SPK by CeramTec

CUTTING TOOLS

Machining of Heat Resistant Superalloys – HRSA

THE CERAMIC EXPERTS

Machining Solutions

Turning • Hard Turning • Grooving • Milling • Boring

Precision tools from SPK Cutting Tools have played a key role in providing high-productivity machining solutions for cast iron components for over 70 years. Today, continuous developments in cutting tool materials enable reliable high-performance machining not only of cast iron materials, but also of heat-resistant superalloys and hard materials. Whether it's turning, grooving, milling or boring, using standard or special tools - SPK Cutting Tools machining solutions focus on cost and productivity benefits combined with process reliability.

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SPK´s
BIG FIVE

THAT´S ALL YOU NEED –

For your HRSA machining

When it comes to machining HRSA materials, SPK Cutting Tools' Big Five offers everything you need from a single source to ensure that the machining of your HRSA components is as efficient and reliable as possible.

1

CUTTING MATERIALS
- SiC-whisker ceramics
- SiAlON
- Polymorphic SiAlON

2

INSERTS
- Standard geometries
- Special geometries

3

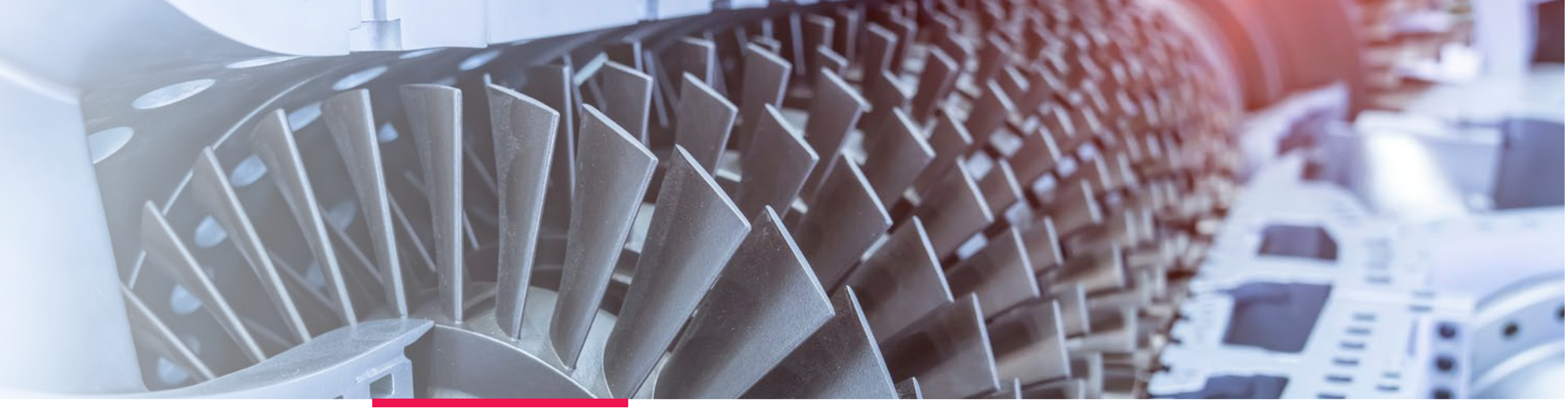
TOOL HOLDERS
- Special tools
- Standard tools

4

ENGINEERING
- Tool layouts
- Tool designs
- Time calculations

5

PARTNER
- From the first chip
- To optimization
- And troubleshooting
- Worldwide – on-site



