



MASTER CATALOG **2018**

VOLUME TWO | **ROTATING TOOLS**



HOLEMAKING | TAPPING | SOLID END MILLING | INDEXABLE MILLING

➤ Drills for Machining of CFRP-Metal Stack Materials

Primary Application

The all new stack drill tackles CFRP-metal stack material drilling operations in diameter ranges of 4,763–15,875mm (3/16–5/8"). The drill can be applied in all combinations of stacks: CFRP-Ti-Al as well as CFRP-Ti, CFRP-Al, and also straight Ti or Al. Operate these drills with standard through coolant, MQL, or even dry.

The new Kennametal B55_DAL solid carbide drill provides excellent hole quality in combination with extended tool life, especially for customers in the aerospace industry who require the best hole quality and cost savings in an increasing number of applications with CFRP-Ti-stack materials.

The new Kennametal PDC251_ drill provides outstanding wear resistance and tool life. Thanks to the PCD tip, the PDC251_ drill withstands the most abrasive CFRP materials with high-fiber content. It is available in diameter ranges of 4,763–12,7mm (3/16–1/2"). Best performance is achieved with automated rigid machining devices. Additionally, multiple regrinds are possible.

Features and Benefits

Double-Angle Point Design

- Sharp cutting edge to cleanly cut CFRPs as top layer in CFRP-metal stacks.
- Bur-free when exiting metal side of stack.
- Excellent centering capabilities.

KN15™ Beyond™ Grade

- The highly polished surface ensures superior chip evacuation, even when MQL coolant is applied.
- The grade is a specified, uncoated 9% Co fine-grain carbide.

KD1415™ Grade

- Polycrystalline diamond grade for high wear resistance.
- Sufficient toughness for Ti- or Al-metal layers.

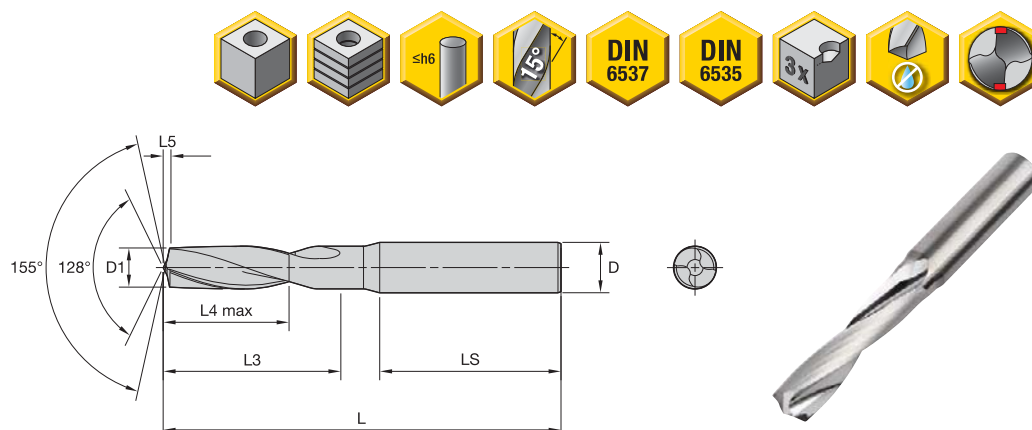


k6 Tolerance

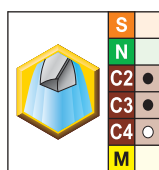
- The drill diameter is ground to a k6 tolerance and can achieve hole tolerances of H8.

Customization

- Intermediate diameters available as semi-standards.
- Length variations and step drills, as well as shank variations, available as custom solutions for carbide and PCD versions.
- A four-margin land design for increased stability is available as semi-standard B54_DAL.



