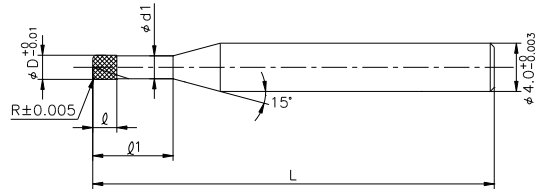
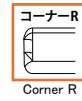


BREF-2

CBN 2枚刃コーナーR付エンドミル
CBN 2 Flutes Corner R Endmill

- 高硬度材・焼入れ鋼の直彫り加工
Direct cutting for Highly hardened material and Quenching steel
- 高精度・高品位・長寿命加工が可能
Possible to process with high accuracy, high quality and long tool life



被削材 Workpiece		
~HRC55 NAK80 STAVAX等	~HRC60 SKD11等	~HRC65 SKH等
◎	◎	◎

- 切削条件表はP72に記載
- Cutting conditions are recommended on page 72.

単位[寸法: mm/価格: 円]
Unit [size: mm/Retail Price: JPY]

品番 Code No.	刃径 D Flute Diameter	コーナーR Corner R	有効長 $\ell 1$ Effective Length	刃長 ℓ Flute Length	首下径 d1 Neck Diameter	CBN層 CBN Length	全長 L Total Length	柄径 Shank Diameter	標準価格 Retail Price
BREF-203003005	0.3	R 0.03	0.5	0.3	—	0.4	50	4	21,500
BREF-203003009	0.3	R 0.03	0.9	0.3	0.26	0.6	50	4	21,500
BREF-203003018	0.3	R 0.03	1.8	0.3	0.26	0.6	50	4	22,000
BREF-203005005	0.3	R 0.05	0.5	0.3	—	0.4	50	4	21,500
BREF-203005009	0.3	R 0.05	0.9	0.3	0.26	0.6	50	4	21,500
BREF-203005018	0.3	R 0.05	1.8	0.3	0.26	0.6	50	4	22,000
BREF-204003005	0.4	R 0.03	0.5	0.4	—	0.4	50	4	20,000
BREF-204003012	0.4	R 0.03	1.2	0.4	0.36	0.6	50	4	20,000
BREF-204003024	0.4	R 0.03	2.4	0.4	0.36	0.6	50	4	20,600
BREF-204005005	0.4	R 0.05	0.5	0.4	—	0.4	50	4	20,000
BREF-204005012	0.4	R 0.05	1.2	0.4	0.36	0.6	50	4	20,000
BREF-204005024	0.4	R 0.05	2.4	0.4	0.36	0.6	50	4	20,600
BREF-204010005	0.4	R 0.1	0.5	0.4	—	0.4	50	4	20,000
BREF-204010012	0.4	R 0.1	1.2	0.4	0.36	0.6	50	4	20,000
BREF-204010024	0.4	R 0.1	2.4	0.4	0.36	0.6	50	4	20,600
BREF-205003005	0.5	R 0.03	0.5	0.5	—	0.4	50	4	19,100
BREF-205003010	0.5	R 0.03	1	0.5	0.46	0.6	50	4	19,600
BREF-205003015	0.5	R 0.03	1.5	0.5	0.46	0.6	50	4	19,600
BREF-205003020	0.5	R 0.03	2	0.5	0.46	0.6	50	4	20,300
BREF-205003030	0.5	R 0.03	3	0.5	0.46	0.6	50	4	20,300
BREF-205005005	0.5	R 0.05	0.5	0.5	—	0.4	50	4	19,100
BREF-205005010	0.5	R 0.05	1	0.5	0.46	0.6	50	4	19,600
BREF-205005015	0.5	R 0.05	1.5	0.5	0.46	0.6	50	4	19,600
BREF-205005020	0.5	R 0.05	2	0.5	0.46	0.6	50	4	20,300
BREF-205005030	0.5	R 0.05	3	0.5	0.46	0.6	50	4	20,300
BREF-205010005	0.5	R 0.1	0.5	0.5	—	0.4	50	4	19,100