Aerospace

Gas & Oil

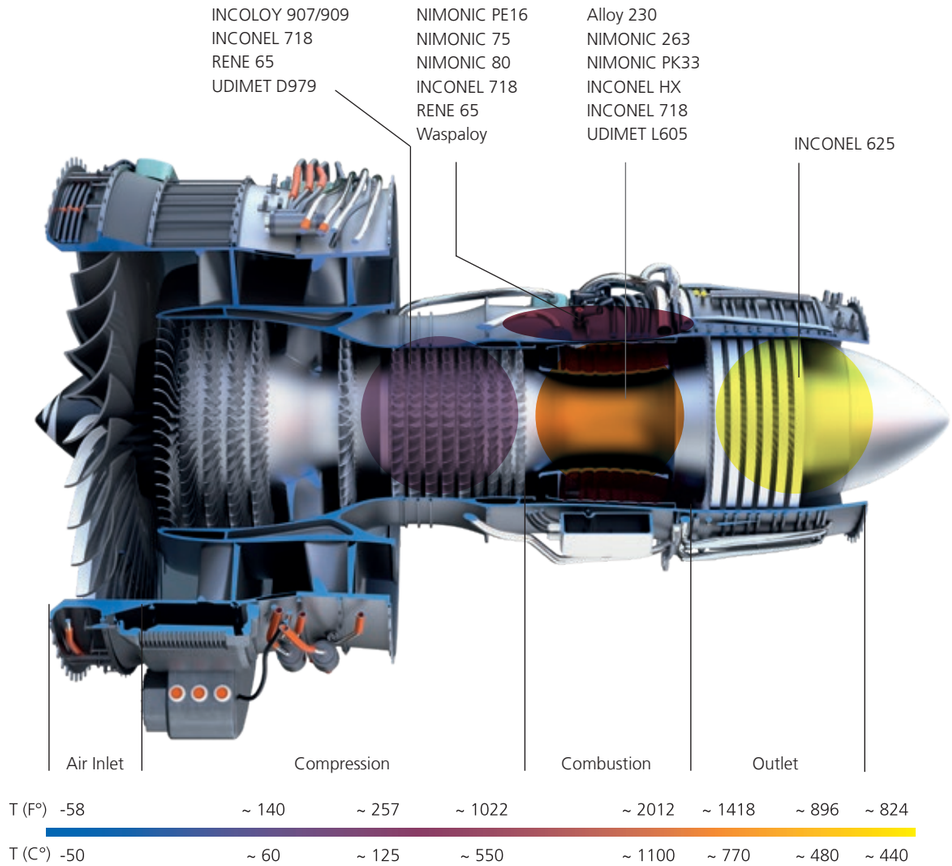
Energy

Process

High productivity when machining heat resistant superalloys – HRSA

Machining HRSA materials

HRSA (heat resistant superalloy) materials are used in a variety of industries. These materials are primarily used for components that have to retain their material properties such as high strength and hardness at high temperatures, sometimes even in corrosive environments. This is the case, for example, in the hot section of turbines or for joints and flanges in the oil & gas industry or process industry. HRSA materials can be divided into three groups of alloys: nickel, iron and cobalt based alloys. SPK cutting materials are designed for machining nickel and cobalt-based alloys.



Cutting materials

SPK Cutting Tools offers various cutting material grades for machining HRSA materials. They are perfectly balanced between toughness and wear resistance. This leads to high cutting parameters during roughing and semi-finishing. Various chamfer geometries are available that are precisely matched to the application. Special geometries for turning and grooving inserts are available on request.

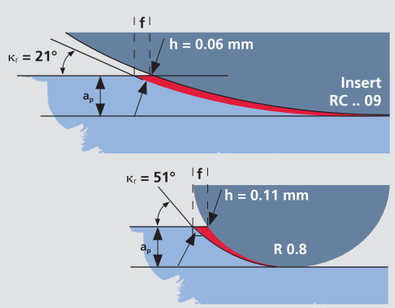
	Cutting materials for turning			Cutting materials for milling
SPK Type	**RST 330**	**LST 320**	**LST 370**	**LSM 800**
Cutting Material	SiC-whisker reinforced ceramic	SiAlON ceramic	Polymorphous SiAlON ceramic	SiAlON ceramic
Application	Turning, Grooving	Turning, Grooving	Turning	Solid ceramic endmills and cutting inserts
Machining	Roughing, Semi-finishing, Profinling, Broaching, Scale / no scale	Roughing, Semi-finishing, Profinling, Broaching, Scale / no scale	Semi-finishing, Profinling, No scale	Roughing, Semi-finishing
Materials	Nickel- and cobalt-based alloys	Nickel-based alloys	Nickel-based alloys	Nickel-based alloys

