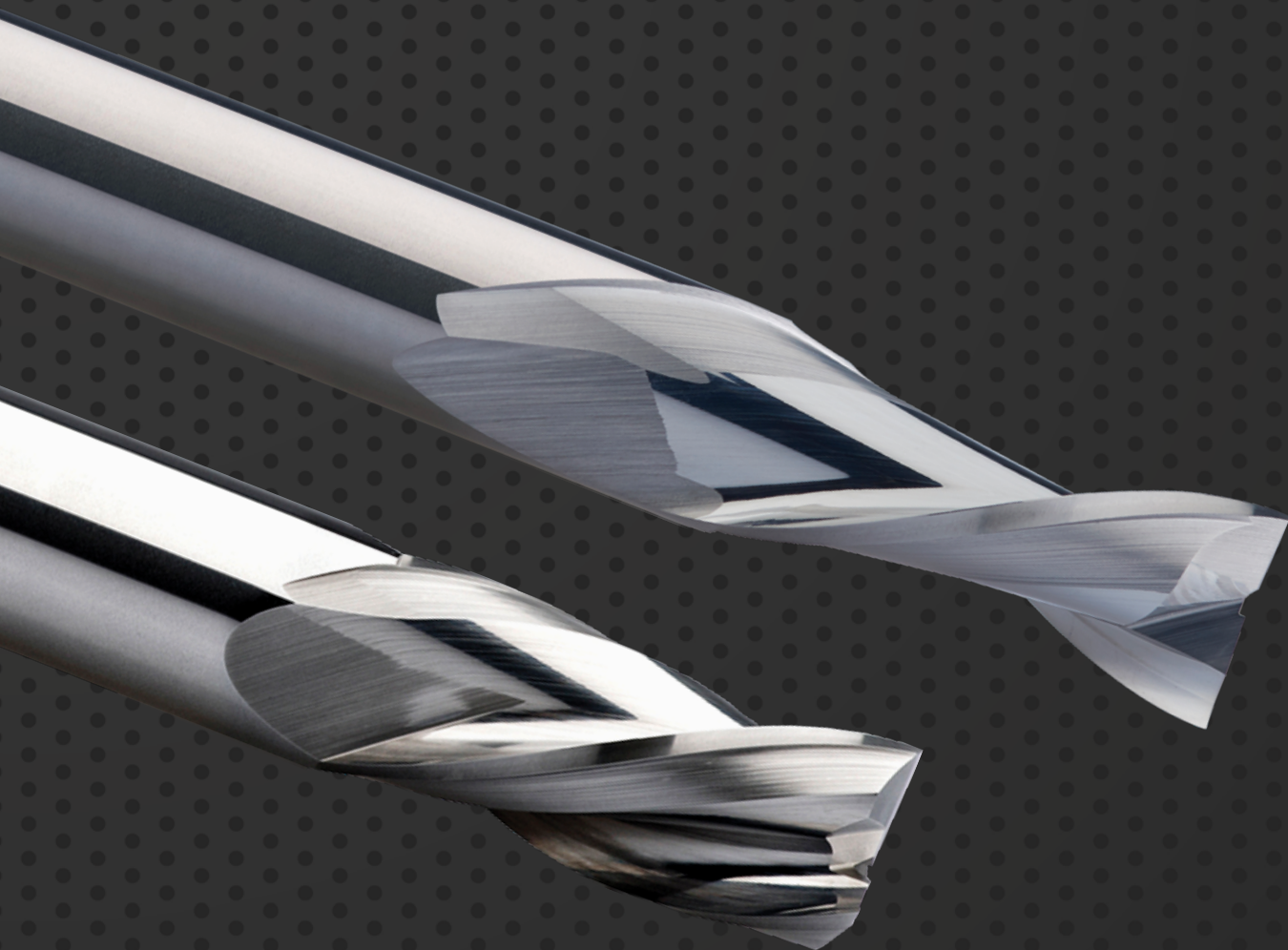




ENDMILLS

ALU LINE

Wide range of carbide endmills

Index - Alu Line, For Non Ferrous Metal

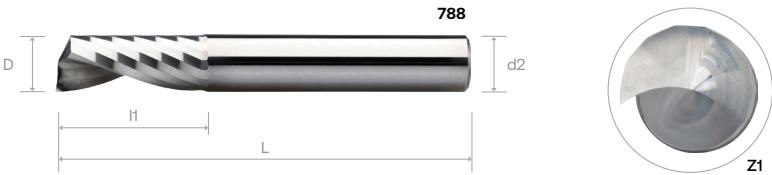
Suitable for Material Groups
 Adapté pour les matériaux
 适用于材料
 Geeignet für die Materialgruppen
 Adatto per il materiale

N **O**

EDP Number	Type	No. Z	Helix Angle	Coating	Performance	Page Number
788	AL SE	1	25°	UC	G	44
924	AL SE, Flute Polished	1	25°	UC	G	44
G49	AL SE	2	40°	UC	G	45
301	AL SE	2	50°	UC	P	46
G52	AL SE Torus, Edge Protection, Flute Polished	2	30°	UC	P	47
G53	AL SE Torus, Edge Protection, Flute Polished, Recess	2	30°	UC	P	47
G56	AL SE Long Torus, Edge Protection, Flute Polished	2	30°	UC	P	48
G57	AL SE Long Torus, Edge Protection, Flute Polished, Recess	2	30°	UC	P	48
G71	AL SE Reduced Shank	2	30°	UC	P	49
G50	AL SE	3	40°	UC	G	50
303	AL SE DP	3	50°	UC	G	51
K30	AL SE DP	3	40°	UC	G	52
K31	AL SE Long	3	40°	H2600	G	52
G51	AL SE	3	40°	UC	P	53
G69	AL SE DP, Edge Protection, Flute Polished	3	30°	UC	P	54
G70	AL SE DP, Edge Protection	3	30°	UC	P	54
G72	AL SE DP Torus Roughing	3	40°	UC	P	55
G73	AL SE DP Torus Roughing, Recess	3	40°	UC	P	55
S42	AL SE DP	4	40°	UC	P	56
C45	AL SE DP Torus	4	40°	UC	P	57
C51	AL SE DP Torus, Weldon	4	40°	UC	P	57
NEW K60	XQ Alu DP/DH/DF, Recess	4	a° ≠ b°	UC	P	60
NEW K61	XQ Alu DP/DH/DF, Recess, Chip Breaker	4	a° ≠ b°	UC	P	61
NEW K62	XQ Alu Torus DP/DH/DF, Recess	4	a° ≠ b°	UC	P	64
NEW K63	XQ Alu Torus DP/DH/DF, Recess, Chip Breaker	4	a° ≠ b°	UC	P	65
NEW K88	XQ Alu Long DP/DH/DF	4	a° ≠ b°	UC	P	66
NEW K89	XQ Alu Long DP/DH/DF, Chip Breaker	4	a° ≠ b°	UC	P	67
G68	AL SE Miniature Long Neck	2	40°	UC	G	68
G74	AL BN	2	30°	UC	G	70
G75	AL BN, Recess	2	30°	UC	G	70
G76	AL BN Miniature Long Neck	2	30°	UC	G	71

AL SE SINGLE FLUTE ENDMILLS

- VHM AL SE Einzahn Fräser
- Frese AL SE, 1 tagliente
- Fraises AL SE à une dent
- 整体硬质合金 AL SE 系列 单刃平底铣刀



Order Number	Dimension (mm)					Normal	Order Number	Dimension (mm)					Flute Polished
	D	I 1	I 2	L	d2 (h6)	UC		D	I 1	I 2	L	d2 (h6)	UC
788 0200 *	2	10		40	2	•	924 0200 *	2	10		40	2	•
788 0300 *	3	12		40	3	•	924 0300 *	3	12		40	3	•
788 0400	4	15		50	4	•	924 0400	4	15		50	4	•
788 0500	5	16		50	5	•	924 0500	5	16		50	5	•
788 0600	6	20		60	6	•	924 0600	6	20		60	6	•
788 0800	8	22		63	8	•	924 0800	8	22		63	8	•
788 1000	10	25		72	10	•	924 1000	10	25		72	10	•
788 1200	12	30		83	12	•	924 1200	12	30		83	12	•

* - DIN 6535

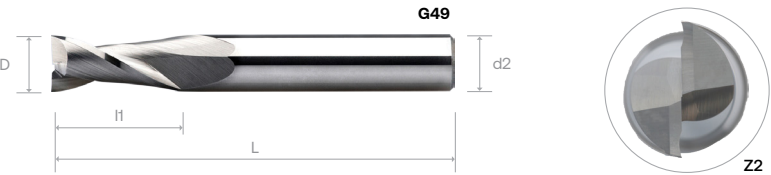
Material Group | Material-Gruppe | Groupe Matiere | Gruppo Materiali | 材质主类

N01N02N03K01K02P01P02P03M01M02S01S02S03H01H02O01O02

72

AL SE ENDMILLS, 2 FLUTES

- VHM AL SE Fräser, 2 Zähne
- Frese AL SE, 2 taglienti
- Fraises AL SE - 2 dents
- 整体硬质合金 AL SE 系列 2刃平底铣刀



Order Number	Dimension (mm)					UC
	D	I 1	I 2	L	d2 (h6)	
G49 0100 040 04	1	3		40	4	•
G49 0150 040 04 *	1.5	4.5		40	4	◦
G49 0200 040 04	2	6.5		40	4	◦
G49 0250 040 04 *	2.5	6.5		40	4	◦
G49 0300	3	9		40	3	•
G49 0300 050 06				50	6	•
G49 0400	4	12		50	4	•
G49 0400 050 06				50	6	•
G49 0500 050 06	5	15		50	6	◦
G49 0600 050	6	16		50	6	•
G49 0600 060		20		60	6	•
G49 0800	8			64	8	◦
G49 1000 070	10	22		70	10	•
G49 1000 075		31		75	10	◦
G49 1200	12	25		75	12	•
G49 1400	14	32		90	14	◦
G49 1600	16			90	16	◦
G49 2000	20	38		100	20	◦

