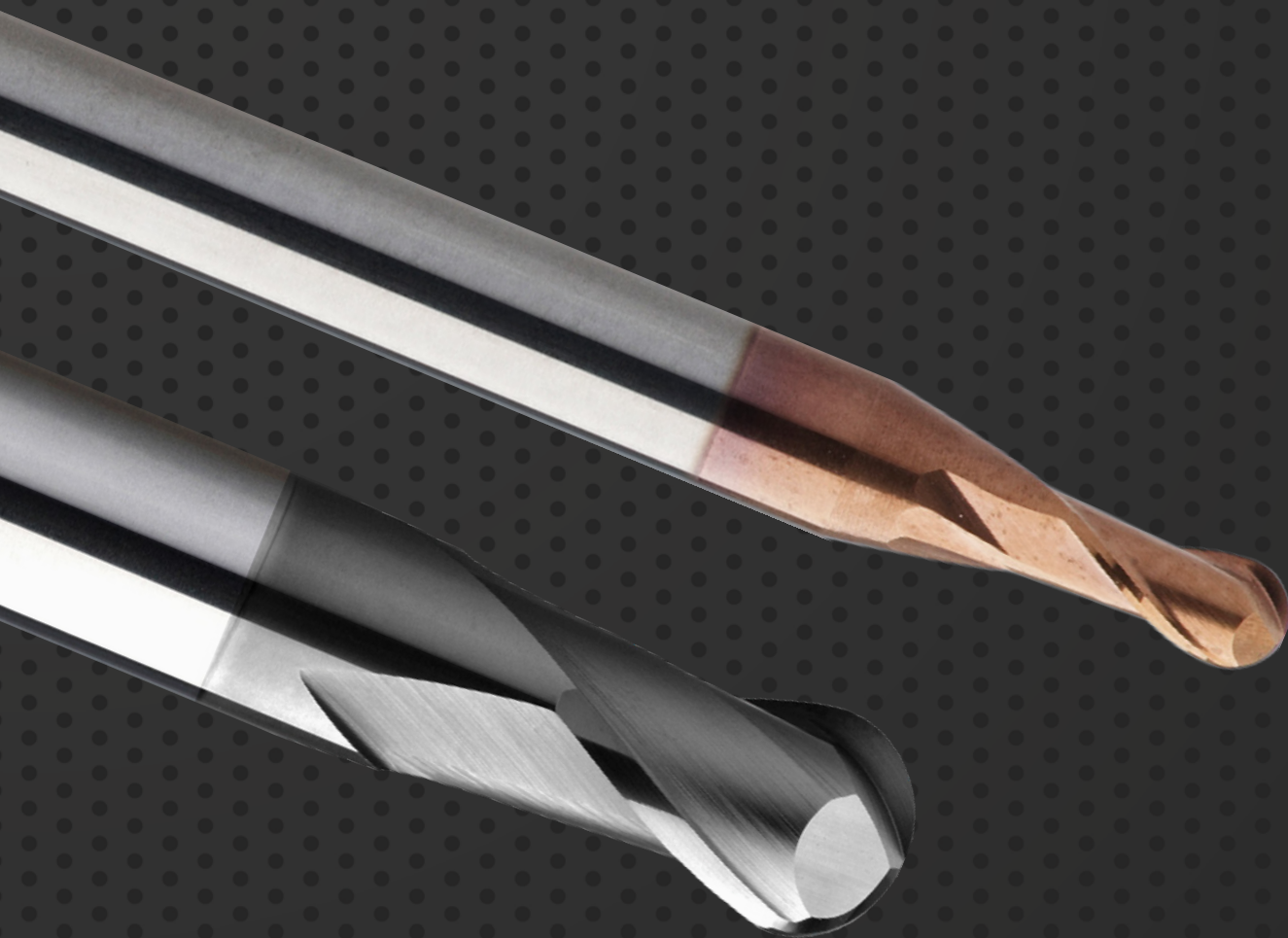




BALLNOSE

BN 45

For general machining

For material application between 36 HRC to 52 HRC

Index - BN 45, For 36 - 52 HRC

Suitable for Material Groups
 Adapté pour les matériaux
 适用于材料
 Geeignet für die Materialgruppen
 Adatto per il materiale

P	M	K
S	H	

NEW

EDP Number	Type	No. Z	Helix Angle	Coating	Performance	Page Number
929	BN 45	2	30°	B0819	G	370
C36	BN 45	2	30°	G6110	G	370
F38	BN 45, Recess	2	30°	B0819	G	371
B82	BN 45	4	30°	B0819	G	372
931	BN 45 Long	2	30°	B0819	G	373
933	BN 45 Extra-Long	2	30°	B0819	G	374
940	BN 45	2	30°	B0819	G	375
941	BN 45, Recess	2	30°	B0819	G	375
A57	BN 45	2	30°	B0909	G	375
A58	BN 45, Recess	2	30°	B0909	G	375
485	BN 45	4	30°	G6110	G	376
942	BN 45 Long	2	30°	B0819	G	377
943	BN 45 Long, Recess	2	30°	B0819	G	377
A59	BN 45 Long	2	30°	B0909	G	377
A60	BN 45 Long, Recess	2	30°	B0909	G	377
944	BN 45 Extra-Long	2	30°	B0819	G	378
945	BN 45 Extra-Long, Recess	2	30°	B0819	G	379
A61	BN 45 Extra-Long	2	30°	B0909	G	378
A62	BN 45 Extra-Long, Recess	2	30°	B0909	G	379
935	BN 45 Mini	2	30°	B0819	G	380
A63	BN 45 Mini	2	30°	B0909	G	380
A65	BN 45 Miniature Long Neck	2	30°	B0909	G	381
937	BN 45 Miniature Long Neck	2	30°	B0819	G	382
A76	BN 45 Miniature Long Neck	2	30°	B0909	G	382
A78	BN 45 Taper Neck	2	30°	B0909	G	384

G - General P - Performance

FEATURES & BENEFITS

BN 45



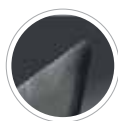
Top View

1 Eccentric Grinding



Optimum eccentric grinding in order to avoid rubbing, while maintaining maximum cutting tool strength.

2 Cutting Edge Preparation



- Enhances tool life
- Less material adhere on the cutting edge for stable machining
- Improves wear resistance and reduces excessive friction

3 Superior Coating to Reduce Friction

- Increases hardness and higher abrasive wear resistance
- Higher thermal resistance
- Smoother chips evacuation

4 Suitable for Material Groups





1. Exzentrischer Schliff
Optimaler exzentrischer Schliff zur Reduzierung der Reibung unter Beibehaltung der maximalen Schneidenstabilität
2. Schneidkantenbehandlung
Verbessert die Werkzeuglebensdauer
Weniger Materialanhaftungen an der Schneide Für stabile Bearbeitung
3. Ausgezeichnete Beschichtung zur Verringerung der Reibung
Erhöht die Härte und und bietet bessere Verschleißfestigkeit
Höhere Temperaturbeständigkeit
Glatte Oberfläche für besseren Spänefluß
4. Positiver Spanwinkel
Geeignet für die Materialgruppen P, M, K, S, H



1. 偏心研磨
最佳偏心研磨, 可避免摩擦, 同时保持最大切削刀具强度。
2. 切削刃设置提高刀具寿命
提高刀具寿命。
较少的材料粘在切削刃上。
用于稳定加工。
3. 优异的涂层, 减少摩擦
增加硬度, 提高材料耐磨性。
更高的抗热性。
更顺畅的排屑。
4. 正前角
适用于材料 P、M、K、S、H。



1. Levigatura orbitale
Levigatura orbitale ottimale per evitare sfregatura, garantendo la massima resistenza dello strumento di taglio.
2. Preparazione dell'angolo di taglio
Migliora la durata dello strumento
Meno materiale che aderisce sull'angolo di taglio
Per una lavorazione stabile
3. Rivestimento superiore per ridurre la frizione
Aumenta la durezza e una maggiore resistenza all'usura abrasiva
Resistenza termica superiore
Evacuazione dei trucioli più semplice
4. Angolo di taglio positivo
Adatto per il materiale P, M, K, S, H



1. Meulage excentrique
Meulage optimal diminuant le coefficient de friction tout en maintenant une bonne acuité de l'arête de coupe
2. Préparation des arêtes de coupes
Améliore la durée de vie de l'outil
Moins de matériau adhère à l'arête tranchante
Pour un usinage stable
3. Revêtement supérieur pour réduire la friction
Augmente la dureté et la résistance à l'abrasion
Résistance thermique supérieure
Évacuation des copeaux plus fluide
4. Angle de coupe positif
Adapté pour les matériaux P, M, K, S, H

BN 45 BALLNOSE CUTTERS, 2 FLUTES

 VHM BN 45 Standard Radiusschafffräser, 2 Zähne Frese sferiche BN 45, 2 taglienti Fraises BN 45 , à bout hémisphérique, 2 dents 整体硬质合金 BN 45 系列 2刃球头铣刀

Order Number	Dimension (mm)						G6110	Order Number	Dimension (mm)						B0819
	D	R	I1	I2	L	d2 (h6)			D	R	I1	I2	L	d2 (h6)	
C36 0100 040 03	1	0.5	3		40	3	•	929 0100 040 03	1	0.5	3		40	3	•
C36 0100 050 04					50	4	◦	929 0100 050 04					50	4	•
C36 0150 040 03	1.5	0.75	3		40	3	◦	929 0150 040 03	1.5	0.75	3		40	3	•
C36 0150 050 04					50	4	◦	929 0150 050 04					50	4	•
C36 0200 040 03	2	1	4		40	3	◦	929 0200 040 03	2	1	4		40	3	•
C36 0200 050 04					50	4	◦	929 0200 050 04					50	4	•
C36 0250 040 03	2.5	1.25	4		40	3	◦	929 0250 040 03	2.5	1.25	4		40	3	•
C36 0250 050 04					50	4	◦	929 0250 050 04					50	4	•
C36 0300	3	1.5	5		40	3	•	929 0300	3	1.5	5		40	3	•
C36 0300 050 04					50	4	◦	929 0300 050 04					50	4	•
C36 0300 050 06	3.5	1.75	5		50	6	•	929 0300 050 06	3.5	1.75	5		50	6	•
C36 0350 050 04					50	4	◦	929 0350 050 04					50	4	•
C36 0400	4	2	8		50	4	◦	929 0400	4	2	8		50	4	•
C36 0400 050 06					50	6	•	929 0400 050 06					50	6	•
C36 0450 050 05	4.5	2.25	9		50	5	◦	929 0450 050 05	4.5	2.25	9		50	5	•
C36 0500					50	5	◦	929 0500					50	5	•
C36 0500 050 06	5	2.5	9		50	6	◦	929 0500 050 06	5	2.5	9		50	6	•
C36 0550 050 06					50	6	◦	929 0550 050 06					50	6	•
C36 0600 050	6	3	10		50	6	◦	929 0600 050	6	3	10		50	6	•
C36 0600 060					60	6	◦	929 0600 060					60	6	•
C36 0700 064 08	7	3.5	12		64	8	◦	929 0700 064 08	7	3.5	12		64	8	•
C36 0800					64	8	•	929 0800					64	8	•
C36 0900 070 10	9	4.5	14		70	10	◦	929 0900 070 10	9	4.5	14		70	10	•
C36 1000 070					70	10	•	929 1000 070					70	10	•
C36 1000 075	10	5	16		75	10	•	929 1000 075	10	5	16		75	10	•
C36 1100 075 12					75	12	◦	929 1100 075 12					75	12	•
C36 1200	12	6	32		75	12	•	929 1200	12	6	32		75	12	•
C36 1400					90	14	◦	929 1400					90	14	•
C36 1600	16	8	38		90	16	◦	929 1600	16	8	38		90	16	•
C36 1800					100	18	◦	929 1800					100	18	•
C36 2000	20	10	40		100	20	◦	929 2000	20	10	40		100	20	•
C36 2200					100	22	◦	929 2200					100	22	•
C36 2500	25	12.5			100	25	◦	929 2500	25	12.5			100	25	◦

cont'd ►

Material Group | Material-Gruppe | Groupe Matière | Gruppo Materiali | 材质主类

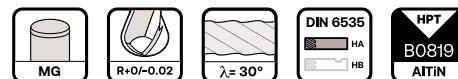
Cutting Parameter

N01	N02	N03	K01	K02	P01	P02	P03	M01	M02	S01	S02	S03	H01	H02	O01	O02
			●	●	○	○	●	○	●	○	●		●	○		

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BN GR	DM70 - BN 70	BN 60X	BN 60	BN 45	BN 30
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 整体硬质合金 BN 45 系列 2 刃球头铣刀

[illegible]

* - DIN 6535

Material Group | Material-Gruppe | Groupe Matiere | Gruppo Materiali | 材质主类

Cutting Parameter

N01 N02 N03 K01 K02 P01 P02 P03 M01 M02 S01 S02 S03 H01 H02 O01 O02 386

	VHM BN 45 Standard Radiusschafffräser, 4 Zähne
	Frese sferiche BN 45, 4 taglienti
	Fraises BN 45, à bout hémisphérique, 4 dents
	整体硬质合金 BN 45 系列 4 刃球头铣刀



Order Number	Dimension (mm)						B0819
	D	R	I 1	I 2	L	d2 (h6)	
B82 0300	3	1.5	5		40	3	•
B82 0300 050 06					50	6	•
B82 0350 050 04	3.5	1.75	8		50	4	◦
B82 0400	4	2			50	4	•
B82 0400 050 06				50	6	•	
B82 0450 050 05	4.5	2.25	9		50	5	◦
B82 0500	5	2.5			50	5	◦
B82 0500 050 06				50	6	◦	
B82 0550 050 06	5.5	2.75	10		50	6	•
B82 0600 050	6	3			50	6	•
B82 0600 060				60	6	•	
B82 0700 064 08	7	3.5	12		64	8	◦
B82 0800	8	4			64	8	•
B82 0900 070 10	9	4.5	14		70	10	◦
B82 1000 070	10	5			70	10	•
B82 1000 075				75	10	◦	
B82 1100 075 12	11	5.5	16		75	12	◦
B82 1200	12	6			75	12	•
B82 1400	14	7	32		90	14	◦
B82 1600	16	8			90	16	◦
B82 1800	18	9	38		100	18	◦
B82 2000	20	10			100	20	◦
B82 2200	22	11	40		100	22	◦
B82 2500	25	12.5			100	25	◦

