KSEM PLUS Carbide Insert Recommendations

Material Group	Outboard/ Inboard	Insert Style	Grade	Page(s)	Comments
P	O	DFR-GD	KCU25, KCU40	H89	Recommended outboard insert style for working in all P-materials. Start with KCU40™ and use KCU25™ in stable conditions to achieve higher tool life.
		DFC-/DFT-HP		H90, H88	
		DFC-/DFT-DS	KCU40	H90, H88	Reduce feed rate by 10% to further improve chip formation in long-chipping steels and low carbon steel.
	I	KSEMP-HPG	KC7315	H87	Must use KSEMP centre inserts in P-materials to avoid excessive wear on head & inserts.
M	O	DFR-MD	KC7140	H89	Recommended outboard insert style for working in all M-materials.
		DFC-/DFT-MD		H90, H89	
		DFC-/DFT-DS	KCU40	H90, H88	Reduce feed rate by 20% to further improve chip formation and/or run with lower power consumption.
	I	KSEMP-HPG	KC7315	H87	Recommended inboard insert style for working in all M-materials.
		KSEM-PC	KC7135	H56, H87	For unstable conditions in stainless steel, use KSEM PC inserts.
		KSEM-HPL	KC7320	H50	If chip control issue resulting from centre insert occurs in M-materials, use KSEM HPL insert inboard. Reduction of feed rate up to 20% is recommended.
K	O	DFR-LD	KCU25	H89	Recommended insert styles for working in all K-Materials.
		DFC-/DFT-HP		H90, H88	
	I	KSEM-HPCCL	KC7410	H48, H87	
N	O	DFR-GD	KC7225	H89	Recommended outboard insert styles for working in all non-ferrous materials.
		DFC-/DFT-HP	KCU40	H90, H88	
		DFC-/DFT-DS	KCU40	H90, H88	Reduce feed rate by 15% for diameters <56mm and up to 50% for larger diameters to improve chip formation.
		DFR/DFT-ST	KD1425	J85	Use PCD tipped outboard when working with CFRP, CFRP/metal stacks and plastics (N3, N5, and N6).
	I	KSEMP-HPG	KC7315	H87	Recommended inboard insert style for working in all non-ferrous materials.
		KSEM-HPS	K715	—	This is a made-to-order item (uncoated/sharp) — use it to improve your results in N3, N5, and N6, if required.
S	O	DFR-GD	KC7140	H89	Recommended outboard insert style for working in all S-materials.
		DFC-/DFT-HP	KCU40	H90, H88	
		DFC-/DFT-DS	KCU40	H90, H88	Reduce feed rate by 20% to further improve chip formation and/or run with lower power consumption.
	I	KSEM-PC	KC7135	H56, H87	If centre breakage is an issue in S-materials, use KSEM PC insert inboard.

Need help with bad chip formation?

Our new DS geometry for DFT™ and DFC™ inserts on KSEM PLUS helps you to improve your performance in long chipping materials.

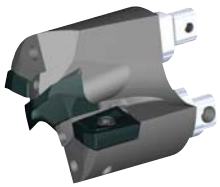
If chip formation is an issue, you may use our new DFT and DFC DS style inserts with the recommendations for feed rate adjustments given as indicated.