* - DIN 6535

Ø mm	Tol. µm
01 ~ 2.9	-0 / -20
3.0 ~ 6.0	-0 / -25
6.0 ~ 30.0	-0 / -30

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

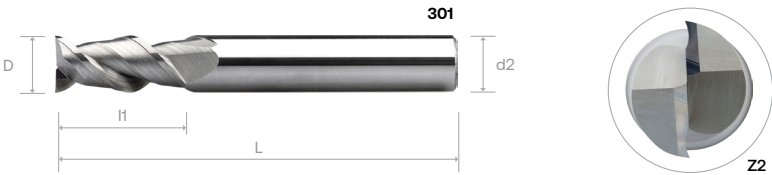
O01

O02

72 - 73

AL SE ENDMILLS, 2 FLUTES

-  VHM AL SE Fräser, 2 Zähne
-  Frese AL SE, 2 taglienti
-  Fraises AL SE - 2 dents
-  整体硬质合金 AL SE 系列 2刃平底铣刀



Order Number	Dimension (mm)					UC
	D	I 1	I 2	L	d2 (h6)	
301 0100 040 03	1	3		40	3	•
301 0100 040 04				40	4	•
301 0150 040 03	1.5	4.5		40	3	•
301 0150 040 04 *				40	4	•
301 0200 040 03	2	6.5		40	3	•
301 0200 040 04 *				40	4	•
301 0250 040 03	2.5			40	3	•
301 0250 040 04				40	4	◦
301 0300	3	9		40	3	•
301 0300 050 06				50	6	•
301 0400	4	12		50	4	•
301 0400 050 06				50	6	•
301 0500	5	15		50	5	•
301 0500 050 06				50	6	•
301 0600 050	6	16		50	6	•
301 0600 060		20		60	6	•
301 0800	8			64	8	•
301 1000 070	10	22		70	10	•
301 1000 075				75	10	•
301 1200	12	25		75	12	◦
301 1400	14	32		90	14	•
301 1600	16			90	16	•
301 1800	18	38		100	18	•
301 2000	20			100	20	◦

* - DIN 6535

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

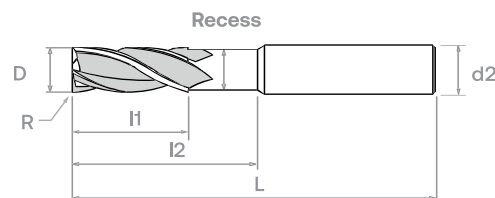
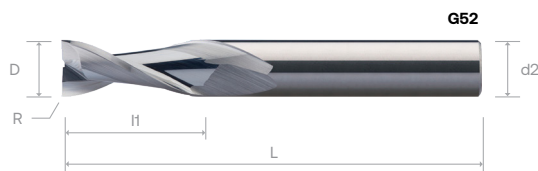
N01N02N03K01K02P01P02P03M01M02S01S02S03H01H02O01O02

Cutting Parameter73

CNC Repeatability
Ø1 - Ø3 within 10µm
Ø4 - Ø8 within 15µm
≥ Ø10 within 20µm

AL SE ENDMILLS, EDGE PROTECTION, FLUTE POLISHED, 2 FLUTES

- 🇩🇪 VHM AL SE Torusfräser, 2 Zähne
🇮🇹 Frese toroidali AL SE, 2 taglienti
🇫🇷 Fraises AL SE toriques - 2 dents
🇨🇳 整体硬质合金 AL SE 系列 2刃刀尖保护铣刀



Order Number	Dimension (mm)								Normal
	D	I1	I2	d3	L	d2 (h6)	R	UC	
G52 0200	2	6.5		2.8	40	4	0.1	•	G53 0200
G52 0200 050 06				2.8	50	6	0.1	•	
G52 0300	3	9		2.8	40	3	0.1	•	G53 0300
G52 0300 050 06				2.8	50	6	0.1	•	
G52 0400	4	12		3.7	50	4	0.1	•	G53 0400
G52 0400 050 06 06		6		3.7	50	6	0.1	•	
G52 0400 050 06		12		3.7	50	6	0.1	•	
G52 0500 050 06	5	15		4.6	50	6	0.1	•	G53 0500 050 06
G52 0600 060 09	6	9		5.5	60	6	0.1	•	G53 0600 060 09
G52 0600 060		20		5.5	60	6	0.1	•	
G52 0800 12	8	12		7.4	64	8	0.1	•	G53 0800 12
G52 0800		20		7.4	64	8	0.1	•	
G52 1000 15	10	15		9.2	75	10	0.1	•	G53 1000 15
G52 1000		22		9.2	75	10	0.1	•	
G52 1200 18	12	18		11	75	12	0.1	•	G53 1200 18
G52 1200		25		11	75	12	0.1	•	
G52 1400	14	32		13	90	14	0.1	•	G53 1400
G52 1600 24	16	24		15	90	16	0.1	•	G53 1600 24
G52 1600		32		15	90	16	0.1	•	
G52 2000	20	38		19	100	20	0.1	•	G53 2000

* - DIN 6535

CNC Repeatability

Ø1 - Ø3 within 10µm
Ø4 - Ø8 within 15µm
≥ Ø10 within 20µm

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

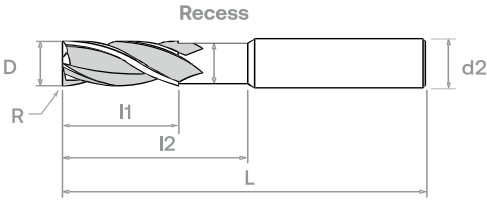
Cutting Parameter

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

72 - 73

AL SE LONG TORUS ENDMILLS, EDGE PROTECTION, FLUTE POLISHED, 2 FLUTES

-  VHM AL SE Torusfräser, 2 Zähne
-  Frese toroidali lunghe AL SE, 2 taglienti
-  Fraises AL SE toriques longues - 2 dents
-  整体硬质合金 AL SE 系列 2刃长型刀尖保护铣刀



Order Number	Dimension (mm)								Normal
	D	I1	I2	d3	L	d2 (h6)	R	UC	
G56 0600	6	16		5.5	80	6	0.1	•	
G56 0800	8	20		7.4	80	8	0.1	•	
G56 1000	10	22		9.2	100	10	0.1	•	
G56 1200	12	25		11	100	12	0.1	◦	
G56 1400	14	32		13	125	14	0.1	•	
G56 1600	16			15	125	16	0.1	◦	
G56 2000	20	38		19	125	20	0.1	◦	

Order Number	Dimension (mm)								Flute Polished
	D	I1	I2	d3	L	d2 (h6)	R	UC	
G57 0600	6	16	40	5.5	80	6	0.1	•	
G57 0800	8	20	40	7.4	80	8	0.1	•	
G57 1000	10	22	60	9.2	100	10	0.1	•	
G57 1200	12	25	60	11	100	12	0.1	◦	
G57 1400	14	32	75	13	125	14	0.1	◦	
G57 1600	16		75	15	125	16	0.1	•	
G57 2000	20	38	75	19	125	20	0.1	•	

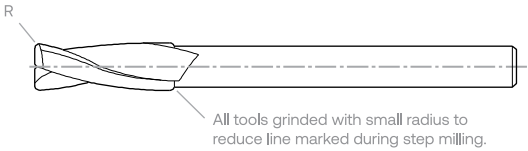
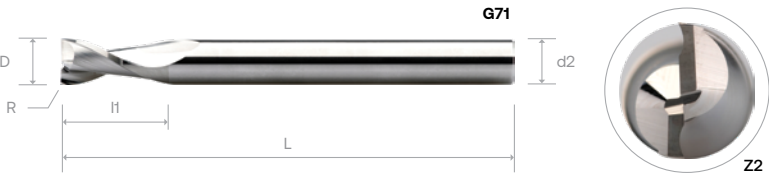
Material Group | Material-Gruppe | Groupe Matiere | Gruppo Materiali | 材质主类

N01N02N03K01K02P01P02P03M01M02S01S02S03H01H02O01O02

Cutting Parameter73

AL SE REDUCED SHANK ENDMILLS, 2 FLUTES

- VHM AL SE Fräser, 2 Zähne
- Frese AL SE, con gambo ridotto, 2 taglienti
- Fraises AL SE - 2 dents
- 整体硬质合金 AL SE 系列 2 刃刀尖保护铣刀



Order Number	Dimension (mm)						UC
	D	I1	I2	L	d2 (h6)	R	
G71 0320 075	3.2	4		75	3	0.1	•
G71 0420 075	4.2	5		75	4	0.1	•
G71 0520 075	5.2	6		75	5	0.1	•
G71 0620 075				75	6	0.1	•
G71 0620 100	6.2	8		100	6	0.1	•
G71 0820 075				75	8	0.1	◦
G71 0820 100	8.2	10		100	8	0.1	◦
G71 1030 100				100	10	0.1	•
G71 1030 125	10.3	14		125	10	0.1	•
G71 1230 100				100	12	0.1	◦
G71 1230 125	12.3	16		125	12	0.1	•
G71 1630 125				125	16	0.1	•
G71 2030 125	20.3	25		125	20	0.1	◦

CNC Repeatability
Ø1 - Ø3 within 10µm
Ø4 - Ø8 within 15µm
≥ Ø10 within 20µm

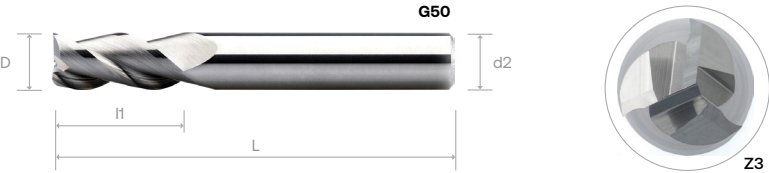
Material Group | Material-Gruppe | Groupe Matiere | Gruppo Materiali | 材质主类

Cutting Parameter

N01	N02	N03	K01	K02	P01	P02	P03	M01	M02	S01	S02	S03	H01	H02	O01	O02	72 - 73
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AL SE ENDMILLS, 3 FLUTES

-  VHM AL SE Fräser, 3 Zähne
-  Frese AL SE, 3 taglienti
-  Fraises AL SE - 3 dents
-  整体硬质合金 AL SE 系列 3刃平底铣刀