Cutting Parameter

N01 N02 N03 K01 K02 P01 P02 P03 M01 M02 S01 S02 S03 H01 H02 O01 O02 387

BN 45 LONG BALLNOSE CUTTERS, 2 FLUTES

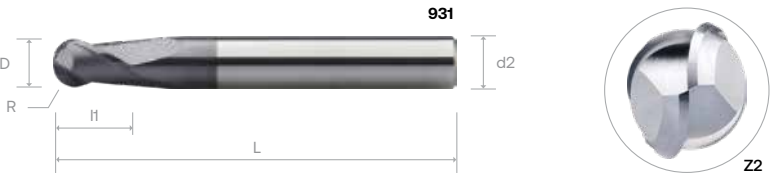
- 

VHM BN 45 Radiusschaftfräser, lang, 2 Zähne
- 

Frese sferiche lunghe BN 45, 2 taglienti
- 

Fraises BN 45 longues, à bout hémisphérique, 2 dents
- 

整体硬质合金 BN 45 系列 2刃长型球头铣刀



Order Number	Dimension (mm)						B0819
	D	R	I 1	I 2	L	d2 (h6)	
931 0100 060 03	1	0.5	3		60	3	•
931 0100 075 04	1	0.5			75	4	◦
931 0150 060 03	1.5	0.75			60	3	◦
931 0150 075 04					75	4	◦
931 0200 060 03	2	1	4		60	3	◦
931 0200 075 04					75	4	•
931 0250 060 03					60	3	◦
931 0250 075 04					75	4	◦
931 0300	3	1.5	5		60	3	•
931 0300 075 04					75	4	◦
931 0300 075 06					75	6	◦
931 0400	4	2	8		60	4	•
931 0400 075 06					75	6	•
931 0500	5	2.5	9		60	5	◦
931 0500 075 06					75	6	•
931 0600	6	3	10		75	6	•
931 0800	8	4	12		75	8	•
931 1000 075	10	5	14		75	10	◦
931 1000 100					100	10	•
931 1200	12	6	16		100	12	•
931 1400	14	7	32		125	14	◦
931 1600	16	8			125	16	◦
931 1800	18	9	38		125	18	◦
931 2000	20	10			125	20	◦

Material Group | Material-Gruppe | Groupe Matiere | Gruppo Materiali | 材质主类

N01

N02

N03

K01

K02

P01

P02

P03

M01

M02

S01

S02

S03

H01

H02

O01

O02

○

●

○

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●

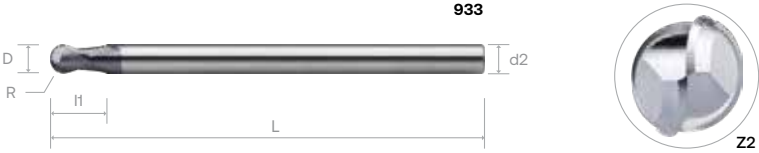
○

Cutting Parameter

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BN 45 EXTRA-LONG BALLNOSE CUTTERS, 2 FLUTES

- VHM BN 45 Radiusschaftfräser, extra-lang, 2 Zähne
- Frese sferiche extra-lunghe BN 45, 2 taglienti
- Fraises BN 45 extra-longues, à bout hémisphérique, 2 dents
- 整体硬质合金 BN 45 系列 2刃加长型球头铣刀



Order Number	Dimension (mm)						B0819
	D	R	I 1	I 2	L	d2 (h6)	
933 0100 100 03	1	0.5	3		100	3	°
933 0100 100 04					100	4	°
933 0150 100 03	1.5	0.75	3		100	3	°
933 0150 100 04					100	4	°
933 0200 100 03	2	1	4		100	3	•
933 0200 100 04					100	4	°
933 0250 100 03	2.5	1.25	4		100	3	°
933 0250 100 04					100	4	°
933 0300	3	1.5	5		100	3	•
933 0300 100 04					100	4	°
933 0300 100 06	4	2	8		100	6	°
933 0400					100	4	•
933 0400 100 06	5	2.5	9		100	6	°
933 0500					100	5	•
933 0500 100 06	6	3	10		100	6	°
933 0600 100					100	6	•
933 0600 150	8	4	12		150	6	•
933 0800 100					100	8	•
933 0800 150	10	5	14		150	8	°
933 1000 125					125	10	•
933 1000 150	12	6	16		150	10	°
933 1200 125					125	12	•
933 1200 150	14	7	32		150	12	°
933 1400 150					150	14	°
933 1400 200	16	8	32		200	14	°
933 1600 150					150	16	°
933 1600 200	18	9	38		200	16	•
933 1800 150					150	18	°
933 1800 200	20	10	38		200	18	°
933 2000 150					150	20	°
933 2000 200					200	20	°

- BN 30
- BN 45
- BN 60
- BN 60X
- DM70 - BN70
- BN GR

Material Group | Material-Gruppe | Groupe Matière | Gruppo Materiali | 材质主类

Cutting Parameter

N01

N02

N03

K01

K02

P01

P02

P03

M01

M02

S01

S02

S03

H01

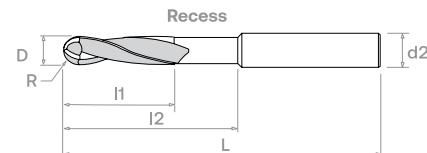
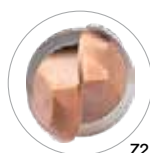
H02

O01

O02

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BN 45 BALLNOSE CUTTERS / WITH RECESS, 2 FLUTES

 VHM BN 45 Standard Radiusschaftfräser, 2 Zähne Frese sferiche BN 45, 2 taglienti Fraises BN 45, à bout hémisphérique, 2 dents 整体硬质合金 BN 45 系列 2刃球头铣刀

Order Number	Dimension (mm)						B0909
	D	R	I1	I2	L	d2 (h6)	
A57 0100 040 03	1	0.5	3		40	3	•
A57 0100 050 04					50	4	•
A57 0150 040 03	1.5	0.75	3		40	3	•
A57 0150 050 04					50	4	•
A57 0200 040 03	2	1	4		40	3	•
A57 0200 050 04					50	4	•
A57 0250 040 03	2.5	1.25	4		40	3	•
A57 0250 050 04					50	4	•
A57 0300	3	1.5	5		40	3	•
A57 0300 050 04					50	4	•
A57 0300 050 06	4	2	8		50	6	•
A57 0400					50	4	•
A57 0400 050 06	5	2.5	9		50	6	•
A57 0500					50	5	•
A57 0500 050 06	6	3	10		50	6	•
A57 0600 050					60	6	•
A57 0600 060	8	4	12		64	8	•
A57 0800					70	10	•
A57 1000	12	6	16		75	12	•
A57 1200					90	14	•
A57 1400	14	7	32		90	16	•
A57 1600					100	18	•
A57 1800	18	9	38		100	20	•
A57 2000					100	22	•
A57 2200	22	11	40		100	25	•
A57 2500					100	25	•

Order Number	Dimension (mm)						B0819
	D	R	I1	I2	L	d2 (h6)	
940 0100 040 03	1	0.5	3		40	3	•
940 0100 050 04					50	4	•
940 0150 040 03	1.5	0.75	3		40	3	•
940 0150 050 04					50	4	•
940 0200 040 03	2	1	4		40	3	•
940 0200 050 04					50	4	•
940 0250 040 03	2.5	1.25	4		40	3	•
940 0250 050 04					50	4	•
940 0300	3	1.5	5		40	3	•
940 0300 050 04					50	6	•
940 0300 050 06	4	2	8		50	6	•
940 0400					50	4	•
940 0400 050 06	5	2.5	9		50	6	•
940 0500					50	5	•
940 0500 050 06	6	3	10		50	6	•
940 0600 050					60	6	•
940 0600 060	8	4	12		64	8	•
940 0800					70	10	•
940 1000	12	6	16		75	12	•
940 1200					90	14	•
940 1400	14	7	32		90	16	•
940 1600					100	18	•
940 1800	18	9	38		100	20	•
940 2000					100	22	•
940 2200	22	11	40		100	25	•
940 2500					100	25	•

Order Number	Dimension (mm)						B0909
	D	R	I1	I2	L	d2 (h6)	
A58 0100 040 03	1	0.5	3	4	40	3	•
A58 0100 050 04				4	50	4	•
A58 0150 040 03	1.5	0.75	3	6	40	3	•
A58 0150 050 04 *				6	50	4	•
A58 0200 040 03	2	1	4	8	40	3	•
A58 0200 050 04 *				8	50	4	•
A58 0250 040 03 *	2.5	1.25	4	10	40	3	•
A58 0250 050 04				10	50	4	•
A58 0300	3	1.5	5	14	40	3	•
A58 0300 050 04				14	50	4	•
A58 0300 050 06	4	2	8	14	50	6	•
A58 0400 *				20	50	4	•
A58 0400 050 06	5	2.5	9	20	50	6	•
A58 0500 *				20	50	5	•
A58 0500 050 06	6	3	10	20	50	6	•
A58 0600 050				30	60	6	•
A58 0600 060	8	4	12	30	64	8	•
A58 0800				32	70	10	•
A58 1000	12	6	16	38	75	12	•
A58 1200				44	90	14	•
A58 1400 *	14	7	32	46	90	16	•
A58 1600				53	100	18	•
A58 1800	18	9	38	58	100	20	•
A58 2000				58	100	22	•
A58 2200	22	11	40	58	100	25	•
A58 2500				58	100	25	•

Order Number	Dimension (mm)						B0819
	D	R	I1	I2	L	d2 (h6)	
941 0100 040 03	1	0.5	3	4	40	3	•
941 0100 050 04				4	50	4	•
941 0150 040 03	1.5	0.75	3	6	40	3	•
941 0150 050 04 *				6	50	4	•
941 0200 040 03	2	1	4	8	40	3	•
941 0200 050 04 *				8	50	4	•
941 0250 040 03 *	2.5	1.25	4	10	40	3	•
941 0250 050 04				10	50	4	•
941 0300	3	1.5	5	14	40	3	•
941 0300 050 04				14	50	4	•
941 0300 050 06	4	2	8	14	50	6	•
941 0400 *				20	50	4	•
941 0400 050 06	5	2.5	9	20	50	6	•
941 0500 *				20	50	5	•
941 0500 050 06	6	3	10	20	50	6	•
941 0600 050				30	60	6	•
941 0600 060	8	4	12	30	64	8	•
941 0800				32	70	10	•
941 1000	12	6	16	38	75	12	•
941 1200				44	90	14	•
941 1400 *	14	7	32	46	90	16	•
941 1600				53	100	18	•
941 1800	18	9	38	58	100	20	•
941 2000				58	100	22	•
941 2200	22	11	40	58	100	25	•
941 2500				58	100	25	•

* - DIN 6535

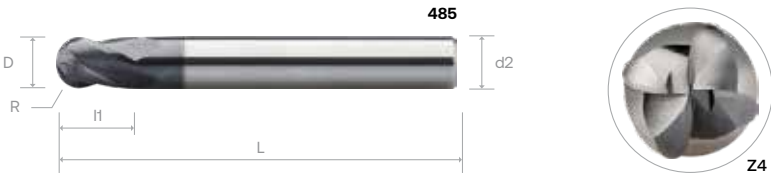
Material Group | Material-Gruppe | Groupe Matiere | Gruppo Materiali | 材质主类

Cutting Parameter

N01	N02	N03	K01	K02	P01	P02	P03	M01	M02	S01	S02	S03	H01	H02	O01	O02	386
○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

BN 45 BALLNOSE CUTTERS, 4 FLUTES

- VHM BN 45 Standard Radiusschafffräser, 4 Zähne
- Frese sferiche BN 45, 4 taglienti
- Fraises BN 45, à bout hémisphérique, 4 dents
- 整体硬质合金 BN 45 系列 4 刀球头铣刀



Order Number	Dimension (mm)						G6110
	D	R	I 1	I 2	L	d2 (h6)	
485 0300	3	1.5	5		40	3	•
485 0300 050 06					50	6	•
485 0400	4	2	8		50	4	•
485 0400 050 06					50	6	◦
485 0500	5	2.5	9		50	5	•
485 0500 050 06					50	6	◦
485 0600 050	6	3	10		50	6	•
485 0600 060					60	6	•
485 0800	8	4	12		64	8	•
485 1000	10	5	14		70	10	◦
485 1200	12	6	32		75	12	•
485 1400	14	7			90	14	◦
485 1600	16	8	38		90	16	◦
485 1800	18	9			100	18	◦
485 2000	20	10	40		100	20	◦
485 2200	22	11			100	22	◦
485 2500	25	12.5			100	25	◦

BN 30
BN 45
BN 60
BN 60X
DM70 - BN 70
BN GR

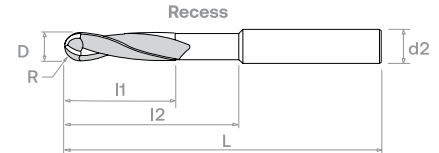
Material Group | Material-Gruppe | Groupe Matiere | Gruppo Materiali | 材质主类

Cutting Parameter

N01	N02	N03	K01	K02	P01	P02	P03	M01	M02	S01	S02	S03	H01	H02	O01	O02	387
			○	●	○	○	●	○	●	○	●		●	○			

BN 45 LONG BALLNOSE CUTTERS / WITH RECESS, 2 FLUTES

-  VHM BN 45 Radiusschafffräser, lang, 2 Zähne
-  Frese sferiche lunghe BN 45, 2 taglienti
-  Fraises BN 45 longues, à bout hémisphérique, 2 dents
-  整体硬质合金 BN 45 系列 2刃长型球头铣刀



