DORMER PRAMET

SBN10 END MILLING CUTTER TECHNICAL INFORMATION

High-feed milling cutter for smaller diameters utilizing double-sided BNGX 10 inserts with four cutting edges and APMX of 1 mm. Internal coolant. Suitable for a wide range of applications. Available in cylindrical, modular and arbor style. Body treated for longer tool life.

Product Feature

- Finishing – very good surface quality - Possible use
- Medium machining – good surface quality - Primary use
- Roughing – unlimited surface roughness - Primary use
- Suitable for very unstable working conditions - Possible use
- Suitable for unstable working conditions - Primary use
- Suitable for stable working conditions - Primary use
- S – Screw clamp
- DIN 1835A Cylindrical Shank
- Right Hand Rotation / Cutting
- Through Tool Coolant

Product Operation

- Face Milling - Primary use
- Shallow Shoulder Milling - Primary use
- Plunge Milling - Primary use
- Shallow Slot Milling - Possible use
- Contoured Surfaces (Copy Milling) - Primary use
- Ramping - Primary use
- Progressive Plunging - Primary use
- Helical Interpolation - Primary use

MILLING GRADES – OVERVIEW

Grade Identification	Area of Application	Application	Feed	Cutting speed	Resistance to adverse Working Conditions	Coating	Colour	Substrate	Coolant benefit	Grade description
M8345	P30 – P50 M30 – M40	■ ■				PVD		H	-	This grade has exceptional operational reliability and is designed for heavy cuts in unfavourable conditions in difficult and tough materials.
M6330	P20 – P35 M20 – M35 S20 – S30	■ ■ ■				PVD		H	+ / -	Milling grade with extraordinary service reliability. Especially suitable for machining of hard to machine materials. Powerful in applications where unfavourable conditions and heavy cuts dominate.
M4303	P01 – P10 K01 – K10 N01 – N10 H01 – H10	◪ ■ ◪ ■				PVD		ultra submicron H	-	The most wear resistant grade for mold & die applications. Offers exceptional performance at high cutting speeds and low feeds in stable cutting conditions. Suitable for finishing operations in difficult workpiece materials.
M4310	P05 – P15 M05 – M15 K05 – K15 S05 – S10 H05 – H15	◪ ◪ ■ ■ ■				PVD		ultra submicron H	-	Universal grade for mold & die applications. Suitable for finishing as well as semi-roughing operations. This grade combines high wear resistance with extraordinary operational reliability.
2003	P01 – P10 M01 – M10 K01 – K10 S05 – S10 H05 – H15	◪ ◪ ■ ■ ◪				PVD		ultra submicron H	-	Milling grade with excellent wear resistance. Most suitable in a machining of hard and high strength materials under stable cutting conditions and moderate/higher cutting speeds. Suitable for cutting other workpiece group materials except non-ferrous metals.
M0315	N05 – N25	■				PVD		submicron H	-	Submicron grade for milling non-ferrous metals and their alloys with a balanced ratio of wear resistance and toughness. It is provided with a unique coating with excellent friction properties.
M8326	P20 – P40 M15 – M30	■ ◪				PVD		H	-	Special grade for heavy duty. The main application area of this grade is machining all kinds of steels (including stainless) in the „soft state". It can also be used for machining softer cast irons. Suitable for M15 – M30 machining at medium speeds under average cutting conditions.
M8346	P30 – P50 M30 – M40	■ ■				PVD		H	-	Special grade for heavy duty. This grade has exceptional operational reliability and is designed for heavy cuts in unfavourable conditions in difficult and tough materials.
S26	P15 – P30	■				–		S	++	Uncoated milling grade with excellent resistance to erosion of the cutting face. It is intended solely for machining carbon and alloy steels at low cutting speeds.
S45	P30 – P45	■				–		S	++	Uncoated, tough cutting grade suitable for machining applications where low cutting speed and unfavourable cutting conditions dominate
HF7	M10 – M20 K10 – K25 N10 – N25	◪ ■ ■				–		submicron H	++	Uncoated grade which is primarily designed for machining non-ferrous metals; can also be used for other machined materials (except steel). This grade can be used in turning, milling, and even boring.