Order Number	Dimension (mm)					UC
	D	L1	L2	L	d2 (h6)	
G50 0100 040 04	1	3		40	4	◦
G50 0150 040 04 *	1.5	4.5		40	4	◦
G50 0200 040 04	2	6.5		40	4	•
G50 0250 040 04 *	2.5			40	4	•
G50 0300	3	9		40	3	•
G50 0300 050 06				50	6	•
G50 0400	4	12		50	4	•
G50 0400 050 06				50	6	•
G50 0500 050 06	5	15		50	6	•
G50 0600 050	6	16		50	6	•
G50 0600 060		20		60	6	•
G50 0800	8			64	8	•
G50 1000 070	10	22		70	10	•
G50 1000 075		31		75	10	•
G50 1200	12	25		75	12	◦
G50 1400	14	32		90	14	◦
G50 1600	16			90	16	◦
G50 2000	20	38		100	20	•

* - DIN 6535

Ø mm	Tol. µm
0.1 ~ 2.9	-0 / -20
3.0 ~ 6.0	-0 / -25
6.0 ~ 30.0	-0 / -30

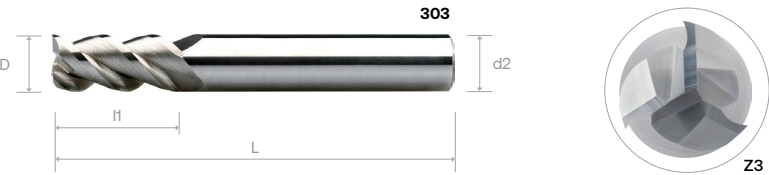
Material Group | Material-Gruppe | Groupe Matiere | Gruppo Materiali | 材质主类

N01N02N03K01K02P01P02P03M01M02S01S02S03H01H02O01O02

Cutting Parameter74

AL SE ENDMILLS, 3 FLUTES

- VHM AL SE Fräser, 3 Zähne
- Frese AL SE, 3 taglienti
- Fraises AL SE - 3 dents
- 整体硬质合金 AL SE 系列 3刃平底铣刀



Order Number	Dimension (mm)					UC
	D	I 1	I 2	L	d2 (h6)	
303 0100 040 03	1	3		40	3	•
303 0100 040 04				40	4	•
303 0150 040 03	1.5	4.5		40	3	•
303 0150 040 04 *				40	4	•
303 0200 040 03 *	2	6.5		40	3	•
303 0200 040 04 *				40	4	•
303 0250 040 03	2.5			40	3	•
303 0250 040 04				40	4	•
303 0300	3	9		40	3	•
303 0300 050 06				50	6	•
303 0400	4	12		50	4	•
303 0400 050 06				50	6	•
303 0500	5	15		50	5	•
303 0500 050 06				50	6	•
303 0600 050	6	16		50	6	•
303 0600 060		20		60	6	•
303 0800	8			64	8	•
303 1000 070	10	22		70	10	•
303 1000 075				75	10	•
303 1200	12	25		75	12	•
303 1400	14	32		90	14	•
303 1600	16			90	16	•
303 1800	18	38		100	18	•
303 2000	20			100	20	•

* - DIN 6535

CNC Repeatability
Ø1 - Ø3 within 10µm
Ø4 - Ø8 within 15µm
≥ Ø10 within 20µm

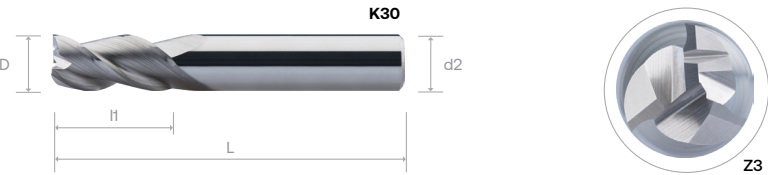
Material Group | Material-Gruppe | Groupe Matiere | Gruppo Materiali | 材质主类

Cutting Parameter

N01	N02	N03	K01	K02	P01	P02	P03	M01	M02	S01	S02	S03	H01	H02	O01	O02	74
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AL SE DP ENDMILLS, 3 FLUTES

- VHM AL SE DP Fräser, 3 Zähne
- Frese AL SE DP in metallo duro integrale, 3 taglienti
- Fraises AL SE DP - 3 dents
- 整体硬质合金 AL SE DP 系列 3刃平底铣刀



Order Number	Dimension (mm)					UC	Order Number	Dimension (mm)					H2600
	D	I1	I2	L	d2 (h6)			D	I1	I2	L	d2 (h6)	
K30 0100 040 04	1	3		40	4	•	K31 0100 040 04	1	3		40	4	•
K30 0150 040 04 *	1.5	4.5		40	4	•	K31 0150 040 04 *	1.5	4.5		40	4	•
K30 0200 040 04	2	6.5		40	4	•	K31 0200 040 04	2	6.5		40	4	•
K30 0250 040 04 *	2.5			40	4	•	K31 0250 040 04 *	2.5			40	4	•
K30 0300	3	9		40	3	•	K31 0300	3	9		40	3	•
K30 0300 050 06				50	6	•	K31 0300 050 06				50	6	•
K30 0400	4	12		50	4	•	K31 0400	4	12		50	4	•
K30 0400 050 06				50	6	•	K31 0400 050 06				50	6	•
K30 0500 050 06	5	15		50	6	•	K31 0500 050 06	5	15		50	6	•
K30 0600 050	6	16		50	6	•	K31 0600 050	6	16		50	6	•
K30 0600 060		20		60	6	•	K31 0600 060		20		60	6	•
K30 0800	8			64	8	•	K31 0800	8			64	8	•
K30 1000 070	10	22		70	10	•	K31 1000 070	10	22		70	10	•
K30 1000 075		31		75	10	•	K31 1000 075		31		75	10	•
K30 1200	12	25		75	12	•	K31 1200	12	25		75	12	•
K30 1600	16	32		90	16	•	K31 1600	16	32		90	16	•

* - DIN 6535

Ø mm	Tol. µm
0.1 ~ 2.9	-0 / -20
3.0 ~ 6.0	-0 / -25
6.0 ~ 30.0	-0 / -30

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

Cutting Parameter

74

AL SE LONG ENDMILLS, 3 FLUTES

- VHM AL SE Fräser, lang, 3 Zähne
- Frese lunghe AL SE, 3 taglienti
- Fraises AL SE longues - 3 dents
- 整体硬质合金 AL SE 系列 3刃长型平底铣刀



Order Number	Dimension (mm)					UC
	D	I 1	I 2	L	d2 (h6)	
G51 0300	3	19		60	3	•
G51 0300 075 06				75	6	•
G51 0400	4			60	4	•
G51 0400 075 06				75	6	•
G51 0500	5			75	6	•
G51 0600 075	6	31		75	6	•
G51 0600 100		38		100	6	•
G51 0800 075	8	31		75	8	•
G51 0800 100		41		100	8	•
G51 1000 100	10	50		100	10	•
G51 1000 125		57		125	10	•
G51 1200 100	12	50		100	12	•
G51 1200 150		75		150	12	•
G51 1400	14	57		125	14	•
G51 1600	16			125	16	•

Ø mm	Tol. µm
01 ~ 2.9	-0 / -20
3.0 ~ 6.0	-0 / -25
6.0 ~ 30.0	-0 / -30

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

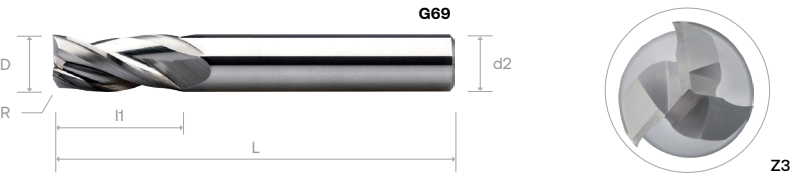
O01

O02

75

AL SE DP ENDMILLS, EDGE PROTECTION, 2 FLUTES

-  VHM AL SE Standard Torusfräser, 3 Zähne
-  Frese toroidali AL SE, con passo differenziale, 2 taglienti
-  Fraises AL SE DP - 2 dents
-  整体硬质合金 AL SE DP 系列 3刃刀尖保护铣刀



Order Number	Dimension (mm)							Flute Polished	UC	Order Number	Dimension (mm)							Normal	UC
	D	I1	I2	L	d2 (h6)	R					D	I1	I2	L	d2 (h6)	R			
G69 0200	2	6.5		40	4	0.1		°		G70 0200	2	6.5		40	4	0.1		°	
G69 0200 050 06				50	6	0.1		°		G70 0200 050 06				50	6	0.1		•	
G69 0300	3	9		40	3	0.1		°		G70 0300	3	9		40	3	0.1		•	
G69 0300 050 06				50	6	0.1		•		G70 0300 050 06				50	6	0.1		•	
G69 0400	4	12		50	4	0.1		°		G70 0400	4	12		50	4	0.1		°	
G69 0400 050 06				50	6	0.1		•		G70 0400 050 06				50	6	0.1		•	
G69 0500 050 06	5	15		50	6	0.1		°		G70 0500 050 06	5	15		50	6	0.1		°	
G69 0600 060	6	20		60	6	0.1		°		G70 0600 060	6	20		60	6	0.1		•	
G69 0800	8			64	8	0.1		°		G70 0800	8			64	8	0.1		•	
G69 1000	10	22		75	10	0.1		•		G70 1000	10	22		75	10	0.1		•	
G69 1200	12	25		75	12	0.1		•		G70 1200	12	25		75	12	0.1		•	
G69 1400	14	32		90	14	0.1		•		G70 1400	14	32		90	14	0.1		•	
G69 1600	16			90	16	0.1		•		G70 1600	16			90	16	0.1		°	

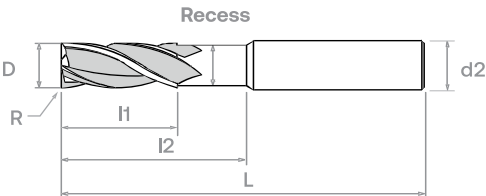
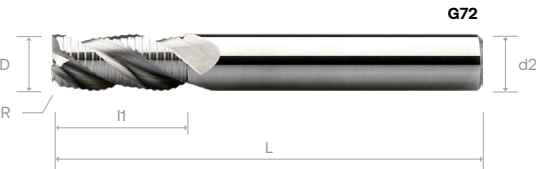
Material Group | Material-Gruppe | Groupe Matiere | Gruppo Materiali | 材质主类