Order Number	Dimension (mm)						B0909
	D	R	I1	I2	L	d2 (h6)	
A59 0100 060 03	1	0.5	3		60	3	°
A59 0100 075 04					75	4	•
A59 0150 060 03	1.5	0.75	3		60	3	•
A59 0150 075 04					75	4	•
A59 0200 060 03	2	1	4		60	3	°
A59 0200 075 04					75	4	•
A59 0250 060 03	2.5	1.25	4		60	3	°
A59 0250 075 04					75	4	•
A59 0300	3	1.5	5		60	3	•
A59 0300 075 06					75	6	•
A59 0400	4	2	8		60	4	•
A59 0400 075 06					75	6	•
A59 0500	5	2.5	9		60	5	•
A59 0500 075 06					75	6	•
A59 0600	6	3	10		75	6	•
A59 0800					75	8	•
A59 1000 075	10	5	14		75	10	•
A59 1000 100					100	10	•
A59 1200	12	6	16		100	12	•
A59 1400					125	14	•
A59 1600	16	8	32		125	16	•
A59 1800					125	18	•
A59 2000	20	10	38		125	20	•

Order Number	Dimension (mm)						B0819
	D	R	I1	I2	L	d2 (h6)	
942 0100 060 03	1	0.5	3		60	3	°
942 0100 075 04					75	4	°
942 0150 060 03	1.5	0.75	3		60	3	°
942 0150 075 04					75	4	°
942 0200 060 03	2	1	4		60	3	•
942 0200 075 04					75	4	•
942 0250 060 03	2.5	1.25	4		60	3	°
942 0250 075 04					75	4	•
942 0300	3	1.5	5		60	3	°
942 0300 075 06					75	6	•
942 0400	4	2	8		60	4	•
942 0400 075 06					75	6	•
942 0500	5	2.5	9		60	5	°
942 0500 075 06					75	6	•
942 0600	6	3	10		75	6	•
942 0800					75	8	°
942 1000 075	10	5	14		75	10	°
942 1000 100					100	10	•
942 1200	12	6	16		100	12	°
942 1400					125	14	°
942 1600	16	8	32		125	16	°
942 1800					125	18	°
942 2000	20	10	38		125	20	•

Order Number	Dimension (mm)						B0909
	D	R	I1	I2	L	d2 (h6)	
A60 0100 060 03	1	0.5	3	7	60	3	°
A60 0100 075 04				7	75	4	°
A60 0150 060 03	1.5	0.75	3	10	60	3	°
A60 0150 075 04				10	75	4	•
A60 0200 060 03	2	1	4	14	60	3	°
A60 0200 075 04				14	75	4	•
A60 0250 060 03	2.5	1.25	4	18	60	3	°
A60 0250 075 04				18	75	4	°
A60 0300	3	1.5	5	21	60	3	°
A60 0300 075 06				21	75	6	°
A60 0400	4	2	8	28	60	4	•
A60 0400 075 06				28	75	6	•
A60 0500	5	2.5	9	32	60	5	•
A60 0500 075 06				32	75	6	°
A60 0600	6	3	10	40	75	6	•
A60 0800				40	75	8	•
A60 1000 075	10	5	14	40	75	10	°
A60 1000 100				60	100	10	•
A60 1200	12	6	16	60	100	12	•
A60 1400				80	125	14	°
A60 1600	16	8	32	80	125	16	°
A60 1800				80	125	18	°
A60 2000	20	10	38	80	125	20	°

Order Number	Dimension (mm)						B0819
	D	R	I1	I2	L	d2 (h6)	
943 0100 060 03	1	0.5	3	7	60	3	°
943 0100 075 04				7	75	4	°
943 0150 060 03	1.5	0.75	3	10	60	3	°
943 0150 075 04				10	75	4	°
943 0200 060 03	2	1	4	14	60	3	°
943 0200 075 04				14	75	4	°
943 0250 060 03	2.5	1.25	4	18	60	3	•
943 0250 075 04				18	75	4	°
943 0300	3	1.5	5	21	60	3	°
943 0300 075 06				21	75	6	•
943 0400	4	2	8	28	60	4	°
943 0400 075 06				28	75	6	•
943 0500	5	2.5	9	32	60	5	°
943 0500 075 06				32	75	6	•
943 0600	6	3	10	40	75	6	•
943 0800				40	75	8	•
943 1000 075	10	5	14	40	75	10	°
943 1000 100				60	100	10	•
943 1200	12	6	16	60	100	12	•
943 1400				80	125	14	°
943 1600	16	8	32	80	125	16	°
943 1800				80	125	18	°
943 2000	20	10	38	80	125	20	•

* - DIN 6535

Material Group | Material-Gruppe | Groupe Matiere | Gruppo Materiali | 材质主类

Cutting Parameter

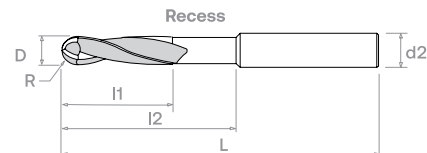
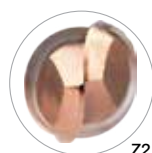
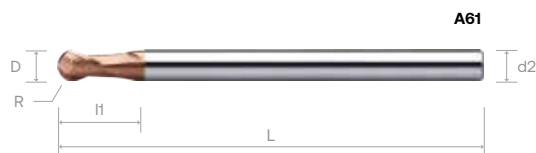
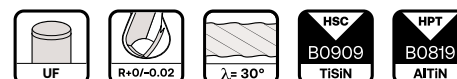
N01	N02	N03	K01	K02	P01	P02	P03	M01	M02	S01	S02	S03	H01	H02	O01	O02	388
			○	●	○	○	●	○	●	○	●	○	●	○	○		

944 / 945 / A61 / A62



BN 45 EXTRA-LONG BALLNOSE CUTTERS / WITH RECESS, 2 FLUTES

- VHM BN 45 Radiusschaftfräser, extra-lang, 2 Zähne
- Frese sferiche extra-lunghe BN 45, 2 taglienti
- Fraises BN 45 extra-longues, à bout hémisphérique, 2 dents
- 整体硬质合金 BN 45 系列 2刃加长型球头铣刀



Order Number	Dimension (mm)						B0909
	D	R	I1	I2	L	d2 (h6)	
A61 0100 100 03	1	0.5	3		100	3	°
A61 0100 100 04					100	4	°
A61 0150 100 03	1.5	0.75	3		100	3	°
A61 0150 100 04					100	4	°
A61 0200 100 03	2	1	4		100	3	°
A61 0200 100 04					100	4	°
A61 0250 100 03	2.5	1.25	4		100	3	°
A61 0250 100 04					100	4	°
A61 0300	3	1.5	5		100	3	•
A61 0300 100 06					100	6	•
A61 0400	4	2	8		100	4	•
A61 0400 100 06					100	6	•
A61 0500	5	2.5	9		100	5	•
A61 0500 100 06					100	6	•
A61 0600 100	6	3	10		100	6	•
A61 0600 150					150	6	•
A61 0800 100	8	4	12		100	8	•
A61 0800 150					150	8	•
A61 1000 125	10	5	14		125	10	•
A61 1000 150					150	10	•
A61 1200 125	12	6	16		125	12	•
A61 1200 150					150	12	•
A61 1400 150	14	7	32		150	14	•
A61 1400 200					200	14	•
A61 1600 150	16	8	32		150	16	•
A61 1600 200					200	16	•
A61 1800 150	18	9	38		150	18	°
A61 1800 200					200	18	°
A61 2000 150	20	10	38		150	20	°
A61 2000 200					200	20	•

Order Number	Dimension (mm)						B0819
	D	R	I1	I2	L	d2 (h6)	
944 0100 100 03	1	0.5	3		100	3	°
944 0100 100 04					100	4	°
944 0150 100 03	1.5	0.75	3		100	3	°
944 0150 100 04					100	4	°
944 0200 100 03	2	1	4		100	3	°
944 0200 100 04					100	4	°
944 0250 100 03	2.5	1.25	4		100	3	°
944 0250 100 04					100	4	°
944 0300	3	1.5	5		100	3	•
944 0300 100 06					100	6	°
944 0400	4	2	8		100	4	•
944 0400 100 06					100	6	°
944 0500	5	2.5	9		100	5	•
944 0500 100 06					100	6	°
944 0600 100	6	3	10		100	6	°
944 0600 150					150	6	•
944 0800 100	8	4	12		100	8	°
944 0800 150					150	8	•
944 1000 125	10	5	14		125	10	•
944 1000 150					150	10	•
944 1200 125	12	6	16		125	12	°
944 1200 150					150	12	°
944 1400 150	14	7	32		150	14	°
944 1400 200					200	14	°
944 1600 150	16	8	32		150	16	°
944 1600 200					200	16	°
944 1800 150	18	9	38		150	18	°
944 1800 200					200	18	°
944 2000 150	20	10	38		150	20	°
944 2000 200					200	20	°

cont'd ▶

Material Group | Material-Gruppe | Groupe Matière | Gruppo Materiali | 材质主类

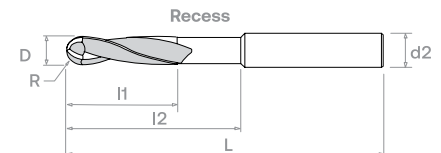
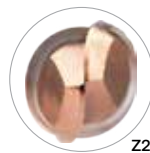
Cutting Parameter

N01	N02	N03	K01	K02	P01	P02	P03	M01	M02	S01	S02	S03	H01	H02	O01	O02	389
○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○

Modifiche Tecniche possibili senza preavviso

BN 45 EXTRA-LONG BALLNOSE CUTTERS / WITH RECESS, 2 FLUTES

- VHM BN 45 Radiuschaftfräser, extra-lang, 2 Zähne
- Frese sferiche extra-lunghe BN 45, 2 taglienti
- Fraises BN 45 extra-longues, à bout hémisphérique, 2 dents
- 整体硬质合金 BN 45 系列 2刃加长型球头铣刀



Order Number	Dimension (mm)						B0909
	D	R	I1	I2	L	d2 (h6)	
A62 0100 100 03	1	0.5	3	10	100	3	°
A62 0100 100 04				10	100	4	°
A62 0150 100 03	1.5	0.75	3	15	100	3	°
A62 0150 100 04				15	100	4	°
A62 0200 100 03	2	1	4	20	100	3	°
A62 0200 100 04				20	100	4	°
A62 0250 100 03	2.5	1.25	4	25	100	3	°
A62 0250 100 04				25	100	4	°
A62 0300	3	1.5	5	30	100	3	°
A62 0300 100 06				30	100	6	°
A62 0400	4	2	8	40	100	4	°
A62 0400 100 06				40	100	6	°
A62 0500	5	2.5	9	50	100	5	°
A62 0500 100 06				50	100	6	°
A62 0600 100	6	3	10	60	100	6	°
A62 0600 150				60	150	6	°
A62 0800 100	8	4	12	80	100	8	°
A62 0800 150				80	150	8	°
A62 1000 125 *	10	5	14	85	125	10	°
A62 1000 150				100	150	10	°
A62 1200 125	12	6	16	85	125	12	°
A62 1200 150				110	150	12	°
A62 1400 150	14	7	32	110	150	14	°
A62 1400 200				150	200	14	°
A62 1600 150	16	8	32	110	150	16	°
A62 1600 200 *				150	200	16	°
A62 1800 150	18	9	38	110	150	18	°
A62 1800 200 *				150	200	18	°
A62 2000 150	20	10	38	110	150	20	°
A62 2000 200 *				150	200	20	°

Order Number	Dimension (mm)						B0819
	D	R	I1	I2	L	d2 (h6)	
945 0100 100 03	1	0.5	3	10	100	3	°
945 0100 100 04				10	100	4	°
945 0150 100 03	1.5	0.75	3	15	100	3	°
945 0150 100 04				15	100	4	°
945 0200 100 03	2	1	4	20	100	3	°
945 0200 100 04				20	100	4	°
945 0250 100 03	2.5	1.25	4	25	100	3	°
945 0250 100 04				25	100	4	°
945 0300	3	1.5	5	30	100	3	°
945 0300 100 06				30	100	6	°
945 0400	4	2	8	40	100	4	°
945 0400 100 06				40	100	6	°
945 0500	5	2.5	9	50	100	5	°
945 0500 100 06				50	100	6	°
945 0600 100	6	3	10	60	100	6	°
945 0600 150				60	150	6	°
945 0800 100	8	4	12	80	100	8	°
945 0800 150				80	150	8	°
945 1000 125 *	10	5	14	85	125	10	°
945 1000 150				100	150	10	°
945 1200 125	12	6	16	85	125	12	°
945 1200 150				110	150	12	°
945 1400 150	14	7	32	110	150	14	°
945 1400 200				150	200	14	°
945 1600 150	16	8	32	110	150	16	°
945 1600 200 *				150	200	16	°
945 1800 150	18	9	38	110	150	18	°
945 1800 200 *				150	200	18	°
945 2000 150	20	10	38	110	150	20	°
945 2000 200 *				150	200	20	°

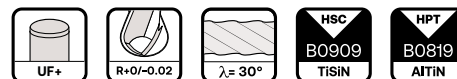
* - DIN 6535

Material Group | Material-Gruppe | Groupe Matiere | Gruppo Materiali | 材质主类

Cutting Parameter

N01	N02	N03	K01	K02	P01	P02	P03	M01	M02	S01	S02	S03	H01	H02	O01	O02	389
			○	●	○	○	●	○	●	○	●		●	○			

	VHM BN45 Radiuskleinstschافتraser, 2 Zahne
	Micro-frese sferiche BN 45, 2 taglienti
	Micro-fraises BN 45  bout hemispherique, 2 dents
	整体硬质合金 BN 45 系列 微小 2 径 2 球头铣刀



