
VEHICLES


AEROSPACE


GEAR + BEARING


ENGINEERING


WIND ENERGY

BFL MILLING SYSTEM

Plunge Milling, Helical Milling and Helical Interpolation

CeramTec
THE CERAMIC EXPERTS

AEROSPACE

The aerospace industry places extremely high demands on machining. In this field, machining capacity and process safety are the decisive parameters, and our CSA cutting materials together with our Monsoon Tool Technology tools are the optimal solution. Component examples: Jet engine components such as blisks

AUTOMOTIVE INDUSTRY

For over 50 years, precision tools from CeramTec have been an integral part of highly productive machining solutions for components from the automotive industry. With our tool solutions, the implementation of concrete cost savings and increased productivity is always top priority. Component examples:
Brake discs, gear components, fly wheels, clutch plates, brake components, drive shafts, hydraulic elements, engine/motor components

MACHINERY AND PLANT ENGINEERING

Manufacturing complex components made of different materials with extreme precision and optimal surface quality in an economic way – that is the basic structure of requirements for which we work together with our customers to create innovative, cost-efficient machining solutions. Component examples: Gearbox housing, flanges, guides, shafts, rollers

GEAR TECHNOLOGY, DRIVE TECHNOLOGY AND BEARING INDUSTRY

Surface quality, tolerances and the tool life of the cutting materials are the standards for quality for hard machining. Our unique range of cutting materials made of PcBN and ceramic, together with our perfectly matched tools, set the bar in this industry. In practice, this results in highly efficient and cost-effective machining.
Component examples: Gear wheels, shafts, large gearbox components, bearing rings and rolling elements

WIND ENERGY

In the field of wind energy, components mostly require special machining solutions, since the components involved are often especially large. Strict tolerance requirements and a high level of surface quality place extreme demands on the cutting materials and tool holders. By observing and analysing the determining factors for machining, we are able to provide our customers with extremely efficient and cost-effective machining solutions. Component examples: Rotor flange, rotor blade connections, planetary gear holders, gearbox housing, gear components

VEHICLE MANUFACTURING INDUSTRY

MOTOR INDUSTRY
The high-performance materials that are used in this industry require cutting materials that ensure an extremely high level of process reliability and a consistently high quality level. Our cutting materials and tools are the perfect solution.
Component examples: Connecting rods, pulley wheels, cylinder heads, cylinder liners

TRANSPORT
When machining components for the transport industry, special solutions are often required in order for the machining process to remain economic and efficient. Our tools and cutting materials make these kinds of solutions possible.
Component examples: Wheel rims, shafts, bearings

AGRICULTURAL AND CONSTRUCTION MACHINERY
We offer highly efficient bearing solutions for components for agricultural and construction machinery. Our range of solutions are currently used for machining of soft steel as well as processing cast iron and hardened parts.
Component examples: Brake components, drive shafts, hydraulic elements, motor components

AUTOMOTIVE
For over 50 years, precision tools from CeramTec have been an integral part of highly productive machining solutions for components from the automotive industry:
Component examples: Brake discs, brake drums, fly wheels, connecting rods, gear components, engine blocks


Motor industry


Transport


Agricultural and construction machinery


Automotive

ENGINEERED TOOLS FOR PRODUCTIVITY

SPK+ THE PRODUCTIVITY EXPERTS

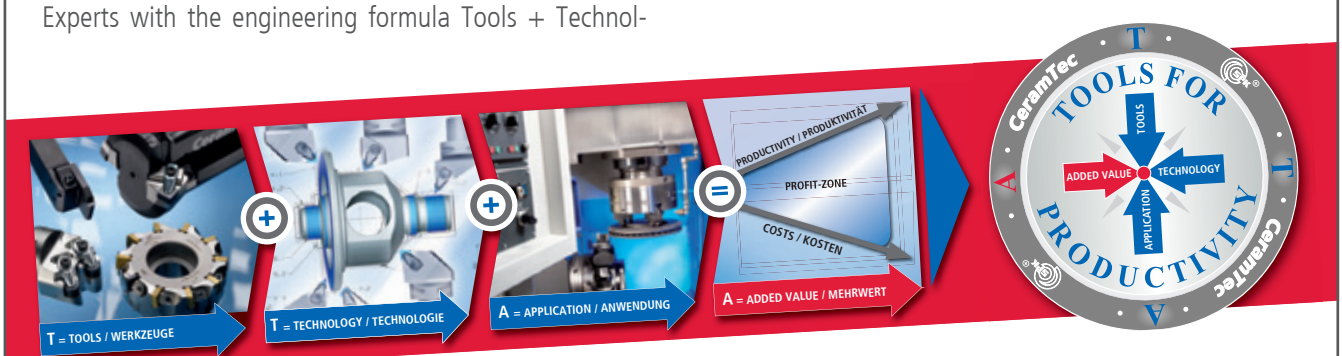
Nowadays, optimal machining of a part is no longer solely dependent on paying attention to the cutting process. Continuously improving materials, continuously increasing qualitative requirements for components and growing environmental challenges mean that the entire machining process must be viewed holistically and optimised both in terms of technology and efficiency.

Our more than 50 years of machining experience makes it possible for us to design machining processes today that are highly efficient and low-cost thanks to our engineering services, coupled with our innovative high-performance cutting materials and our tool systems. Our Engineering department plays a major role in this process. It answers questions of how a component can be machined optimally with our precision tools thanks to innovative and cost-optimised manufacturing strategies. They put together machining plans and perform time and cost studies in order to optimise machining processes.