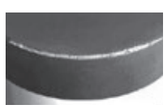
Recommended cutting data range

	Cutting materials for turning			Cutting materials for milling
SPK Type	**RST 330**	**LST 320**	**LST 370**	**LSM 800**
Cutting Material	SiC-whisker reinforced ceramic	SiAlON ceramic	Polymorphous SiAlON ceramic	SiAlON ceramic
v_c (m/min.)	250 - 400 m/min.	180 - 300 m/min	150 - 250 m/min	450 - 750 m/min
f (mm)	0.10 - 0.20 mm	0.15 - 0.35 mm	0.10 - 0.25 mm	0.10 - 0.20 mm/z
a_p (mm)	1.0 - 2.0 mm	2.0 - 3.0 mm	0.5 - 2.0 mm	0.5 - 2.0 mm
Coolant	yes	yes	yes	no

Q U I C K T I P

Reduce load on insert by choosing largest applicable insert radius. This reduces breakage on cutting edge at same doc, feed and speed!





Insert size 9.52 mm

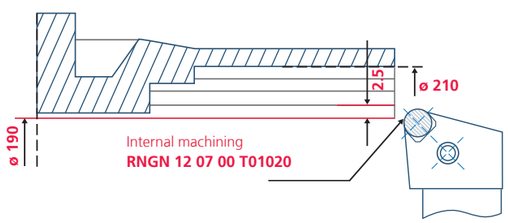
Corner radius 0.8 mm

Pictures not scaled

Application example RST 330

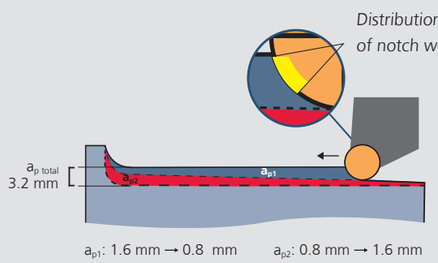
Workpiece: Bell
Material: Inconel 718
Internal turning with RST 330;
Slightly interrupted cut
Coolant supply
Tool life: 4 cuts per cutting edge

Cutting data:
v_c = 300 m/min
f = 0.20 mm
Length of cut, l = 85 mm
doc = 2.5 mm



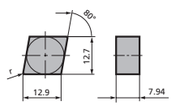
Q U I C K T I P

When using SiC-whisker reinforced inserts for several cuts of the same length, ramping in longitutonal turning will avoid notching and increase tool life significantly.