N01N02N03K01K02P01P02P03M01M02S01S02S03H01H02O01O02

Cutting Parameter74

AL SE DP TORUS ROUGHING ENDMILLS, 3 FLUTES

- VHM AL SE DP Torus Schruppfräser, 3 Zähne
- Frese toroidali per sgrossare AL SE, con passo differenziale, 3 taglienti
- Fraises ébauches AL SE DP toriques 3 dents
- 整体硬质合金 AL SE DP 系列 3刃粗加工圆鼻铣刀



Order Number	Dimension (mm)							UC	Order Number	DIN 6535	Dimension (mm)							UC
	D	I1	I2	d3	L	d2 (h6)	R				D	I1	I2	d3	L	d2 (h6)	R	
G72 0600	6	13		5.5	60	6	0.1	•	G73 0600	*	6	13	24	5.5	60	6	0.1	•
G72 0600 075				5.5	75	6	0.1	◦	G73 0600 075				40	5.5	75	6	0.1	•
G72 0800	8	20		7.4	64	8	0.1	◦	G73 0800	*	8	20	28	7.4	64	8	0.1	•
G72 0800 075				7.4	75	8	0.1	•	G73 0800 075				40	7.4	75	8	0.1	•
G72 1000 075	10	22		9.2	75	10	0.1	•	G73 1000 075		10	22	35	9.2	75	10	0.1	•
G72 1000 100				9.2	100	10	0.1	•	G73 1000 100				60	9.2	100	10	0.1	•
G72 1200 075	12	26		11	75	12	0.12	•	G73 1200 075		12	26	40	11	75	12	0.12	•
G72 1200 100				11	100	12	0.12	•	G73 1200 100				60	11	100	12	0.12	◦
G72 1600 090	16	32		15	90	16	0.16	•	G73 1600 090	*	16	32	40	15	90	16	0.16	•
G72 1600 125				15	125	16	0.16	◦	G73 1600 125	*			75	15	125	16	0.16	◦
G72 2000 100	20	40		19	100	20	0.2	◦	G73 2000 100	*	20	40	50	19	100	20	0.2	◦
G72 2000 150				19	150	20	0.2	◦	G73 2000 150	*			100	19	150	20	0.2	◦

* - DIN 6535

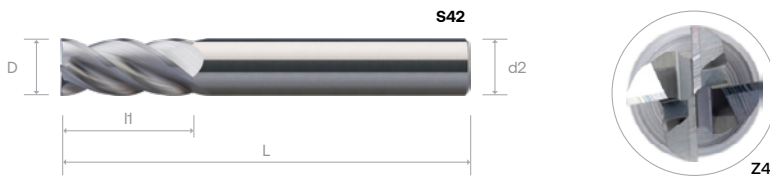
Material Group | Material-Gruppe | Groupe Matiere | Gruppo Materiali | 材质主类

N01N02N03K01K02P01P02P03M01M02S01S02S03H01H02O01O02

76

AL SE DP ENDMILLS, 4 FLUTES

- VHM AL SE DP Standard Fräser, 4 Zähne
- Frese AL SE, con passo differenziale, 4 taglienti
- Fraises AL SE DP - 4 dents
- 整体硬质合金 AL SE DP 系列 4刃平底铣刀



Order Number	Dimension (mm)					UC
	D	L1	L2	L	d2 (h6)	
S42 0300 057 06	3	9		57	6	•
S42 0400 057 06	4	12		57	6	•
S42 0500 057 06	5	13		57	6	•
S42 0600 057	6			57	6	•
S42 0800 064	8	20		64	8	•
S42 1000 072	10	22		72	10	•
S42 1200 083	12	26		83	12	•
S42 1400 090	14	32		90	14	•
S42 1600 092	16			92	16	•
S42 2000 104	20	38		104	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

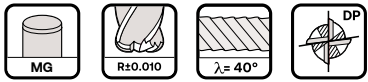
CNC Repeatability	
Ø1 - Ø3	within 10µm
Ø4 - Ø8	within 15µm
≥ Ø10	within 20µm

Cutting Parameter

75

AL SE DP TORUS ENDMILLS, 4 FLUTES

- VHM AL SE DP Torusfräser, 4 Zähne
- Frese toroidali AL SE, con passo differenziale, raggio di protezione, 4 taglienti
- Fraises AL SE DP toriques à pas décalés 4 dents
- 整体硬质合金 AL SE DP 系列 4刃圆鼻铣刀



Order Number	Dimension (mm)							HA		Order Number	Dimension (mm)							HB	
	D	I1	I2	L	d2 (h6)	R	UC				D	I1	I2	L	d2 (h6)	R	UC		
C45 0300 057 0600 030	3	9		57	6	0.3	•			C51 0300 057 0600 030	3	9		57	6	0.3	•		
C45 0300 057 0600 050				57	6	0.5	◦			C51 0300 057 0600 050				57	6	0.5	◦		
C45 0400 057 0600 030	4	12		57	6	0.3	•			C45 0400 057 0600 030	4	12		57	6	0.3	◦		
C45 0400 057 0600 050				57	6	0.5	•			C51 0400 057 0600 050				57	6	0.5	◦		
C45 0500 057 0600 030	5	15		57	6	0.3	◦			C45 0500 057 0600 030	5	15		57	6	0.3	◦		
C45 0500 057 0600 050				57	6	0.5	◦			C51 0500 057 0600 050				57	6	0.5	◦		
C45 0600 057 0600 030	6	16		57	6	0.3	•			C45 0600 057 0600 030	6	16		57	6	0.3	◦		
C45 0600 057 0600 050				57	6	0.5	•			C51 0600 057 0600 050				57	6	0.5	◦		
C45 0600 057 0600 100	8	20		57	6	1	•			C45 0600 057 0600 100	8	20		57	6	1	◦		
C45 0800 064 0800 030				64	8	0.3	•			C51 0800 064 0800 030				64	8	0.3	◦		
C45 0800 064 0800 050				64	8	0.5	•			C51 0800 064 0800 050				64	8	0.5	◦		
C45 0800 064 0800 100				64	8	1	•			C51 0800 064 0800 100				64	8	1	◦		
C45 0800 064 0800 150	10	22		64	8	1.5	◦			C45 0800 064 0800 150	10	22		64	8	1.5	◦		
C45 0800 064 0800 200				64	8	2	•			C51 0800 064 0800 200				64	8	2	◦		
C45 1000 072 1000 030	12	26		72	10	0.3	◦			C45 1000 072 1000 030	12	26		72	10	0.3	◦		
C45 1000 072 1000 050				72	10	0.5	◦			C51 1000 072 1000 050				72	10	0.5	◦		
C45 1000 072 1000 100	14	32		72	10	1	•			C45 1000 072 1000 100	14	32		72	10	1	◦		
C45 1200 083 1200 030				83	12	0.3	•			C51 1200 083 1200 030				83	12	0.3	◦		
C45 1200 083 1200 050				83	12	0.5	•			C51 1200 083 1200 050				83	12	0.5	◦		
C45 1200 083 1200 100				83	12	1	•			C51 1200 083 1200 100				83	12	1	◦		
C45 1200 083 1200 200	16	32		83	12	2	•			C45 1200 083 1200 200	16	32		83	12	2	◦		
C45 1200 083 1200 250				83	12	2.5	◦			C51 1200 083 1200 250				83	12	2.5	◦		
C45 1200 083 1200 300	20	38		83	12	3	•			C45 1200 083 1200 300	20	38		83	12	3	◦		
C45 1400 083 1400 050				83	14	0.5	•			C51 1200 083 1200 300				83	12	3	◦		
C45 1400 083 1400 100				83	14	1	◦			C45 1400 083 1400 050				83	14	0.5	◦		
C45 1400 083 1400 150				83	14	1.5	◦			C51 1400 083 1400 050				83	14	1	◦		
C45 1400 083 1400 200	16	32		83	14	2	◦			C45 1400 083 1400 150	16	32		83	14	1.5	◦		
C45 1600 092 1600 030				92	16	0.3	◦			C51 1400 083 1400 200				83	14	2	◦		
C45 1600 092 1600 050	20	38		92	16	0.5	◦			C45 1600 092 1600 030	20	38		92	16	0.3	◦		
C45 1600 092 1600 100				92	16	1	◦			C51 1600 092 1600 050				92	16	0.5	◦		
C45 1600 092 1600 200				92	16	2	◦			C45 1600 092 1600 100				92	16	1	◦		
C45 1600 092 1600 250				92	16	2.5	◦			C51 1600 092 1600 100				92	16	2	◦		
C45 1600 092 1600 300	20	38		92	16	3	◦			C45 1600 092 1600 200	20	38		92	16	2.5	◦		
C45 1600 092 1600 400				92	16	4	◦			C51 1600 092 1600 200				92	16	2.5	◦		
C45 2000 104 2000 030				104	20	0.3	◦			C45 1600 092 1600 300				92	16	3	◦		
C45 2000 104 2000 050				104	20	0.5	◦			C51 1600 092 1600 300				92	16	3	◦		
C45 2000 104 2000 100	20	38		104	20	1	◦			C45 1600 092 1600 400	20	38		92	16	4	◦		
C45 2000 104 2000 200				104	20	2	◦			C51 1600 092 1600 400				104	20	0.3	◦		
C45 2000 104 2000 250				104	20	2.5	◦			C45 2000 104 2000 030				104	20	0.5	◦		
C45 2000 104 2000 300				104	20	3	◦			C45 2000 104 2000 100				104	20	1	◦		
C45 2000 104 2000 400				104	20	4	◦			C45 2000 104 2000 200				104	20	2	◦		
										C45 2000 104 2000 250				104	20	2.5	◦		
										C45 2000 104 2000 300				104	20	3	◦		
										C45 2000 104 2000 400				104	20	4	◦		

CNC Repeatability
Ø1 - Ø3 within 10µm
Ø4 - Ø8 within 15µm
≥ Ø10 within 20µm

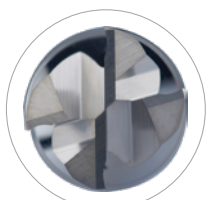
Material Group | Material-Gruppe | Groupe Matiere | Gruppo Materiali | 材质主类

Cutting Parameter

N01	N02	N03	K01	K02	P01	P02	P03	M01	M02	S01	S02	S03	H01	H02	O01	O02	75
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FEATURES & BENEFITS

