



MASTER CATALOG **2018**

VOLUME TWO | **ROTATING TOOLS**



HOLEMAKING | TAPPING | SOLID END MILLING | INDEXABLE MILLING

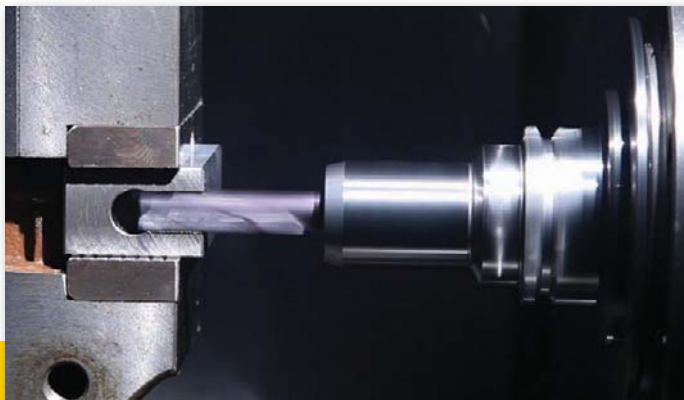
➤ FB Drills with Through Coolant for Flat-Bottom Applications

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 uncoated KN15™ grade offers the same advantages for drilling in non-ferrous materials, such as aluminum, copper, and brass. The B707_FBL series with the new KCMS15™ grade was optimized for applications in stainless steel and high-temperature alloys.



Features and Benefits

Unique FB Drill-Point Design

- Two effective cutting edges over center enable high feed rates.
- Creates a true flat-bottom hole from O.D. to center.
- 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

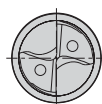
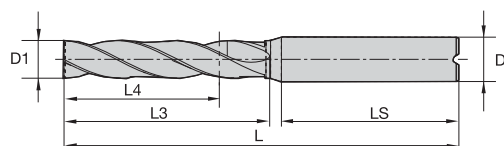
- AlTiN-based PVD coating for the demands of stainless steels.
- Edge preparation with a light hone.

Productivity tools that combine two operations in one.

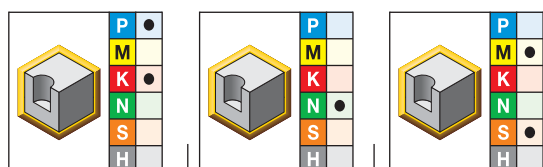


Customization

- 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

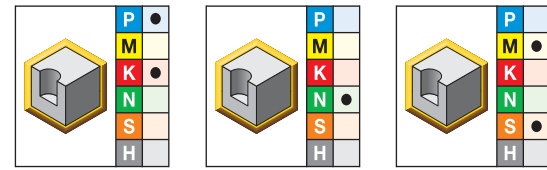


- first choice
- alternate choice

			D1 diameter								
B707A-FBG • KC7315	B707A-FBS • KN15	B707A-FBL • KCMS15	mm	in	fraction	wire size	L	L3	L4 max	LS	D
B707A03000FBG	B707A03000FBS	B707A03000FBL	3,000	.1181	—	—	62	20	14	36	6
B707A03175FBG	B707A03175FBS	B707A03175FBL	3,175	.1250	1/8	—	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	5/32	—	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	3/16	—	66	28	20	36	6
B707A04800FBG	B707A04800FBS	B707A04800FBL	4,800	.1890	—	12	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	1/4	—	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

(continued)

