +1.50	4.80 -0.60	1.40 ±0.15	54.41 -1.08 / +1.11	2.50	1.65		•	
12.0	10.50	120.0 +2.00	6.25 -0.80	1.40 ±0.15	65.30 -1.30 / +1.34	2.50	1.75		•	
14.0	12.50	126.0 +2.00	7.10 -0.80	1.75 ±0.20	76.18 -1.51 / +1.56	3.00	2.15		•	
16.0	14.50	135.5 +2.00	8.30 -0.80	1.75 ±0.20	87.06 -1.73 / +1.78	3.00	2.30		•	
18.0	16.50	145.5 +2.00	9.55 -0.80	2.00 ±0.25	97.95 -1.94 / +2.00	3.50	2.50		•	
20.0	18.50	156.0 +2.00	10.40 -1.00	2.00 ±0.25	108.83 -2.16 / +2.23	3.50	2.70		•	
6.0	4.80	98.0 +1.50	2.60 -0.40	0.70 ±0.10	32.65 -0.65 / +0.67	1.50	0.90			•
8.0	6.80	107.5 +1.50	4.00 -0.40	1.00 ±0.15	43.53 -0.86 / +0.89	2.00	1.40			•
10.0	8.80	132.5 +1.50	4.80 -0.60	1.40 ±0.15	54.41 -1.08 / +1.11	2.50	1.65			•
12.0	10.50	157.0 +2.00	6.25 -0.80	1.40 ±0.15	65.30 -1.30 / +1.34	2.50	1.75			•
14.0	12.50	184.0 +2.00	7.10 -0.80	1.75 ±0.20	76.18 -1.51 / +1.56	3.00	2.15			•
16.0	14.50	206.5 +2.00	8.30 -0.80	1.75 ±0.20	87.06 -1.73 / +1.78	3.00	2.30			•
18.0	16.50	225.5 +2.00	9.55 -0.80	2.00 ±0.25	97.95 -1.94 / +2.00	3.50	2.50			•
20.0	18.50	247.0 +2.00	10.40 -1.00	2.00 ±0.25	108.83 -2.16 / +2.23	3.50	2.70			•



• ground

MILLING CUTTER BLANKS

GROUND (h6), SOLID, CHAMFERED ONE END, FOR MILLING CUTTERS DIN 6527

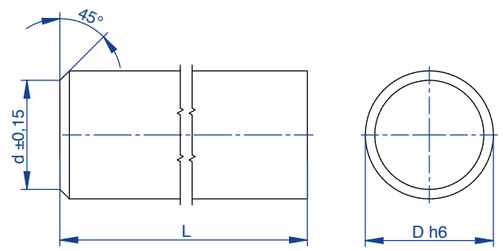
D h6 mm	d mm	L mm	Code	K40UF 7127	K44UF 7126	K6UF 7200	K55SF 7125
3.0	2.4	38.3	3.002		•		
3.0	2.4	39.5	3.001	•	•		•
3.0	2.4	45.0	3.006	•			
3.0	2.4	52.3	3.005	•			
3.0	2.4	76.2	3.003		•		
4.0	3.4	40.3	4.002		•		
4.0	3.4	40.5	4.001	•			
4.0	3.4	50.3	4.003		•		
4.0	3.4	51.0	4.000	•	•		•
4.0	3.4	59.3	4.004	•			
4.0	3.4	76.2	4.001		•		
4.76	3.76	65.0	4.760			•	
5.0	4.0	50.3	5.002		•		
5.0	4.0	51.2	5.000	•	•		•
5.0	4.0	60.3	5.003		•		
5.0	4.0	76.2	5.001		•		
6.0	5.0	38.0	6.010	•			
6.0	5.0	40.3	6.004		•		
6.0	5.0	50.3	6.005		•		
6.0	5.0	51.2	6.000	•	•		•
6.0	5.0	55.0	6.001	•	•		•
6.0	5.0	57.5	6.008		•		
6.0	5.0	58.2	6.002	•	•		•
6.0	5.0	60.3	6.006		•		
6.0	5.0	63.0	6.009	•			
6.0	5.0	63.0	6.013		•		
6.0	5.0	66.2	6.000			•	
6.0	5.0	66.2	6.008	•			
6.0	5.0	69.0	6.012	•			
6.0	5.0	70.0	6.001			•	
6.0	5.0	70.0	6.011	•			
6.0	5.0	75.0	6.013	•			