XQ Alu Cutters



Top View

1 Differential Pitch (DP)



Provides excellent surface finishing while eliminating chatter

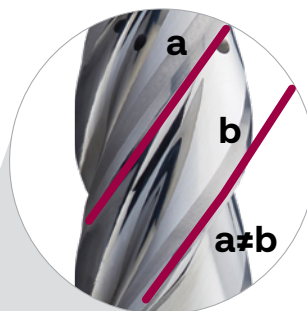
5 Polished Flutes



Ensures fast and effective chips evacuation and drastically reduces built-up edge

3 Differential Fluting (DF)

With optimized core diameter, counteracts the forces generated and ensures greater milling performance



2 Differential Helix (DH)



- Reduces machining vibrations allowing for high speed machining and increased productivity
- For chatter free machining and excellent surface finishing

4 Oil Hole for High Performance Milling



- Improves welding resistance
- Enables a wide range of machining processes
- Especially beneficial for difficult to cut materials, offering stable machining





1. Ungleiche Teilung (DP)
Per una lavorazione senza vibrazione e finiture superficiali eccellenti
2. Ungleiche Drallsteigung (DH)
Reduziert Bearbeitungsvibrationen und ermöglicht eine Hochgeschwindigkeitsbearbeitung und eine höhere Produktivität
Zur Schnittkraftreduzierung und Leistungssteigerung
3. Ungleiche Spannuttentiefe (DF)
Optimierter Kerndurchmesser wirkt den erzeugten Kräften entgegen und ermöglicht einen stabileren Fräsprozess
4. Große Kühlkanalbohrungen für Hochleistungsfräsen
Verbessert die Spanabfuhr
Ermöglicht umfangreiche Applikationen
Große Vorteile für die Bearbeitung festerer AluminiumlegierungenXQ
5. Polierte Schneiden
Sorgt für schnellen effizienten Spänefluß und reduziert die Bildung von Aufbauschneiden



1. 不等分割設計 (DP)
有效降低加工時的振動從而, 達到更好的工件表面光潔度。
2. 不等螺旋角設計 (DH)
減少加工振動, 有效提升, 加工速度並提高生產率。
用于无颤振加工和出色的表面光潔度。
3. 不等槽幾何設計
優化的核心直徑, 提高, 溝槽容屑率並提升銑削性能。
4. 高性能油孔
切削時更能達到冷卻的效果。
降低積屑的效果從而優。
化排屑性能。
5. 拋光溝槽
快速且有效的讓鐵屑排出。
減少鐵屑堆積的機會。



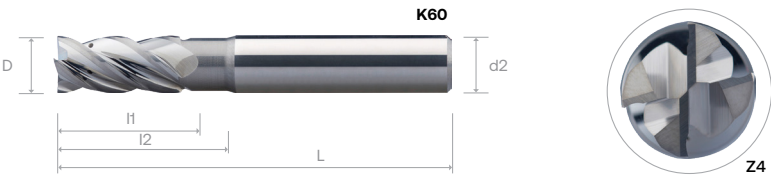
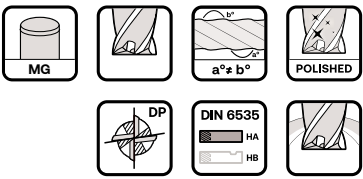
1. Design del passo differenziale (DP)
Design del passo differenziale (DP) Riduce le vibrazioni, massimizza la produttività e la durata dell'utensile.
2. Elica differenziale (DH)
Riduce le vibrazioni di lavorazione, consentendo di lavorazioni ad alta velocità e maggiore produttività
Per ridurre le forze di taglio e migliorare le performance di lavorazione
3. Fluting differenziale (DF)
Con un diametro del nucleo ottimizzato, contrasta le forze generate e garantisce una maggiore prestazioni di fresatura
4. Foro dell'olio per la fresatura ad alte prestazioni
Migliora la resistenza alla saldatura
Consente un'ampia gamma di processi di lavorazione
Particolarmente utile per materiali difficili da tagliare, offrendo una lavorazione stabile
5. Flauti Lucidi
Assicura un'evacuazione rapida ed efficace dei trucioli e riduce drasticamente il bordo di costruzione



1. Conception à pas différentiel (DP)
Pour un usinage sans vibrations et un très bon état de surface
2. Conception à hélice variable (DH)
Réduit les efforts de coupes et améliore les performances d'usinage
Pour un usinage sans bavardage et un excellent état de surface
3. Cannelures différentielles (DF)
Avec un diamètre de noyau optimisé, contrecarre les forces générées et assure de meilleures performances de fraisage
4. Trou d'huile pour le fraisage haute performance
Améliore la résistance au soudage
Permet une large gamme de processus d'usinage
Particulièrement bénéfique pour les matériaux difficiles à couper, offrant un usinage stable
5. Flûtes polies
Assure une évacuation rapide et efficace des copeaux et réduit considérablement les bords accumulés

XQ ALU CUTTERS DP/DH/DF ENDMILLS, WITH RECESS, 4 FLUTES

- VHM XQ Alu Cutter DP/DH/DF Fräser, mit Spanbrecher, Innenkühlung, 4 Zähne
- Frese XQ Alu con passo differenziale, eliche a spoglie variabili, fori lubrificanti radiali, rompitruciolo, recesso, 4 taglienti
- Fraises XQ Alu à pas décalés avec hélice différente, 4 dents
- 整体硬质合金 XQ Alu Cutters DP/DH/DF 4刃平底铣刀(避空位和侧固柄)



Order Number	Dimension (mm)						Flute Polished
	D	I1	I2	L	d2 (h6)	C	UC
K60 0600 *	6	13	20	57	6	0.1	•
K60 0800 *	8	20	26	64	8	0.1	•
K60 1000 *	10	22	30	72	10	0.2	•
K60 1200 *	12	26	36	83	12	0.2	•
K60 1400 *	14		38	83	14	0.2	◦
K60 1600 *	16	32	42	92	16	0.2	•
K60 1800 *	18		42	92	18	0.3	◦
K60 2000 *	20	38	52	104	20	0.3	•

* - DIN 6535

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

N01N02N03K01K02P01P02P03M01M02S01S02S03H01H02O01O02

Cutting Parameter76 - 77

CNC Repeatability
Ø1 - Ø3 within 10µm
Ø4 - Ø8 within 15µm
≥ Ø10 within 20µm

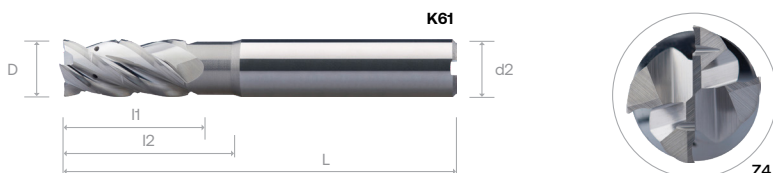
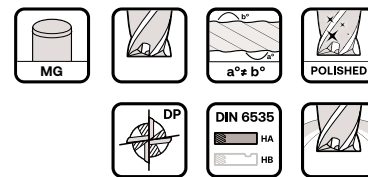


K61

NEW

XQ ALU CUTTERS DP/DH/DF ENDMILLS, WITH CHIP BREAKER, RECESS, 4 FLUTES

-  VHM XQ Alu Cutter DP/DH/DF Fräser, mit Spanbrecher, Innenkühlung, 4 Zähne
-  Frese XQ Alu con passo differenziale, eliche a spoglie variabili, fori lubrificanti radiali, rompitruciolo, recesso, 4 taglienti
-  Fraises XQ Alu à pas décalés avec hélice différentielle, brise-copeaux, évidement, 4 dents
-  整体硬质合金 XQ Alu Cutters DP/DH/DF 4刃平底铣刀(断屑槽、避空位和侧固柄)



Order Number	Dimension (mm)						Flute Polished
	D	I 1	I 2	L	d2 (h6)	C	UC
K61 0600 *	6	13	20	57	6	0.1	•
K61 0800 *	8	20	26	64	8	0.1	•
K61 1000 *	10	22	30	72	10	0.2	•
K61 1200 *	12	26	36	83	12	0.2	•
K61 1400 *	14		38	83	14	0.2	•
K61 1600 *	16	32	42	92	16	0.2	•
K61 1800 *	18		42	92	18	0.3	•
K61 2000 *	20	38	52	104	20	0.3	•

* - DIN 6535

CNC Repeatability
Ø1 - Ø3 within 10µm
Ø4 - Ø8 within 15µm
≥ Ø10 within 20µm

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	76 - 77
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FEATURES & BENEFITS

XQ Alu Cutters



Top View

1 Differential Pitch (DP)



Provides excellent surface finishing while eliminating chatter

4 Oil Hole for High Performance Milling



- Improves welding resistance
- Enables a wide range of machining processes
- Especially beneficial for difficult to cut materials, offering stable machining

5 Polished Flutes



Ensures fast and effective chips evacuation and drastically reduces built-up edge

3 Differential Fluting (DF)

With optimized core diameter, counteracts the forces generated and ensures greater milling performance

6 Corner Radius



- Reducing chipping and providing longer tool life
- Standardized corner radius for aerospace components

7 Chipbreakers

Efficiently shears work materials and shortens chips for improved chips removal

2 Differential Helix (DH)



- Reduces machining vibrations allowing for high speed machining and increased productivity
- For chatter free machining and excellent surface finishing





1. Ungleiche Teilung (DP)
Per una lavorazione senza vibrazione e finiture superficiali eccellenti
2. Ungleiche Drallsteigung (DH)
Reduziert Bearbeitungsvibrationen und ermöglicht eine Hochgeschwindigkeitsbearbeitung und eine höhere Produktivität
3. Ungleiche Spannuttentiefe (DF)
Optimierter Kerndurchmesser wirkt den erzeugten Kräften entgegen und ermöglicht einen stabileren Fräsprozess
4. Große Kühlkanalbohrungen für Hochleistungsfräsen
Verbessert die Spanabfuhr
Ermöglicht umfangreiche Applikationen
Große Vorteile für die Bearbeitung festerer Aluminiumlegierungen XQ
5. Polierte Schneiden
Sorgt für schnellen effizienten Spänefluß und reduziert die Bildung von Aufbauschneiden
6. Eckenradius
Eckenradius hervorragender Schneideckenschutz sorgt für längere Werkzeuglebensdauer genormte Eckenradien für Aerospace Bauteile
Standardisierter Eckradius für Aerospace-Komponenten (XQ Alu)
7. Spanbrecher
Sorgt für kurze Späne auch bei langspanenden Werkstoffen und verhindert somit Spanstau im Prozess und bei der Spanabfuhr