Order Number	Dimension (mm)						B0819	Order Number	Dimension (mm)						B0909
	D	R	I1	I2	L	d2 (h6)			D	R	I1	I2	L	d2 (h6)	
935 0020 03	0.2	0.1	0.4		40	3	•	A63 0100 100 03	0.2	0.1	0.4		40	3	◦
935 0020 04					40	4	•	A63 0100 100 04					40	4	◦
935 0030 03	0.3	0.15	0.6		40	3	•	A63 0150 100 03	0.3	0.15	0.6		40	3	◦
935 0030 04					40	4	•	A63 0150 100 04					40	4	•
935 0040 03	0.4	0.2	0.8		40	3	•	A63 0200 100 03	0.4	0.2	0.8		40	3	◦
935 0040 04					40	4	•	A63 0200 100 04					40	4	•
935 0050 03	0.5	0.25	1.2		40	3	•	A63 0250 100 03	0.5	0.25	1.2		40	3	◦
935 0050 04					40	4	•	A63 0250 100 04					40	4	•
935 0060 03	0.6	0.3	1.4		40	3	•	A63 0300	0.6	0.3	1.4		40	3	•
935 0060 04					40	4	•	A63 0300 100 06					40	4	•
935 0070 03	0.7	0.35	1.6		40	3	◦	A63 0400	0.7	0.35	1.6		40	3	◦
935 0070 04					40	4	•	A63 0400 100 06					40	4	◦
935 0080 03	0.8	0.4	1.8		40	3	•	A63 0500	0.8	0.4	1.8		40	3	◦
935 0080 04					40	4	•	A63 0500 100 06					40	4	•
935 0090 03	0.9	0.45	2		40	3	◦	A63 0600 100	0.9	0.45	2		40	3	◦
935 0090 04					40	4	•	A63 0600 150					40	4	•

D mm	Tol. μm
0.1 ~ 0.7	0 / -12
0.7 ~ 4.0	0 / -20

Material Group | Material-Gruppe | Groupe Matiere | Gruppo Materiali | 材质主类

Cutting Parameter

N01 N02 N03 K01 K02 P01 P02 P03 M01 M02 S01 S02 S03 H01 H02 O01 O02 390

BN 45 MINIATURE BALLNOSE CUTTERS WITH LONG NECK SHANK 6, 2 FLUTES

- VHM BN 45 Kleinstradiusfräser mit langem Hals, 2 Zähne
- Micro-frese sferiche BN 45, con collo lungo, codolo 6, 2 taglienti
- Micro-fraises BN 45 à bout hémisphérique avec cou long tige 6, 2 dents
- 整体硬质合金 BN 45 系列 微小径2刃长颈球头铣刀 Ø6柄



Order Number	Dimension (mm)							B0909
	D	R	I1	I2	L	d1	d2 (h6)	
A65 0050 060 0600 025	0.5	0.25	0.5	2.5	60	0.45	6	•
A65 0060 060 0600 060	0.6	0.3	0.6	6	60	0.55	6	•
A65 0080 060 0600 040	0.8	0.4	0.8	4	60	0.75	6	◦
A65 0080 060 0600 080				8	60	0.75	6	◦
A65 0100 060 0600 050	1.0	0.5	1.5	5	60	0.9	6	•
A65 0100 060 0600 080				8	60	0.9	6	◦
A65 0100 060 0600 120				12	60	0.9	6	◦
A65 0120 060 0600 060	1.2	0.6	1.8	6	60	1.1	6	•
A65 0150 060 0600 080	1.5	0.75	2.3	8	60	1.4	6	•
A65 0150 060 0600 120				12	60	1.4	6	•
A65 0150 060 0600 160				16	60	1.4	6	◦
A65 0160 060 0600 160				16	60	1.4	6	◦
A65 0180 060 0600 160	1.8	0.9	2.7	16	60	1.7	6	◦
A65 0200 060 0600 120	2.0	1	3	12	60	1.9	6	•
A65 0200 060 0600 160				16	60	1.9	6	◦
A65 0200 075 0600 200				20	75	1.9	6	◦
A65 0250 075 0600 125	2.5	1.25	3	12.5	75	2.4	6	•
A65 0300 075 0600 160	3.0	1.5	4.5	16	75	2.8	6	•
A65 0300 075 0600 200				20	75	2.8	6	◦
A65 0400 075 0600 200	4.0	2	6	20	75	3.7	6	•

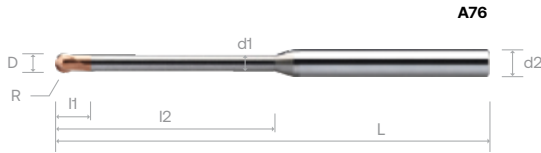
Material Group | Material-Gruppe | Groupe Matiere | Gruppo Materiali | 材质主类

Cutting Parameter

N01	N02	N03	K01	K02	P01	P02	P03	M01	M02	S01	S02	S03	H01	H02	O01	O02	392 - 395
			○	●	○	○	●	○	●	○	●		●	○			

BN 45 MINIATURE BALLNOSE CUTTERS WITH LONG NECK, 2 FLUTES

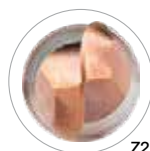
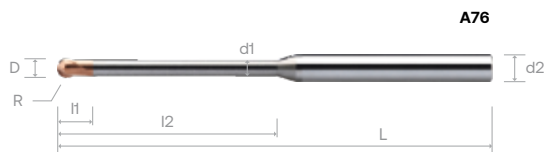
- 🇩🇪 VHM BN 45 Kleinstradiusfräser mit langem Hals, 2 Zähne
- 🇮🇹 Micro-frese sferiche BN 45, con collo lungo, 2 taglianti
- 🇫🇷 Micro-fraises BN 45 à bout hémisphérique avec cou long, 2 dents
- 🇨🇳 整体硬质合金 BN 45 系列 微小径2刃长颈球头铣刀



Order Number	Dimension (mm)							B0819	Order Number	Dimension (mm)							B0909			
	D	R	I 1	I 2	L	d1	d2 (H6)			D	R	I 1	I 2	L	d1	d2 (H6)				
937 0020 050 0400	0.2	0.10	0.2	-	50	-	4	°	A76 0020 050 0400	0.2	0.10	0.2	-	50	-	4	•			
937 0020 050 0400 005				0.5	50	0.17	4	°	A76 0020 050 0400 005				0.5	50	0.17	4	•			
937 0020 050 0400 010				1.0	50	0.17	4	•	A76 0020 050 0400 010				1.0	50	0.17	4	•			
937 0020 050 0400 015				1.5	50	0.17	4	•	A76 0020 050 0400 015				1.5	50	0.17	4	•			
937 0030 050 0400	0.3	0.15	0.3	-	50	-	4	°	A76 0030 050 0400	0.3	0.15	0.3	-	50	-	4	•			
937 0030 050 0400 010				1.0	50	0.27	4	•	A76 0030 050 0400 010				1.0	50	0.27	4	•			
937 0030 050 0400 020				2.0	50	0.27	4	•	A76 0030 050 0400 020				2.0	50	0.27	4	•			
937 0030 050 0400 030				3.0	50	0.27	4	°	A76 0030 050 0400 030				3.0	50	0.27	4	•			
937 0040 050 0400	0.4	0.20		-	50	-	4	°	A76 0040 050 0400	0.4	0.20		-	50	-	4	•			
937 0040 050 0400 010				1.0	50	0.37	4	•	A76 0040 050 0400 010				1.0	50	0.37	4	•			
937 0040 050 0400 020				2.0	50	0.37	4	•	A76 0040 050 0400 020				2.0	50	0.37	4	•			
937 0040 050 0400 030				3.0	50	0.37	4	•	A76 0040 050 0400 030				3.0	50	0.37	4	•			
937 0040 050 0400 040	0.4	0.20		4.0	50	0.37	4	•	A76 0040 050 0400 040	0.4	0.20		4.0	50	0.37	4	•			
937 0040 050 0400 050				5.0	50	0.37	4	°	A76 0040 050 0400 050				5.0	50	0.37	4	•			
937 0050 050 0400		0.5	0.25	0.4	-	50	-	4	°		A76 0050 050 0400	0.5	0.25	0.4	-	50	-	4	•	
937 0050 050 0400 020					2.0	50	0.45	4	•		A76 0050 050 0400 020				2.0	50	0.45	4	•	
937 0050 050 0400 030					3.0	50	0.45	4	•		A76 0050 050 0400 030				3.0	50	0.45	4	•	
937 0050 050 0400 040					4.0	50	0.45	4	•		A76 0050 050 0400 040				4.0	50	0.45	4	•	
937 0050 050 0400 050	0.5		0.25	5.0	50	0.45	4	•	A76 0050 050 0400 050	0.5			0.25	5.0	50	0.45	4	•		
937 0050 050 0400 060				6.0	50	0.45	4	•	A76 0050 050 0400 060					6.0	50	0.45	4	•		
937 0050 050 0400 080				8.0	50	0.45	4	•	A76 0050 050 0400 080					8.0	50	0.45	4	•		
937 0060 050 0400 020				2.0	50	0.55	4	°	A76 0060 050 0400 020					2.0	50	0.55	4	•		
937 0060 050 0400	0.6	0.30	0.5	-	50	-	4	•	A76 0060 050 0400	0.6	0.30	0.5	-	50	-	4	•			
937 0060 050 0400 030				3.0	50	0.55	4	•	A76 0060 050 0400 030				3.0	50	0.55	4	•			
937 0060 050 0400 040				4.0	50	0.55	4	•	A76 0060 050 0400 040				4.0	50	0.55	4	•			
937 0060 050 0400 050				5.0	50	0.55	4	°	A76 0060 050 0400 050				5.0	50	0.55	4	•			
937 0060 050 0400 060	0.6	0.30	0.5	6.0	50	0.55	4	•	A76 0060 050 0400 060	0.6	0.30	0.5	6.0	50	0.55	4	•			
937 0060 050 0400 080				8.0	50	0.55	4	°	A76 0060 050 0400 080				8.0	50	0.55	4	•			
937 0080 050 0400		0.8	0.40	0.6	-	50	-	4	°		A76 0080 050 0400	0.8	0.40	0.6	-	50	-	4	•	
937 0080 050 0400 020					2.0	50	0.75	4	•		A76 0080 050 0400 020				2.0	50	0.75	4	•	
937 0080 050 0400 040					4.0	50	0.75	4	°		A76 0080 050 0400 040				4.0	50	0.75	4	•	
937 0080 050 0400 050					5.0	50	0.75	4	•		A76 0080 050 0400 050				5.0	50	0.75	4	•	
937 0080 050 0400 060	0.8	0.40	0.6	6.0	50	0.75	4	•	A76 0080 050 0400 060	0.8	0.40	0.6	6.0	50	0.75	4	•			
937 0080 050 0400 070				7.0	50	0.75	4	°	A76 0080 050 0400 070				7.0	50	0.75	4	•			
937 0080 050 0400 080				8.0	50	0.75	4	•	A76 0080 050 0400 080				8.0	50	0.75	4	•			
937 0080 050 0400 100				10.0	50	0.75	4	•	A76 0080 050 0400 100				10.0	50	0.75	4	•			
937 0100 050 0400	1.0	0.50	0.8	-	50	-	4	°	A76 0100 050 0400	1.0	0.50	0.8	-	50	-	4	•			
937 0100 050 0400 030				3.0	50	0.9	4	°	A76 0100 050 0400 030				3.0	50	0.9	4	•			
937 0100 050 0400 040				4	50	0.9	4	•	A76 0100 050 0400 040				4	50	0.9	4	•			
937 0100 050 0400 050				5	50	0.9	4	•	A76 0100 050 0400 050				5	50	0.9	4	•			
937 0100 050 0400 060	1.0	0.50	0.8	6	50	0.9	4	•	A76 0100 050 0400 060	1.0	0.50	0.8	6	50	0.9	4	•			
937 0100 050 0400 070				7	50	0.9	4	°	A76 0100 050 0400 070				7	50	0.9	4	•			
937 0100 050 0400 080				8	50	0.9	4	•	A76 0100 050 0400 080				8	50	0.9	4	•			
937 0100 050 0400 090				9	50	0.9	4	°	A76 0100 050 0400 090				9	50	0.9	4	•			
937 0100 050 0400 100	1.0	0.50	0.8	10	50	0.9	4	•	A76 0100 050 0400 100	1.0	0.50	0.8	10	50	0.9	4	•			
937 0100 050 0400 120				12	50	0.9	4	•	A76 0100 050 0400 120				12	50	0.9	4	•			
937 0100 050 0400 140				14	50	0.9	4	•	A76 0100 050 0400 140				14	50	0.9	4	•			
937 0100 050 0400 160 *				16	50	0.9	4	•	A76 0100 050 0400 160 *				16	50	0.9	4	•			
937 0100 060 0400	1.0	0.60	1.0	-	60	-	4	°	A76 0100 060 0400	1.0	0.60	1.0	-	60	-	4	•			
937 0100 060 0400 200				20	60	0.9	4	°	A76 0100 060 0400 200				20	60	0.9	4	•			
937 0120 050 0400		1.2	0.60	1.0	-	50	-	4	°		A76 0120 050 0400	1.2	0.60	1.0	-	50	-	4	°	
937 0120 050 0400 060					6	50	1.1	4	°		A76 0120 050 0400 060				6	50	1.1	4	•	
937 0120 050 0400 080					8	50	1.1	4	°		A76 0120 050 0400 080				8	50	1.1	4	•	
937 0120 050 0400 100					10	50	1.1	4	•		A76 0120 050 0400 100				10	50	1.1	4	•	
937 0120 050 0400 120	1.2	0.60	1.0	12	50	1.1	4	°	A76 0120 050 0400 120	1.2	0.60	1.0	12	50	1.1	4	•			
937 0140 050 0400				-	50	-	4	°	A76 0140 050 0400				-	50	-	4	°			
937 0140 050 0400 080				8	50	1.3	4	°	A76 0140 050 0400 080				8	50	1.3	4	•			
937 0140 050 0400 120				12	50	1.3	4	°	A76 0140 050 0400 120				12	50	1.3	4	•			
937 0140 050 0400 160 *	1.4	0.70																		