■ B551A_DAL • ~3 x D



● first choice

○ alternate choice

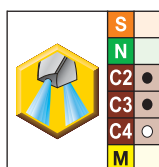
short • KN15	D1 diameter			L	L3	L4 max	L5	LS	D
	mm	in	fraction						
B551A04763DAL *	4,763	.1875	3/16	66	28	20	0,8	36	6
B551A06350DAL	6,350	.2500	1/4	79	34	24	1,1	36	8
B551A07938DAL	7,938	.3125	5/16	79	41	29	1,4	36	8
B551A09525DAL	9,525	.3750	3/8	89	47	35	1,7	40	10
B551A11113DAL *	11,113	.4375	7/16	102	55	40	2,0	45	12
B551A12700DAL *	12,700	.5000	1/2	107	60	43	2,3	45	14
B551A14288DAL *	14,288	.5625	9/16	115	65	45	2,5	48	16
B551A15875DAL *	15,875	.6250	5/8	115	65	45	2,8	48	16

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

DAL Drills • CFRP-Ti-Stacks • Through Coolant



■ B556A_DAL • ~3 x D



● first choice

○ alternate choice

short • KN15	D1 diameter			L	L3	L4 max	L5	LS	D
	mm	in	fraction						
B556A04763DAL *	4,763	.1875	3/16	66	28	20	0,8	36	6
B556A04826DAL	4,826	.1900	—	66	28	20	0,9	36	6
B556A06350DAL	6,350	.2500	1/4	79	34	24	1,1	36	8
B556A06375DAL *	6,375	.2510	—	79	34	24	1,1	36	8
B556A07938DAL	7,938	.3125	5/16	79	41	29	1,4	36	8
B556A09525DAL *	9,525	.3750	3/8	89	47	35	1,7	40	10
B556A11113DAL *	11,113	.4375	7/16	102	55	40	2,0	45	12
B556A12700DAL *	12,700	.5000	1/2	107	60	43	2,3	45	14
B556A14288DAL *	14,288	.5625	9/16	115	65	45	2,5	48	16
B556A15875DAL *	15,875	.6250	5/8	115	65	45	2,8	48	16

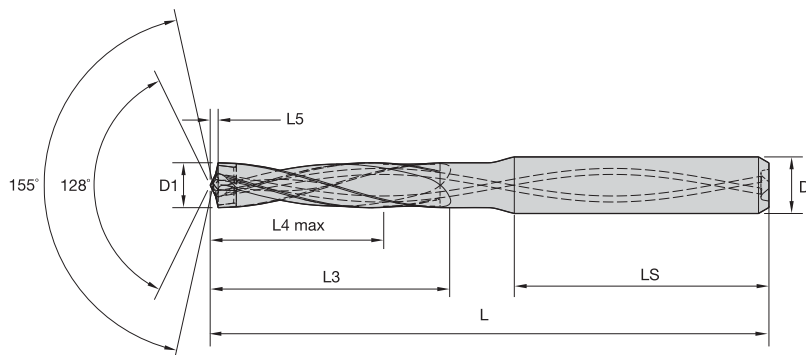
NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

■ Stack Drill • B551/B541 Series • Grade KN15™ • Dry • Drill Diameters 3–20mm (.1181–.7874")

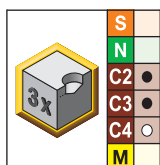
Material Group													
		Cutting Speed — vc			Metric								
		Range — m/min			Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
C	2	15	80	120	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
	3	10	10	15	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
	4	10	15	25	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
Material Group		Cutting Speed — vc			Inch								
		Range — SFM			Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
C	2	50	260	390	IPR	.000–.002	.001–.003	.001–.004	.002–.005	.002–.006	.002–.007	.002–.008	.003–.009
	3	30	30	50	IPR	.001–.002	.001–.003	.001–.004	.002–.005	.002–.006	.002–.007	.002–.008	.003–.009
	4	30	50	80	IPR	.001–.002	.001–.003	.001–.004	.002–.005	.002–.006	.002–.007	.002–.008	.003–.009

■ Stack Drill • B556/B546 Series • Grade KN15 • Through Coolant • Drill Diameters 3–20mm (.1181–.7874")