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



- first choice
- alternate choice

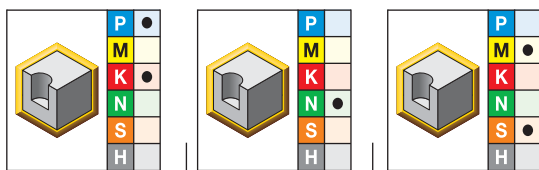
D1 diameter

B707A-FBG • KC7315	B707A-FBS • KN15	B707A-FBL • KCMS15	D1 diameter				L	L3	L4 max	LS	D
			mm	in	fraction	wire size					
B707A07145FBG	—	—	7,145	.2813	9/32	—	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	5/16	—	79	41	29	36	8
B707A08000FBG	B707A08000FBS	B707A08000FBL	8,000	.3150	—	—	79	41	29	36	8
B707A08334FBG	—	—	8,334	.3281	21/64	—	89	47	35	40	10
B707A08500FBG	B707A08500FBS	B707A08500FBL	8,500	.3346	—	—	89	47	35	40	10
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	23/64	—	89	47	35	40	10
B707A09500FBG	B707A09500FBS	B707A09500FBL	9,500	.3740	—	—	89	47	35	40	10
B707A09525FBG	B707A09525FBS	B707A09525FBL	9,525	.3750	3/8	—	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	13/32	—	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	29/64	—	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	15/32	—	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	1/2	—	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	9/16	—	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

(continued)

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

Solid Carbide Drills



- first choice
- alternate choice

			D1 diameter								
B707A-FBG • KC7315	B707A-FBS • KN15	B707A-FBL • KCMS15	mm	in	fraction	wire size	L	L3	L4 max	LS	D
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	5/8	—	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	11/16	—	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	3/4	—	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

Tolerance • Inch		
nominal size range	D1 tolerance m7	D tolerance h6
>.1181–.2362	.0002/.0006	.0000/- .0003
>.2362–.3937	.0002/.0008	.0000/- .0004
>.3937–.7087	.0003/.0010	.0000/- .0004
>.7087–1.0000	.0003/.0011	.0000/- .0005

■ Flat-Bottom Drills • B707_FBG Series • Grade KC7315™ • 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
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
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
P	0	330	440	560	IPR	.002–.006	.004–.007	.004–.008	.004–.010	.007–.011	.006–.012	.006–.015	.008–.017
	1	330	440	560	IPR	.003–.006	.005–.008	.004–.009	.005–.011	.008–.013	.007–.015	.008–.017	.009–.019
	2	430	490	590	IPR	.003–.005	.004–.006	.006–.008	.005–.009	.007–.011	.007–.012	.008–.014	.009–.015
	3	260	350	430	IPR	.004–.006	.005–.008	.005–.009	.006–.009	.008–.012	.008–.015	.010–.017	.011–.018
	4	230	320	430	IPR	.003–.006	.005–.008	.004–.009	.006–.011	.008–.012	.007–.014	.008–.016	.009–.018
	6	230	320	430	IPR	.003–.005	.004–.006	.004–.006	.005–.008	.006–.009	.006–.010	.007–.012	.008–.013
K	1	230	280	330	IPR	.004–.007	.005–.008	.005–.010	.006–.012	.009–.014	.008–.015	.009–.018	.010–.021
	2	330	370	430	IPR	.004–.006	.005–.007	.005–.008	.006–.010	.008–.012	.008–.013	.009–.015	.010–.017
	3	230	340	460	IPR	.003–.005	.004–.006	.004–.008	.005–.009	.007–.011	.007–.012	.008–.014	.009–.015

■ Flat-Bottom Drills • B707_FBS Series • Grade KN15™ • Through Coolant •
 Drill Diameters 3–20mm (.1181–.7874")