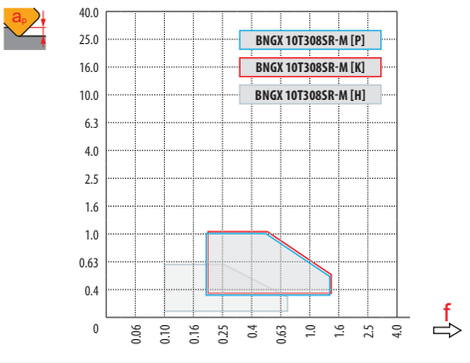
MILLING GRADES – OVERVIEW

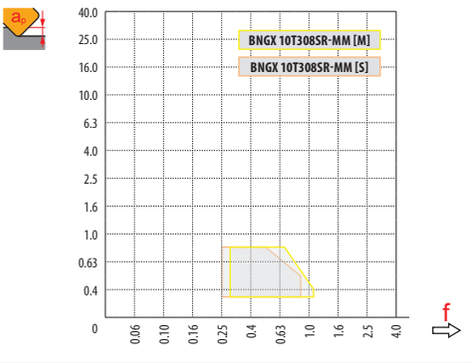
Grade Identification	Area of Application	Application	Feed	Cutting speed	Resistance to adverse Working Conditions	Coating	Colour	Substrate	Coolant benefit	Grade description
M9315	P05 – P25 K10 – K30 H10 – H20	■ ■ ◪				MT-CVD		H	---	Milling grade with high abrasion resistance even at high thermal loads, main application area is higher cutting speeds with medium or small depths of cut.
M9325	P10 – P30 K10 – K30 H15 – H20	■ ■ ◪				MT-CVD		H	---	This grade has an ideal balance between wear resistance and toughness, it is mainly designed for roughing operations. Advantages are excellent wear resistance even at relatively high cutting speeds with excellent reliability, this grade is more suitable for applications using higher speeds and lower feed rates.
M9340	P35 – P50 M30 – M40 S15 – S20	■ ■ ■				MT-CVD		H	---	A very tough grade, where the main advantage is the high strength of the cutting edge and resistance to adverse cutting conditions. Although this material has an MT-CVD M30 – M40 coating, it is possible to use emulsion cooling for its application, especially in optimum cutting conditions.
M5315	P05 – P20 K05 – K25 H05 – H20	◪ ■ ■				MT-CVD		H	---	One of the most abrasion-resistant milling grades which should be used under stable conditions. Its main advantage is the extremely high resistance to thermal stress and abrasive K05 – K25 wear. It is mainly used for machining hard and very hard materials, particularly cast iron.
M8310	P01 – P10 M01 – M10 K01 – K10 H05 – H15	■ ◪ ■ ◪				PVD		ultra submicron H	-	Grade specially developed for copy milling, featuring high resistance to abrasion. It is suitable for machining at higher cutting speeds under stable cutting conditions, and for machining virtually all groups of machined materials (particularly stronger and harder materials).
8215	P10 – P20 M10 – M20 K10 – K25 N10 – N25 S10 – S15 H10 – H15	■ ◪ ■ ■ ◪ ■				PVD		submicron H	+ / -	One of the most versatile milling grades, in terms of both the range of workpiece materials and the range of possible applications. It is characterised by high wear resistance and operational reliability. Its other advantages include excellent resistance to cracking induced by temperature shock. With its unique properties, this material is undoubtedly one of the pillars of the milling range.
M8325	P20 – P40 M15 – M30	■ ◪				PVD		S	-	The main application area of this grade is machining all kinds of steels (including stainless) in the "soft state". It can also be used for machining softer cast irons. Suitable for M15 – M30 machining at medium speeds under average cutting conditions.
M8330	P20 – P40 M20 – M35 K20 – K40 N15 – N30 S15 – S25 H15 – H25	■ ■ ■ ◪ ◪ ◪				PVD		submicron H	+ / -	This grade is universal and can be used for machining various types of materials. However, it's priority application area lies within steels and ductile cast irons. It is recommended for milling at medium speeds under unstable cutting conditions.
M8340	P25 – P50 M20 – M40 K20 – K40 S20 – S30	■ ■ ◪ ■				PVD		submicron H	+ / -	One of the toughest grade dedicated for machining with lower cutting speed and unfavorable conditions. This grade is ideal for all operations where the main requirement is for a tough cutting edge.

