FB Drills with Through Coolant for Flat-Bottom Applications

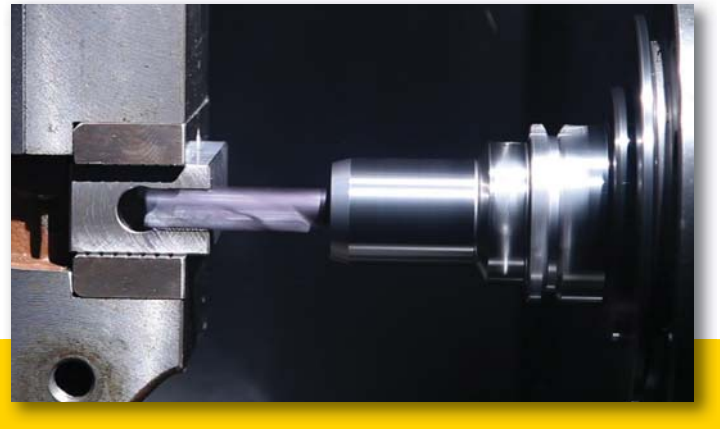
Primary Application

B707_FB series solid carbide drills are productivity tools that combine two operations in one:

1) Eliminate the 180° end mill in flat-bottom drilling or when preparing an inclined or curved surface for drilling.

2) After full cylindrical engagement, the drill runs at normal solid carbide drilling parameters.

The B707_FBS Series with the new uncoated KN15™ grade now offers the same advantages for drilling in non-ferrous materials, such as aluminium, copper, and brass. The 707_FBL Series is designed for applications in stainless steel and high-temperature alloys.



Features and Benefits

Unique FB Drill-Point Design

- Two effective cutting edges over centre enable high feed rates.
- Creates a true flat-bottom hole from O.D. to centre.
- Four-margin land design improves hole straightness and roundness and provides good alignment, even when drilling cross holes.

Straight Cutting Edge

- Guarantees a true 180° hole ground.
- Rake angle correction improves chip control.

KC7315™ Grade on B707_FBG

- Enables high drill-like penetration rates and superior tool life in steel and iron materials.

KN15 Grade on B707_FBS

- The uncoated grade prevents built-up edge reducing the risk of fracture.
- The highly polished surfaces ensure superior chip evacuation even when low-pressure coolant or MQL is applied.

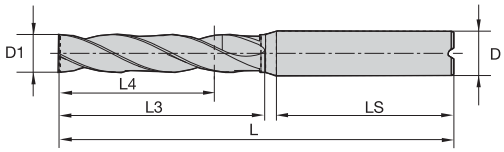
KCMS15™ Grade on B707_FBL

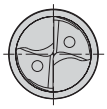
- AlTiN-based PVD coating for the demands of stainless steels.
- Edge preparation with a light hone.

Productivity tools that combine two operations in one.

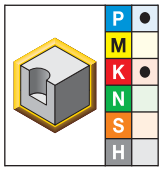
Customisation

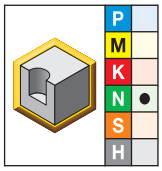
- Intermediate diameters available as semi-standards.
- Length variations available as semi-standard:
  - B706_ 1.5 x D
  - B708_ 5 x D
  - B709_ 8 x D
- Other length variations and step drills are available as engineered solutions.

