



KOMET KUB Centron[®] Powerline
Solid drilling to 9xD

Maximum drilling performance at drilling depths of up to 9xD

Together with the double-sided design of the drill head, this tool ensures extremely high performance in all standard materials.

The center drill of the KOMET KUB Centron® Powerline guides the tool exactly into the bore axis and thereby ensures straightness and maximum process reliability at drilling depths of up to 9xD. The extremely stable indexable insert ensures maximum stability and optimum chip removal, even at maximum drilling depths.

The new KUB Centron® Powerline head can be used with all existing KUB Centron® base elements and is equipped with the proven W83 inserts used in our KUB Quatron® drill.

The KUB Centron® Powerline enables drilling up to 9xD is on flat even surfaces without a pilot hole.

BENEFITS for you:

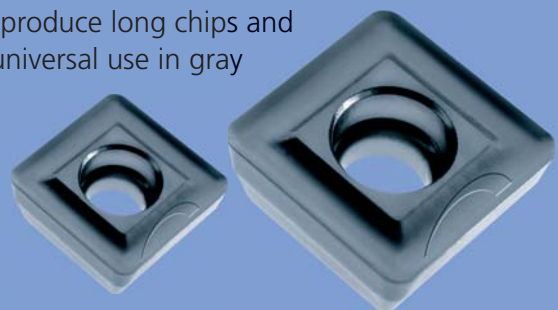
- Doubling of the feed values
- High stability and economy by using square inserts
- Maximum tool life with four cutting edges made up of specific substrates and coatings
- Stable drilling process due to proven cutting geometries
- Center carbide drill for better tool life and higher cutting values
- No guide pads required
- Compatibility with proven KUB Centron® basic elements
- Intermediate sizes are available upon request (inch or metric)

Insert geometry 21:

Consisting of ultra-fine grain carbide with highly positive top rake, clearly reduced cutting edge rounding and a new type of coating, the cutting and feed forces can be reduced by approximately 1/3 compared with the -01 geometry.

This reduces the stress on the machine and workpiece, which allows significantly higher cutting parameters and, as a result, increases in productivity.

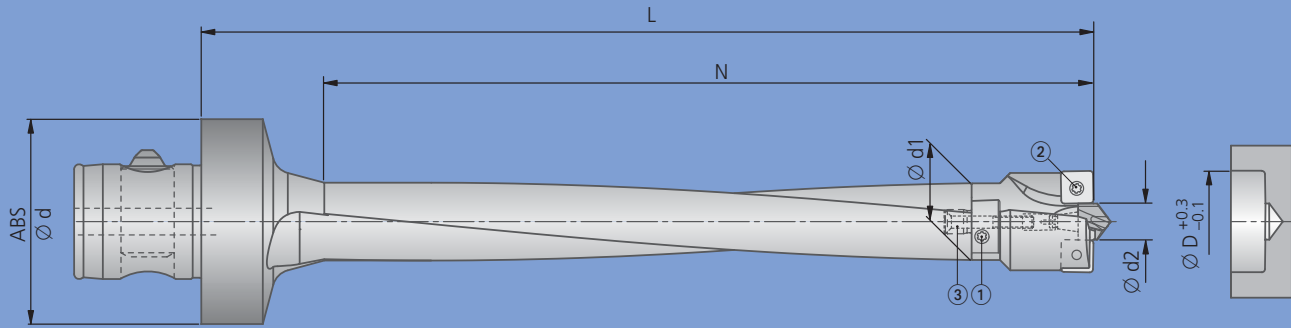
Geometry 21 was developed specifically for materials that produce long chips and for stainless steels. However, it is also very well suited for universal use in gray cast iron, steel and aluminum alloys.



NEW \varnothing 20 – 65 mm KUB Centron® Powerline

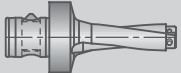
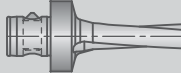
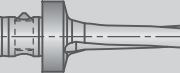
- ① **Inserts:** New cutting materials and geometries guarantee maximum tool life and reliable machining.
- ② **Center drill:** The center drill guides the solid drill precisely in the bore axis. This means dimensional stability even at bore depths of up to $9 \times D$. Optimized concentricity of the whole system means that the center drill and the inserts have a noticeably longer life.
- ③ **Drill head:** Thanks to the double-sided design of the head, guide pads are not necessary, and no constriction develops at the bore exit.
- ④ **Connection point:** Central positioning is produced by means of an accurately fitting centering spigot. Two tapered screws which act in the direction of the torque pull the drill head onto large drive pins, producing a precise and stable connection between the drill head and the base element.
- ⑤ **Base element:** Compatible with all existing KUB Centron® base elements. With the tried and tested ABS® connection, the KUB Centron® Powerline has no connection problems.