a_{p1}: 1.6 mm → 0.8 mm a_{p2}: 0.8 mm → 1.6 mm

Ceramic cutting materials – SiAlON

INSERT	ISO	GRADE	K: EN-GJL 150	EN-GJL 200	EN-GJL 250	EN-GJL 300	EN-GJL 350	EN-GJS 400-15	EN-GJS 500-7	EN-GJS 600-3	EN-GJS 700-2	EN-GJS 800-2	EN-GJS 800-8	EN-GJS 1000-5	EN-GJS 1200-2	EN-GJS 1400-0	EN-GJS 450-18	EN-GJS 500-14	EN-GJS 600-10	EN-GJV 300	EN-GJV 350	EN-GJV 400	EN-GJV 450	EN-GJV 500	H: HARD STEEL	CHILLED CAST IRON	DIE CASTING	S: HRSA	P: STEEL	SPK REF. NO.
CNGN 12 07 .. 	CNGN 12 07 08 T01020	LST 320	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦					o	o	o									✦		15.50.022.15.8
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	CNGN 12 07 12 T01020	LST 370	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦					o	o	o									✦		21.50.023.15.4
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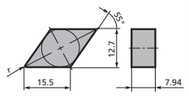
DNGN 15 07 .. 	DNGN 15 07 08 T01020	LST 370	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦					o	o	o									✦		21.50.077.15.4
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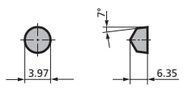
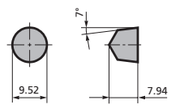
RCGX 06 06 00 	RCGX 06 06 00 T01020	LST 370	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦					o	o	o									✦		21.42.331.15.4
RCGX 09 07 00 	RCGX 09 07 00 T01020	LST 320	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦					o	o	o									✦		15.42.103.15.8
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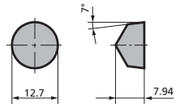
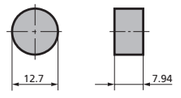
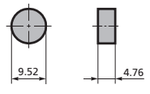
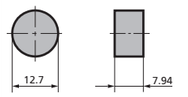
RCGX 12 07 .. 	RCGX 12 07 00 T01020	LST 370	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦					o	o	o									✦		21.42.104.15.4
RNCN 12 07 .. 	RNCN 12 07 00 T01020	LSM 800	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦					o	o	o									✦		15.40.204.15.9
RNGN 09 04 .. 	RNGN 09 04 00 T01020	LST 370	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦					o	o	o									✦		21.40.018.15.4

ISO Application group

K Cast iron | H Hard Materials | S HSRA | P Steel | Main application ✦ | Secondary application o

INSERT	ISO	GRADE	K: EN-GJL 150	EN-GJL 200	EN-GJL 250	EN-GJL 300	EN-GJL 350	EN-GJS 400-15	EN-GJS 500-7	EN-GJS 600-3	EN-GJS 700-2	EN-GJS 800-2	EN-GJS 800-8	EN-GJS 1000-5	EN-GJS 1200-2	EN-GJS 1400-0	EN-GJS 450-18	EN-GJS 500-14	EN-GJS 600-10	EN-GJV 300	EN-GJV 350	EN-GJV 400	EN-GJV 450	EN-GJV 500	H: HARD STEEL	CHILLED CAST IRON	DIE CASTING	S: HRSA	P: STEEL	SPK REF. NO.
RNGN 12 07 .. 	RNGN 12 07 00 T01020	LST 320	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦					o	o	o									✦		15.40.002.15.8
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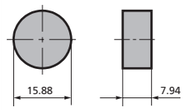
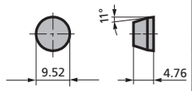
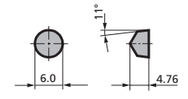
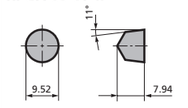
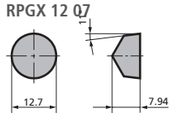
RNGN 15 07 .. 	RNGN 15 07 00 T01020	LST 370	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦					o	o	o									✦		21.40.023.15.4
RPGN 09 04 .. 	RPGN 09 04 00 T01020	LST 370	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦					o	o	o									✦		21.42.054.15.4
RPGX 06 04 .. 	RPGX 06 04 00 T01020	LST 370	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦					o	o	o									✦		21.42.341.15.4
RPGX 09 07 .. 	RPGX 09 07 00 T01020	LST 370	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦					o	o	o									✦		21.42.340.15.4
RPGX 12 07 	RPGX 12 07 00 T01020	LST 320	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦					o	o	o									✦		15.42.337.15.8
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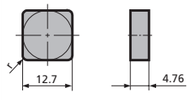
SNGN 12 04 .. 	SNGN 12 04 08 T01020	LST 320	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦					o	o	o									✦		15.10.009.15.8
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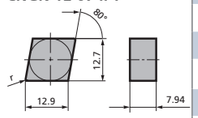
ISO Application group

K Cast iron | H Hard Materials | S HSRA | P Steel | Main application ✦ | Secondary application o