D h6 mm	d mm	L mm	Code	K40UF 7127	K44UF 7126	K6UF 7200	K55SF 7125
6.0	5.0	76.0	6.009		•		
6.0	5.0	80.0	6.014	•			
6.0	5.0	80.3	6.007		•		
6.0	5.0	80.5	6.012		•		
6.0	5.0	90.5	6.014		•		
6.0	5.0	100.0	6.002				
6.0	5.0	100.5	6.003		•		
6.35	5.4	63.5	6.351		•		
6.35	5.35	71.2	6.350			•	
7.0	5.0	50.3	7.000		•		
7.0	5.0	61.0	7.001	•			
7.0	5.0	75.3	7.001		•		
8.0	6.0	41.0	8.007	•			
8.0	6.0	44.0	8.002	•			
8.0	6.0	50.3	8.003		•		
8.0	6.0	59.0	8.000	•	•		•
8.0	6.0	63.5	8.006		•		
8.0	6.0	64.2	8.001	•	•		•
8.0	6.0	64.3	8.004		•		
8.0	6.0	72.0	8.008	•	•		
8.0	6.0	73.5	8.011	•			
8.0	6.0	75.5	8.009		•		
8.0	6.0	76.2	8.000			•	
8.0	6.0	80.0	8.009	•			
8.0	6.0	80.3	8.005		•		
8.0	6.0	90.0	8.010	•			
8.0	6.0	100.0	8.001			•	
8.0	6.0	100.5	8.007		•		
8.0	6.0	101.2	8.005	•			
8.0	6.0	120.5	8.002		•		
9.0	7.0	50.3	9.000		•		
9.0	7.0	68.0	9.002	•			

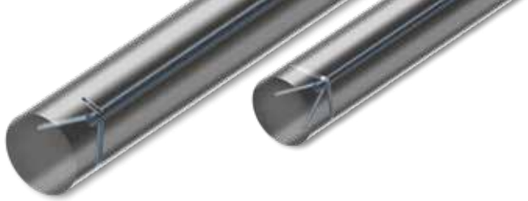
D h6 mm	d mm	L mm	Code	K40UF 7127	K44UF 7126	K6UF 7200	K55SF 7125
9.0	7.0	70.3	9.001		•		
9.0	7.0	90.3	9.002		•		
9.525	7.525	77.5	9.525			•	
10.0	8.0	48.0	10.009	•			
10.0	8.0	60.3	10.004		•		
10.0	8.0	67.2	10.000	•	•		•
10.0	8.0	72.5	10.007		•		
10.0	8.0	73.2	10.002	•	•		•
10.0	8.0	80.3	10.005		•		
10.0	8.0	84.0	10.010	•			
10.0	8.0	100.0	10.000			•	
10.0	8.0	100.0	10.011	•			
10.0	8.0	101.0	10.001		•		
10.0	8.0	101.2	10.004	•			
10.0	8.0	105.0	10.012	•			
10.0	8.0	120.5	10.006		•		
10.0	8.0	150.5	10.003		•		
11.0	9.0	72.0	11.000	•			
12.0	10.0	60.3	12.003		•		
12.0	10.0	74.2	12.000	•	•		•
12.0	10.0	83.5	12.006		•		
12.0	10.0	84.2	12.001	•	•		•
12.0	10.0	84.3	12.004		•		
12.0	10.0	97.0	12.008	•			
12.0	10.0	100.0	12.000			•	
12.0	10.0	100.0	12.005		•		
12.0	10.0	101.2	12.004	•			
12.0	10.0	110.0	12.009	•			
12.0	10.0	120.0	12.010	•			
12.0	10.0	120.5	12.002		•		
12.0	10.0	151.0	12.007		•		
12.7	10.7	90.2	12.700			•	

D h6 mm	d mm	L mm	Code	K40UF 7127	K44UF 7126	K6UF 7200	K55SF 7125
13.0	11.0	85.0	13.001	•			
14.0	12.0	60.3	14.004		•		
14.0	12.0	76.2	14.001	•	•		•
14.0	12.0	84.0	14.003		•		
14.0	12.0	84.2	14.000	•	•		•
14.0	12.0	84.3	14.002		•		
14.0	12.0	101.2	14.004	•			
15.0	12.0	94.0	15.001	•			
16.0	13.0	70.5	16.002	•			
16.0	13.0	83.2	16.001	•	•		•
16.0	13.0	93.0	16.002		•		
16.0	13.0	93.2	16.000	•	•		•
16.0	13.0	100.0	16.000			•	
16.0	13.0	105.5	16.009	•			
16.0	13.0	108.0	16.007	•			
16.0	13.0	109.2	16.006	•			
16.0	13.0	123.0	16.008	•			
16.0	13.0	151.0	16.003		•		
16.0	13.0	151.2	16.004	•			
18.0	15.0	93.0	18.002	•	•		•
20.0	17.0	93.2	20.000	•	•		•
20.0	17.0	105.0	20.001	•	•		•
20.0	17.0	122.0	20.007	•			
20.0	17.0	127.2	20.006	•			•
20.0	17.0	141.0	20.008	•			
20.0	17.0	151.0	20.002		•		
25.0	22.0	123.0	25.001	•			