Internal coolant supply for optimum cooling lubrication and effective chip removal.



Drill head							
Ø D	Order No.	Connecting point Ø d1	kg	Clamping screw ① for basic body	Clamping screw ② for insert	Clamping screw ③ for center drill	
				Order No.	Order No.	Order No.	depending on Ø d2
20.0	V46 22000	19	0.031	N00 57480 S2564-8IP 1.28 Nm	N00 57553 S/M2.2×5.5-6IP 1.01 Nm	N10 12010 M3×22-8IP	1.28 Nm
21.0	V46 22100	19	0.034				1.28 Nm
22.0	V46 22200	19	0.038				1.28 Nm
23.0	V46 22300	19	0.040				1.8 Nm
24.0	V46 22400	19	0.044				1.8 Nm
25.0	V46 22500	19	0.047	N00 57490 S3074-8IP 2.25 Nm	N00 57571 S/M2.5×6.3-8IP 1.28 Nm	N10 12010 M3×22-8IP	1.28 Nm
26.0	V46 22600	25	0.052				1.8 Nm
27.0	V46 22700	25	0.056				1.8 Nm
28.0	V46 22800	25	0.059				1.8 Nm
29.0	V46 22900	25	0.061				1.8 Nm
30.0	V46 23000	25	0.066	N00 57440 S4089-15IP 4.3 Nm	N00 57261 S3575-15IP 2.8 Nm	N10 12010 M3×22-8IP	1.8 Nm
31.0	V46 23100	25	0.070				1.8 Nm
32.0	V46 23200	25	0.072				1.8 Nm
33.0	V46 23300	32	0.079				1.8 Nm
33.2	V46 23320	32	0.080				1.8 Nm
34.0	V46 23400	32	0.084	N00 57301 S45100-20IP 6.25 Nm	N10 12010 M3×22-8IP	1.8 Nm	1.8 Nm
35.0	V46 23500	32	0.087				1.8 Nm
36.0	V46 23600	32	0.093				1.8 Nm
37.0	V46 23700	32	0.096				1.8 Nm
38.0	V46 23800	32	0.099				1.8 Nm
39.0	V46 23900	32	0.105	N00 57440 S4089-15IP 4.3 Nm	N00 57301 S45100-20IP 6.25 Nm	N10 12010 M3×22-8IP	1.8 Nm
39.9	V46 23920	32	0.105				

Intermediate dimensions on request

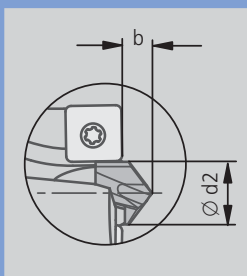
Basic element		~ 4xD				~ 6xD				~ 8xD			
ABS Ø d	Connecting point Ø d1												
		Order No.	N	L	kg	Order No.	N	L	kg	Order No.	N	L	kg
50	19	V47 20201	113	145	0.52	V47 40201	150	185	0.55	V47 60201	200	235	0.63
50	25	V47 20261	130	160	0.66	V47 40261	175	210	0.77	V47 60261	230	260	0.90
50	32	V47 20331	160	195	0.93	V47 40331	215	255	1.13	V47 60331	290	330	1.4

The precise diameter to length ratio (L:D) is produced from relationship of the relevant basic element to the diameter of the drill head selected.

L / D	through hole	blind hole	forge/casting skin, interface	angled	convex	cross bore	centering bore	chamber	stack plate drilling	rough boring	adjustable
4-9xD											
	●	●	●	○	○	○	○	×	×	×	×