SiC-whisker reinforced ceramic RST 330

INSERT	ISO	GRADE	K: GJL EN-GJL 150	K: GJL EN-GJL 200	K: GJL EN-GJL 250	K: GJL EN-GJL 300	K: GJL EN-GJL 350	K: GJS EN-GJS 400-15	K: GJS EN-GJS 500-7	K: GJS EN-GJS 600-3	K: GJS EN-GJS 700-2	K: GJS EN-GJS 800-2	K: ADI EN-GJS 800-8	K: ADI EN-GJS 1000-5	K: ADI EN-GJS 1200-2	K: ADI EN-GJS 1400-0	K: SI GJS EN-GJS 450-18	K: SI GJS EN-GJS 500-14	K: SI GJS EN-GJS 600-10	K: GJV EN-GJV 300	K: GJV EN-GJV 350	K: GJV EN-GJV 400	K: GJV EN-GJV 450	K: GJV EN-GJV 500	H: HARD STEEL	H: CHILLED CAST IRON	H: DIE CASTING	S: HRSA	P: STEEL	SPK REF. NO.
CNGN 12 07 .. T 	CNGN 12 07 08 T01020	RST 330	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	o	o	o	o	o	o	o						o	✦		✦		15.50.022.15.0
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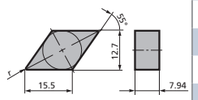
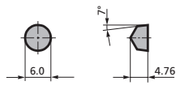
DNGN 15 07 .. T 	DNGN 15 07 12 T01020	RST 330	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	o	o	o	o	o	o	o						o	✦		✦		15.50.078.15.0
RCGX 06 04 00 	RCGX 06 04 00 T00520	RST 330	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	o	o	o	o	o	o	o						o	✦		✦		15.42.322.03.0
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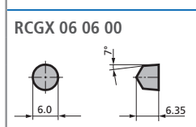
RCGX 06 06 00 	RCGX 06 06 00 S01020	RST 330	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	o	o	o	o	o	o	o						o	✦		✦		15.42.331.18.0
	RCGX 06 06 00 T01020	RST 330	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	o	o	o	o	o	o	o						o	✦		✦		15.42.331.15.0
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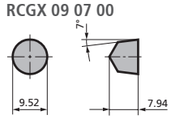
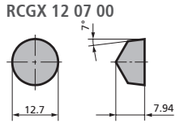
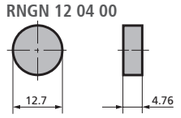
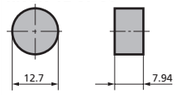
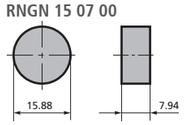
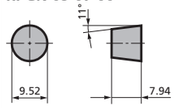
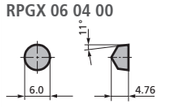
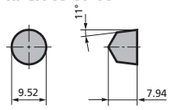
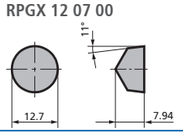
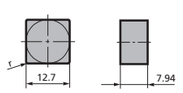
RCGX 09 07 00 	RCGX 09 07 00 T01020	RST 330	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	o	o	o	o	o	o	o						o	✦		✦		15.42.103.15.0
RCGX 12 07 00 	RCGX 12 07 00 T01020	RST 330	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	o	o	o	o	o	o	o						o	✦		✦		15.42.104.15.0
RNGN 12 04 00 	RNGN 12 04 00 T01020	RST 330	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	o	o	o	o	o	o	o						o	✦		✦		15.40.027.15.0

ISO Application group

K Cast iron | H Hard Materials | S HSRA | P Steel | Main application ✦ | Secondary application o