BREF-2

品番 Code No.	刃径 D Flute Diameter	コーナーR Corner R	有効長 ℓ1 Effective Length	刃長 ℓ Flute Length	首下径 d1 Neck Diameter	CBN層 CBN Length	全長 L Total Length	柄径 Shank Diameter	標準価格 Retail Price
BREF-205010010	0.5	R0.1	1	0.5	0.46	0.6	50	4	19,600
BREF-205010015	0.5	R0.1	1.5	0.5	0.46	0.6	50	4	19,600
BREF-205010020	0.5	R0.1	2	0.5	0.46	0.6	50	4	20,300
BREF-205010030	0.5	R0.1	3	0.5	0.46	0.6	50	4	20,300
BREF-210003020	1	R0.03	2	1	0.95	1	50	4	18,700
BREF-210003030	1	R0.03	3	1	0.95	1	50	4	18,700
BREF-210003040	1	R0.03	4	1	0.95	1	50	4	19,600
BREF-210003050	1	R0.03	5	1	0.95	1	50	4	19,600
BREF-210003060	1	R0.03	6	1	0.95	1	50	4	19,600
BREF-210003080	1	R0.03	8	1	0.95	1	50	4	21,500
BREF-210003100	1	R0.03	10	1	0.95	1	50	4	22,400
BREF-210005020	1	R0.05	2	1	0.95	1	50	4	18,700
BREF-210005030	1	R0.05	3	1	0.95	1	50	4	18,700
BREF-210005040	1	R0.05	4	1	0.95	1	50	4	19,600
BREF-210005050	1	R0.05	5	1	0.95	1	50	4	19,600
BREF-210005060	1	R0.05	6	1	0.95	1	50	4	19,600
BREF-210005080	1	R0.05	8	1	0.95	1	50	4	21,500
BREF-210005100	1	R0.05	10	1	0.95	1	50	4	22,400
BREF-210010020	1	R0.1	2	1	0.95	1	50	4	18,700
BREF-210010030	1	R0.1	3	1	0.95	1	50	4	18,700
BREF-210010040	1	R0.1	4	1	0.95	1	50	4	19,600
BREF-210010050	1	R0.1	5	1	0.95	1	50	4	19,600
BREF-210010060	1	R0.1	6	1	0.95	1	50	4	19,600
BREF-210010080	1	R0.1	8	1	0.95	1	50	4	21,500
BREF-210010100	1	R0.1	10	1	0.95	1	50	4	22,400
BREF-210020020	1	R0.2	2	1	0.95	1	50	4	18,700
BREF-210020030	1	R0.2	3	1	0.95	1	50	4	18,700
BREF-210020040	1	R0.2	4	1	0.95	1	50	4	19,600
BREF-210020050	1	R0.2	5	1	0.95	1	50	4	19,600
BREF-210020060	1	R0.2	6	1	0.95	1	50	4	19,600
BREF-210020080	1	R0.2	8	1	0.95	1	50	4	21,500
BREF-210020100	1	R0.2	10	1	0.95	1	50	4	22,400
BREF-215003045	1.5	R0.03	4.5	1.5	1.45	2	50	4	23,800
BREF-215003090	1.5	R0.03	9	1.5	1.45	2	50	4	25,000
BREF-215005045	1.5	R0.05	4.5	1.5	1.45	2	50	4	23,800
BREF-215005090	1.5	R0.05	9	1.5	1.45	2	50	4	25,000
BREF-215010045	1.5	R0.1	4.5	1.5	1.45	2	50	4	23,800
BREF-215010090	1.5	R0.1	9	1.5	1.45	2	50	4	25,000
BREF-215020045	1.5	R0.2	4.5	1.5	1.45	2	50	4	23,800
BREF-215020090	1.5	R0.2	9	1.5	1.45	2	50	4	25,000
BREF-220003060	2	R0.03	6	1.5	1.95	2	50	4	25,000
BREF-220003120	2	R0.03	12	1.5	1.95	2	50	4	26,500

BREF-2

CBN

品番 Code No.	刃径 D Flute Diameter	コーナーR Corner R	有効長 ℓ1 Effective Length	刃長 ℓ Flute Length	首下径 d1 Neck Diameter	CBN層 CBN Length	全長 L Total Length	柄径 Shank Diameter	標準価格 Retail Price
BREF-220005060	2	R0.05	6	1.5	1.95	2	50	4	25,000
BREF-220005120	2	R0.05	12	1.5	1.95	2	50	4	26,500
BREF-220010060	2	R0.1	6	1.5	1.95	2	50	4	25,000
BREF-220010120	2	R0.1	12	1.5	1.95	2	50	4	26,500
BREF-220020060	2	R0.2	6	1.5	1.95	2	50	4	25,000
BREF-220020120	2	R0.2	12	1.5	1.95	2	50	4	26,500
BREF-220030060	2	R0.3	6	1.5	1.95	2	50	4	25,000
BREF-220030120	2	R0.3	12	1.5	1.95	2	50	4	26,500
BREF-230003090	3	R0.03	9	2	2.95	2	50	4	33,700
BREF-230003180	3	R0.03	18	2	2.95	2	60	4	35,000
BREF-230005090	3	R0.05	9	2	2.95	2	50	4	33,700
BREF-230005180	3	R0.05	18	2	2.95	2	60	4	35,000
BREF-230010090	3	R0.1	9	2	2.95	2	50	4	33,700
BREF-230010180	3	R0.1	18	2	2.95	2	60	4	35,000
BREF-230020090	3	R0.2	9	2	2.95	2	50	4	33,700
BREF-230020180	3	R0.2	18	2	2.95	2	60	4	35,000
BREF-230030090	3	R0.3	9	2	2.95	2	50	4	33,700
BREF-230030180	3	R0.3	18	2	2.95	2	60	4	35,000
BREF-230050090	3	R0.5	9	2	2.95	2	50	4	33,700
BREF-230050180	3	R0.5	18	2	2.95	2	60	4	35,000