● very good ○ good ○ possible: see technical notes, page 11 × not possible

Center drill		Basic recommendation				for workpiece material ● main area of application ○ suitable in some cases
Ø d2	Order No.	Order No.	ISO-Code	Pieces		
10.3	V96 01100.8450	W83 18210.088430 W83 18210.082730 W83 18210.088430 W83 18210.087710	SOEX 060308-21 BK8430 SOEX 060308-21 BK2730 SOEX 060308-21 BK8430 SOEX 060308-21 BK7710	2		
10.3	V96 01100.8450					
11.3	V96 01110.8450					
12.3	V96 01120.8450					
13.3	V96 01130.8450					
11.3	V96 01110.8450	W83 23210.088430 W83 23210.082730 W83 23000.016115 W83 23210.087710	SOEX 07T308-21 BK8430 SOEX 07T308-21 BK2730 SOEX 07T308-01 BK6115 SOEX 07T308-21 BK7710	2		
12.3	V96 01120.8450					
13.3	V96 01130.8450					
14.3	V96 01140.8450					
15.3	V96 01150.8450					
13.3	V96 01130.8450	W83 32210.088430 W83 32210.082730 W83 32000.156115 W83 32210.087710	SOEX 090408-21 BK8430 SOEX 090408-21 BK2730 SOEX 090408-01 BK6115 SOEX 090408-21 BK7710	2		
14.3	V96 01140.8450					
15.3	V96 01150.8450					
13.3	V96 01130.8450	W83 39210.088430 W83 39210.082730 W83 39210.086130 W83 39210.087710	SOEX 110508-21 BK8430 SOEX 110508-21 BK2730 SOEX 110508-21 BK6130 SOEX 110508-21 BK7710	2		
14.3	V96 01140.8450					
14.3	V96 01140.8450					
15.3	V96 01150.8450					
16.3	V96 01160.8450					
14.3	V96 01140.8450	W83 44210.088430 W83 44210.082730 W83 44000.186115 W83 44210.087710	SOEX 120508-21 BK8430 SOEX 120508-21 BK2730 SOEX 120508-01 BK6115 SOEX 120508-21 BK7710	2		
15.3	V96 01150.8450					
16.3	V96 01160.8450					
16.3	V96 01160.8450					

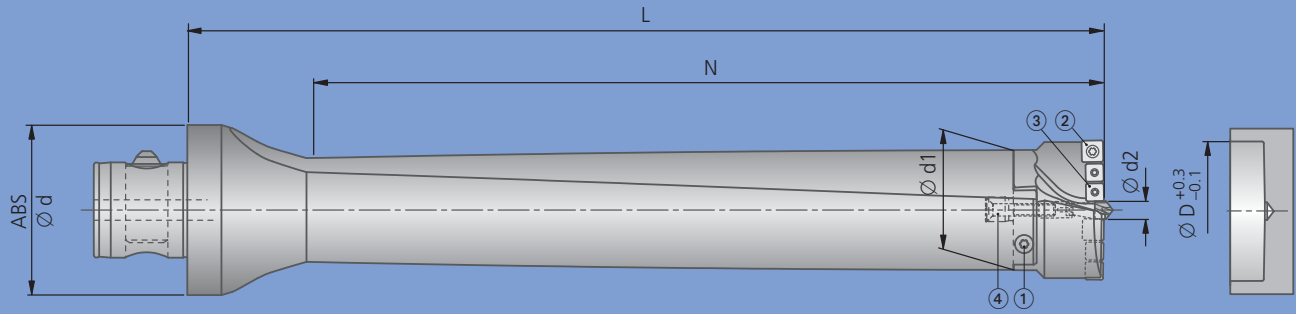


Ø d2	b
10.3	3.94
11.3	4.23
12.3	4.72
13.3	4.94
14.3	5.18
15.3	5.57
16.3	6.06

Supply includes:

Basic element with ABS® assembly parts. Drill head with screws ①, ② and ③. Please order insert and center drill separately.

Guideline values for solid drilling: page 8-9. Alternative inserts: page 10.



Drill head