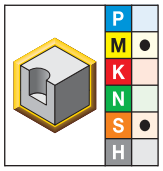




B707_FBG/FBS/FBL • ~3 x D





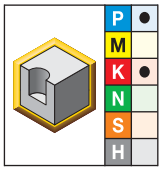


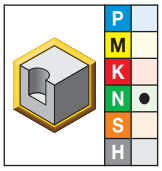
● first choice
○ alternate choice

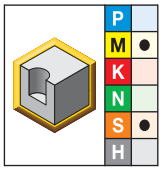
B707A-FBG • KC7315	B707A-FBS • KN15	B707A-FBL • KCMS15	D1 diameter mm	D1 diameter in	L	L3	L4 max	LS	D
B707A03000FBG	B707A03000FBS	B707A03000FBL	3,000	.1181	62	20	14	36	6
B707A03175FBG	B707A03175FBS	B707A03175FBL	3,175	.1250	62	20	14	36	6
B707A03500FBG	B707A03500FBS	B707A03500FBL	3,500	.1378	62	20	14	36	6
B707A03700FBG	–	–	3,700	.1457	62	20	14	36	6
–	–	B707A03800FBL	3,800	.1496	66	24	17	36	6
B707A03970FBG	–	–	3,970	.1563	66	24	17	36	6
B707A04000FBG	B707A04000FBS	B707A04000FBL	4,000	.1575	66	24	17	36	6
B707A04200FBG	B707A04200FBS	–	4,200	.1654	66	24	17	36	6
B707A04400FBG	B707A04400FBS	B707A04400FBL	4,400	.1732	66	24	17	36	6
B707A04500FBG	B707A04500FBS	B707A04500FBL	4,500	.1772	66	24	17	36	6
B707A04763FBG	–	–	4,763	.1875	66	28	20	36	6
B707A04800FBG	B707A04800FBS	B707A04800FBL	4,800	.1890	66	28	20	36	6
B707A04900FBG	B707A04900FBS *	–	4,900	.1929	66	28	20	36	6
B707A05000FBG	B707A05000FBS	B707A05000FBL	5,000	.1969	66	28	20	36	6
B707A05200FBG	–	–	5,200	.2047	66	28	20	36	6
B707A05560FBG	B707A05560FBS	B707A05560FBL	5,560	.2189	66	28	20	36	6
B707A05800FBG	–	–	5,800	.2283	66	28	20	36	6
B707A05900FBG	B707A05900FBS	B707A05900FBL	5,900	.2323	66	28	20	36	6
B707A06000FBG	B707A06000FBS	B707A06000FBL	6,000	.2362	66	28	20	36	6
B707A06100FBG	–	–	6,100	.2402	79	34	24	36	8
B707A06350FBG	B707A06350FBS	B707A06350FBL	6,350	.2500	79	34	24	36	8
B707A06500FBG	B707A06500FBS	B707A06500FBL	6,500	.2559	79	34	24	36	8
B707A06800FBG	B707A06800FBS	B707A06800FBL	6,800	.2677	79	34	24	36	8
B707A07000FBG	B707A07000FBS	B707A07000FBL	7,000	.2756	79	34	24	36	8
B707A07145FBG	–	–	7,145	.2813	79	41	29	36	8
–	B707A07400FBS	–	7,400	.2913	79	41	29	36	8
B707A07500FBG	B707A07500FBS	B707A07500FBL	7,500	.2953	79	41	29	36	8
B707A07800FBG	–	–	7,800	.3071	79	41	29	36	8
B707A07938FBG	B707A07938FBS	B707A07938FBL	7,938	.3125	79	41	29	36	8
B707A08000FBG	B707A08000FBS	B707A08000FBL	8,000	.3150	79	41	29	36	8
B707A08334FBG	–	–	8,334	.3281	89	47	35	40	10
B707A08500FBG	B707A08500FBS	B707A08500FBL	8,500	.3346	89	47	35	40	10

(continued)

(B707_FBG/FBS/FBL • ~3 x D — continued)