INSERT	ISO	GRADE	K: GJL EN-GJL 150	K: GJL EN-GJL 200	K: GJL EN-GJL 250	K: GJL EN-GJL 300	K: GJL EN-GJL 350	K: GJS EN-GJS 400-15	K: GJS EN-GJS 500-7	K: GJS EN-GJS 600-3	K: GJS EN-GJS 700-2	K: GJS EN-GJS 800-2	K: ADI EN-GJS 800-8	K: ADI EN-GJS 1000-5	K: ADI EN-GJS 1200-2	K: ADI EN-GJS 1400-0	K: SI GJS EN-GJS 450-18	K: SI GJS EN-GJS 500-14	K: SI GJS EN-GJS 600-10	K: GJV EN-GJV 300	K: GJV EN-GJV 350	K: GJV EN-GJV 400	K: GJV EN-GJV 450	K: GJV EN-GJV 500	H: HARD STEEL	H: CHILLED CAST IRON	H: DIE CASTING	S: HRSA	P: STEEL	SPK REF. NO.
RNGN 12 07 00 	RNGN 12 07 00 S01020	RST 330	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	o	o	o	o	o	o	o						o	✦		✦		15.40.002.18.0
	RNGN 12 07 00 S99	RST 330	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	o	o	o	o	o	o	o						o	✦		✦		15.40.002.99.0
	RNGN 12 07 00 T01020	RST 330	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	o	o	o	o	o	o	o						o	✦		✦		15.40.002.15.0
RNGN 15 07 00 	RNGN 15 07 00 P86	RST 330	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	o	o	o	o	o	o	o						o	✦		✦		15.40.023.86.0
RPGN 09 07 00 	RPGN 09 07 00 T01020	RST 330	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	o	o	o	o	o	o	o						o	✦		✦		15.42.342.20.0
RPGX 06 04 00 	RPGX 06 04 00 T01020	RST 330	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	o	o	o	o	o	o	o						o	✦		✦		15.42.341.15.0
RPGX 09 07 00 	RPGX 09 07 00 T01020	RST 330	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	o	o	o	o	o	o	o						o	✦		✦		15.42.340.15.0
RPGX 12 07 00 	RPGX 12 07 00 T01020	RST 330	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	o	o	o	o	o	o	o						o	✦		✦		15.42.337.15.0
SNGN 12 07 .. T 	SNGN 12 07 16 T01020	RST 330	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦	o	o	o	o	o	o	o						o	✦		✦		15.10.023.15.0

ISO Application group

K Cast iron | H Hard Materials | S HSRA | P Steel | Main application ✦ | Secondary application o

HPC-Tooling System – machining with high pressure coolant

The special feature of our HPC tooling system is that the coolant is supplied through the clamping finger. The coolant outlets on the finger are designed to deliver coolant directly to the work area where it is needed.

A coolant pressure of up to 200 bar can be applied to the tool. It should be noted that there is no need for seals between the tool holder and the clamping element. The design takes care of the sealing.

Another advantage of high pressure cooling is that the chip can be broken quickly. Ribbon chips are avoided and process reliability is increased.

Tools with high pressure cooling are available on request. Our sales representatives will be happy to answer your request.

Please contact us at info@spk-tools.com

HPC-Tool in action

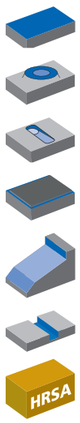
Milling of HRSA materials

Milling systems
Face and contour milling, ramp and helix milling with high stock removal rates - that is what our milling systems are made for.
With our end mills, screw-on and arbor mount milling cutters, we offer the right solution for any milling task.

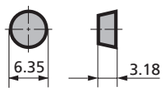
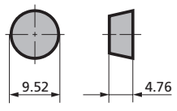
Screw on milling cutter ***PFK**RP*

Roughing 6.3

v_c = 600 - 1000 m/min f_z = 0.08 - 0.18 mm
a_p for Ø 20 mm = 0.3 - 2.5 mm
a_p for Ø ≥ 25 mm = 0.3 - 4.0 mm



Type	SPK Ref. No.	Dimensions (mm)			
		D	t	h_1	n_{max} (rpm)
PFKS-020-03RP0600R-EMCLBO	778.30.000.31	20	3	30	30000
PFKS-025-03RP0900R-EMCLBO	778.30.000.41	25	3	35	23000
PFKS-032-04RP0900R-EMCLBO	778.30.000.51	32	4	40	23000
PFKS-040-05RP0900R-EMCLBO	778.30.000.61	40	5	40	8000