Ø D	Order No.	Connecting point Ø d1	kg	Clamping screw				depending on Ø d2
				① for basic body	② for insert	③ for insert	④ for center drill	
				Order No.	Order No.	Order No.	Order No.	
40.0	V46 24000	38.5	0.13	N00 57500 S45105-20IP 6.25Nm	N00 57261 S3575-15IP 2.8Nm	N00 57553 S/M2.2x5.5-6IP 1.01Nm	N10 12030 M3x30-8IP	1.28 Nm
41.0	V46 24100	38.5	0.14					
42.0	V46 24200	38.5	0.14					
43.0	V46 24300	38.5	0.15					
44.0	V46 24400	38.5	0.16	N00 57500 S45105-20IP 6.25Nm	N00 57261 S3575-15IP 2.8Nm	N00 57553 S/M2.2x5.5-6IP 1.01Nm	N10 12020 M3x26-8IP	1.8 Nm
45.0	V46 24500	38.5	0.17					
46.0	V46 24600	44.5	0.20	N00 57450 S/M5x11.5-20IP 6.25Nm	N00 57261 S3575-15IP 2.8Nm	N00 57553 S/M2.2x5.5-6IP 1.01Nm	N10 12030 M3x30-8IP	1.8 Nm
47.0	V46 24700	44.5	0.20					
48.0	V46 24800	44.5	0.21					
49.0	V46 24900	44.5	0.21					
50.0	V46 25000	44.5	0.22	N00 57450 S/M5x11.5-20IP 6.25Nm	N00 57271 S3585-15IP 2.8Nm	N00 57571 S/M2.5x6.3-8IP 1.28Nm	N10 12040 M3x33-8IP	1.28 Nm
50.5	V46 25050	44.5	0.23					
51.0	V46 25100	44.5	0.23					
52.0	V46 25200	44.5	0.23					
52.5	V46 25250	44.5	0.24					
53.0	V46 25300	44.5	0.24					
54.0	V46 25400	44.5	0.25					
55.0	V46 25500	53.5	0.31	N00 57460 S/M5.5x14-20IP 6.25Nm	N00 57301 S45100-20IP 6.25Nm	N00 57571 S/M2.5x6.3-8IP 1.28Nm	N10 12050 M3x35-8IP	1.8 Nm
56.0	V46 25600	53.5	0.32					
57.0	V46 25700	53.5	0.33					
58.0	V46 25800	53.5	0.34					
59.0	V46 25900	53.5	0.35					
60.0	V46 26000	53.5	0.35					
61.0	V46 26100	53.5	0.37	N00 57460 S/M5.5x14-20IP 6.25Nm	N00 57261 S3575-15IP 2.8Nm	N00 57571 S/M2.5x6.3-8IP 1.28Nm	N10 12060 M3x38-8IP	1.28 Nm
62.0	V46 26200	53.5	0.37					
63.0	V46 26300	53.5	0.38					
64.0	V46 26400	53.5	0.40	N00 57460 S/M5.5x14-20IP 6.25Nm	N00 57261 S3575-15IP 2.8Nm	N00 57571 S/M2.5x6.3-8IP 1.28Nm	N10 12050 M3x35-8IP	1.8 Nm
65.0	V46 26500	63.5	0.50					
				N00 57470 S60160-20IP 6.25Nm	N00 57261 S3575-15IP 2.8Nm	N00 57571 S/M2.5x6.3-8IP 1.28Nm	N10 12070 M3x47.5-8IP	1.8 Nm