● first choice
○ alternate choice

B707A-FBG • KC7315	B707A-FBS • KN15	B707A-FBL • KCMS15	D1 diameter mm	D1 diameter in	L	L3	L4 max	LS	D
B707A08800FBG	B707A08800FBS	B707A08800FBL	8,800	.3465	89	47	35	40	10
B707A09000FBG	B707A09000FBS	B707A09000FBL	9,000	.3543	89	47	35	40	10
B707A09129FBG	–	–	9,129	.3594	89	47	35	40	10
B707A09500FBG	B707A09500FBS	B707A09500FBL	9,500	.3740	89	47	35	40	10
B707A09525FBG	B707A09525FBS	B707A09525FBL	9,525	.3750	89	47	35	40	10
B707A09800FBG	–	–	9,800	.3858	89	47	35	40	10
B707A10000FBG	B707A10000FBS	B707A10000FBL	10,000	.3937	89	47	35	40	10
B707A10200FBG	–	–	10,200	.4016	102	55	40	45	12
B707A10320FBG	B707A10320FBS	B707A10320FBL	10,320	.4063	102	55	40	45	12
B707A10500FBG	B707A10500FBS	B707A10500FBL	10,500	.4134	102	55	40	45	12
B707A10600FBG	–	–	10,600	.4173	102	55	40	45	12
B707A10800FBG	–	–	10,800	.4252	102	55	40	45	12
B707A11000FBG	B707A11000FBS	B707A11000FBL	11,000	.4331	102	55	40	45	12
B707A11111FBG	B707A11111FBS	B707A11111FBL	11,111	.4374	102	55	40	45	12
B707A11350FBG	–	–	11,350	.4469	102	55	40	45	12
B707A11509FBG	B707A11509FBS	B707A11509FBL	11,509	.4531	102	55	40	45	12
B707A11570FBG	B707A11570FBS *	B707A11570FBL	11,570	.4555	102	55	40	45	12
B707A11700FBG	B707A11700FBS	B707A11700FBL	11,700	.4606	102	55	40	45	12
B707A11800FBG	B707A11800FBS	B707A11800FBL	11,800	.4646	102	55	40	45	12
B707A11908FBG	–	–	11,908	.4688	102	55	40	45	12
B707A12000FBG	B707A12000FBS	B707A12000FBL	12,000	.4724	102	55	40	45	12
B707A12100FBG	B707A12100FBS	B707A12100FBL	12,100	.4764	107	60	43	45	14
B707A12500FBG	B707A12500FBS	B707A12500FBL *	12,500	.4921	107	60	43	45	14
B707A12600FBG *	–	–	12,600	.4961	107	60	43	45	14
B707A12700FBG	B707A12700FBS	B707A12700FBL	12,700	.5000	107	60	43	45	14
B707A12800FBG	B707A12800FBS	B707A12800FBL	12,800	.5039	107	60	43	45	14
B707A13000FBG	B707A13000FBS	B707A13000FBL	13,000	.5118	107	60	43	45	14
B707A13500FBG	B707A13500FBS	B707A13500FBL	13,500	.5315	107	60	43	45	14
B707A14000FBG	B707A14000FBS	B707A14000FBL	14,000	.5512	107	60	43	45	14
B707A14288FBG	B707A14288FBS	B707A14288FBL	14,288	.5625	115	65	45	48	16
B707A14500FBG	B707A14500FBS	B707A14500FBL	14,500	.5709	115	65	45	48	16
B707A15000FBG	B707A15000FBS	B707A15000FBL	15,000	.5906	115	65	45	48	16
B707A15250FBG	B707A15250FBS	B707A15250FBL *	15,250	.6004	115	65	45	48	16
B707A15500FBG	B707A15500FBS	B707A15500FBL	15,500	.6102	115	65	45	48	16
B707A15875FBG	B707A15875FBS	B707A15875FBL	15,875	.6250	115	65	45	48	16
B707A16000FBG	B707A16000FBS	B707A16000FBL	16,000	.6299	115	65	45	48	16
B707A16500FBG	B707A16500FBS	B707A16500FBL	16,500	.6496	123	73	51	48	18
B707A17000FBG	B707A17000FBS	B707A17000FBL	17,000	.6693	123	73	51	48	18
B707A17463FBG	–	–	17,463	.6875	123	73	51	48	18
B707A17500FBG	B707A17500FBS	B707A17500FBL	17,500	.6890	123	73	51	48	18
–	–	B707A17900FBL	17,900	.7047	123	73	51	48	18
B707A18000FBG	B707A18000FBS	B707A18000FBL	18,000	.7087	123	73	51	48	18
B707A18500FBG	–	–	18,500	.7283	131	79	55	50	20
B707A19000FBG	B707A19000FBS	B707A19000FBL *	19,000	.7480	131	79	55	50	20
B707A19050FBG	B707A19050FBS	B707A19050FBL *	19,050	.7500	131	79	55	50	20
B707A20000FBG	B707A20000FBS	B707A20000FBL	20,000	.7874	131	79	55	50	20
B707A21000FBG	B707A21000FBS	B707A21000FBL	21,000	.8268	141	86	60	50	20