BSR-2、BRR-2、BREF-2、BRE-2

切削条件参考

Referential Cutting Conditions

硬度 Hardness 被削材 Workpiece	~HRC55 NAK80、STAVAX等				~HRC60 SKD11等				~HRC65 SKH等				
	刃径 Flute Diameter	回転数 Revolution	送り速度 Feed	切込量 Depth of Cut		回転数 Revolution	送り速度 Feed	切込量 Depth of Cut		回転数 Revolution	送り速度 Feed	切込量 Depth of Cut	
	mm	min ⁻¹	mm/min	Ad mm	Rd mm	min ⁻¹	mm/min	Ad mm	Rd mm	min ⁻¹	mm/min	Ad mm	Rd mm
	0.3	50,000	200~ 400	0.003~0.01	0.03	50,000	150~ 300	0.004~0.015	0.03	50,000	100~250	0.003~0.01	0.03
	0.4	50,000	350~ 600	0.005~0.01	0.04	50,000	200~ 400	0.004~0.015	0.04	50,000	150~300	0.005~0.01	0.04
	0.5	50,000	600~ 900	0.01 ~0.03	0.07	50,000	600~ 900	0.01 ~0.03	0.07	50,000	500~800	0.005~0.01	0.07
	1	45,000	800~1,100	0.02 ~0.04	0.3	40,000	800~1,100	0.01 ~0.03	0.3	32,000	600~900	0.01 ~0.04	0.1
	1.5	30,000	800~1,100	0.03 ~0.05	0.5	26,500	800~1,100	0.02 ~0.04	0.5	22,000	600~900	0.015~0.05	0.2
	2	23,000	800~1,100	0.04 ~0.06	0.6	20,000	800~1,100	0.02 ~0.06	0.6	16,000	600~900	0.015~0.06	0.4
	3	15,000	700~1,000	0.05 ~0.1	0.8	13,000	700~1,000	0.03 ~0.05	0.8	10,500	600~900	0.02 ~0.05	0.6
	4	11,500	600~ 800	0.05 ~0.1	1.0	10,000	500~ 700	0.04 ~0.06	1.0	8,500	400~700	0.04 ~0.08	0.8
	5	9,000	600~ 800	0.06 ~0.1	1.2	8,000	500~ 700	0.06 ~0.1	1.2	7,500	350~600	0.04 ~0.08	1
	6	8,000	600~ 800	0.06 ~0.1	1.3	7,000	500~ 700	0.06 ~0.1	1.3	6,000	350~600	0.05 ~0.08	1.2

備考

- (1)オイルミストまたはエアブローをお奨めします。
- (2)回転数と送り速度は、同じ割合で調整してください。
- (3)切込量は荒加工、中仕上げ加工の最大値を示しております。
必要とする面粗度に応じて切込量及びピックフィード・ピッチを調整してください。
- (4)切込量は、Adは深さ方向、Rdはピックフィード・ピッチを示しております。
- (5)この切削条件表は目安を示すものですので、加工形状、機械の剛性等によって都度調整してください。
- (6)工具突き出し量は、必要最低限でご使用ください。

Remark

- (1)Oil mist or Air blow is recommendable.
- (2)Adjust Revolution and Feed Speed at the same rate.
- (3)Depth of cut is shown the maximum value in rough cutting and semi finish
Adjust Depth of cut and Pick feed pitch according to required surface roughness.
- (4)Depth of cut is shown as Ad : Axial depth and Rd : Pick feed pitch.
- (5)Adjust the cutting conditions respectively according to Cutting shape and Machine rigidity
since these conditions are shown just as Standard.
- (6)Shorten overhang as much as possible is recommendable.