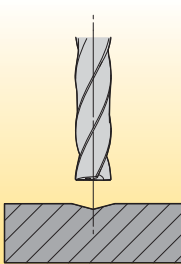
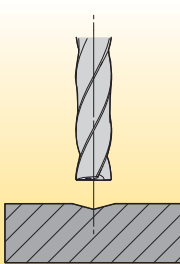
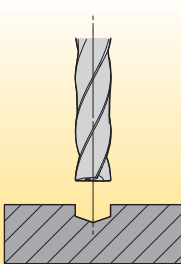
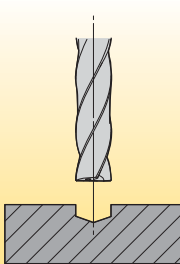
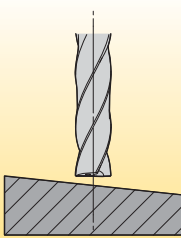
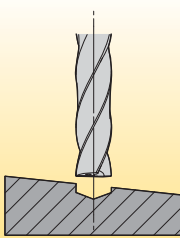
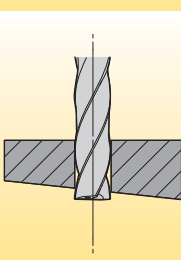
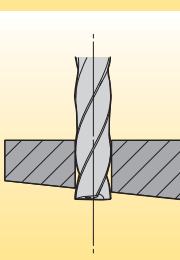
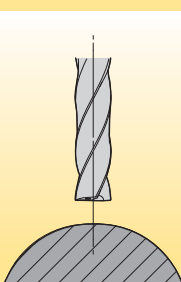
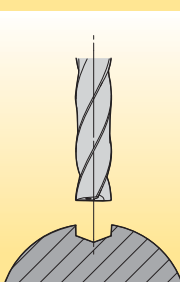
Material Group													
		Cutting Speed – vc			Metric								
		Range – m/min			Recommended Feed Rate (f) by Diameter								
		min	Starting Value	max		3,0	4,0	6,0	8,0	10,0	12,0	16,0	20,0
N	1	120	260	400	mm/r	0,07–0,20	0,08–0,22	0,13–0,34	0,14–0,40	0,15–0,44	0,17–0,46	0,19–0,50	0,22–0,58
	2	120	250	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
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
N	1	390	850	1310	IPR	.003–.008	.003–.009	.005–.013	.006–.016	.006–.017	.007–.018	.008–.020	.009–.023
	2	390	820	920	IPR	.003–.008	.003–.009	.004–.013	.006–.016	.006–.017	.008–.018	.008–.020	.009–.023
	3	330	660	850	IPR	.003–.006	.003–.006	.004–.009	.006–.010	.006–.012	.008–.015	.009–.017	.010–.018
	4	200	490	660	IPR	.001–.002	.001–.002	.001–.002	.002–.002	.002–.003	.002–.003	.002–.003	.002–.004

Flat-Bottom Drills • B707_FBL Series • Grade KCMS15™ • Through Coolant • Drill Diameters 3–20mm (.1181–.7874")

Solid Carbide Drills

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
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
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
P	5	150	160	200	IPR	.002–.003	.002–.004	.002–.005	.004–.006	.004–.006	.005–.008	.006–.009	.006–.009
	6	130	160	200	IPR	.001–.002	.002–.003	.002–.004	.003–.005	.004–.006	.004–.006	.005–.007	.006–.008
M	1	130	160	200	IPR	.002–.003	.002–.004	.002–.005	.004–.006	.004–.006	.005–.008	.006–.009	.006–.009
	2	130	160	260	IPR	.002–.004	.003–.004	.003–.006	.005–.008	.005–.008	.006–.009	.007–.009	.008–.010
	3	130	180	230	IPR	.001–.002	.001–.002	.002–.002	.002–.003	.002–.003	.002–.004	.003–.004	.003–.005
S	1	70	80	100	IPR	.002–.003	.002–.003	.003–.004	.004–.005	.004–.006	.005–.006	.006–.008	.007–.009
	2	30	70	100	IPR	.002–.003	.002–.003	.002–.003	.003–.004	.004–.005	.004–.005	.005–.006	.006–.007
	3	100	110	160	IPR	.001–.002	.001–.002	.002–.003	.002–.004	.002–.004	.002–.004	.003–.004	.003–.005
	4	100	110	160	IPR	.001–.002	.001–.002	.002–.003	.002–.004	.002–.004	.002–.004	.003–.004	.003–.005

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.