• ground



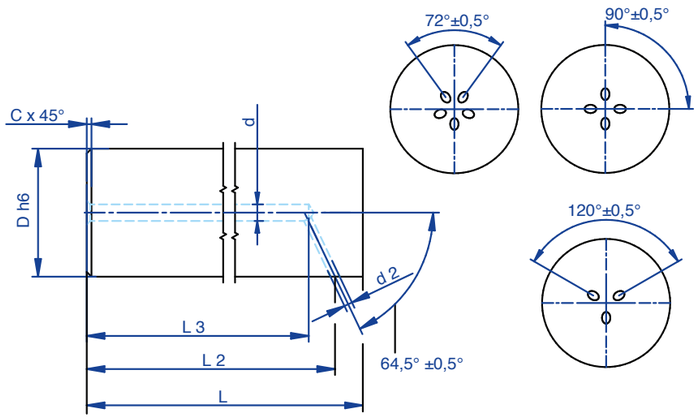
• ground



MILLING CUTTER BLANKS

GROUND (h6), WITH AXIAL COOLANT DUCT AND LATERAL EXITS*

D h6 mm	L mm		d mm		L2 mm		d2 mm		C mm	L3 mm	Code	K40UF 3 exits	K40UF 4 exits	K40UF 5 exits
6.0	58.0	+0.80	1.75	+0.30	55.0	±0.30	1.0	+0.25	0.5	54.6	6.058	•	•	•
6.0	76.5	+0.90	1.75	+0.30	73.0	±0.30	1.0	+0.25	0.5	72.6	6.076	•	•	•
8.0	64.2	+0.80	1.75	+0.30	60.0	±0.30	1.2	+0.25	1.0	59.1	8.064	•	•	
8.0	101.2	+1.00	1.75	+0.30	97.0	±0.30	1.2	+0.25	1.0	96.1	8.101	•	•	•
10.0	67.2	+0.80	2.00	+0.30	62.2	±0.30	1.2	+0.25	1.0	60.6	10.067		•	
10.0	73.2	+0.90	2.00	+0.30	68.0	±0.30	1.2	+0.25	1.0	66.6	10.073	•	•	•
10.0	101.2	+1.00	2.00	+0.30	96.0	±0.30	1.2	+0.25	1.0	94.6	10.101	•	•	•
12.0	74.2	+0.90	2.00	+0.30	68.0	±0.30	1.5	+0.25	1.0	66.1	12.074	•	•	
12.0	84.2	+0.90	2.00	+0.30	78.0	±0.30	1.5	+0.25	1.0	76.1	12.084	•	•	•
12.0	101.1	+1.00	2.00	+0.30	95.0	±0.30	1.5	+0.25	1.0	93.1	12.101	•	•	•
14.0	84.2	+0.90	2.00	+0.30	77.0	±0.30	1.5	+0.25	1.0	74.7	14.084	•	•	
14.0	101.2	+1.00	2.00	+0.30	94.0	±0.30	1.5	+0.25	1.0	91.7	14.101	•	•	
16.0	83.2	+0.90	4.00	+0.30	75.0	±0.30	1.5	+0.25	1.5	72.2	16.083			•
16.0	93.2	+1.00	4.00	+0.30	85.0	±0.30	1.5	+0.25	1.5	82.2	16.093	•	•	•
16.0	101.2	+1.00	4.00	+0.30	93.0	±0.30	1.5	+0.25	1.5	90.2	16.101	•	•	•
18.0	93.0	+1.00	4.00	+0.30	84.0	±0.30	2.0	+0.25	1.5	80.7	18.093	•	•	
18.0	102.0	+1.00	4.00	+0.30	93.0	±0.30	2.0	+0.25	1.5	89.7	18.102	•	•	
18.0	151.3	+1.60	4.00	+0.30	142.0	±0.30	2.0	+0.25	1.5	138.7	18.151	•	•	
20.0	93.2	+1.00	4.00	+0.30	83.0	±0.30	2.0	+0.25	1.5	79.2	20.093	•	•	
20.0	105.0	+1.10	4.00	+0.30	95.0	±0.30	2.0	+0.25	1.5	91.2	20.105	•	•	•
20.0	151.2	+1.60	4.00	+0.30	141.0	±0.30	2.0	+0.25	1.5	137.2	20.151	•	•	•
25.0	122.0	+1.20	4.00	+0.30	109.5	±0.30	2.0	+0.25	1.5	104.5	25.122	•	•	•
25.0	152.0	+1.60	4.00	+0.30	139.5	±0.30	2.0	+0.25	1.5	134.5	25.152	•	•	•