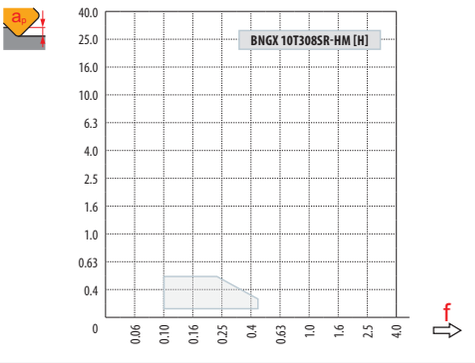
a_e / DC	5 %	10 %	15 %	20 %	25 %	30 %	40 %	50 %	60 %	70 %	75 %	80 %	90 %	100 %
X.V	1.48	1.35	1.27	1.22	1.19	1.16	1.11	1.08	1.05	1.03	1.00	1.00	1.00	1.00
⇨ x.f	2.20	1.60	1.35	1.20	1.10	.95	.85	.75	.85	.95	1.00	1.00	1.00	1.00
⇨ x.f	.64	.64	.64	.64	.64	.65	.65	.67	.68	.71	.72	.74	.79	1.00

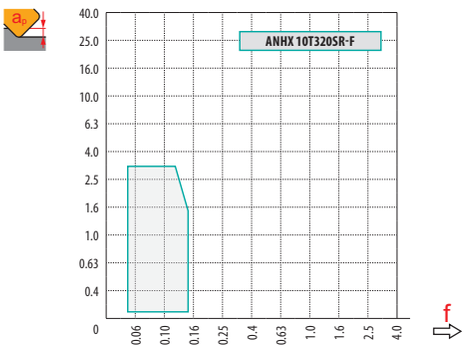
	BNGX 10-M	BNGX 10-MM	BNGX 10-HM
RE (mm)	.8	.8	.8
BS (mm)	–	–	–

	ANHX 10 - F
RE (mm)	2.0
BS (mm)	.92









(mm)

BNGX 10 (HFC)

DCX	a_p	.00	.30	.40	.50	.60	.70	.80	.90	1.00
16		9.40	12.85	13.36	13.80	14.20	14.56	14.88	15.19	15.47
18		11.40	14.85	15.36	15.80	16.20	16.56	16.88	17.19	17.47
20		13.40	16.85	17.36	17.80	18.20	18.56	18.88	19.19	19.47
25		18.40	21.85	22.36	22.80	23.20	23.56	23.88	24.19	24.47
28	DEF	21.40	24.85	25.36	25.80	26.20	26.56	26.88	27.19	27.47
32		25.40	28.85	29.36	29.80	30.20	30.56	30.88	31.19	31.47
35		28.40	31.85	32.36	32.80	33.20	33.56	33.88	34.19	34.47
40		33.40	36.85	37.36	37.80	38.20	38.56	38.88	39.19	39.47
42		35.40	38.85	39.36	39.80	40.20	40.56	40.88	41.19	41.47
	a_p	**.00**	**.30**	**.40**	**.50**	**.60**	**.70**	**.80**	**.90**	**1.00**
	1 f	–	1.30	1.10	.90	.80	.72	.68	.65	.50

(mm)

BNGX 10

DCX	a_{emax}	f_{max}
16	3.5	.12
18	3.5	.12
20	4.0	.15
25	4.0	.15
28	4.0	.17
32	4.0	.17
35	4.0	.17
40	4.0	.17
42	4.0	.17

(mm)