Modular Drill • KSEM PLUS™ • Metric • A1 and B1 Style

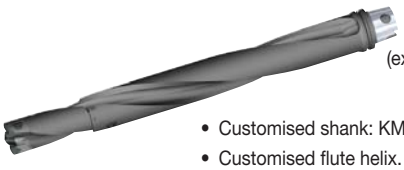
Metric											
Material Group		Condition	Cutting Speed — vc Range — m/min			Recommended Feed Rate (fz) by Diameter					
			min	Starting Value	max	Ø	KSEM 14….17 DFR/DFC04... 28.00–31,74	KSEM 15….18 DFT/DFC05... 31,74–35,99	KSEM 13….22 DFT/DFC06... 36,00–44,99	KSEM 18….28 DFT/DFC07... 45,00–55,99	KSEM 20….34 DFT/DFC09... 56,00–102,35
P	1	S	115	**235**	290	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		U	90	**160**	215	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		I	65	**100**	140	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
	2	S	90	**190**	230	mm/r	0,160–0,280	0,160–0,280	0,200–0,360	0,200–0,400	0,200–0,450
		U	71	**130**	170	mm/r	0,160–0,280	0,160–0,280	0,200–0,360	0,200–0,400	0,200–0,450
		I	50	**80**	110	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
	3	S	90	**180**	230	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
		U	70	**120**	170	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
		I	50	**70**	106	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
	4	S	90	**140**	220	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
		U	70	**110**	160	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
		I	50	**80**	110	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
	5	S	90	**130**	210	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
		U	70	**100**	150	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
		I	50	**70**	100	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
	6	S	70	**90**	180	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
		U	50	**75**	120	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
		I	40	**60**	100	mm/r	0,160–0,280	0,160–0,280	0,200–0,320	0,200–0,400	0,200–0,450
M	1	S	60	**110**	135	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		U	40	**70**	90	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		I	30	**50**	65	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
	2	S	60	**100**	135	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		U	40	**60**	90	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		I	30	**50**	65	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
	3	S	50	**90**	135	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		U	40	**60**	90	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		I	25	**40**	65	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
K	1	S	90	**170**	230	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
		U	60	**120**	160	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
		I	40	**70**	90	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
	2	S	90	**160**	220	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
		U	60	**110**	160	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
		I	40	**70**	100	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
	3	S	90	**150**	210	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
		U	60	**100**	150	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
		I	35	**60**	90	mm/r	0,180–0,300	0,180–0,300	0,216–0,360	0,240–0,420	0,300–0,480
N	1	S	150	**240**	360	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		U	100	**160**	240	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		I	60	**100**	160	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
	2	S	150	**220**	360	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		U	100	**150**	240	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		I	60	**100**	160	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
	3	S	150	**200**	360	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		U	100	**140**	240	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		I	60	**90**	160	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
	4	S	150	**200**	360	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		U	100	**140**	240	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		I	60	**90**	160	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
	5	S	150	**200**	360	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		U	100	**140**	240	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		I	60	**90**	160	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
	6	S	150	**200**	360	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		U	100	**140**	240	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		I	60	**90**	160	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
	7	S	110	**220**	260	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		U	70	**140**	170	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
		I	45	**90**	110	mm/r	0,120–0,200	0,120–0,200	0,144–0,280	0,160–0,320	0,200–0,400
S	1	S	25	**50**	75	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		U	20	**40**	60	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		I	15	**30**	50	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
	2	S	20	**40**	60	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		U	15	**30**	45	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		I	12	**25**	35	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
	3	S	20	**40**	60	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		U	15	**30**	45	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		I	12	**25**	40	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
	4	S	20	**40**	60	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		U	15	**30**	45	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360
		I	12	**25**	40	mm/r	0,130–0,250	0,130–0,250	0,160–0,280	0,160–0,320	0,200–0,360

Application	Workpiece Shape	A1 Head	B1 Head
Flat Face		✓	✓
Cored Hole		✗	✓
Stacked Plates		✗	✓
Angled Exit (exit only!)		✓ <3°	✓ max 15°
Angled Entrance		✓ <3°	✓ <3°
Cross Holes		✗	✓ max 50% of D1

KSEM PLUS Customised Solution Capabilities:



- Intermediate head Ø.
- Custom head to use reground KSEM™ inserts.
- Heads for cross holes Ø = d1.



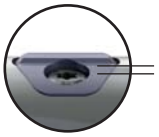
(example)

- Customised shank: KM™, HSK, VDI, ISO taper, etc.
- Customised flute helix.
- Step drill.

- Drill body up to L1 = 20 x D and total length of 1250mm.

Mounting DPA Guiding Pads on B1 Heads

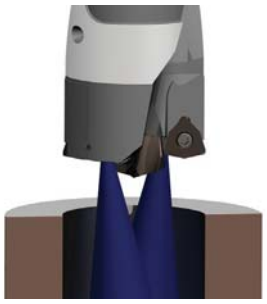
All B1 heads are delivered with preset guiding pads.



Measure radial undersize "A" of pad to cutting edge for both sides and adjust using shim set that comes with each head.

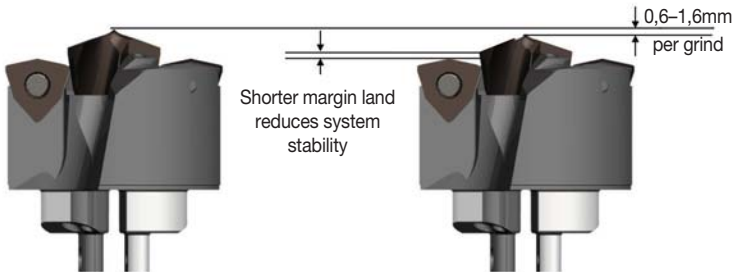
NOTE: For best results with slanted exits and in cross hole drilling, we recommend guiding pads adjustment results in an undersize of A = 30 µm (edge of guiding pads to cutting edges).

Coolant Recommendations



Internal coolant is recommended for optimum chip flow and tool life.

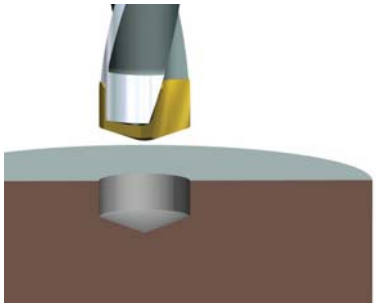
KSEM PLUS Piloting Insert SHOULD NOT Be Reground:



Only new KSEM PLUS inserts will provide consistency and process security on a KSEM PLUS modular drill system. If you want to regrind, refer to our custom solution A1 and B1 heads.

NOTE: Reground KSEM PLUS inserts can be used in KSEM™ drills.

Piloting Instructions:



1. KSEM….PC Pilot drill Ø equal KSEMP Ø PDD
2. Drill 1mm deep from full diameter