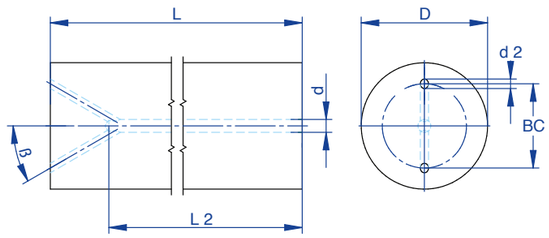


• ground
*on request – all grades available

MILLING CUTTER BLANKS

GROUND (h6), WITH AXIAL COOLANT DUCT AND Y-EXITS*

*on request – all grades available



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Together with our partners, we established a worldwide sales network covering all five continents. As a medium-sized company with slender structure, we react fast and flexible to our customers' requirements. Based on partnership, we compile suitable solutions for their respective needs.

Zusammen mit unseren Partnern haben wir ein weltweites Vertriebsnetz auf allen 5 Kontinenten geschaffen. Als mittelständisches Unternehmen mit schlanker Struktur reagieren wir schnell und flexibel auf die Anforderungen unserer Kunden. Durch eine partnerschaftliche Zusammenarbeit gestalten wir passende Lösungen für die jeweiligen Bedürfnisse.

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GRADE SPECIFICATIONS

MORE DETAILS AT PAGE 21

Grade		K40XF	K40UF	K44UF	K20F	K88UF	K6UF	K55SF	K5UF
Co	%	10.0	10.0	12.0	8.0	10.0	6.0	9.0	5.0
HV_{30}	kg/mm²	1560 ± 50	1620 ± 50	1690 ± 50	1720 ± 50	1770 ± 50	1870 ± 50	1920 ± 50	2010 ± 50
WC grain size	µm	0.80	0.65	0.50	0.70	0.50	0.65	0.20	0.50