BNGX 10 (HFC)

a_p	.3	.6	1.0
1 f	1.10	.60	.30

(mm)

BNGX 10 (HFC)

DCX	RPMX	APMX/I
16	4.0°	1/16
18	4.0°	1/16
20	4.0°	1/16
25	2.8°	1/22
28	2.3°	1/26
32	1.9°	1/32
35	1.7°	1/35
40	1.3°	1/46
42	1.3°	1/46

(mm)

ANHX 10

DCX	RPMX	APMX/I
16	1.6°	2.65/100
18	1.3°	2.15/100
20	1.1°	1.80/100
25	.8°	1.25/100
28	.7°	1.10/100
32	.5°	.75/100
35	.5°	.75/100
40	.4°	.55/100
42	.4°	.55/100

(mm)

BNGX 10 (HFC)

DCX	a_p	f_{max}
16	.4	.15
18	.7	.15
20	.7	.15
25	.7	.15
28	.7	.2
32	.7	.2
35	.7	.2
40	.7	.2
42	.7	.2

(mm)

BNGX 10 (HFC)

DCX	DMIN	DMAX	SMAX DMIN	SMAX DMAX
16	22.4	31.8	.5	.5
18	25.4	35.8	.5	.5
20	29.4	39.8	.5	.5
25	39.4	49.8	.5	.5
28	45.4	55.8	.5	.5
32	53.4	63.8	.5	.5
35	59.4	69.8	.5	.5
40	69.4	79.8	.5	.5
42	73.4	83.8	.5	.5

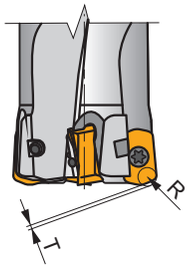
(mm)

DCX	µm	3	5	10	15	20	30	40	50	60	80	100
16		.438	.566	.800	.980	1.131	1.386	1.600	1.789	1.960	2.263	2.530
18		.465	.600	.849	1.039	1.200	1.470	1.697	1.897	2.078	2.400	2.683
20		.490	.632	.894	1.095	1.265	1.549	1.789	2.000	2.191	2.530	2.828
25	FE	.548	.707	1.000	1.225	1.414	1.732	2.000	2.236	2.449	2.828	3.162
28		.580	.748	1.058	1.296	1.497	1.833	2.117	2.366	2.592	2.993	3.347
32		.620	.800	1.131	1.386	1.600	1.960	2.263	2.530	2.771	3.200	3.578
35		.648	.837	1.183	1.449	1.673	2.049	2.366	2.646	2.898	3.347	3.742
40		.693	.894	1.265	1.549	1.789	2.191	2.530	2.828	3.098	3.578	4.000
42		.710	.917	1.296	1.587	1.833	2.245	2.592	2.898	3.175	3.666	4.099

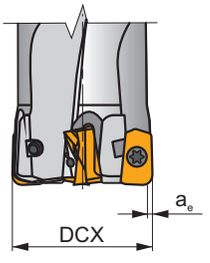
ANHX 10

RE	µm	3	5	10	15	20	30	40	50	60	80	100
2.0	FE	.219	.283	.400	.490	.566	.693	.800	.894	.980	1.131	1.265

(mm)