Material Group													
		Cutting Speed — vc			Metric								
		Range — m/min			Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
C	2	15	120	150	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
	3	10	15	25	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
	4	10	25	50	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
Material Group		Cutting Speed — vc			Inch								
		Range — SFM			Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
C	2	50	390	490	IPR	.000–.002	.001–.003	.001–.004	.002–.005	.002–.006	.002–.007	.002–.008	.003–.009
	3	30	50	80	IPR	.001–.002	.001–.003	.001–.004	.002–.005	.002–.006	.002–.007	.002–.008	.003–.009
	4	30	80	160	IPR	.001–.002	.001–.003	.001–.004	.002–.005	.002–.006	.002–.007	.002–.008	.003–.009



■ PCD Twist Drill • PDC251 Series • ~3 x D



- first choice
- alternate choice

KD1415	D1 diameter			L	L3	L4 max	L5	LS	D
	mm	in	fraction						
PDC251A04763DA	4,7630	0.188	3/16	66	28	20	0,8	36	6
PDC251A06350DA	6,3500	0.250	1/4	79	34	24	1,1	36	8
PDC251A07938DA *	7,9380	0.313	5/16	79	41	29	1,4	36	8
PDC251A09525DA *	9,5250	0.375	3/8	89	47	35	1,7	40	10
PDC251A11113DA *	11,1130	0.438	7/16	102	55	40	2,0	45	12
PDC251A12700DA *	12,7000	0.500	1/2	107	60	43	2,3	45	14

NOTE: *Made-to-order standard item. Standard pricing, manufacturing lead time, and minimum order quantity applies.

Tolerance • Metric		
nominal size range	D1 tolerance k6	D tolerance h6
>3-6	0,001/0,009	0,000/-0,008
>6-10	0,001/0,010	0,000/-0,009
>10-18	0,001/0,012	0,000/-0,011
>18-25,4	0,002/0,015	0,000/-0,013

Tolerance • Inch		
nominal size range	D1 tolerance k6	D tolerance h6
>.1181-.2362	.0000/.0004	.0000/-0.0003
>.2362-.3937	.0000/.0004	.0000/-0.0004
>.3937-.7087	.0000/.0005	.0000/-0.0004
>.7087-1.0000	.0000/.0006	.0000/-0.0005

C2	CFRP/Aluminum
C3	CFRP/Titanium
C4	CFRP/Stainless Steel

■ Stack Drill • PDC25 Series • Grade KD1415™ • Dry • Drill Diameters 3–20mm (.1181–.7874")

Material Group													
		Cutting Speed — vc			Metric								
		Range — m/min			Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
C	2	15	80	120	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
	3	10	10	15	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
	4	10	15	25	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
Material Group		Cutting Speed — vc			Inch								
		Range — SFM			Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
C	2	50	260	390	IPR	.000–.002	.001–.003	.001–.004	.002–.005	.002–.006	.002–.007	.002–.008	.003–.009
	3	30	30	50	IPR	.001–.002	.001–.003	.001–.004	.002–.005	.002–.006	.002–.007	.002–.008	.003–.009
	4	30	50	80	IPR	.001–.002	.001–.003	.001–.004	.002–.005	.002–.006	.002–.007	.002–.008	.003–.009

■ Stack Drill • PDC251 Series • Grade KD1415 • Through Coolant • Drill Diameters 3–20mm (.1181–.7874")

													
		Cutting Speed — vc			Metric								
		Range — m/min			Recommended Feed Rate (f) by Diameter								
Material Group		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
C	2	15	120	150	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
	3	10	15	25	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
	4	10	25	50	mm/r	0,01–0,05	0,02–0,07	0,03–0,10	0,04–0,12	0,05–0,15	0,05–0,18	0,06–0,21	0,07–0,23
Material Group		Cutting Speed — vc			Inch								
		Range — SFM			Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		1/8 .125	3/16 .188	1/4 .250	5/16 .313	3/8 .375	1/2 .500	5/8 .625	3/4 .750
C	2	50	390	490	IPR	.000–.002	.001–.003	.001–.004	.002–.005	.002–.006	.002–.007	.002–.008	.003–.009
	3	30	50	80	IPR	.001–.002	.001–.003	.001–.004	.002–.005	.002–.006	.002–.007	.002–.008	.003–.009
	4	30	80	160	IPR	.001–.002	.001–.003	.001–.004	.002–.005	.002–.006	.002–.007	.002–.008	.003–.009