SPK by CeramTec

CUTTING TOOLS

Grooving of HRSA Materials

MACHINING MATTERS

Grooving of HRSA materials

Grooving heat-resistant superalloys place high demands on the grooving tool and the cutting material. Hot, tough, long chips in a tight chip space make grooving operations challenging.

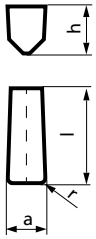
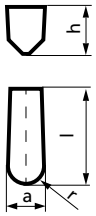
The SPK® grooving system addresses exactly this point with high-pressure cooling in the grooving tool. The coolant is delivered directly into the cutting zone at up to 200 bar. This reliably dissipates the heat and makes it possible to break the chip and flush it out of the machining zone.

SiC-whisker-reinforced ceramic grooving inserts are available for the grooving system. This ceramic grade is characterized by high edge stability, fracture resistance and hot hardness and is therefore ideally suited to demanding grooving cuts.

Typical cutting speeds when grooving HRSA materials with the SiC-whisker ceramic RST 330 are v_c = 150–350 m/min; grooving feeds are between 0.05 and 0.10 mm/rev.

Available application-specifically as a shank or Capto tool.

Grooving width	Grooving depth for standard tools	Straight grooving insert	Full-radius grooving insert
3.18	up to 18 mm	●	●
3.96	up to 18 mm	●	●
4.75	up to 18 mm	●	●
5.54	up to 24 mm	●	●
6.35	up to 30 mm	●	●
7.92	up to 30 mm		●

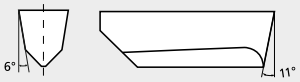
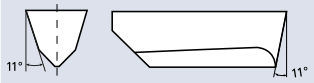
Groove width a (mm)	SPK Designation	Grade	SPK-Ref.-No.	Form	Dimensions (mm) r	h	l
3.18	GCFA 127 A0318 E00150 L0.4 R0.4	RST 330	15.23.726.43.0		0.4	4.5	12.7
3.96	GCFA 127 A0396 E00150 L0.4 R0.4	RST 330	15.23.728.43.0		0.4	4.5	12.7
4.75	GCFA 127 A0475 E00150 L0.4 R0.4	RST 330	15.23.730.43.0		0.4	4.5	12.7
5.54	GCFA 190 D0554 E00150 L0.4 R0.4	RST 330	15.23.732.43.0		0.4	6.1	19.0
6.35	GCFA 190 D0635 E00150 L0.8 R0.8	RST 330	15.23.734.43.0		0.8	6.1	19.0
3.18	GCRA 127 A0318 E00150 RA1.59	RST 330	15.23.727.43.0		1.59	4.5	12.7
3.96	GCRA 127 A0396 E00150 RA1.98	RST 330	15.23.729.43.0		1.98	4.5	12.7
4.75	GCRA 127 A0475 E00150 RA2.38	RST 330	15.23.731.43.0		2.375	4.5	12.7
5.54	GCRA 190 D0554 E00150 RA2.77	RST 330	15.23.733.43.0		2.77	6.1	19.0
6.35	GCRA 190 D0635 E00150 RA3.18	RST 330	15.23.735.43.0		3.175	6.1	19.0
7.92	GCRA 254 G0792 E00150 RA3.96	RST 330	15.23.736.43.0		3.96	8.3	25.4

SPK designation system for HRSA grooving inserts

Insert form	Grooving form	Insert length	Groove width	Cutting edge design
G single-edged	CF straight; CR full radius	127 12.70 mm; 190 19.05 mm; 254 25.40 mm	0318 3.175 mm; 0396 3.96 mm; 0475 4.75 mm; 0554 5.54 mm; 0635 6.35 mm; 0792 7.925 mm	E rounded

G	CF	A	127	A	0318	E00150	L1R1

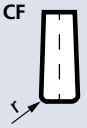
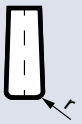
A = Standard

Prisma 90°	Clearance angle	Grooving width
		0318 0396
		from 0475

Insert thickness

A	≤ 5 mm
B	≤ 5.5 mm
C	≤ 6 mm
D	≤ 6.5 mm
E	≤ 7.5 mm
F	≤ 8 mm
G	≤ 10 mm

Cutting edge radii

Radius left		Radius right		Full radius	
L0.4	r = 0.4 mm	R0.4	r = 0.4 mm	0318	1.59 mm
L0.8	r = 0.8 mm	R0.8	r = 0.8 mm	0396	1.98 mm
				0475	2.375 mm
				0554	2.77 mm
				0635	3.175 mm
				0792	3.96 mm

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All grooving tools in this system are **designed with high-pressure cooling**. The coolant flow is supplied both from above through the clamp and from below through the insert seat. **This ensures a highly effective coolant supply**.

Our sales team is at your disposal for the design of application-specific special tools. Contact us at **info@spk-tools.com**

HPC-Tool in Action

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