Intermediate dimensions on request

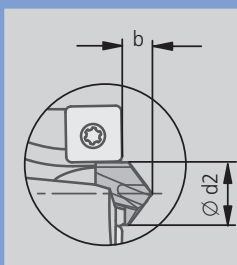
Basic element		~ 4xD				~ 6xD				~ 8xD			
ABS Ø d	Connecting point Ø d1	Order No.	N	L	kg	Order No.	N	L	kg	Order No.	N	L	kg
80	44.5	V47 20461	215	280	3.31	V47 40461	310	375	3.97	V47 60461	415	480	4.82
80	53.5	V47 20551	260	325	4.30	V47 40551	370	435	5.42	V47 60551	495	560	6.68
80	63.5	V47 20651	295	375	5.80	V47 40651	420	500	7.52	V47 60651	560	640	9.46

The precise diameter to length ratio (L:D) is produced from relationship of the relevant basic element to the diameter of the drill head selected.

L / D	through hole	blind hole	forge/casting skin, interface	angled	convex	cross bore	centering bore	chamber	stack plate drilling	rough boring	adjustable
4-9xD											
	●	●	●	○	○	○	○	×	×	×	×

● very good ○ good ○ possible: see technical notes, page 11 × not possible

Center drill		Basic recommendation						for workpiece material ● main area of application ○ suitable in some cases
Ø d2	Order No.	Insert		Pieces	Insert		Pieces	
		Order No.	ISO-Code		Order No.	ISO-Code		
10.3	V96 01100.8450							
10.3	V96 01100.8450							
10.3	V96 01100.8450							
11.3	V96 01110.8450	W83 32210.088430	SOEX 090408-21 BK8430		W83 18210.088430	SOEX 060308-21 BK8430		
12.3	V96 01120.8450	W83 32210.082730	SOEX 090408-21 BK2730	2	W83 18210.082730	SOEX 060308-21 BK2730		
13.3	V96 01130.8450	W83 32000.156115	SOEX 090408-01 BK6115		W83 18210.088430	SOEX 060308-21 BK8430		
14.3	V96 01140.8450	W83 32210.087710	SOEX 090408-21 BK7710		W83 18210.087710	SOEX 060308-21 BK7710		
15.3	V96 01150.8450							
16.3	V96 01160.8450							
11.3	V96 01110.8450							
12.3	V96 01120.8450							
13.3	V96 01130.8450	W83 39210.088430	SOEX 110508-21 BK8430		W83 23210.088430	SOEX 07T308-21 BK8430		
13.3	V96 01130.8450	W83 39210.082730	SOEX 110508-21 BK2730	2	W83 23210.082730	SOEX 07T308-21 BK2730		
14.3	V96 01140.8450	W83 39210.086130	SOEX 110508-21 BK6130		W83 23000.016115	SOEX 07T308-01 BK6115		
15.3	V96 01150.8450	W83 39210.087710	SOEX 110508-21 BK7710		W83 23210.087710	SOEX 07T308-21 BK7710		
15.3	V96 01150.8450							
16.3	V96 01160.8450							
13.3	V96 01130.8450							
13.3	V96 01130.8450							
14.3	V96 01140.8450	W83 44210.088430	SOEX 120508-21 BK8430		W83 23210.088430	SOEX 07T308-21 BK8430		
15.3	V96 01150.8450	W83 44210.082730	SOEX 120508-21 BK2730	2	W83 23210.082730	SOEX 07T308-21 BK2730		
16.3	V96 01160.8450	W83 44000.186115	SOEX 120508-01 BK6115		W83 23000.016115	SOEX 07T308-01 BK6115		
16.3	V96 01160.8450	W83 44210.087710	SOEX 120508-21 BK7710		W83 23210.087710	SOEX 07T308-21 BK7710		
16.3	V96 01160.8450							
10.3	V96 01100.8450							
11.3	V96 01110.8450	W83 32210.088430	SOEX 090408-21 BK8430		W83 23210.088430	SOEX 07T308-21 BK8430		
12.3	V96 01120.8450	W83 32210.082730	SOEX 090408-21 BK2730	2	W83 23210.082730	SOEX 07T308-21 BK2730		
		W83 32000.156115	SOEX 090408-01 BK6115		W83 23000.016115	SOEX 07T308-01 BK6115		
13.3	V96 01130.8450	W83 32210.087710	SOEX 090408-21 BK7710	4	W83 23210.087710	SOEX 07T308-21 BK7710		