TOLERANCES

SOLID RODS, RAW

L mm		↗ mm
< 200	variable	0.15
200 – 300	variable	0.25
> 300	+10.0	0.25

COOLANT DUCT RODS, RAW

L mm		↗ mm
< 200	variable	0.15
200 – 300	variable	0.25
> 300	+10.0	0.35

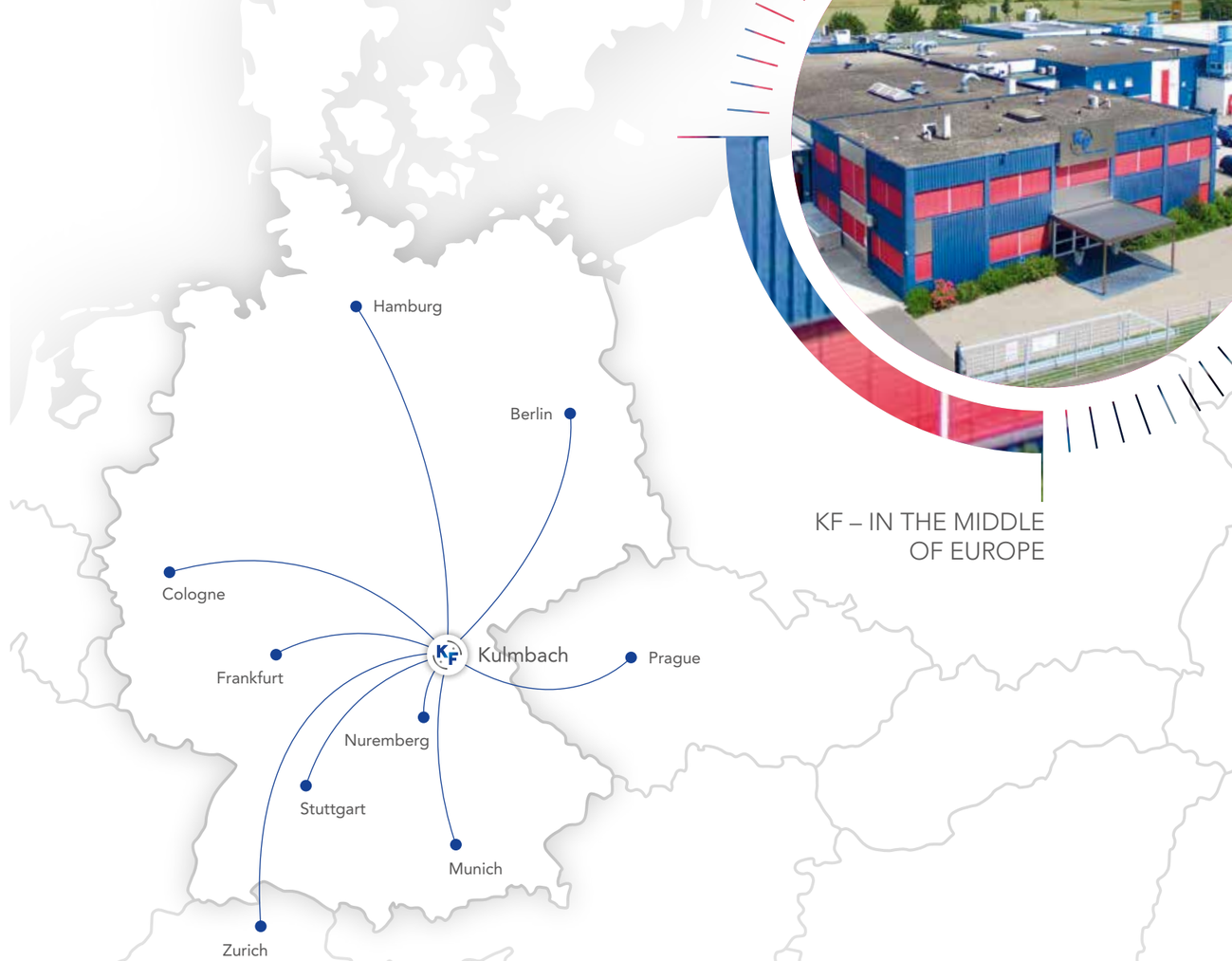
GROUND RODS (h6) ≥ 300 mm, SOLID OR WITH COOLANT DUCTS

D h6 mm	↗ mm	○ mm
3.0	0.11	0.002
3.175	0.11	0.002
3.5	0.11	0.002
4.0	0.11	0.002
4.5	0.11	0.002
4.763	0.11	0.002
5.0	0.11	0.002
5.5	0.11	0.002
6.0	0.11	0.002
6.35	0.11	0.003
6.5	0.11	0.003
7.0	0.11	0.003
7.5	0.06	0.003
7.938	0.06	0.003
8.0	0.06	0.003
8.5	0.06	0.003
9.0	0.06	0.003
9.5	0.06	0.003
9.525	0.06	0.003
10.0	0.06	0.003
10.5	0.05	0.003
11.0	0.05	0.003

D h6 mm	↗ mm	○ mm
11.113	0.05	0.003
11.5	0.05	0.003
12.0	0.05	0.003
12.5	0.05	0.003
12.7	0.05	0.003
13.0	0.05	0.003
13.5	0.05	0.003
14.0	0.05	0.003
14.288	0.05	0.003
14.5	0.05	0.003
15.0	0.05	0.003
15.5	0.05	0.003
15.875	0.05	0.003
16.0	0.05	0.003
16.5	0.02	0.003
17.0	0.02	0.003
17.5	0.02	0.003
18.0	0.02	0.003
18.5	0.02	0.004
19.0	0.02	0.004
19.05	0.02	0.004
19.5	0.02	0.004

D h6 mm	↗ mm	○ mm
20.0	0.02	0.004
21.0	0.02	0.004
22.0	0.02	0.004
22.225	0.02	0.004
23.0	0.02	0.004
24.0	0.02	0.004
25.0	0.02	0.004
25.4	0.02	0.005
26.0	0.02	0.005
27.0	0.02	0.005
28.0	0.02	0.005
29.0	0.02	0.005
30.0	0.02	0.005
31.0	0.02	0.005
32.0	0.02	0.005
36.0	0.02	0.006
40.0	0.02	0.006

↗ Circular run-out | ○ Roundness



KF – IN THE MIDDLE OF EUROPE

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