1. 不等分割設計 (DP)
有效降低加工時的振動從而, 達到更好的工件表面光潔度。
2. 不等螺旋角設計 (DH)
減少加工振動, 有效提升, 加工速度並提高生產率。
用于無顫振加工和出色的表面光潔度。
3. 不等槽幾何設計
優化的核心直徑, 提高, 溝槽容屑率並提升銑削性能。
4. 高性能油孔
切削時更能達到冷卻的效果。
降低積屑的效果從而優。
化排屑性能。
5. 拋光溝槽
快速且有效的讓鐵屑排出。
減少鐵屑堆積的機會。
6. 拐角半徑
減少碎屑并延長刀具壽命。
航空航天部件的標準化圓角半徑 (XQ Alu)。
7. 使用斷屑槽優化几何
高效剪切工作材料. 并縮短切屑以改善排屑。



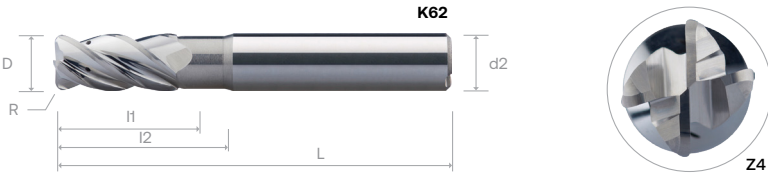
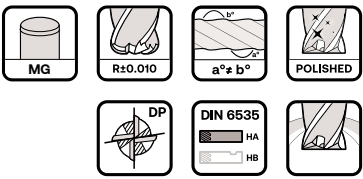
1. Design del passo differenziale (DP)
Design del passo differenziale (DP) Riduce le vibrazioni, massimizza la produttività e la durata dell'utensile.
2. Elica differenziale (DH)
Riduce le vibrazioni di lavorazione, consentendo di lavorazioni ad alta velocità e maggiore produttività
Per ridurre le forze di taglio e migliorare le performance di lavorazione
3. Fluting differenziale (DF)
Con un diametro del nucleo ottimizzato, contrasta le forze generate e garantisce una maggiore prestazioni di fresatura
4. Foro dell'olio per la fresatura ad alte prestazioni
Migliora la resistenza alla saldatura
Consente un'ampia gamma di processi di lavorazione
Particolarmente utile per materiali difficili da tagliare, offrendo una lavorazione stabile
5. Flauti Lucidi
Assicura un'evacuazione rapida ed efficace dei trucioli
riduce drasticamente il bordo di costruzione
6. Raggio d'angolo
Riduzione dei trucioli e maggiore durata dell'utensile
Raggio d'angolo standardizzato per componenti aerospaziali (XQ Alu)
7. Rompitrucioli
Taglia in modo efficiente i materiali di lavoro e accorcia i trucioli per una migliore rimozione dei trucioli



1. Conception à pas différentiel (DP)
Pour un usinage sans vibrations et un très bon état de surface
2. Conception à hélice variable (DH)
Réduit les efforts de coupes et améliore les performances d'usinage
Pour un usinage sans bavardage et un excellent état de surface
3. Cannelures différentielles (DF)
Avec un diamètre de noyau optimisé, contrecarre les forces générées et assure de meilleures performances de fraisage
4. Trou d'huile pour le fraisage haute performance
Améliore la résistance au soudage
Permet une large gamme de processus d'usinage
Particulièrement bénéfique pour les matériaux difficiles à couper, offrant un usinage stable
5. Flûtes polies
Assure une évacuation rapide et efficace des copeaux et réduit considérablement les bords accumulés
6. Rayon d'angle
Réduire l'écaillage et prolonger la durée de vie de l'outil
Rayon d'angle normalisé pour les composants aérospatiaux (XQ Alu)
7. Brise-copeaux
Cisaille efficacement les matériaux de travail et raccourcit les copeaux pour une meilleure élimination des copeaux

XQ ALU CUTTERS DP/DH/DF TORUS ENDMILLS, WITH RECESS, 4 FLUTES

- VHM XQ Alu Cutter DP/DH/DF Torusfräser, mit Innenkühlung, 4 Zähne
- Frese toroidali XQ Alu con passo differenziale, eliche a spoglie variabili, fori lubrificanti radiali, recesso, 4 taglienti
- Fraises XQ Alu toriques à pas décalés avec hélice différente, 4 dents
- 整体硬质合金 XQ Alu Cutters DP/DH/DF 4刃圆鼻铣刀(避空位和侧固柄)



Order Number DIN 6535	Dimension (mm)						Flute Polished	
	D	I1	I2	L	d2 (h6)	R	UC	
K62 1000 072 1000 200 *	10	22	30	72	10	2	•	
K62 1000 072 1000 250 *			30	72	10	2.5	◦	
K62 1000 072 1000 300 *			30	72	10	3	•	
K62 1000 072 1000 400 *			30	72	12	4	•	
K62 1200 083 1200 200 *	12	26	36	83	12	2	•	
K62 1200 083 1200 250 *			36	83	12	2.5	◦	
K62 1200 083 1200 300 *			36	83	12	3	◦	
K62 1200 083 1200 400 *			36	83	12	4	•	
K62 1600 092 1600 200 *	16	32	42	92	16	2	•	
K62 1600 092 1600 250 *			42	92	16	2.5	◦	
K62 1600 092 1600 300 *			42	92	16	3	◦	
K62 1600 092 1600 400 *			42	92	16	4	◦	
K62 2000 104 2000 200 *	20	38	52	104	20	2	◦	
K62 2000 104 2000 250 *			52	104	20	2.5	◦	
K62 2000 104 2000 300 *			52	104	20	3	◦	
K62 2000 104 2000 400 *			52	104	20	4	◦	

* - DIN 6535

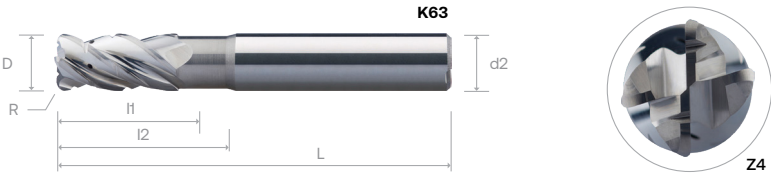
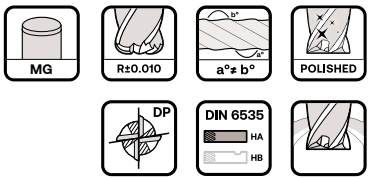
Material Group | Material-Gruppe | Groupe Matiere | Gruppo Materiali | 材质主类

N01	N02	N03	K01	K02	P01	P02	P03	M01	M02	S01	S02	S03	H01	H02	O01	O02	Cutting Parameter
																	76 - 77

CNC Repeatability
Ø1 - Ø3 within 10µm
Ø4 - Ø8 within 15µm
≥ Ø10 within 20µm

XQ ALU CUTTERS DP/DH/DF TORUS ENDMILLS, WITH CHIP BREAKER, RECESS, 4 FLUTES

- VHM XQ Alu Cutter DP/DH/DF Torusfräser, mit Spanbrecher, Innenkühlung, 4 Zähne
- Frese toroidali XQ Alu con passo differenziale, eliche a spoglie variabili, fori lubrificanti radiali, rompitruciolo, recesso, 4 taglienti
- Fraises XQ Alu toriques à pas décalés avec hélice différente, avec brise-copeaux , 4 dents
- 整体硬质合金 XQ Alu Cutters DP/DH/DF 4刃圆鼻铣刀(断屑槽、避空位和侧固柄)



Order Number	Dimension (mm)						Flute Polished
	D	I 1	I 2	L	d2 (h6)	R	UC
K63 1000 072 1000 200 *	10	22	30	72	10	2	◦
K63 1000 072 1000 250 *			30	72	10	2.5	•
K63 1000 072 1000 300 *			30	72	10	3	•
K63 1000 072 1000 400 *	12	26	30	72	12	4	•
K63 1200 083 1200 200 *			36	83	12	2	◦
K63 1200 083 1200 250 *			36	83	12	2.5	•
K63 1200 083 1200 300 *			36	83	12	3	•
K63 1200 083 1200 400 *			36	83	12	4	•
K63 1600 092 1600 200 *	16	32	42	92	16	2	•
K63 1600 092 1600 250 *			42	92	16	2.5	•
K63 1600 092 1600 300 *			42	92	16	3	•
K63 1600 092 1600 400 *			42	92	16	4	•
K63 2000 104 2000 200 *	20	38	52	104	20	2	•
K63 2000 104 2000 250 *			52	104	20	2.5	•
K63 2000 104 2000 300 *			52	104	20	3	•
K63 2000 104 2000 400			52	104	20	4	•

* - DIN 6535

CNC Repeatability
Ø1 - Ø3 within 10µm
Ø4 - Ø8 within 15µm
≥ Ø10 within 20µm

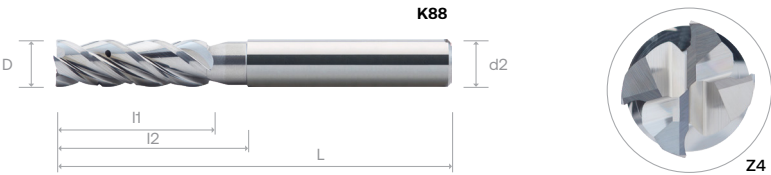
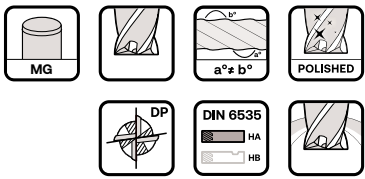
Material Group | Material-Gruppe | Groupe Matiere | Gruppo Materiali | 材质主类