Ø d2	b
10.3	3.94
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12.3	4.72
13.3	4.94
14.3	5.18
15.3	5.57
16.3	6.06

Supply includes:

Basic element with ABS® assembly parts. Drill head with screws ①, ② and ③. Please order insert and center drill separately.

Guideline values for solid drilling: page 8-9. Alternative inserts: page 10.

Guidelines for solid drilling					Cutting speed v_c • feed f (mm/rev)							
Material group	Strength R_m (lb/ft ²)	Hardness HB	Material	Material example ANSI / SAE	⚠ Backing out of the bore with greatly reduced speed							
					Ø 20 - 24.9		Ø 25 - 29.9		Ø 30 - 32.9		Ø 33 - 36.9	
					v_c m/min	f mm/U	v_c m/min	f mm/U	v_c m/min	f mm/U	v_c m/min	f mm/U
					~ 4xD min opt. max	~ 4xD min opt. max	~ 4xD min opt. max	~ 4xD min opt. max	~ 4xD min opt. max	~ 4xD min opt. max	~ 4xD min opt. max	~ 4xD min opt. max
					⚠ ~ 6xD $v_c = -10%$ · ~ 8xD $v_c = -25%$							
P	1.0	≤ 72,500	non-alloy steels	1010 1144 1213	200	0.14 0.16 0.18	180	0.14 0.17 0.20	180	0.15 0.18 0.21	180	0.15 0.18 0.21
	2.0	72,500 - 130,000	non-alloy / low alloy steels	1055 5115 5120	200	0.14 0.16 0.18	180	0.14 0.17 0.20	180	0.15 0.18 0.21	180	0.15 0.18 0.21
	2.1	< 72,500	lead alloys	12L14	200	0.16 0.18 0.20	200	0.17 0.20 0.23	200	0.22 0.25 0.28	200	0.22 0.25 0.28
	3.0	>130,000	non alloy / low alloy steels: heat resistant structural, heat treated, nitride and tools steels	1064 4140	160	0.14 0.16 0.18	160	0.17 0.20 0.23	160	0.19 0.22 0.25	160	0.22 0.25 0.28
	4.0	>130,000	high alloy steels	H13 H21	140	0.12 0.14 0.16	140	0.13 0.16 0.19	140	0.15 0.18 0.21	140	0.17 0.20 0.23
4.1		HSS	M10 T4					Upon request				
S	5.0		250 special alloys: Inconel, Hastelloy, Nimonic, stc.	Inconel® 718 Nimonic® 80A					Upon request			
	5.1	58,000	titanium, titanium alloys	Ti-6Al-4V					Upon request			
M	6.0	≤ 87,000	stainless steels	304L 316					Upon request			
	6.1	<130,000	stainless steels	630					Upon request			
	7.0	>130,000	stainless / fireproof steels	403 420					Upon request			
K	8.0		180 gray cast iron	Class 25 G3000	180	0.23 0.25 0.27	180	0.27 0.30 0.33	180	0.32 0.35 0.38	180	0.32 0.35 0.38
	8.1		250 alloy gray cast iron	A436 Type 2	170	0.23 0.25 0.27	170	0.27 0.30 0.33	170	0.32 0.35 0.38	170	0.32 0.35 0.38
	9.0	≤ 87,000	130 ductile cast iron, ferritic	60-40-18 D4512	180	0.23 0.25 0.27	180	0.27 0.30 0.33	180	0.32 0.35 0.38	180	0.32 0.35 0.38
	9.1		230 ductile cast iron, ferritic / perlitic	80-55-06 D5506	170	0.20 0.22 0.24	170	0.22 0.25 0.28	170	0.27 0.30 0.33	170	0.27 0.30 0.33
	10.0	> 87,000	250 spheroidal graphite cast iron, perlitic malleable iron	100-70-03 07003	160	0.18 0.20 0.22	160	0.19 0.22 0.25	160	0.25 0.28 0.31	160	0.25 0.28 0.31
	10.1		200 alloyed spheroidal graphite cast iron	A43D2	120	0.12 0.14 0.16	120	0.15 0.18 0.21	120	0.19 0.22 0.25	120	0.19 0.22 0.25
10.2		300 vermicular cast iron		120	0.20 0.22 0.24	120	0.22 0.25 0.28	120	0.32 0.35 0.38	120	0.32 0.35 0.38	
N	12.0		90 copper alloy, brass, lead-alloy bronze, lead bronze: good cut	316	250	0.18 0.20 0.22	250	0.22 0.25 0.28	250	0.25 0.28 0.31	250	0.27 0.30 0.33
	12.1		100 copper alloy, brass, bronze: average cut		250	0.16 0.18 0.20	250	0.19 0.22 0.25	250	0.25 0.28 0.31	250	0.25 0.28 0.31
	13.0		60 wrought aluminum alloys	6151 7075	300	0.12 0.14 0.16	300	0.15 0.18 0.21	300	0.17 0.20 0.23	300	0.17 0.20 0.23
	13.1		75 cast aluminum alloy: Si-content <10% magnesium alloy	380 A356.0	250	0.18 0.20 0.22	250	0.22 0.25 0.28	250	0.27 0.30 0.33	250	0.27 0.30 0.33
14.0		100 cast aluminum alloy: Si-content > 10%	383 A413.0	250	0.18 0.20 0.22	250	0.22 0.25 0.28	250	0.27 0.30 0.33	250	0.27 0.30 0.33	
H	15.0	203,000	hardened steels < 45 HRC					Upon request				
	16.0	261,000	hardened steels > 45 HRC, ≤ 55 HRC					Upon request				