INSERT	ISO	GRADE	K: GJL: EN-GJL 150	EN-GJL 200	EN-GJL 250	EN-GJL 300	EN-GJL 350	GJS: EN-GJS 400-15	EN-GJS 500-7	EN-GJS 600-3	EN-GJS 700-2	EN-GJS 800-2	ADI: EN-GJS 800-8	EN-GJS 1000-5	EN-GJS 1200-2	EN-GJS 1400-0	SI GJS: EN-GJS 450-18	EN-GJS 500-14	EN-GJS 600-10	GJV: EN-GJV 300	EN-GJV 350	EN-GJV 400	EN-GJV 450	EN-GJV 500	H: HARD STEEL	CHILLED CAST IRON	DIE CASTING	S: HRSA	P: STEEL	SPK REF. NO.
RPGN 06 03 T00520 	RPGN 06 03 00 T00520	LKM 840	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦					o	o	o									✦		23.42.334.03.2
RPGN 09 04 T00520 	RPGN 09 04 00 T00520	LKM 840	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦					o	o	o									✦		23.42.054.03.2

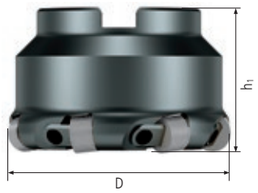
ISO Application group

K Cast iron | H Hard Materials | S HSRA | P Steel | Main application ✦ | Secondary application o

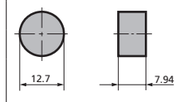
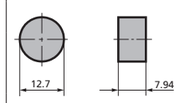
Face milling cutter ***PFKS**RN*

Roughing 6.3

v_c = 600 - 1000 m/min
f_z = 0.08 - 0.18 mm
a_p = 0.50 - 5 mm



Type	SPK Ref. No	Dimensions (mm)			
		D	t	h_1	n_{max} (rpm)
PFKS-050-04RN1200R-AMBO	778.00.021.71	50	4	40	18000
PFKS-050-05RN1200R-AMBO	778.00.021.41	50	5	40	18000
PFKS-063-05RN1200R-AMBO	778.00.021.81	63	5	40	13000
PFKS-063-06RN1200R-AMBO	778.00.022.11	63	6	40	13000
PFKS-080-07RN1200R-AMBO	778.00.021.91	80	7	50	10000
PFKS-100-09RN1200R-AMBO	778.00.022.01	100	9	50	8000

INSERT	ISO	GRADE	K: GJL: EN-GJL 150	EN-GJL 200	EN-GJL 250	EN-GJL 300	EN-GJL 350	GJS: EN-GJS 400-15	EN-GJS 500-7	EN-GJS 600-3	EN-GJS 700-2	EN-GJS 800-2	ADI: EN-GJS 800-8	EN-GJS 1000-5	EN-GJS 1200-2	EN-GJS 1400-0	SI GJS: EN-GJS 450-18	EN-GJS 500-14	EN-GJS 600-10	GJV: EN-GJV 300	EN-GJV 350	EN-GJV 400	EN-GJV 450	EN-GJV 500	H: HARD STEEL	CHILLED CAST IRON	DIE CASTING	S: HRSA	P: STEEL	SPK REF. NO.
RNCX 12 07 00 T01020 	RNCX 12 07 00 T01020	LKM 840	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦					o	o	o									✦		23.40.196.20.2
RNCN 12 07 00 T01020 	RNCN 12 07 00 T01020	LSM 800	✦	✦	✦	✦	✦	✦	✦	✦	✦	✦					o	o	o									✦		15.40.204.15.9

ISO Application group

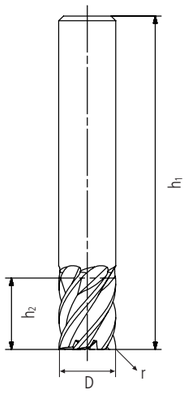
K Cast iron | H Hard Materials | S HSRA | P Steel | Main application ✦ | Secondary application o