BN 45 MINIATURE BALLNOSE CUTTERS WITH LONG NECK, 2 FLUTES

-  VHM BN 45 Kleinstradiusfräser mit langem Hals, 2 Zähne
-  Micro-frese sferiche BN 45, con collo lungo, 2 taglienti
-  Micro-fraises BN 45 à bout hémisphérique avec cou long, 2 dents
-  整体硬质合金 BN 45 系列 微小径2刀长颈球头铣刀



Order Number	Dimension (mm)							B0819	Order Number	Dimension (mm)							B0909
	D	R	I1	I2	L	d1	d2 (h6)			D	R	I1	I2	L	d1	d2 (h6)	
937 0150 050 0400	1.5	0.75	1.2	-	50	-	4	°	A76 0150 050 0400	1.5	0.75	1.2	-	50	-	4	•
937 0150 050 0400 080				8	50	1.4	4	•	A76 0150 050 0400 080				8	50	1.4	4	•
937 0150 050 0400 120				12	50	1.4	4	•	A76 0150 050 0400 120				12	50	1.4	4	•
937 0150 050 0400 160 *				16	50	1.4	4	°	A76 0150 050 0400 160 *				16	50	1.4	4	°
937 0150 060 0400				-	60	-	4	°	A76 0150 060 0400				-	60	-	4	•
937 0150 060 0400 180	1.6	0.80	1.3	18	60	1.4	4	•	A76 0150 060 0400 180	1.6	0.80	1.3	18	60	1.4	4	•
937 0160 050 0400				-	50	-	4	°	A76 0160 050 0400				-	50	-	4	°
937 0160 050 0400 080				8	50	1.5	4	°	A76 0160 050 0400 080				8	50	1.5	4	•
937 0160 050 0400 120				12	50	1.5	4	°	A76 0160 050 0400 120				12	50	1.5	4	•
937 0160 050 0400 160 *				16	50	1.5	4	°	A76 0160 050 0400 160 *				16	50	1.5	4	•
937 0160 060 0400	1.8	0.90	1.4	-	60	-	4	°	A76 0160 060 0400	1.8	0.90	1.4	-	60	-	4	°
937 0160 060 0400 200				20	60	1.5	4	°	A76 0160 060 0400 200				20	60	1.5	4	•
937 0180 050 0400				-	50	-	4	°	A76 0180 050 0400				-	50	-	4	°
937 0180 050 0400 080				8	50	1.7	4	°	A76 0180 050 0400 080				8	50	1.7	4	•
937 0180 050 0400 120				12	50	1.7	4	°	A76 0180 050 0400 120				12	50	1.7	4	•
937 0180 050 0400 160 *	2	1	1.6	16	50	1.7	4	•	A76 0180 050 0400 160 *	2	1	1.6	16	50	1.7	4	•
937 0180 060 0400				-	60	-	4	°	A76 0180 060 0400				-	60	-	4	°
937 0180 060 0400 200				20	60	1.7	4	°	A76 0180 060 0400 200				20	60	1.7	4	°
937 0200 050 0400				-	50	-	4	°	A76 0200 050 0400				-	50	-	4	•
937 0200 050 0400 040				4	50	1.9	4	°	A76 0200 050 0400 040				4	50	1.9	4	•
937 0200 050 0400 060	3	1.5	2.4	6	50	1.9	4	•	A76 0200 050 0400 060	3	1.5	2.4	6	50	1.9	4	•
937 0200 050 0400 080				8	50	1.9	4	•	A76 0200 050 0400 080				8	50	1.9	4	•
937 0200 050 0400 100				10	50	1.9	4	•	A76 0200 050 0400 100				10	50	1.9	4	•
937 0200 050 0400 120				12	50	1.9	4	•	A76 0200 050 0400 120				12	50	1.9	4	•
937 0200 050 0400 140				14	50	1.9	4	•	A76 0200 050 0400 140				14	50	1.9	4	•
937 0200 050 0400 160	4	2	3.2	16	50	1.9	4	•	A76 0200 050 0400 160	4	2	3.2	16	50	1.9	4	•
937 0200 060 0400				-	60	-	4	°	A76 0200 060 0400				-	60	-	4	°
937 0200 060 0400 180				18	60	1.9	4	°	A76 0200 060 0400 180				18	60	1.9	4	•
937 0200 060 0400 200				20	60	1.9	4	•	A76 0200 060 0400 200				20	60	1.9	4	•
937 0200 060 0400 220				22	60	1.9	4	°	A76 0200 060 0400 220				22	60	1.9	4	•
937 0200 075 0400	3	1.5	2.4	-	75	-	4	°	A76 0200 075 0400	3	1.5	2.4	-	75	-	4	°
937 0200 075 0400 250				25	75	1.9	4	•	A76 0200 075 0400 250				25	75	1.9	4	•
937 0200 075 0400 300				30	75	1.9	4	•	A76 0200 075 0400 300				30	75	1.9	4	•
937 0300 050 0600				-	50	-	6	°	A76 0300 050 0600				-	50	-	6	°
937 0300 050 0600 080 *				8	50	2.8	6	•	A76 0300 050 0600 080 *				8	50	2.8	6	•
937 0300 050 0600 100	4	2	3.2	10	50	2.8	6	•	A76 0300 050 0600 100	4	2	3.2	10	50	2.8	6	•
937 0300 060 0600				-	60	-	6	°	A76 0300 060 0600				-	60	-	6	°
937 0300 060 0600 160				16	60	2.8	6	°	A76 0300 060 0600 160				16	60	2.8	6	•
937 0300 060 0600 200				20	60	2.8	6	•	A76 0300 060 0600 200				20	60	2.8	6	•
937 0300 075 0600				-	75	-	6	°	A76 0300 075 0600				-	75	-	6	°
937 0300 075 0600 250	4	2	3.2	25	75	2.8	6	•	A76 0300 075 0600 250	4	2	3.2	25	75	2.8	6	•
937 0300 075 0600 300				30	75	2.8	6	•	A76 0300 075 0600 300				30	75	2.8	6	•
937 0300 075 0600 350				35	75	2.8	6	•	A76 0300 075 0600 350				35	75	2.8	6	•
937 0400 050 0600				-	50	-	6	°	A76 0400 050 0600				-	50	-	6	•
937 0400 050 0600 100				10	50	3.7	6	°	A76 0400 050 0600 100				10	50	3.7	6	•
937 0400 060 0600	4	2	3.2	-	60	-	6	°	A76 0400 060 0600	4	2	3.2	-	60	-	6	°
937 0400 060 0600 160				16	60	3.7	6	°	A76 0400 060 0600 160				16	60	3.7	6	•
937 0400 060 0600 200				20	60	3.7	6	•	A76 0400 060 0600 200				20	60	3.7	6	•
937 0400 075 0600				-	75	-	6	°	A76 0400 075 0600				-	75	-	6	°
937 0400 075 0600 250				25	75	3.7	6	°	A76 0400 075 0600 250				25	75	3.7	6	•
937 0400 075 0600 300	4	2	3.2	30	75	3.7	6	•	A76 0400 075 0600 300	4	2	3.2	30	75	3.7	6	•
937 0400 075 0600 350				35	75	3.7	6	•	A76 0400 075 0600 350				35	75	3.7	6	•
937 0400 100 0600				-	100	-	6	°	A76 0400 100 0600				-	100	-	6	°
937 0400 100 0600 400				40	100	3.7	6	°	A76 0400 100 0600 400				40	100	3.7	6	•
937 0400 100 0600 450				45	100	3.7	6	°	A76 0400 100 0600 450				45	100	3.7	6	•
937 0400 100 0600 500				50	100	3.7	6	•	A76 0400 100 0600 500				50	100	3.7	6	•

* - DIN 6535

Material Group | Material-Gruppe | Groupe Matiere | Gruppo Materiali | 材质主类

Cutting Parameter

N01	N02	N03	K01	K02	P01	P02	P03	M01	M02	S01	S02	S03	H01	H02	O01	O02	392 - 395
			○	●	○	○	●	○	●	○	●		●	○			

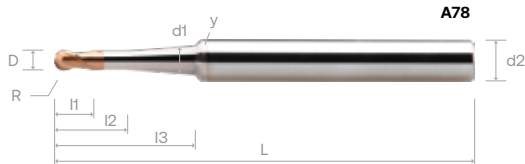
BN 45 TAPER NECK BALLNOSE CUTTERS, 2 FLUTES

🇩🇪 VHM BN 45 Radiuschaftfräser, lang, 2 Zähne

🇮🇹 Frese BN 45, con collo conico, 2 taglienti

🇫🇷 Fraises 2 tailles BN 45 col conique, 2 dents

🇨🇳 整体硬质合金 BN 45 系列 2刃球头铣刀 锥颈型



Order Number	Dimension (mm)									Interference Angle	Effective Wall Gradient Angle			B0909
	D	R	I1	I2	I3	d1	L	y	d2 (h6)		1°	2°	3°	
A78 0100 010 06 010	1.0	0.5	1.0	2.0	10	1.18	60	1°	6	11.85°	10.28	10.24	10.41	°
A78 0100 015 06 010			1.0	2.0	15	1.35	60	1°	6	8.45°	15.08	15.33	15.59	°
A78 0100 020 06 010			1.0	2.0	20	1.53	60	1°	6	6.56°	20.08	20.42	20.76	°
A78 0100 025 06 010			1.0	2.0	25	1.70	60	1°	6	5.36°	25.08	25.51	25.94	°
A78 0100 010 06 015			1.0	2.0	10	1.32	60	1.5°	6	11.92°	10.01	10.17	10.34	°
A78 0100 015 06 015			1.0	2.0	15	1.58	60	1.5°	6	8.51°	-	15.21	15.47	°
A78 0100 020 06 015			1.0	2.0	20	1.84	60	1.5°	6	6.61°	-	20.26	20.60	°
A78 0100 025 06 015			1.0	2.0	25	2.10	60	1.5°	6	5.40°	-	25.30	25.73	°
A78 0100 020 06 020			1.0	2.0	10	1.46	60	2°	6	11.99°	-	10.10	10.27	°
A78 0100 015 06 020			1.0	2.0	15	1.81	60	2°	6	8.57°	-	15.10	15.35	°
A78 0100 020 06 020			1.0	2.0	20	2.16	60	2°	6	6.66°	-	20.09	20.43	°
A78 0100 010 06 030			1.0	2.0	10	1.74	60	3°	6	12.13	-	-	10.12	°
A78 0100 015 06 030			1.0	2.0	15	2.26	60	3°	6	8.68°	-	-	15.11	°
A78 0100 020 06 030			1.0	2.0	20	2.79	60	3°	6	6.75°	-	-	20.10	°
A78 0100 015 06 050			1.0	2.0	15	3.17	60	5°	6	8.93°	-	-	-	°
A78 0100 020 06 050			1.0	2.0	20	4.05	60	5°	6	6.96°	-	-	-	°
A78 0150 010 06 010	1.5	0.75	1.5	3.0	10	1.64	60	1°	6	11.14°	10.09	10.25	10.42	°
A78 0150 015 06 010			1.5	3.0	15	1.82	60	1°	6	7.84°	15.09	15.34	15.59	°
A78 0150 020 06 010			1.5	3.0	20	1.99	60	1°	6	6.04°	20.09	20.43	20.77	°
A78 0150 030 06 010			1.5	3.0	30	2.34	75	1°	6	4.14°	30.09	30.60	31.12	°
A78 0150 010 06 020			1.5	3.0	10	1.89	60	2°	6	11.26°	-	10.13	10.29	°
A78 0150 015 06 020			1.5	3.0	15	2.24	60	2°	6	7.94°	-	15.12	15.37	°
A78 0150 020 06 020			1.5	3.0	20	2.59	60	2°	6	6.13°	-	20.12	20.45	°
A78 0150 030 06 020			1.5	3.0	30	3.29	75	2°	6	4.20°	-	30.12	30.62	°
A78 0150 015 06 030			1.5	3.0	15	2.66	60	3°	6	8.04°	-	-	15.15	°
A78 0150 020 06 030			1.5	3.0	20	3.18	60	3°	6	6.22°	-	-	20.14	°
A78 0150 030 06 030			1.5	3.0	30	4.23	75	3°	6	4.27°	-	-	30.12	°
A78 0150 015 06 050			1.5	3.0	15	3.50	60	5°	6	8.26°	-	-	-	°
A78 0150 020 06 050			1.5	3.0	20	4.38	75	5°	6	6.40°	-	-	-	°
A78 0200 012 06 010	2.0	1.0	2.0	4.0	12	2.18	60	1°	6	8.81°	12.10	12.30	12.49	°
A78 0200 016 06 010			2.0	4.0	16	2.32	60	1°	6	6.77°	16.10	16.37	16.63	°
A78 0200 020 06 010			2.0	4.0	20	2.46	60	1°	6	5.50°	20.10	20.44	20.77	•
A78 0200 025 06 010			2.0	4.0	25	2.63	60	1°	6	4.45°	25.10	25.53	25.95	°
A78 0200 030 06 010			2.0	4.0	30	2.81	75	1°	6	3.74°	30.10	30.61	31.12	°
A78 0200 035 06 010			2.0	4.0	35	2.98	75	1°	6	3.22°	35.10	35.70	36.30	°
A78 0200 040 06 010			2.0	4.0	40	3.61	75	1°	6	2.83°	45.10	40.79	41.47	•
A78 0200 012 06 020			2.0	4.0	12	2.46	60	2°	6	8.90°	-	12.15	12.35	°
A78 0200 016 06 020			2.0	4.0	16	2.74	60	2°	6	6.86°	-	16.15	16.41	°

cont'd ▶

Material Group | Material-Gruppe | Groupe Matière | Gruppo Materiali | 材质主类

Cutting Parameter

N01	N02	N03	K01	K02	P01	P02	P03	M01	M02	S01	S02	S03	H01	H02	O01	O02	390 - 391
○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