Cutting values shown are relating to the basic recommendations for cutting materials given.

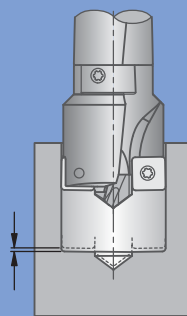
Cutting speed v_c • feed f (mm/rev)														
⚠ Backing out of the bore with greatly reduced speed														
∅ 37 - 39.9		∅ 40 - 44.9		∅ 45 - 48.9		∅ 49 - 51.9		∅ 52 - 54.9		∅ 55 - 61.9		∅ 62 - 65		
v_c m/min	f mm/U	v_c m/min	f mm/U	v_c m/min	f mm/U	v_c m/min	f mm/U	v_c m/min	f mm/U	v_c m/min	f mm/U	v_c m/min	f mm/U	
~ 4xD	min opt. max	~ 4xD	min opt. max	~ 4xD	min opt. max	~ 4xD	min opt. max	~ 4xD	min opt. max	~ 4xD	min opt. max	~ 4xD	min opt. max	
⚠ ~ 6xD $v_c = -10%$ · ~ 8xD $v_c = -25%$														
180	0.17 0.20 0.23	200	0.14 0.16 0.18	180	0.14 0.16 0.18	200	0.14 0.17 0.18	180	0.14 0.17 0.18	180	0.14 0.17 0.18	200	0.14 0.17 0.18	
180	0.17 0.20 0.23	200	0.14 0.16 0.18	180	0.14 0.16 0.18	200	0.14 0.17 0.18	180	0.14 0.17 0.18	180	0.14 0.17 0.18	200	0.14 0.17 0.18	
200	0.22 0.25 0.28	220	0.16 0.18 0.20	200	0.17 0.20 0.22	220	0.20 0.23 0.25	200	0.20 0.25 0.28	200	0.20 0.25 0.28	220	0.20 0.23 0.25	
160	0.22 0.25 0.28	180	0.16 0.20 0.22	160	0.16 0.20 0.22	180	0.18 0.20 0.24	160	0.18 0.20 0.24	160	0.18 0.20 0.24	180	0.18 0.20 0.24	
140	0.17 0.20 0.23	160	0.12 0.16 0.19	140	0.12 0.16 0.19	160	0.12 0.16 0.19	140	0.17 0.20 0.23	140	0.17 0.20 0.23	160	0.17 0.20 0.23	
						Upon request								
						Upon request								
						Upon request								
						Upon request								
						Upon request								
						Upon request								
180	0.32 0.35 0.38	180	0.23 0.25 0.27	170	0.23 0.25 0.27	180	0.27 0.30 0.33	170	0.27 0.30 0.33	170	0.27 0.30 0.33	180	0.23 0.25 0.27	
170	0.32 0.35 0.38	170	0.23 0.25 0.27	160	0.23 0.25 0.27	170	0.27 0.30 0.33	160	0.27 0.30 0.33	160	0.27 0.30 0.33	170	0.23 0.25 0.27	
180	0.32 0.35 0.38	180	0.23 0.25 0.27	170	0.23 0.25 0.27	180	0.27 0.30 0.33	170	0.27 0.30 0.33	170	0.27 0.30 0.33	180	0.23 0.25 0.27	
170	0.27 0.30 0.33	170	0.20 0.22 0.24	160	0.20 0.22 0.24	170	0.22 0.25 0.28	160	0.22 0.25 0.28	160	0.22 0.25 0.28	170	0.20 0.22 0.24	
160	0.25 0.28 0.31	160	0.18 0.20 0.22	150	0.18 0.20 0.22	160	0.19 0.22 0.25	150	0.19 0.22 0.25	150	0.19 0.22 0.25	160	0.18 0.20 0.22	
120	0.19 0.22 0.25	130	0.12 0.14 0.16	120	0.12 0.14 0.16	130	0.15 0.18 0.21	120	0.15 0.18 0.21	130	0.15 0.18 0.21	120	0.12 0.14 0.16	
120	0.32 0.35 0.38	130	0.20 0.22 0.24	120	0.20 0.22 0.24	130	0.22 0.25 0.28	120	0.22 0.25 0.28	130	0.22 0.25 0.28	120	0.20 0.22 0.24	
250	0.27 0.30 0.33	250	0.18 0.20 0.22	240	0.18 0.20 0.22	250	0.22 0.25 0.28	240	0.22 0.25 0.28	240	0.22 0.25 0.28	250	0.18 0.20 0.22	
250	0.25 0.28 0.31	250	0.16 0.18 0.20	240	0.16 0.18 0.20	250	0.19 0.22 0.25	240	0.19 0.22 0.25	240	0.19 0.22 0.25	250	0.16 0.18 0.20	
300	0.17 0.20 0.23	300	0.12 0.14 0.16	280	0.12 0.14 0.16	300	0.15 0.18 0.21	280	0.15 0.18 0.21	280	0.15 0.18 0.21	300	0.12 0.14 0.16	
250	0.27 0.30 0.33	250	0.18 0.20 0.22	240	0.18 0.20 0.22	250	0.22 0.25 0.28	240	0.22 0.25 0.28	240	0.22 0.25 0.28	250	0.18 0.20 0.22	
250	0.27 0.30 0.33	250	0.18 0.20 0.22	240	0.18 0.20 0.22	250	0.22 0.25 0.28	240	0.22 0.25 0.28	240	0.22 0.25 0.28	250	0.18 0.20 0.22	
						Upon request								
						Upon request								

Alternative inserts				
size	Insert		for workpiece material ● main area of application ◐ suitable in some cases	
	Order No.	ISO-Code		
			P M K N S H	
for better chip control	W.18...	W83 18130.088425	SOEX 060308-13 BK8425	●
		W83 18130.087935	SOEX 060308-13 BK7935	◐
		W83 18210.087710	SOEX 060308-21 BK7710	●
	W.23...	W83 23130.088425	SOEX 07T308-13 BK8425	●
		W83 23030.088430	SOEX 07T308-03 BK8430	●
		W83 23130.087935	SOEX 07T308-13 BK7935	◐
		W83 23210.087710	SOEX 07T308-21 BK7710	●
	W.32...	W83 32130.088425	SOEX 090408-13 BK8425	●
		W83 32030.088430	SOEX 090408-03 BK8430	●
		W83 32130.087935	SOEX 090408-13 BK7935	◐
		W83 32210.087710	SOEX 090408-21 BK7710	●
	W.39...	W83 39130.088425	SOEX 110508-13 BK8425	●
W83 39130.087935		SOEX 110508-13 BK7935	◐	
W83 39210.087710		SOEX 110508-21 BK7710	●	
W.44...	W83 44130.088425	SOEX 120508-13 BK8425	●	
	W83 44030.088430	SOEX 120508-03 BK8430	●	
	W83 44130.087935	SOEX 120508-13 BK7935	◐	
	W83 44210.087710	SOEX 120508-21 BK7710	●	