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

Tolerance • Metric

nominal size range	D1 tolerance m7	D tolerance h6
>3–6	0,004/0,016	0,000/-0,008
>6–10	0,006/0,021	0,000/-0,009
>10–18	0,007/0,025	0,000/-0,011
>18–25,4	0,008/0,029	0,000/-0,013

Flat-Bottom Drills • B707_FBG Series • Grade KC7315™ • Through Coolant • Drill Diameters 3–20mm • Metric

Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	0	100	**133**	170	mm/r	0,06–0,14	0,10–0,17	0,09–0,20	0,11–0,25	0,18–0,28	0,14–0,31	0,16–0,37	0,19–0,42
	1	100	**133**	170	mm/r	0,07–0,16	0,12–0,20	0,10–0,23	0,13–0,29	0,21–0,33	0,17–0,37	0,19–0,44	0,22–0,49
	2	130	**150**	180	mm/r	0,07–0,13	0,10–0,16	0,16–0,19	0,13–0,23	0,18–0,27	0,17–0,30	0,19–0,35	0,22–0,39
	3	80	**106**	130	mm/r	0,09–0,16	0,13–0,20	0,13–0,23	0,16–0,24	0,20–0,31	0,21–0,37	0,25–0,44	0,28–0,46
	4	70	**98**	130	mm/r	0,08–0,16	0,12–0,19	0,11–0,22	0,14–0,27	0,21–0,31	0,18–0,35	0,21–0,41	0,24–0,46
	6	70	**98**	130	mm/r	0,07–0,12	0,10–0,14	0,10–0,16	0,12–0,20	0,16–0,23	0,16–0,26	0,18–0,31	0,21–0,34
K	1	70	**85**	100	mm/r	0,09–0,17	0,13–0,21	0,12–0,25	0,15–0,31	0,23–0,35	0,20–0,39	0,23–0,46	0,26–0,52
	2	100	**113**	130	mm/r	0,09–0,15	0,12–0,18	0,12–0,21	0,15–0,26	0,21–0,30	0,20–0,33	0,23–0,39	0,26–0,44
	3	70	**105**	140	mm/r	0,07–0,13	0,10–0,16	0,11–0,19	0,13–0,23	0,18–0,27	0,17–0,30	0,20–0,35	0,22–0,37

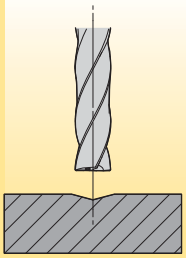
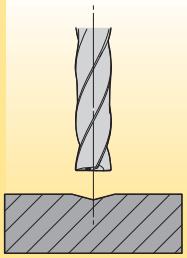
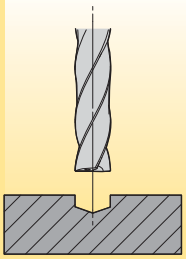
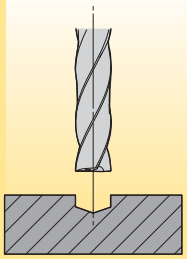
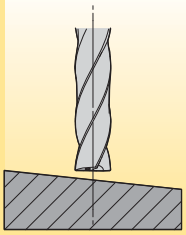
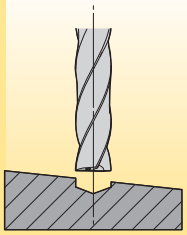
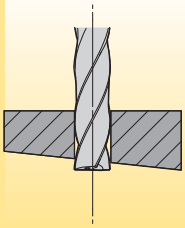
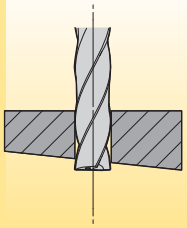
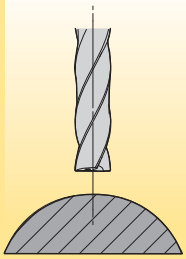
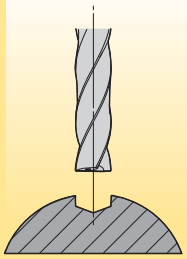
Flat-Bottom Drills • B707_FBS Series • Grade KN15™ • Through Coolant • Drill Diameters 3–20mm • Metric

Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
N	1	120	**260**	400	mm/r	0,07–0,20	0,08–0,22	0,13–0,34	0,14–0,40	0,15–0,44	0,17–0,46	0,19–0,50	0,22–0,58
	2	120	**250**	280	mm/r	0,08–0,20	0,08–0,22	0,09–0,34	0,14–0,40	0,15–0,44	0,19–0,46	0,21–0,50	0,24–0,58
	3	100	**200**	260	mm/r	0,08–0,15	0,08–0,16	0,09–0,22	0,15–0,26	0,16–0,30	0,20–0,37	0,22–0,42	0,26–0,46
	4	60	**150**	200	mm/r	0,03–0,05	0,03–0,06	0,03–0,06	0,04–0,06	0,05–0,07	0,05–0,08	0,05–0,08	0,06–0,09

Flat-Bottom Drills • B707_FBL Series • Grade KCMS15™ • Through Coolant • Drill Diameters 3–20mm • Metric

Material Group		Cutting Speed — vc Range — m/min min	Starting Value	max	Metric Recommended Feed Rate (f) by Diameter	3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
P	5	45	**50**	60	mm/r	0,04–0,08	0,05–0,09	0,06–0,12	0,09–0,15	0,10–0,16	0,12–0,20	0,14–0,23	0,16–0,24
	6	40	**50**	60	mm/r	0,03–0,06	0,04–0,07	0,04–0,10	0,08–0,12	0,09–0,14	0,10–0,16	0,12–0,18	0,14–0,20
M	1	40	**50**	60	mm/r	0,04–0,08	0,05–0,09	0,06–0,12	0,09–0,15	0,10–0,16	0,12–0,20	0,14–0,23	0,16–0,24
	2	40	**50**	80	mm/r	0,06–0,11	0,07–0,11	0,08–0,16	0,12–0,20	0,13–0,21	0,16–0,22	0,18–0,24	0,21–0,26
	3	40	**55**	70	mm/r	0,03–0,04	0,03–0,05	0,04–0,06	0,04–0,07	0,05–0,08	0,06–0,10	0,07–0,11	0,08–0,12
S	1	20	**25**	30	mm/r	0,06–0,08	0,06–0,08	0,07–0,10	0,10–0,13	0,10–0,14	0,12–0,16	0,14–0,19	0,17–0,22
	2	10	**20**	30	mm/r	0,05–0,07	0,05–0,07	0,06–0,08	0,08–0,11	0,09–0,12	0,10–0,13	0,12–0,16	0,14–0,18
	3	30	**35**	50	mm/r	0,03–0,05	0,03–0,05	0,04–0,08	0,05–0,10	0,05–0,10	0,05–0,10	0,07–0,11	0,08–0,12
	4	30	**35**	50	mm/r	0,03–0,05	0,03–0,05	0,04–0,08	0,05–0,10	0,05–0,10	0,05–0,10	0,07–0,11	0,08–0,12

The B707_FBG drill eliminates the traditional two-step process to create a flat-bottom hole using a drill and an end mill and can perform the operation 25–40% faster. It also eliminates the two-step process of using an end mill to pre-machine a flat on the workpiece material for inclined surfaces.

Workpiece Application	B707A..FBG Standard Length	B708/B709A..FBG Custom Long Length
• Tapped hole with lead chamfer larger than FBG diameter.	 No feed reduction.	 50% feed reduction.
• Nominal diameter pilot required.	 Rough or hardened surfaces. No feed reduction.	 Pilot on all surfaces. No feed reduction.
• >6° angled entrances.	 Reduce feed by 30% until full diameter, or use pilot.	 Pilot with short FBG on all surfaces. No feed reduction.
• Angled exits.	 30% feed reduction.	 30% feed reduction.
• Round surfaces.	 Reduce feed by 30% until full diameter, or use pilot.	 Pilot with short FBG on all surfaces. No feed reduction.