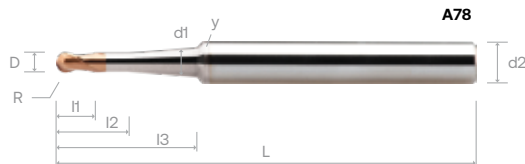
BN 45 TAPER NECK BALLNOSE CUTTERS, 2 FLUTES

 VHM BN 45 Radiusschaftfräser, lang, 2 Zähne

 Frese BN 45, con collo conico, 2 taglienti

 Fraises 2 tailles BN 45 col conique, 2 dents

 整体硬质合金 BN 45 系列 2 刀球头铣刀 锥颈型



Order Number	Dimension (mm)									Interference Angle	Effective Wall Gradient Angle			B0909
	D	R	I1	I2	I3	d1	L	y	d2 (h6)		1°	2°	3°	
A78 0200 020 06 020	2.0	1.0	2.0	4.0	20	3.02	60	2°	6	5.57°	-	20.15	20.48	°
A78 0200 030 06 020			2.0	4.0	30	3.72	75	2°	6	3.80°	-	30.14	30.64	°
A78 0200 040 06 020			2.0	4.0	40	4.41	75	2°	6	2.88°	-	40.14	40.81	°
A78 0200 012 06 030			2.0	4.0	12	2.74	60	3°	6	9.00°	-	12.01	12.20	°
A78 0200 016 06 030			2.0	4.0	16	3.16	60	3°	6	6.94°	-	-	16.19	°
A78 0200 020 06 030			2.0	4.0	20	3.58	60	3°	6	5.65°	-	-	20.18	°
A78 0200 030 06 030			2.0	4.0	30	4.63	75	3°	6	3.85°	-	-	30.16	°
A78 0200 040 06 030			2.0	4.0	40	5.67	75	3°	6	2.92°	-	-	40.15	°
A78 0200 020 06 050			2.0	4.0	20	4.70	60	5°	6	5.81°	-	-	-	°
A78 0300 015 06 010	3.0	1.5	3.0	6.0	15	3.11	60	1°	6	5.73°	15.18	15.42	15.66	°
A78 0300 020 06 010			3.0	6.0	20	3.29	60	1°	6	4.32°	20.18	20.51	20.83	°
A78 0300 030 06 010			3.0	6.0	30	3.64	75	1°	6	2.89°	30.18	30.68	31.18	°
A78 0300 040 06 010			3.0	6.0	40	3.99	75	1°	6	2.17°	40.18	40.86	41.53	°
A78 0300 050 06 010			3.0	6.0	50	4.34	100	1°	6	1.74°	50.18	51.03	51.88	°
A78 0300 015 06 020			3.0	6.0	15	3.43	60	2°	6	5.79°	15.02	15.26	15.49	°
A78 0300 020 06 020			3.0	6.0	20	3.78	75	2°	6	4.37°	-	20.25	20.58	°
A78 0300 030 06 020			3.0	6.0	30	4.48	75	2°	6	2.93°	-	30.25	30.74	°
A78 0300 040 06 020			3.0	6.0	40	5.17	75	2°	6	2.21°	-	40.24	40.91	°
A78 0300 020 06 030			3.0	6.0	20	4.27	60	3°	6	4.43°	-	20.00	20.32	°
A78 0300 030 06 030	4.0	2.0	3.0	6.0	30	5.32	75	3°	6	2.98°	-	-	30.30	°
A78 0300 050 06 030			3.0	6.0	50	7.41	100	3°	6	1.80°	-	-	50.26	°
A78 0300 018 06 050			3.0	6.0	18	4.90	60	5°	6	5.03°	-	-	-	°
A78 0400 020 06 010			4.0	8.0	20	4.12	60	1°	6	3.02°	20.26	20.58	20.90	°
A78 0400 040 06 010			4.0	8.0	40	4.82	75	1°	6	1.48°	40.26	40.93	41.60	°
A78 0400 060 06 010			4.0	8.0	60	5.52	100	1°	6	0.98°	60.26	61.28	62.30	°
A78 0500 030 06 010			5.0	10.0	30	5.30	75	1°	6	1.03°	30.34	30.82	31.31	°
A78 0500 040 06 010			5.0	10.0	40	5.65	75	1°	6	0.76°	40.24	41.00	41.66	°
A78 0500 060 06 010			5.0	10.0	60	6.35	100	1°	6	0.50°	60.34	61.35	62.36	°
A78 0600 030 08 010	6.0	3.0	6.0	12.0	30	6.13	100	1°	8	2.05°	30.41	30.89	31.37	°
A78 0600 040 08 010			6.0	12.0	40	6.48	100	1°	8	1.52°	40.41	41.07	41.72	°
A78 0600 060 08 010			6.0	12.0	60	7.18	100	1°	8	1.00°	60.41	61.42	62.42	°
A78 0700 050 10 010	8.0	4.0	8.0	14.0	50	8.66	100	1°	10	1.23°	50.48	51.29	52.11	°
A78 0800 060 10 010			8.0	14.0	60	9.01	100	1°	10	1.01°	60.48	61.47	62.46	°
A78 0800 070 10 010			8.0	14.0	70	9.35	100	1°	10	0.86°	70.48	71.64	72.81	°
A78 0800 080 10 010			8.0	14.0	80	9.70	100	1°	10	0.75°	80.48	81.82	83.16	°
A78 1000 060 12 010	10.0	5.0	10.0	18.0	60	10.67	100	1°	12	1.03°	60.64	61.61	62.58	°
A78 1000 075 12 010			10.0	18.0	75	11.19	125	1°	12	0.81°	75.64	76.87	78.11	°

Material Group | Material-Gruppe | Groupe Matiere | Gruppo Materiali | 材质主类

Cutting Parameter

N01	N02	N03	K01	K02	P01	P02	P03	M01	M02	S01	S02	S03	H01	H02	O01	O02	390 - 391
			○	●	○	○	●	○	●	○	●		●	○			

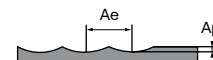
Recommended Cutting Data



Note: These recommended cutting data indicators are just for reference. They should be adjusted according to the different cutting condition

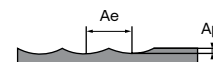


BN 45 Ballnose Cutters, 2 Flutes - 929, 940, 941, C36, A57, A58, F38



Roughing	K		P		M		S		H	
Working Material	Ductile Cast Iron		Prehardened steel		Stainless Steel		Nickel Alloy		Hardened steel	
Properties	-		35 ≤ HRC < 45		Low Machinability		-		45 ≤ HRC < 52	
Cutting depth, ap	0.10 × D		0.10 × D		0.08 × D		0.08 × D		0.10 × D	
Cutting Width, ae	0.30 × D		0.32 × D		0.080xD		0.24 × D		0.30 × D	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
1	160	0.008	185	0.013	70	0.006	40	0.006	140	0.009
2		0.018		0.023		0.012		0.013		0.020
3		0.029		0.036		0.018		0.020		0.032
4		0.043		0.050		0.025		0.028		0.044
5		0.059		0.065		0.032		0.035		0.056
6		0.075		0.081		0.038		0.043		0.068
8		0.104		0.112		0.051		0.058		0.098
10		0.135		0.146		0.065		0.074		0.130
12		0.168		0.183		0.080		0.090		0.162
14		0.185		0.206		0.090		0.099		0.182
16		0.206		0.230		0.103		0.115		0.198
18		0.223		0.252		0.112		0.128		0.210
20		0.238		0.270		0.125		0.138		0.224
22		0.249		0.289		0.135		0.148		0.240
25		0.264		0.305		0.146		0.168		0.252

BN 45 Ballnose Cutters, 2 Flutes - 929, 940, 941, C36, A57, A58, F38



Finishing	K		P		M		S		H	
Working Material	Ductile Cast Iron		Prehardened steel		Stainless Steel		Nickel Alloy		Hardened steel	
Properties	-		35 ≤ HRC < 45		Low Machinability		-		45 ≤ HRC < 52	
Cutting depth, ap	0.05 × D		0.05 × D		0.05 × D		0.05 × D		0.05 × D	
Cutting Width, ae	0.02 × D		0.02 × D		0.02 × D		0.02 × D		0.02 × D	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
1	170	0.006	195	0.011	80	0.004	50	0.004	150	0.006
2		0.015		0.019		0.008		0.008		0.016
3		0.024		0.029		0.013		0.013		0.026
4		0.034		0.041		0.018		0.018		0.035
5		0.045		0.054		0.022		0.025		0.045
6		0.056		0.068		0.028		0.030		0.054
8		0.078		0.094		0.037		0.042		0.078
10		0.105		0.124		0.046		0.052		0.104
12		0.134		0.154		0.058		0.064		0.130
14		0.148		0.173		0.065		0.072		0.146
16		0.162		0.193		0.072		0.082		0.158
18		0.176		0.211		0.082		0.090		0.168
20		0.186		0.225		0.089		0.095		0.179
22		0.197		0.238		0.092		0.105		0.192
25		0.220		0.248		0.105		0.115		0.202

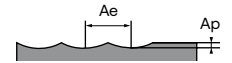
Recommended Cutting Data



Note: These recommended cutting data indicators are just for reference. They should be adjusted according to the different cutting condition

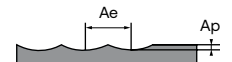


BN 45 Ballnose Cutters, 4 Flutes - 485, B82



Roughing	K		P		M		S		H	
Working Material	Ductile Cast Iron		Prehardened steel		Stainless Steel		Nickel Alloy		Hardened steel	
Properties	-		35 ≤ HRC < 45		Low Machinability		-		45 ≤ HRC < 52	
Cutting depth, ap	0.10 × D		0.10 × D		0.08 × D		0.08 × D		0.10 × D	
Cutting Width, ae	0.30 × D		0.32 × D		0.24 × D		0.24 × D		0.30 × D	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
3	160	0.016	185	0.021	70	0.013	40	0.015	140	0.017
4		0.022		0.029		0.018		0.021		0.024
5		0.032		0.037		0.023		0.027		0.031
6		0.041		0.046		0.028		0.033		0.038
8		0.057		0.063		0.038		0.044		0.056
10		0.073		0.081		0.048		0.056		0.073
12		0.091		0.102		0.058		0.068		0.091
14		0.101		0.115		0.066		0.078		0.103
16		0.112		0.129		0.076		0.088		0.113
18		0.121		0.142		0.084		0.099		0.121
20		0.129		0.153		0.093		0.108		0.130
22		0.136		0.163		0.101		0.117		0.140
25		0.145		0.174		0.113		0.135		0.149

BN 45 Ballnose Cutters, 4 Flutes - 485, B82



Finishing	K		P		M		S		H	
Working Material	Ductile Cast Iron		Prehardened steel		Stainless Steel		Nickel Alloy		Hardened steel	
Properties	-		35 ≤ HRC < 45		Low Machinability		-		45 ≤ HRC < 52	
Cutting depth, ap	0.05 × D		0.05 × D		0.05 × D		0.05 × D		0.05 × D	
Cutting Width, ae	0.02 × D		0.02 × D		0.02 × D		0.02 × D		0.02 × D	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
3	170	0.015	195	0.017	80	0.011	50	0.011	150	0.015
4		0.021		0.024		0.015		0.016		0.021
5		0.028		0.031		0.018		0.020		0.026
6		0.034		0.039		0.022		0.024		0.032
8		0.047		0.053		0.030		0.034		0.046
10		0.063		0.070		0.037		0.042		0.060
12		0.079		0.087		0.046		0.053		0.075
14		0.089		0.098		0.052		0.059		0.084
16		0.098		0.110		0.059		0.068		0.092
18		0.106		0.120		0.067		0.076		0.099
20		0.113		0.129		0.072		0.081		0.106
22		0.121		0.137		0.078		0.089		0.114
25		0.136		0.145		0.088		0.098		0.122

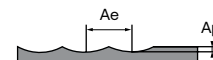
Recommended Cutting Data



Note: These recommended cutting data indicators are just for reference. They should be adjusted according to the different cutting condition

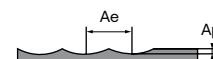


BN 45 Long Ballnose Cutters, 2 Flutes - 931, 942, 943, A59, A60



Roughing	K		P		M		S		H	
Working Material	Ductile Cast Iron		Prehardened steel		Stainless Steel		Nickel Alloy		Hardened steel	
Properties	-		35 ≤ HRC < 45		Low Machinability		-		45 ≤ HRC < 52	
Cutting depth, ap	0.10 × D		0.10 × D		0.08 × D		0.08 × D		0.10 × D	
Cutting Width, ae	0.30 × D		0.32 × D		0.24 × D		0.24 × D		0.30 × D	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
1	125	0.007	165	0.011	65	0.006	35	0.007	120	0.009
2		0.016		0.021		0.012		0.014		0.020
3		0.026		0.033		0.018		0.022		0.032
4		0.040		0.047		0.024		0.030		0.044
5		0.056		0.061		0.030		0.038		0.054
6		0.072		0.077		0.038		0.046		0.068
8		0.101		0.107		0.050		0.061		0.092
10		0.132		0.140		0.063		0.076		0.122
12		0.166		0.183		0.078		0.097		0.150
14		0.181		0.206		0.088		0.106		0.170
16		0.191		0.220		0.100		0.121		0.188
18		0.203		0.240		0.113		0.137		0.204
20		0.214		0.247		0.120		0.152		0.220