In order to help our customers solve their machining challenges, we have made this process a standard as part of our programme SPK+ - The Productivity Experts with the engineering formula Tools + Technology + Application = more productivity at lower costs. A large number of specific applications have already shown that our engineering formula significantly increases productivity and lowers costs for our customers from a wide range of industries.

That is why we will be affixing a quality seal to our products in the future – our productivity compass, which is a sign of increased productivity for our engineered tools. Wherever you find our productivity compass, it will show you that the maximum contribution to productivity is the focus of our engineered machining solutions. Whether on our inserts, tool holders or even on processing machines, whenever the machining process has been optimised by our engineering on-location. Our productivity compass is the productivity seal you can trust.

www.tools-for-productivity.com



Areas of application

- **Helical milling**
- **High-feed milling**
- **Plunge milling**

v_c = 600 - 1400 m/min.
f_z = 0.14 - 0.8 mm
a_p = up to 2.6 mm

The new BFL milling system offers an impressive performance for plunge milling, helical milling and face milling with high feed rates. The milling system is designed for feed speeds of up to 18 m/min at a depth of cut (a_p) of 2.6 mm.
The geometric form of the milling cutter and the design of the milling inserts provide additional advantages. The milling cutter's performance values can be achieved even with milling machines that have a lower torque or lower power level. The wide variety of applications makes the BFL milling system an all-round specialist in productivity.

The BFL milling system works with positive SPHX inserts that are available in the SL 808 high-performance cutting material as a standard. This tough, low-wear cutting material allows optimal processing of GJL (grey cast iron) and GJS (ductile cast iron) workpieces.
The BFL milling cutter can be used for helical milling, high-feed face milling and the plunge milling, making it an important innovation for highly productive milling.

Component examples:

- Gearbox housing
- Cylinder head
- Pump housing
- Machine table
- Stator housing
- Hydraulic pumps
- Valve housing
- Cylinder block

PERFORMANCE COMPARISON

	Helical milling		Face milling	
Material	GJL (grey cast iron)		GJS (ductile cast iron)	
Comparative values	Starting situation	CeramTec	Starting situation	CeramTec
Cutting material	Carbide	SL808	Ceramics	SL808
Feed rate per tooth f_z	100%	70%	100%	225%
Feed rate speed v_f	100%	200%	100%	210%

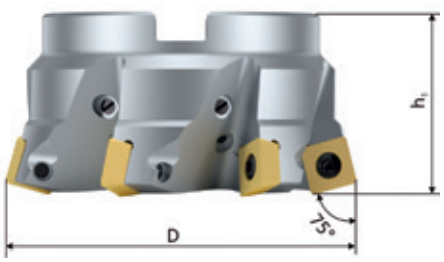
Recommended application

GJL (grey cast iron) GJS (ductile cast iron)

WORKPIECE
Thin-walled ✗ Unstable ✗ Stable ✓

f_z = 0,16 - 0,8 mm/tooth

12.5 • 6.3



Axial rake angle γ_a = +5°
Radial rake angle γ_r = -0°
$a_{p\ max}$ = 2,6 mm
Dimension table according to DIN 8030

BFL - SP13 / 75°	SPK ref. no.	Dimensions				
		D	z	d_4	h_1	$n_{max}(min^{-1})$
BFL-063-05SP1375R-AMCL	775.00.000.32	63	5	-	40	13000
BFL-080-06SP1375R-AMCL	775.00.000.42	80	6	-	50	10000
BFL-100-07SP1375R-AMCL	775.00.000.52	100	7	-	50	8000

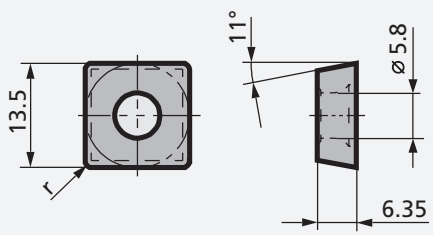
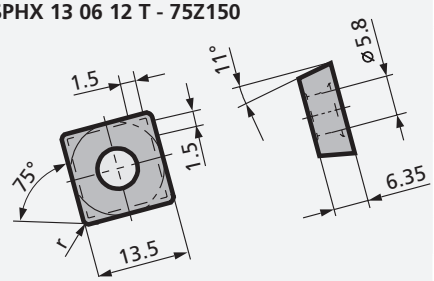

70.91.50.689.0

Torx-Insert 20

70.91.55.709.0

T-handle

70.91.55.706.0

INSERT	DESIGNATION	MATERIAL	SPK REF. NO.
SPHX 13 06 12 T 	SPHX 13 06 12 T01020	SL 808	17.16.535.20.1
	SPHX 13 06 12 T02030	SL 808	17.16.535.52.1
SPHX 13 06 12 T - 75Z150 	SPHX 13 06 12 T01020 - 75Z150	SL 808	17.16.537.20.1

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CeramTec
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CeramTec GmbH
SPK Cutting Tool Division
Hauptstraße 56
73061 Ebersbach / Fils
Germany

Phone: +49 7163 166-239
Fax: +49 7163 166-388
info@spk-tools.com
www.spk-tools.com / www.ceramtec.com

1309 IM · 1.000 St. · 70.91.49.953.3