Cutting Parameter

N01	N02	N03	K01	K02	P01	P02	P03	M01	M02	S01	S02	S03	H01	H02	O01	O02	76 - 77
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XQ ALU CUTTERS DP/DH/DF LONG ENDMILLS, WITH RECESS, 4 FLUTES

- VHM XQ Alu Cutter DP/DH/DF High Performance Fräser, lang, mit Innenkühlung, 4 Zähne
- Frese lunghe XQ Alu, con passo differenziale, eliche a spoglie variabili, recesso, weldon, 4 taglienti
- Fraises XQ Alu longues à pas décalés avec hélice différente, 4 dents
- 整体硬质合金 XQ Alu Cutters DP/DH/DF 4刃长型平底铣刀(避空位)



Order Number DIN 6535	Dimension (mm)						Flute Polished
	D	L1	L2	L	d2 (h6)	C	UC
K88 0600	6	10	30	68	6	0.1	o
K88 0800 *	8	15	34	72	8	0.1	o
K88 1000	10	18	40	83	10	0.2	o
K88 1200 *	12	22	50	95	12	0.2	o
K88 1600	16	26	62	110	16	0.2	o
K88 2000	20	30	75	150	20	0.3	o

* - DIN 6535

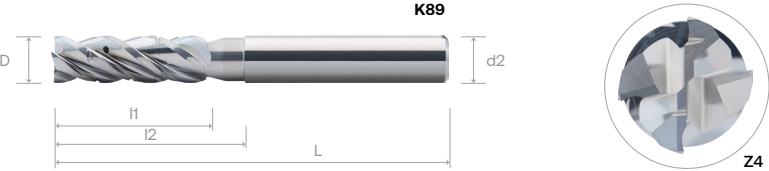
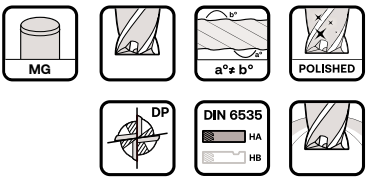
Material Group | Material-Gruppe | Groupe Matiere | Gruppo Materiali | 材质主类

N01N02N03K01K02P01P02P03M01M02S01S02S03H01H02O01O02

Cutting Parameter82

XQ ALU CUTTERS DP/DH/DF LONG ENDMILLS, WITH RECESS AND CHIPBREAKER, 4 FLUTES

- VHM XQ Alu Cutter DP/DH/DF High Performance Fräser, lang, mit Spanbrecher, Innenkühlung, 4 Zähne
- Frese lunghe XQ Alu, con passo differenziale, eliche a spoglie variabili, rompitruciolo, recesso, 4 taglienti
- Fraises XQ Alu longues à pas décalés avec hélice différente, avec brise-copeaux, 4 dents
- 整体硬质合金 XQ Alu Cutters DP/DH/DF 4刃长型铣刀(避空位和断屑槽)



Order Number	Dimension (mm)						Flute Polished	
	D	I 1	I 2	L	d2 (h6)	C	UC	
K89 0600 *	6	20	30	68	6	0.1	°	
K89 0800 *	8	26	34	72	8	0.1	°	
K89 1000	10	32	40	83	10	0.2	°	
K89 1200 *	12	38	50	95	12	0.2	°	
K89 1600 *	16	50	62	110	16	0.2	°	
K89 2000	20	60	75	150	20	0.3	°	

* - DIN 6535

CNC Repeatability
Ø1 - Ø3 within 10µm
Ø4 - Ø8 within 15µm
≥ Ø10 within 20µm

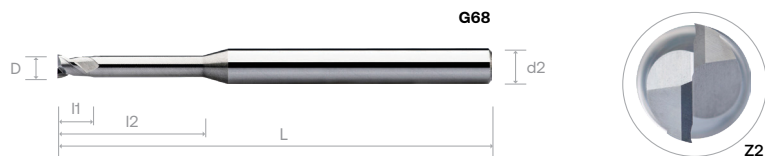
Material Group | Material-Gruppe | Groupe Matiere | Gruppo Materiali | 材质主类

Cutting Parameter

N01	N02	N03	K01	K02	P01	P02	P03	M01	M02	S01	S02	S03	H01	H02	O01	O02	82
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AL SE MINIATURE ENDMILLS WITH LONG NECK, 2 FLUTES

-  VHM AL SE Kleinstfräser mit langem Hals, 2 Zähne
 Micro-frese AL SE, con collo conico lungo, 2 taglienti
 Micro-fraises AL SE avec cou long, 2 dents
 整体硬质合金 AL SE 系列 微小径2刀长颈平底铣刀



Order Number	Dimension (mm)						UC	Order Number	Dimension (mm)						UC
	D	l1	l2	L	d1	d2 (h6)			D	l1	l2	L	d1	d2 (h6)	
G68 0020 050 0400	0.2	0.3	-	50	-	4	°	G68 0140 050 0400	1.4	2.1	-	50	-	4	°
G68 0020 050 0400 005			0.5	50	0.17	4	°	G68 0140 050 0400 060			6	50	1.3	4	°
G68 0020 050 0400 010			1	50	0.17	4	°	G68 0140 050 0400 080			8	50	1.3	4	°
G68 0020 050 0400 015			1.5	50	0.17	4	°	G68 0140 050 0400 100			10	50	1.3	4	°
G68 0030 050 0400	0.3	0.4	-	50	-	4	°	G68 0140 050 0400 120	1.5	2.3	12	50	1.3	4	°
G68 0030 050 0400 010			1	50	0.27	4	°	G68 0140 050 0400 140			14	50	1.3	4	°
G68 0030 050 0400 020			2	50	0.27	4	°	G68 0140 050 0400 160 *			16	50	1.3	4	°
G68 0030 050 0400 030			3	50	0.27	4	°	G68 0150 050 0400			-	50	-	4	°
G68 0040 050 0400	0.4	0.6	-	50	-	4	°	G68 0150 050 0400 060	1.6	2.4	6	50	1.4	4	°
G68 0040 050 0400 020			2	50	0.37	4	°	G68 0150 050 0400 080			8	50	1.4	4	°
G68 0040 050 0400 030			3	50	0.37	4	°	G68 0150 050 0400 100			10	50	1.4	4	°
G68 0040 050 0400 040			4	50	0.37	4	°	G68 0150 050 0400 120			12	50	1.4	4	°
G68 0040 050 0400 050	0.5	0.7	5	50	0.37	4	°	G68 0150 050 0400 140	1.8	2.7	14	50	1.4	4	°
G68 0050 050 0400			-	50	-	4	°	G68 0150 050 0400 160 *			16	50	1.4	4	°
G68 0050 050 0400 020			2	50	0.45	4	°	G68 0150 060 0400			-	60	-	4	°
G68 0050 050 0400 040			4	50	0.45	4	°	G68 0150 060 0400 180			18	60	1.4	4	°
G68 0050 050 0400 060	0.6	0.9	6	50	0.45	4	°	G68 0150 060 0400 200	2	3	20	60	1.4	4	°
G68 0050 050 0400 080			8	50	0.45	4	°	G68 0160 050 0400			-	50	-	4	°
G68 0060 050 0400			-	50	-	4	°	G68 0160 050 0400 060			6	50	1.5	4	°
G68 0060 050 0400 020			2	50	0.55	4	°	G68 0160 050 0400 080			8	50	1.5	4	°
G68 0060 050 0400 040	0.7	1.0	4	50	0.55	4	°	G68 0160 050 0400 100	2.5	3.7	10	50	1.5	4	°
G68 0060 050 0400 060			6	50	0.55	4	°	G68 0160 050 0400 120			12	50	1.5	4	°
G68 0060 050 0400 080			8	50	0.55	4	°	G68 0160 050 0400 140			14	50	1.5	4	°
G68 0060 050 0400 100			10	50	0.55	4	°	G68 0160 050 0400 160 *			16	50	1.5	4	°
G68 0070 050 0400	0.8	1.2	-	50	-	4	°	G68 0160 060 0400	2	3	-	60	-	4	°
G68 0070 050 0400 020			2	50	0.65	4	°	G68 0160 060 0400 180			18	60	1.5	4	°
G68 0070 050 0400 040			4	50	0.65	4	°	G68 0160 060 0400 200			20	60	1.5	4	°
G68 0070 050 0400 060			6	50	0.65	4	°	G68 0180 050 0400			-	50	-	4	°
G68 0070 050 0400 080	0.9	1.4	8	50	0.65	4	°	G68 0180 050 0400 060	2.5	3.7	6	50	1.7	4	°
G68 0070 050 0400 100			10	50	0.65	4	°	G68 0180 050 0400 080			8	50	1.7	4	°
G68 0080 050 0400			-	50	-	4	°	G68 0180 050 0400 100			10	50	1.7	4	°
G68 0080 050 0400 040			4	50	0.75	4	°	G68 0180 050 0400 120			12	50	1.7	4	°
G68 0080 050 0400 060	1.0	1.5	6	50	0.75	4	°	G68 0180 050 0400 140	2	3	14	50	1.7	4	°
G68 0080 050 0400 080			8	50	0.75	4	°	G68 0180 050 0400 160 *			16	50	1.7	4	°
G68 0080 050 0400 100			10	50	0.75	4	°	G68 0180 060 0400			-	60	-	4	°
G68 0080 050 0400 120			12	50	0.75	4	°	G68 0180 060 0400 180			18	60	1.7	4	°
G68 0090 050 0400	1.2	1.8	-	50	-	4	°	G68 0180 060 0400 200	2.5	3.7	20	60	1.7	4	°
G68 0090 050 0400 060			6	50	0.85	4	°	G68 0200 050 0400			-	50	-	4	°
G68 0090 050 0400 080			8	50	0.85	4	°	G68 0200 050 0400 060			6	50	1.9	4	°
G68 0090 050 0400 100			10	50	0.85	4	°	G68 0200 050 0400 080			8	50	1.9	4	°
G68 0090 050 0400 150 *	1.2	1.8	15	50	0.85	4	°	G68 0200 050 0400 100	2.5	3.7	10	50	1.9	4	°
G68 0100 050 0400			-	50	-	4	°	G68 0200 050 0400 120			12	50	1.9	4	°
G68 0100 050 0400 060			6	50	0.9	4	°	G68 0200 050 0400 140			14	50	1.9	4	°
G68 0100 050 0400 080			8	50	0.9	4	°	G68 0200 050 0400 160			16	50	1.9	4	°
G68 0100 050 0400 100	1.0	1.5	10	50	0.9	4	°	G68 0200 060 0400	2	3	-	60	-	4	°
G68 0100 050 0400 120			12	50	0.9	4	°	G68 0200 060 0400 180			18	60	1.9	4	°
G68 0100 050 0400 140			14	50	0.9	4	°	G68 0200 060 0400 200			20	60	1.9	4	°
G68 0100 050 0400 160 *			16	50	0.9	4	°	G68 0200 075 0400			-	75	-	4	°
G68 0120 050 0400	1.2	1.8	-	50	-	4	°	G68 0200 075 0400 250	2.5	3.7	25	75	1.9	4	°
G68 0120 050 0400 060			6	50	1.1	4	°	G68 0200 075 0400 300			30	75	1.9	4	°
G68 0120 050 0400 080			8	50	1.1	4	°	G68 0250 050 0400			-	50	-	4	°
G68 0120 050 0400 100			10	50	1.1	4	°	G68 0250 050 0400 080			8	50	2.4	4	°
G68 0120 050 0400 120	1.2	1.8	12	50	1.1	4	°	G68 0250 050 0400 100			10	50	2.4	4	°