BN 45 Long Ballnose Cutters, 2 Flutes - 931, 942, 943, A59, A60



Finishing	K		P		M		S		H	
Working Material	Ductile Cast Iron		Prehardened steel		Stainless Steel		Nickel Alloy		Hardened steel	
Properties	-		35 ≤ HRC < 45		Low Machinability		-		45 ≤ HRC < 52	
Cutting depth, ap	0.05 × D		0.05 × D		0.05 × D		0.05 × D		0.05 × D	
Cutting Width, ae	0.02 × D		0.02 × D		0.02 × D		0.02 × D		0.02 × D	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
1	135	0.005	175	0.009	75	0.003	45	0.003	140	0.006
2		0.014		0.017		0.007		0.007		0.013
3		0.022		0.026		0.011		0.012		0.020
4		0.032		0.037		0.015		0.017		0.030
5		0.043		0.049		0.019		0.023		0.040
6		0.054		0.062		0.024		0.027		0.051
8		0.076		0.087		0.032		0.039		0.072
10		0.103		0.117		0.040		0.049		0.095
12		0.134		0.145		0.050		0.063		0.118
14		0.147		0.162		0.056		0.068		0.132
16		0.160		0.179		0.063		0.078		0.148
18		0.172		0.195		0.071		0.088		0.162
20		0.179		0.206		0.075		0.090		0.172

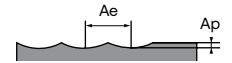
Recommended Cutting Data



Note: These recommended cutting data indicators are just for reference. They should be adjusted according to the different cutting condition

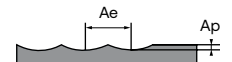


BN 45 Extra-Long Ballnose Cutters, 2 Flutes - 933, 944, 945, A61, A62



Roughing	K		P		M		S		H	
Working Material	Ductile Cast Iron		Prehardened steel		Stainless Steel		Nickel Alloy		Hardened steel	
Properties	-		35 ≤ HRC < 45		Low Machinability		-		45 ≤ HRC < 52	
Cutting depth, ap	0.10 × D		0.10 × D		0.08 × D		0.08 × D		0.10 × D	
Cutting Width, ae	0.30 × D		0.32 × D		0.24 × D		0.24 × D		0.30 × D	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
1	105	0.004	145	0.009	60	0.005	30	0.007	100	0.008
2		0.010		0.020		0.012		0.014		0.018
3		0.016		0.032		0.017		0.020		0.029
4		0.026		0.045		0.023		0.029		0.040
5		0.037		0.059		0.029		0.037		0.049
6		0.049		0.075		0.036		0.044		0.061
8		0.070		0.104		0.048		0.058		0.083
10		0.092		0.137		0.060		0.073		0.110
12		0.117		0.182		0.075		0.094		0.135
14		0.126		0.205		0.084		0.101		0.153
16		0.130		0.216		0.096		0.117		0.169
18		0.136		0.233		0.107		0.130		0.184
20		0.141		0.238		0.115		0.146		0.198

BN 45 Extra-Long Ballnose Cutters, 2 Flutes - 933, 944, 945, A61, A62



Finishing	K		P		M		S		H	
Working Material	Ductile Cast Iron		Prehardened steel		Stainless Steel		Nickel Alloy		Hardened steel	
Properties	-		35 ≤ HRC < 45		Low Machinability		-		45 ≤ HRC < 52	
Cutting depth, ap	0.05 × D		0.05 × D		0.05 × D		0.05 × D		0.05 × D	
Cutting Width, ae	0.02 × D		0.02 × D		0.02 × D		0.02 × D		0.02 × D	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
1	115	0.003	155	0.007	70	0.003	40	0.002	120	0.005
2		0.009		0.015		0.006		0.003		0.012
3		0.015		0.023		0.010		0.005		0.018
4		0.022		0.034		0.013		0.008		0.027
5		0.030		0.046		0.017		0.011		0.036
6		0.038		0.058		0.022		0.013		0.046
8		0.054		0.082		0.029		0.020		0.065
10		0.075		0.111		0.036		0.025		0.086
12		0.098		0.140		0.046		0.032		0.106
14		0.106		0.154		0.050		0.034		0.119
16		0.115		0.170		0.057		0.039		0.133
18		0.122		0.184		0.065		0.044		0.146
20		0.126		0.192		0.067		0.045		0.155

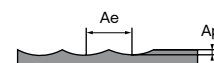
Recommended Cutting Data



Note: These recommended cutting data indicators are just for reference. They should be adjusted according to the different cutting condition

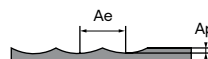


BN 45 Miniature Ballnose Cutters, 2 Flutes - 935, A63



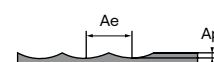
Profiling	N			P			M		
Working Material	Ductile Cast Iron			Prehardened steel			Stainless steel		
Properties	-			35 ≤ HRC < 45			Low Machinability		
D	Ap	N	Fz	Ap	N	Fz	Ap	N	Fz
0.2	0.000	45000	0.005		50000	0.005	0.010	37500	0.003
0.3	0.016	45000	0.005	0.018	50000	0.005	0.011	37500	0.007
0.4	0.029	45000	0.006	0.032	50000	0.006	0.011	37500	0.007
0.5	0.043	45000	0.007	0.048	50000	0.007	0.018	37500	0.009
0.6	0.049	39600	0.010	0.054	44000	0.010	0.033	37500	0.009
0.7	0.063	36450	0.012	0.070	40500	0.012	0.052	35630	0.010
0.8	0.074	33300	0.014	0.082	37000	0.014	0.062	32250	0.011
0.9	0.085	30600	0.016	0.094	34000	0.016	0.070	30750	0.012

BN 45 Miniature Ballnose Cutters, 2 Flutes - 935, A63



Profiling	S			H		
Working Material	Nickel Alloy			Hardened steel		
Properties	-			45 ≤ HRC < 52		
D	Ap	N	Fz	Ap	N	Fz
0.2	0.008	25000	0.003	0.013	50000	0.003
0.3	0.008	25000	0.005	0.014	50000	0.006
0.4	0.008	25000	0.005	0.014	50000	0.006
0.5	0.014	25000	0.007	0.023	50000	0.008
0.6	0.025	25000	0.007	0.041	50000	0.008
0.7	0.039	23750	0.008	0.065	47500	0.009
0.8	0.047	21500	0.009	0.078	43000	0.010
0.9	0.053	20500	0.010	0.088	41000	0.011

BN 45 Miniature Taper Neck Ballnose Cutters, 2 Flutes - A78



Profiling		K			P			M		
Working Material		Ductile Cast Iron			Prehardened steel			Stainless steel		
Properties		-			35 ≤ HRC < 45			Low Machinability		
D	Effective Length	Ap	N	Fz	Ap	N	Fz	Ap	N	Fz
1.0	20	0.045	27000	0.018	0.050	30000	0.018	0.038	20250	0.018
	40	0.027	24300	0.014	0.030	27000	0.014	0.022	18600	0.014
1.5	20	0.052	18720	0.027	0.058	20800	0.027	0.042	14180	0.026
	40	0.034	17370	0.023	0.038	19300	0.023	0.026	12980	0.022
2.0	20	0.072	14850	0.036	0.080	16500	0.036	0.052	10950	0.034
	40	0.045	13950	0.032	0.050	15500	0.032	0.031	10130	0.031
3.0	20	0.104	10620	0.052	0.115	11800	0.052	0.062	7580	0.051
	40	0.058	9450	0.042	0.064	10500	0.042	0.042	7200	0.044
	45	0.052	9000	0.040	0.058	10000	0.040	0.034	6900	0.039
4.0	20	0.135	8190	0.068	0.150	9100	0.068	0.068	6470	0.061
	40	0.072	7740	0.054	0.080	8600	0.054	0.052	5820	0.055
	60	0.050	7038	0.043	0.056	7820	0.043	0.048	5180	0.044
5.0	40	0.074	6660	0.065	0.082	7400	0.065	0.060	4760	0.068
6.0	20	0.153	5580	0.102	0.170	6200	0.102	0.080	4350	0.091
	40	0.135	5310	0.083	0.150	5900	0.083	0.064	3980	0.083
	60	0.126	5040	0.068	0.140	5600	0.068	0.056	3600	0.065
	80	0.108	4680	0.058	0.120	5200	0.058	0.040	3000	0.055

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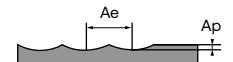
Recommended Cutting Data



Note: These recommended cutting data indicators are just for reference. They should be adjusted according to the different cutting condition

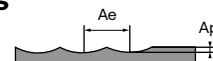


BN 45 Miniature Taper Neck Ballnose Cutters, 2 Flutes - A78



Profiling		K			P			M		
Working Material		Ductile Cast Iron			Prehardened steel			Stainless steel		
Properties		-			35 ≤ HRC < 45			Low Machinability		
D	Effective Length	Ap	N	Fz	Ap	N	Fz	Ap	N	Fz
8.0	25	0.162	4239	0.135	0.180	4710	0.135	0.096	3270	0.123
	60	0.135	3870	0.100	0.150	4300	0.100	0.064	2780	0.086
	75	0.117	3600	0.076	0.130	4000	0.076	0.048	2400	0.072
	105	0.090	3420	0.062	0.100	3800	0.062	0.032	1880	0.068
10.0	30	0.167	3465	0.168	0.185	3850	0.168	0.104	2700	0.151
	70	0.126	2970	0.120	0.140	3300	0.120	0.064	2030	0.123
	75	0.122	2925	0.110	0.135	3250	0.110	0.056	1950	0.094
12.0	35	0.180	2970	0.205	0.200	3300	0.205	0.112	2330	0.180
	70	0.135	2565	0.155	0.150	2850	0.155	0.080	1800	0.145
	90	0.108	2340	0.132	0.120	2600	0.132	0.056	1390	0.143

BN 45 Miniature Taper Neck Ballnose Cutters, 2 Flutes - A78



Profiling		S			H		
Working Material		Nickel Alloy			Hardened steel		
Properties		-			45 ≤ HRC < 52		
D	Effective Length	Ap	N	Fz	Ap	N	Fz
1.0	20	0.029	13500	0.014	0.048	27000	0.016
	40	0.017	12400	0.012	0.028	24800	0.013
1.5	20	0.031	9450	0.022	0.052	18900	0.024
	40	0.019	8650	0.018	0.032	17300	0.020
2.0	20	0.039	7300	0.028	0.065	14600	0.031
	40	0.023	6750	0.025	0.039	13500	0.028
3.0	20	0.047	5050	0.041	0.078	10100	0.046
	40	0.031	4800	0.036	0.052	9600	0.040
	45	0.025	4600	0.032	0.042	9200	0.035
4.0	20	0.051	4320	0.050	0.085	8630	0.055
	40	0.039	3880	0.045	0.065	7760	0.050
	60	0.036	3450	0.036	0.060	6900	0.040
5.0	40	0.045	3180	0.056	0.075	6350	0.062
6.0	20	0.060	2900	0.075	0.100	5800	0.083
	40	0.048	2650	0.068	0.080	5300	0.075
	60	0.042	2400	0.053	0.070	4800	0.059
	80	0.030	2000	0.045	0.050	4000	0.050
8.0	25	0.072	2180	0.101	0.120	4360	0.112
	60	0.048	1850	0.070	0.080	3700	0.078
	75	0.036	1600	0.059	0.060	3200	0.065
	105	0.024	1250	0.056	0.040	2500	0.062
10.0	30	0.078	1800	0.123	0.130	3600	0.137
	70	0.048	1350	0.101	0.080	2700	0.112
	75	0.042	1300	0.077	0.070	2600	0.085
12.0	35	0.084	1550	0.148	0.140	3100	0.164
	70	0.060	1200	0.119	0.100	2400	0.132
	90	0.042	930	0.117	0.070	1850	0.130

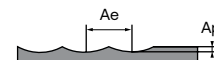
Recommended Cutting Data



Note: These recommended cutting data indicators are just for reference. They should be adjusted according to the different cutting condition