Alternative inserts				
size	Insert		for workpiece material ● main area of application ◐ suitable in some cases	
	Order No.	ISO-Code		
			P M K N S H	
for higher cutting speed	W.18...	W83 18130.086420	SOEX 060308-13 BK6420	●
		W83 18130.0874	SOEX 060308-13 BK74	◐
		W83 18210.086130	SOEX 060308-21 BK6130	●
	W.23...	W83 23010.086420	SOEX 07T308-01 BK6420	●
		W83 23210.086130	SOEX 07T308-21 BK6130	●
		W83 23000.0174	SOEX 07T308-01 BK74	◐
		W83 23000.016115	SOEX 07T308-01 BK6115	●
	W.32...	W83 32010.086420	SOEX 090408-01 BK6420	●
		W83 32210.086130	SOEX 090408-21 BK6130	●
		W83 32000.1574	SOEX 090408-01 BK74	◐
		W83 32000.156115	SOEX 090408-01 BK6115	●
	W.39...	W83 39130.086420	SOEX 110508-13 BK6420	●
W83 39210.086130		SOEX 110508-21 BK6130	●	
W.44...	W83 44010.086420	SOEX 120508-01 BK6420	●	
	W83 44210.086130	SOEX 120508-21 BK6130	●	
	W83 44000.1874	SOEX 120508-01 BK74	◐	
	W83 44000.186115	SOEX 120508-01 BK6115	●	
for greater strength	W.18...	W83 18130.088425	SOEX 060308-13 BK8425	●
		W83 18130.087935	SOEX 060308-13 BK7935	◐
	W.23...	W83 23010.088425	SOEX 07T308-01 BK8425	●
		W83 23010.087935	SOEX 07T308-01 BK7935	◐
	W.32...	W83 32010.088425	SOEX 090408-01 BK8425	●
		W83 32010.087935	SOEX 090408-01 BK7935	◐
	W.39...	W83 39130.088425	SOEX 110508-13 BK8425	●
		W83 39130.087935	SOEX 110508-13 BK7935	◐
	W.44...	W83 44010.088425	SOEX 120508-01 BK8425	●
		W83 44010.087935	SOEX 120508-01 BK7935	◐

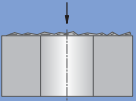

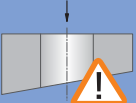
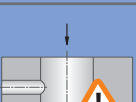
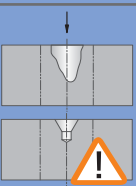
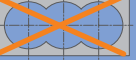
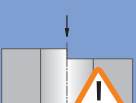
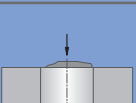
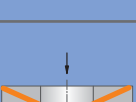

Entering and exiting bore

- Before the tool is backed out of the bore, the exact position must be determined.
- Back out with stationary spindle or with approx. 50-150 rpm.
- Clean bore.
- Enter with stationary spindle up to 0.8 mm before the bottom of the bore. Center drill must be in the existing bore.
- Turn on spindle and feed at 50% of the cutting values; when cutting edges fully engage again, increase to 100%.



Safety notes!

The application details given depend on the environmental and application conditions (i.e. machine, ambient temperature, lubricant/coolant used and machining result required): they are based on the correct application conditions, correct use and compliance with the spindle speed limits given for the tools.

-
1.  **Starting on uneven surfaces (cast surfaces)**
- possible in principle
 - reduce feed rate when starting bore
-
2.  **Starting on angled surfaces**
- surface for starting bore must be spot faced beforehand
 - avoid chip jams on drill shank
-
3.  **Angled bore exit**
- possible under certain conditions
 - reduce feed rate if necessary
 - drilling angle max. 3°
-
4.  **Starting on curved surfaces**
- centered boring can be started with reduced feed rate
 - spot facing is required if the point for starting the bore is outside the radius centre
-
5.  **Drilling through a cross bore**
- halve feed rate at interruption
 - cross bore max. 1/3 of bore diameter
 - off-center cross bore not possible
-
6.  **Starting on a groove or large centering bore**
- surface for starting bore must be spot faced beforehand
 - reduce feed rate if necessary
-
7.  **Drilling a chamber**
- not possible
-
8.  **Starting on an edge**
- not possible
 - surface for starting bore must be spot faced beforehand
 - avoid chip jams on drill shank
-
9.  **Starting on a welded seam**
- reduce feed rate when starting bore
 - face beforehand if necessary
-
10.  **Drilling through stacked plates**
- not possible
-
11.  **Backing out of the bore**
- tool 9xD swings up at bore exit
 - back out of the bore with greatly reduced speed to avoid any development of chatter marks
-
12.  **Adjustable**
- not adjustable, fixed diameter
 - intermediate dimensions on request
-

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