	R	T
BNGX 10T308	1.60	.44

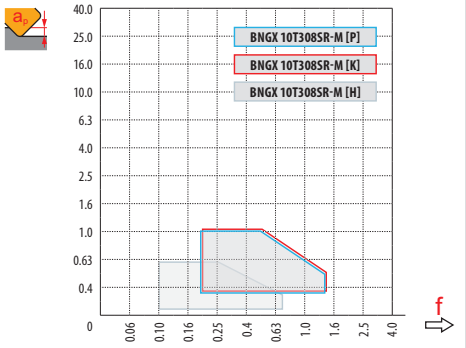


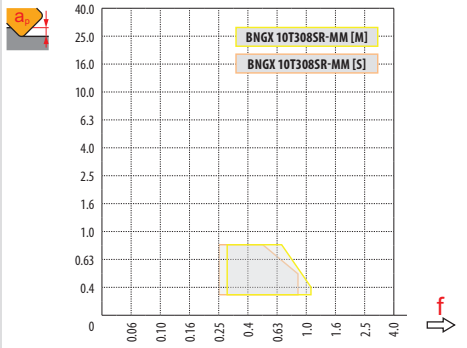
	max a_e/DCX
ANHX 10T320	.05

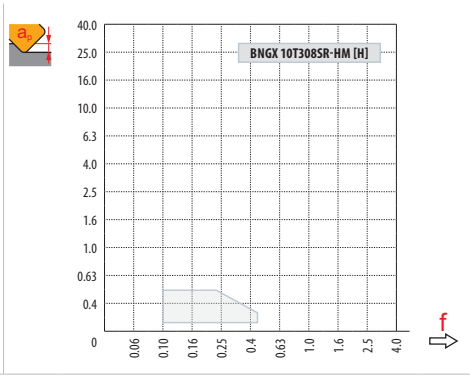
a_e / DCX	5 %	10 %	15 %	20 %	25 %	30 %	40 %	50 %	60 %	70 %	75 %	80 %	90 %	100 %
X.V	1.48	1.35	1.27	1.22	1.19	1.16	1.11	1.08	1.05	1.03	1.00	1.00	1.00	1.00
⇨X.f	2.20	1.60	1.35	1.20	1.10	0.95	0.85	0.75	0.85	0.95	1.00	1.00	1.00	1.00
⇨X.f	0.64	0.64	0.64	0.64	0.64	0.65	0.65	0.67	0.68	0.71	0.72	0.74	0.79	1.00

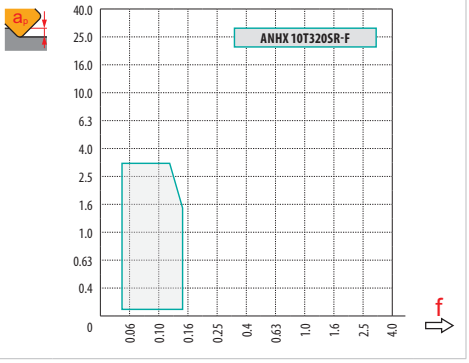
	BNGX 10-M	BNGX 10-MM	BNGX 10-HM
RE	0.8	0.8	0.8
BS	–	–	–

	ANHX 10 - F
RE	2.0
BS	0.92









BNGX 10 (HFC)

DCX	a_p	0.00	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
16		9.40	12.85	13.36	13.80	14.20	14.56	14.88	15.19	15.47
18		11.40	14.85	15.36	15.80	16.20	16.56	16.88	17.19	17.47
20		13.40	16.85	17.36	17.80	18.20	18.56	18.88	19.19	19.47
25		18.40	21.85	22.36	22.80	23.20	23.56	23.88	24.19	24.47
28		21.40	24.85	25.36	25.80	26.20	26.56	26.88	27.19	27.47
32	DEF	25.40	28.85	29.36	29.80	30.20	30.56	30.88	31.19	31.47
35		28.40	31.85	32.36	32.80	33.20	33.56	33.88	34.19	34.47
40		33.40	36.85	37.36	37.80	38.20	38.56	38.88	39.19	39.47
42		35.40	38.85	39.36	39.80	40.20	40.56	40.88	41.19	41.47
50		43.98	46.09	46.45	46.82	47.18	47.54	47.90	48.26	48.56
52		45.98	48.09	48.45	48.82	49.18	49.54	49.90	50.26	50.56
66		59.98	62.09	62.45	62.82	63.18	63.54	63.90	64.26	64.56
	a_p	**0.00**	**0.30**	**0.40**	**0.50**	**0.60**	**0.70**	**0.80**	**0.90**	**1.00**
	f	–	1.30	1.10	0.90	0.80	0.72	0.68	0.65	0.50