End milling cutter *LSM800*

Rough finishing

6.3 3.2

v_c = 550 - 750 m/min
f_z = 0.03 - 0.06 mm
a_p = up to 0.5 x D



Type	SPK Ref. No.	Dimensions (mm)				
		D	z	r*	h_1	h_2
CTE-0600Z06R-AA08 LSM800	On request	6	6	0.80	60	4.5
CTE-0600Z06R-AA10 LSM800	On request	6	6	1.00	60	4.5
CTE-0600Z06R-AA12 LSM800	771.15.060.19.0	6	6	1.20	60	4.5
CTE-0600Z06R-AA20 LSM800	771.15.060.39.0	6	6	2.00	60	4.5
CTE-0600Z06R-AA25 LSM800	771.15.060.29.0	6	6	2.50	60	4.5
CTE-0800Z06R-AB08 LSM800	On request	8	6	0.80	60	6.5
CTE-0800Z06R-AB10 LSM800	On request	8	6	1.00	60	6.5
CTE-0800Z06R-AB12 LSM800	771.15.080.19.0	8	6	1.20	60	6.5
CTE-0800Z06R-AB20 LSM800	771.15.080.39.0	8	6	2.00	60	6.5
CTE-0800Z06R-AB25 LSM800	771.15.080.29.0	8	6	2.50	60	6.5
CTE-1000Z06R-BB08 LSM800	On request	10	6	0.80	65	6.5
CTE-1000Z06R-BB10 LSM800	On request	10	6	1.00	65	6.5
CTE-1000Z06R-BB12 LSM800	771.15.100.19.0	10	6	1.20	65	6.5
CTE-1000Z06R-BB20 LSM800	771.15.100.39.0	10	6	2.00	65	6.5
CTE-1000Z06R-BB25 LSM800	771.15.100.29.0	10	6	2.50	65	6.5
CTE-1200Z06R-CD08 LSM800	On request	12	6	0.80	70	9
CTE-1200Z06R-CD10 LSM800	On request	12	6	1.00	70	9
CTE-1200Z06R-CD12 LSM800	771.15.120.19.0	12	6	1.20	70	9
CTE-1200Z06R-CD20 LSM800	771.15.120.39.0	12	6	2.00	70	9
CTE-1200Z06R-CD25 LSM800	771.15.120.29.0	12	6	2.50	70	9
CTE-1600Z08R-DE08 LSM800	On request	16	8	0.80	83	14
CTE-1600Z08R-DE10 LSM800	On request	16	8	1.00	83	14
CTE-1600Z08R-DE12 LSM800	771.15.160.19.0	16	8	1.20	83	14
CTE-1600Z08R-DE20 LSM800	771.15.160.39.0	16	8	2.00	83	14
CTE-1600Z08R-DE25 LSM800	771.15.160.29.0	16	8	2.50	83	14
CTE-2000Z08R-EE12 LSM800	771.15.200.19.0	20	8	1.20	93	14
CTE-2000Z08R-EE20 LSM800	771.15.200.39.0	20	8	2.00	93	14
CTE-2000Z08R-EE25 LSM800	771.15.200.29.0	20	8	2.50	93	14

Spare parts for milling cutters

For PFK RP milling cutter with Ø = 20 mm

Tightening torque 0.6 Nm


70.91.55.737.2


70.91.50.937.0

Torx blade ISR 7


70.91.55.217.0

For PFK RP milling cutter with Ø = 25 - 40 mm

Tightening torque 2.2 Nm


70.91.55.696.2


70.91.50.648.0

Hexagon ISK SW 2


70.91.55.725.0

Cross grip


70.91.55.706.0

For PFK RN milling cutter with Ø = 50 mm

Tightening torque 3.5 Nm


70.91.55.677.2


70.91.50.328.0

Torx blade ISR10


70.91.55.707.0

Cross grip


70.91.55.706.0

For PFK RN milling cutter witht Ø = 63 - 100 mm

Tightening torque 5 Nm


70.91.55.547.2


70.91.50.354.0

Torx blade ISR10


70.91.55.708.0

Cross grip


70.91.55.706.0

Disclaimer

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