BN 45 Miniature Long Neck Ballnose Cutters, 2 Flutes - 937, A65, A76



Profiling		K			P			M		
Working Material		Ductile Cast Iron			Prehardened steel			Stainless steel		
Properties		-			35 ≤ HRC < 45			Low Machinability		
D	Effective Length	Ap	N	Fz	Ap	N	Fz	Ap	N	Fz
0.2	0.5	0.000	45000	0.005		50000	0.005	0.010	34130	0.003
	1.0	0.009	45000	0.004	0.010	50000	0.004	0.007	34130	0.003
	1.5	0.007	45000	0.003	0.008	50000	0.003	0.004	30380	0.004
0.3	1.0	0.016	45000	0.005	0.018	50000	0.005	0.011	33750	0.005
	2.0	0.011	45000	0.004	0.012	50000	0.004	0.006	30380	0.004
	3.0	0.007	45000	0.003	0.008	50000	0.003	0.004	30380	0.004
0.4	1.0	0.029	45000	0.006	0.032	50000	0.006	0.016	27000	0.006
	2.0	0.020	45000	0.008	0.022	50000	0.008	0.015	27000	0.006
	3.0	0.008	45000	0.007	0.009	50000	0.007	0.008	24300	0.005
	4.0	0.004	45000	0.007	0.004	50000	0.007	0.005	24300	0.005
	5.0	0.002	45000	0.006	0.002	50000	0.006	0.004	21600	0.004
0.5	2.0	0.043	45000	0.009	0.048	50000	0.009	0.018	22500	0.010
	3.0	0.037	45000	0.008	0.041	50000	0.008	0.016	20250	0.009
	4.0	0.031	45000	0.008	0.034	50000	0.008	0.021	20250	0.009
	5.0	0.024	45000	0.007	0.027	50000	0.007	0.009	20250	0.007
	6.0	0.014	45000	0.007	0.016	50000	0.007	0.007	18000	0.009
	8.0	0.007	45000	0.006	0.008	50000	0.006	0.004	18000	0.009
0.6	2.0	0.049	39600	0.010	0.054	44000	0.010	0.022	22500	0.013
	3.0	0.042	39600	0.010	0.047	44000	0.010	0.018	22500	0.013
	4.0	0.036	38700	0.009	0.040	43000	0.009	0.012	20250	0.013
	5.0	0.030	37980	0.009	0.033	42200	0.009	0.010	20250	0.012
	6.0	0.022	37980	0.009	0.024	42200	0.009	0.008	18000	0.012
	8.0	0.011	37890	0.008	0.012	42100	0.008	0.008	18000	0.012
0.8	2.0	0.055	33300	0.014	0.061	37000	0.014	0.042	22500	0.017
	4.0	0.040	33300	0.014	0.045	37000	0.014	0.029	22500	0.017
	5.0	0.032	32400	0.013	0.036	36000	0.013	0.023	20250	0.015
	6.0	0.023	32400	0.013	0.026	36000	0.013	0.017	20250	0.015
	7.0	0.018	29700	0.013	0.020	33000	0.013	0.013	18000	0.016
	8.0	0.014	29700	0.013	0.016	33000	0.013	0.010	18000	0.015
	10.0	0.014	29700	0.012	0.016	33000	0.012	0.010	18000	0.014
	3.0	0.050	27720	0.018	0.056	30800	0.018	0.052	20250	0.021
1.0	4.0	0.049	27540	0.018	0.054	30600	0.018	0.036	20250	0.021
	5.0	0.047	27540	0.018	0.052	30600	0.018	0.034	20250	0.021
	6.0	0.045	27270	0.017	0.050	30300	0.017	0.032	18230	0.021
	7.0	0.043	26235	0.017	0.048	29150	0.017	0.030	18230	0.021
	8.0	0.041	26010	0.016	0.046	28900	0.016	0.027	18230	0.020
	9.0	0.036	25830	0.016	0.040	28700	0.016	0.024	18230	0.020
	10.0	0.032	25650	0.015	0.035	28500	0.015	0.021	18230	0.019
	12.0	0.023	25470	0.015	0.025	28300	0.015	0.013	17250	0.019
	14.0	0.020	25290	0.014	0.022	28100	0.014	0.010	16200	0.018
	16.0	0.017	24750	0.014	0.019	27500	0.014	0.008	16200	0.018
	20.0	0.014	23850	0.014	0.015	26500	0.014	0.005	12150	0.018
	6.0	0.050	23400	0.021	0.056	26000	0.021	0.026	16200	0.024
1.2	8.0	0.047	22950	0.020	0.052	25500	0.020	0.021	15900	0.023
	10.0	0.041	22500	0.019	0.045	25000	0.019	0.018	15830	0.022
	12.0	0.034	22050	0.018	0.038	24500	0.018	0.016	15750	0.022
1.4	8.0	0.056	20610	0.025	0.062	22900	0.025	0.029	14180	0.026
	12.0	0.038	19620	0.024	0.042	21800	0.024	0.018	14180	0.026
	16.0	0.031	18900	0.023	0.034	21000	0.023	0.016	12600	0.025
1.5	8.0	0.070	19800	0.027	0.078	22000	0.027	0.050	14180	0.027
	12.0	0.045	19080	0.026	0.050	21200	0.026	0.031	13880	0.027
	16.0	0.038	18360	0.026	0.042	20400	0.026	0.020	12600	0.025
	18.0	0.029	18000	0.026	0.032	20000	0.026	0.018	12600	0.025

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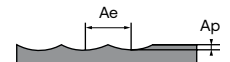
Recommended Cutting Data



Note: These recommended cutting data indicators are just for reference. They should be adjusted according to the different cutting condition



BN 45 Miniature Long Neck Ballnose Cutters, 2 Flutes - 937, A65, A76



Profiling		K			P			M		
Working Material		Ductile Cast Iron			Prehardened steel			Stainless steel		
Properties		-			35 ≤ HRC < 45			Low Machinability		
D	Effective Length	Ap	N	Fz	Ap	N	Fz	Ap	N	Fz
1.6	8.0	0.079	19170	0.030	0.088	21300	0.030	0.057	14630	0.032
	12.0	0.054	18270	0.028	0.060	20300	0.028	0.042	13160	0.030
	16.0	0.045	17901	0.027	0.050	19890	0.027	0.034	13160	0.030
	20.0	0.036	17280	0.026	0.040	19200	0.026	0.026	11700	0.028
1.8	8.0	0.094	17550	0.035	0.104	19500	0.035	0.068	13200	0.036
	12.0	0.072	16740	0.032	0.080	18600	0.032	0.054	12750	0.033
	16.0	0.063	16380	0.031	0.070	18200	0.031	0.044	12300	0.033
	20.0	0.054	15912	0.030	0.060	17680	0.030	0.028	11850	0.031
2.0	4.0	0.144	16065	0.042	0.160	17850	0.042	0.104	12300	0.047
	6.0	0.144	15795	0.041	0.160	17550	0.041	0.104	12150	0.042
	8.0	0.101	15570	0.041	0.112	17300	0.041	0.073	12000	0.042
	10.0	0.101	15390	0.037	0.112	17100	0.037	0.073	11810	0.037
	12.0	0.095	15210	0.036	0.105	16900	0.036	0.067	11550	0.036
	14.0	0.095	15120	0.036	0.105	16800	0.036	0.067	11400	0.036
	16.0	0.086	15030	0.034	0.095	16700	0.034	0.062	11250	0.034
	18.0	0.086	14940	0.034	0.095	16600	0.034	0.042	11100	0.034
	20.0	0.072	14850	0.034	0.080	16500	0.034	0.042	10950	0.034
	22.0	0.068	14580	0.033	0.075	16200	0.033	0.026	10730	0.032
	25.0	0.068	14310	0.033	0.075	15900	0.033	0.026	10500	0.032
	30.0	0.045	13950	0.031	0.050	15500	0.031	0.016	10130	0.031
3.0	8.0	0.216	11340	0.062	0.240	12600	0.062	0.156	8250	0.069
	10.0	0.151	11205	0.058	0.168	12450	0.058	0.109	8100	0.069
	16.0	0.126	10980	0.056	0.140	12200	0.056	0.109	7800	0.062
	20.0	0.104	10620	0.052	0.115	11800	0.052	0.062	7580	0.062
	25.0	0.086	10260	0.050	0.095	11400	0.050	0.042	7350	0.062
	30.0	0.072	9900	0.046	0.080	11000	0.046	0.042	7200	0.062
4.0	35.0	0.058	9450	0.042	0.064	10500	0.042	0.042	7200	0.059
	10.0	0.288	8798	0.090	0.320	9775	0.090	0.208	6470	0.094
	16.0	0.202	8798	0.090	0.224	9775	0.090	0.146	6470	0.094
	20.0	0.202	8798	0.090	0.224	9775	0.090	0.146	6470	0.094
	25.0	0.115	7918	0.081	0.128	8798	0.081	0.083	5820	0.084
	30.0	0.115	7918	0.081	0.128	8798	0.081	0.083	5820	0.084
	35.0	0.072	7918	0.081	0.080	8798	0.081	0.052	5820	0.084
	40.0	0.072	7918	0.081	0.080	8798	0.081	0.052	5820	0.084
	45.0	0.058	7038	0.076	0.064	7820	0.076	0.052	5180	0.079
	50.0	0.050	7038	0.076	0.056	7820	0.076	0.052	5180	0.079

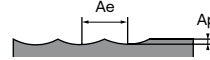
Recommended Cutting Data



Note: These recommended cutting data indicators are just for reference. They should be adjusted according to the different cutting condition



BN 45 Miniature Long Neck Ballnose Cutters, 2 Flutes - 937, A65, A76



Profiling		S			H		
Working Material		Nickel Alloy			Hardened steel		
Properties		-			45 ≤ HRC < 52		
D	Effective Length	Ap	N	Fz	Ap	N	Fz
0.2	0.5	0.000	22750	0.003		45500	0.003
	1.0	0.005	22750	0.003	0.009	45500	0.003
	1.5	0.003	20250	0.003	0.005	40500	0.003
0.3	1.0	0.008	22500	0.004	0.014	45000	0.004
	2.0	0.005	20250	0.003	0.008	40500	0.004
	3.0	0.003	20250	0.003	0.005	40500	0.004
0.4	1.0	0.012	18000	0.005	0.020	36000	0.005
	2.0	0.011	18000	0.005	0.018	36000	0.005
	3.0	0.006	16200	0.004	0.010	32400	0.004
	4.0	0.004	16200	0.004	0.007	32400	0.004
	5.0	0.003	14400	0.004	0.005	28800	0.004
0.5	2.0	0.014	15000	0.008	0.023	30000	0.009
	3.0	0.012	13500	0.007	0.020	27000	0.008
	4.0	0.016	13500	0.007	0.026	27000	0.008
	5.0	0.007	13500	0.006	0.012	27000	0.007
	6.0	0.005	12000	0.007	0.008	24000	0.008
	8.0	0.003	12000	0.007	0.005	24000	0.008
0.6	2.0	0.016	15000	0.011	0.027	30000	0.012
	3.0	0.013	15000	0.011	0.022	30000	0.012
	4.0	0.009	13500	0.010	0.016	27000	0.012
	5.0	0.008	13500	0.010	0.013	27000	0.011
	6.0	0.006	12000	0.010	0.010	24000	0.011
	8.0	0.006	12000	0.010	0.010	24000	0.011
0.8	2.0	0.031	15000	0.014	0.052	30000	0.015
	4.0	0.022	15000	0.014	0.036	30000	0.015
	5.0	0.018	13500	0.012	0.029	27000	0.014
	6.0	0.012	13500	0.012	0.021	27000	0.014
	7.0	0.010	12000	0.013	0.016	24000	0.014
	8.0	0.008	12000	0.012	0.013	24000	0.014
	10.0	0.008	12000	0.012	0.013	24000	0.013
1.0	3.0	0.039	13500	0.017	0.065	27000	0.019
	4.0	0.027	13500	0.017	0.046	27000	0.019
	5.0	0.026	13500	0.017	0.043	27000	0.019
	6.0	0.024	12150	0.017	0.040	24300	0.019
	7.0	0.022	12150	0.017	0.037	24300	0.019
	8.0	0.020	12150	0.016	0.034	24300	0.018
	9.0	0.018	12150	0.016	0.030	24300	0.018
	10.0	0.016	12150	0.015	0.026	24300	0.017
	12.0	0.010	11500	0.015	0.016	23000	0.017
	14.0	0.008	10800	0.014	0.013	21600	0.016
	16.0	0.006	10800	0.014	0.010	21600	0.016
1.2	20.0	0.004	8100	0.014	0.007	16200	0.016
	6.0	0.020	10800	0.020	0.033	21600	0.022
	8.0	0.016	10600	0.019	0.026	21200	0.021
	10.0	0.014	10550	0.018	0.023	21100	0.020
1.4	12.0	0.012	10500	0.018	0.020	21000	0.020
	8.0	0.021	9450	0.022	0.036	18900	0.024
	12.0	0.014	9450	0.021	0.023	18900	0.024
	16.0	0.012	8400	0.020	0.020	16800	0.022

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BN 30

BN 45

BN 60

BN 60X

DM70 -
BN70

BN GR

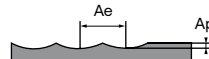
Recommended Cutting Data



Note: These recommended cutting data indicators are just for reference. They should be adjusted according to the different cutting condition



BN 45 Miniature Long Neck Ballnose Cutters, 2 Flutes - 937, A65, A76



Profiling		S			H		
Working Material		Nickel Alloy			Hardened steel		
Properties		-			45 ≤ HRC < 52		
D	Effective Length	Ap	N	Fz	Ap	N	Fz
1.5	8.0	0.037	9450	0.022	0.062	18900	0.024
	12.0	0.023	9250	0.022	0.039	18500	0.024
	16.0	0.015	8400	0.021	0.025	16800	0.023
	18.0	0.013	8400	0.021	0.022	16800	0.023
1.6	8.0	0.043	9750	0.026	0.072	19500	0.029
	12.0	0.031	8780	0.024	0.052	17550	0.027
	16.0	0.025	8780	0.024	0.042	17550	0.027
	20.0	0.019	7800	0.023	0.032	15600	0.025
1.8	8.0	0.051	8800	0.030	0.085	17600	0.033
	12.0	0.041	8500	0.027	0.068	17000	0.030
	16.0	0.033	8200	0.027	0.055	16400	0.030
	20.0	0.021	7900	0.025	0.035	15800	0.028
2.0	4.0	0.078	8200	0.039	0.130	16400	0.043
	6.0	0.078	8100	0.034	0.130	16200	0.038
	8.0	0.055	8000	0.034	0.091	16000	0.038
	10.0	0.055	7880	0.031	0.091	15750	0.034
	12.0	0.050	7700	0.030	0.084	15400	0.033
	14.0	0.050	7600	0.030	0.084	15200	0.033
	16.0	0.047	7500	0.028	0.078	15000	0.031
	18.0	0.031	7400	0.028	0.052	14800	0.031
	20.0	0.031	7300	0.028	0.052	14600	0.031
	22.0	0.020	7150	0.026	0.033	14300	0.029
	25.0	0.020	7000	0.026	0.033	14000	0.029
	30.0	0.012	6750	0.026	0.020	13500	0.028
3.0	8.0	0.117	5500	0.057	0.195	11000	0.063
	10.0	0.082	5400	0.057	0.137	10800	0.063
	16.0	0.082	5200	0.051	0.137	10400	0.057
	20.0	0.047	5050	0.051	0.078	10100	0.057
	25.0	0.031	4900	0.051	0.052	9800	0.057
	30.0	0.031	4800	0.051	0.052	9600	0.057
	35.0	0.031	4800	0.048	0.052	9600	0.054
4.0	10.0	0.156	4320	0.077	0.260	8630	0.085
	16.0	0.109	4320	0.077	0.182	8630	0.085
	20.0	0.109	4320	0.077	0.182	8630	0.085
	25.0	0.062	3880	0.068	0.104	7760	0.076
	30.0	0.062	3880	0.068	0.104	7760	0.076
	35.0	0.039	3880	0.068	0.065	7760	0.076
	40.0	0.039	3880	0.068	0.065	7760	0.076
	45.0	0.039	3450	0.065	0.065	6900	0.072
	50.0	0.039	3450	0.065	0.065	6900	0.072