BNGX 10

DCX	$a_{e\,max}$	f_{max}
16	3.5	0.12
18	3.5	0.12
20	4.0	0.15
25	4.0	0.15
28	4.0	0.17
32	4.0	0.17
35	4.0	0.17
40	4.0	0.17
42	4.0	0.17
50	4.5	0.30
52	4.5	0.30
66	4.5	0.30

BNGX 10 (HFC)

a_p	0.3	0.6	1.0
f	1.10	0.60	0.30

DCX	BNGX 10 (HFC) RPMX	BNGX 10 (HFC) APMX/I	ANHX 10 RPMX	ANHX 10 APMX/I
16	3.8	1/17	1.6°	2.65/100
18	3.8	1/17	1.3°	2.15/100
20	3.8	1/17	1.1°	1.80/100
25	2.6	1/24	0.8°	1.25/100
28	2.2	1/28	0.7°	1.10/100
32	1.8	1/33	0.5°	0.75/100
35	1.6	1/37	0.5°	0.75/100
40	1.3	1/46	0.4°	0.55/100
42	1.3	1/46	0.4°	0.55/100
50	0.4	0.55/100	–	–
52	0.4	0.55/100	–	–
66	0.3	0.4/100	–	–

BNGX 10 (HFC)

DCX	a_p	f_{max}
16	0.4	0.15
18	0.7	0.15
20	0.7	0.15
25	0.7	0.15
28	0.7	0.2
32	0.7	0.2
35	0.7	0.2
40	0.7	0.2
42	0.7	0.2
50	0.3	0.2
52	0.3	0.2
66	0.3	0.2

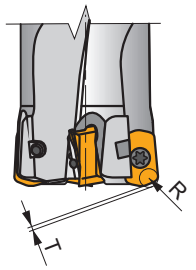
BNGX 10 (HFC)

DCX	DMIN	DMAX	SMAX DMIN	SMAX DMAX
16	22.4	31.8	0.5	0.5
18	25.4	35.8	0.5	0.5
20	29.4	39.8	0.5	0.5
25	39.4	49.8	0.5	0.5
28	45.4	55.8	0.5	0.5
32	53.4	63.8	0.5	0.5
35	59.4	69.8	0.5	0.5
40	69.4	79.8	0.5	0.5
42	73.4	83.8	0.5	0.5
50	89.6	99.6	0.5	0.5
52	93.6	103.6	0.5	0.5
66	121.6	131.6	0.5	0.5

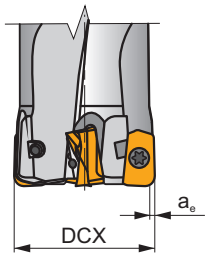
DCX	µm	3	5	10	15	20	30	40	50	60	80	100
16	FE	0.438	0.566	0.800	0.980	1.131	1.386	1.600	1.789	1.960	2.263	2.530
18		0.465	0.600	0.849	1.039	1.200	1.470	1.697	1.897	2.078	2.400	2.683
20		0.490	0.632	0.894	1.095	1.265	1.549	1.789	2.000	2.191	2.530	2.828
25		0.548	0.707	1.000	1.225	1.414	1.732	2.000	2.236	2.449	2.828	3.162
28		0.580	0.748	1.058	1.296	1.497	1.833	2.117	2.366	2.592	2.993	3.347
32		0.620	0.800	1.131	1.386	1.600	1.960	2.263	2.530	2.771	3.200	3.578
35		0.648	0.837	1.183	1.449	1.673	2.049	2.366	2.646	2.898	3.347	3.742
40		0.693	0.894	1.265	1.549	1.789	2.191	2.530	2.828	3.098	3.578	4.000
42		0.710	0.917	1.296	1.587	1.833	2.245	2.592	2.898	3.175	3.666	4.099

ANHX 10

RE	µm	3	5	10	15	20	30	40	50	60	80	100
2.0	FE	0.219	0.283	0.400	0.490	0.566	0.693	0.800	0.894	0.980	1.131	1.265



	R	T
BNGX 10T308	1.60	0.44



	max a_e/DCX
ANHX 10T320	0.05