* - DIN 6535

cont'd ▶

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
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AL SE MINIATURE ENDMILLS WITH LONG NECK, 2 FLUTES

	VHM AL SE Kleinstfräser mit langem Hals, 2 Zähne
	Micro-frese AL SE, con collo conico lungo, 2 taglienti
	Micro-fraises AL SE avec cou long, 2 dents
	整体硬质合金 AL SE 系列 微小径2刃长颈平底铣刀

[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

77 - 79

AL BN BALLNOSE CUTTERS, 2 FLUTES

-  VHM Standard AL-BN Radiuschaftfräser, 2 Zähne
-  Frese sferiche AL-BN, 2 taglienti
-  Fraises AL-BN en carbure monobloc, à bout hémisphérique, 2 dents
-  整体硬质合金 AL BN 系列 2刃球头铣刀



Order Number	Dimension (mm)							UC
	D	R	I 1	I 2	d3	L	d2 (h6)	
G74 0300	3	1.5	5		2.8	57	6	°
G74 0400	4	2	6		3.7	57	6	•
G74 0500	5	2.5	7		4.6	57	6	•
G74 0600	6	3	8		5.5	57	6	•
G74 0800	8	4	10		7.4	64	8	•
G74 1000	10	5	12		9.2	75	10	•
G74 1200	12	6	14		11	75	12	•
G74 1600	16	8	18		15	90	16	•
G74 2000	20	10	22		19	100	20	°

Order Number	Dimension (mm)							UC
	D	R	I 1	I 2	d3	L	d2 (h6)	
G75 0300	3	1.5	5	20	2.8	57	6	•
G75 0400	4	2	6	20	3.7	57	6	°
G75 0500	5	2.5	7	20	4.6	57	6	•
G75 0600 *	6	3	8	20	5.5	57	6	•
G75 0800	8	4	10	25	7.4	64	8	•
G75 1000	10	5	12	35	9.2	75	10	°
G75 1200	12	6	14	35	11	75	12	•
G75 1600	16	8	18	45	15	90	16	•
G75 2000 *	20	10	22	50	19	100	20	°

* - DIN 6535

Ø mm	Tol. µm
~ Ø2.5	+0 -0.020
Ø3 ~ Ø6	+0 -0.025
>Ø6	+0 -0.030

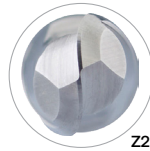
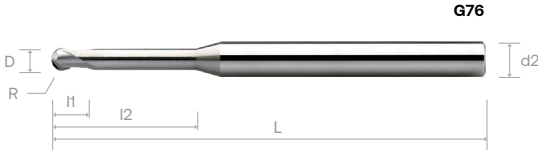
Material Group | Material-Gruppe | Groupe Matiere | Gruppo Materiali | 材质主类

N01N02N03K01K02P01P02P03M01M02S01S02S03H01H02O01O02

Cutting Parameter79 - 80

AL BN MINIATURE BALLNOSE CUTTERS WITH LONG NECK, 2 FLUTES

-  VHM Kleinst-Radiusfräser AL BN mit langem Hals, 2 Zähne
-  Micro-frese sferiche AL-BN, con collo lungo, 2 taglienti
-  Micro-fraises AL BN hémisphérique avec degagement, 2 dents
-  整体硬质合金 AL BN 系列 微小径2刀长颈球头铣刀



Order Number	Dimension (mm)							UC	Order Number	Dimension (mm)							UC
	D	R	I1	I2	L	d1	d2(h6)			D	R	I1	I2	L	d1	d2(h6)	
G76 0020 050 0400	0.2	0.10	0.2	-	50	-	4	°	G76 0150 050 0400	1.5	0.75	1.2	-	50	-	4	°
G76 0020 050 0400 005				0.5	50	0.17	4	°	G76 0150 050 0400 080				8	50	1.4	4	°
G76 0020 050 0400 010				1	50	0.17	4	•	G76 0150 050 0400 120				12	50	1.4	4	•
G76 0020 050 0400 015				1.5	50	0.17	4	•	G76 0150 050 0400 160 *				16	50	1.4	4	•
G76 0030 050 0400	0.3	0.15	0.3	-	50	-	4	°	G76 0160 050 0400	1.6	0.80	1.3	-	60	-	4	°
G76 0030 050 0400 010				1	50	0.27	4	°	G76 0160 050 0400 180				18	60	1.4	4	°
G76 0030 050 0400 020				2	50	0.27	4	•	G76 0160 050 0400				-	50	-	4	°
G76 0030 050 0400 030				3	50	0.27	4	°	G76 0160 050 0400 080				8	50	1.5	4	°
G76 0040 050 0400	0.4	0.20	0.4	-	50	-	4	°	G76 0160 050 0400 120	1.6	0.80	1.3	12	50	1.5	4	°
G76 0040 050 0400 010				1	50	0.37	4	•	G76 0160 050 0400 160 *				16	50	1.5	4	°
G76 0040 050 0400 020				2	50	0.37	4	°	G76 0160 060 0400				-	60	-	4	°
G76 0040 050 0400 030				3	50	0.37	4	°	G76 0160 060 0400 200				20	60	1.5	4	°
G76 0040 050 0400 040	0.5	0.25	0.4	4	50	0.37	4	°	G76 0180 050 0400	1.8	0.90	1.4	-	50	-	4	°
G76 0040 050 0400 050				5	50	0.37	4	•	G76 0180 050 0400 080				8	50	1.7	4	°
G76 0050 050 0400				-	50	-	4	°	G76 0180 050 0400 120				12	50	1.7	4	°
G76 0050 050 0400 020				2	50	0.45	4	°	G76 0180 050 0400 160 *				16	50	1.7	4	°
G76 0050 050 0400 030	0.6	0.30	0.5	3	50	0.45	4	°	G76 0180 060 0400	2	1	1.6	-	60	-	4	°
G76 0050 050 0400 040				4	50	0.45	4	•	G76 0180 060 0400 200				20	60	1.7	4	°
G76 0050 050 0400 050				5	50	0.45	4	°	G76 0200 050 0400				-	50	-	4	•
G76 0050 050 0400 060				6	50	0.45	4	°	G76 0200 050 0400 040				4	50	1.9	4	•
G76 0050 050 0400 080	0.8	0.40	0.6	8	50	0.45	4	°	G76 0200 050 0400 060	2	1	1.6	6	50	1.9	4	•
G76 0060 050 0400				-	50	-	4	°	G76 0200 050 0400 080				8	50	1.9	4	•
G76 0060 050 0400 020				2	50	0.55	4	°	G76 0200 050 0400 100				10	50	1.9	4	•
G76 0060 050 0400 030				3	50	0.55	4	°	G76 0200 050 0400 120				12	50	1.9	4	•
G76 0060 050 0400 040	1.0	0.50	0.8	4	50	0.55	4	•	G76 0200 050 0400 140	3	1.5	2.4	14	50	1.9	4	•
G76 0060 050 0400 050				5	50	0.55	4	°	G76 0200 050 0400 160				16	50	1.9	4	•
G76 0060 050 0400 060				6	50	0.55	4	•	G76 0200 060 0400				-	60	-	4	°
G76 0060 050 0400 080				8	50	0.55	4	°	G76 0200 060 0400 180				18	60	1.9	4	•
G76 0080 050 0400	1.2	0.60	1.0	-	50	-	4	°	G76 0200 060 0400 200	4	2	3.2	20	60	1.9	4	•
G76 0080 050 0400 020				2	50	0.75	4	•	G76 0200 060 0400 220				22	60	-	4	•
G76 0080 050 0400 040				4	50	0.75	4	°	G76 0200 075 0400				-	75	1.9	4	°
G76 0080 050 0400 050				5	50	0.75	4	•	G76 0200 075 0400 250				25	75	1.9	4	•
G76 0080 050 0400 060	1.4	0.70	1.1	6	50	0.75	4	°	G76 0200 075 0400 300	4	2	3.2	30	75	1.9	4	•
G76 0080 050 0400 070				7	50	0.75	4	°	G76 0300 050 0600				-	50	-	6	°
G76 0080 050 0400 080				8	50	0.75	4	°	G76 0300 050 0600 080 *				8	50	2.8	6	•
G76 0080 050 0400 100				10	50	0.75	4	°	G76 0300 050 0600 100				10	50	2.8	6	•
G76 0100 050 0400	1.2	0.60	1.0	-	50	-	4	°	G76 0300 060 0600	3	1.5	2.4	-	60	-	6	°
G76 0100 050 0400 030				3	50	0.9	4	°	G76 0300 060 0600 160				16	60	2.8	6	°
G76 0100 050 0400 040				4	50	0.9	4	•	G76 0300 060 0600 200				20	60	2.8	6	•
G76 0100 050 0400 050				5	50	0.9	4	•	G76 0300 075 0600				-	75	-	6	°
G76 0100 050 0400 060	1.0	0.50	0.8	6	50	0.9	4	•	G76 0300 075 0600 250	4	2	3.2	25	75	2.8	6	•
G76 0100 050 0400 070				7	50	0.9	4	°	G76 0300 075 0600 300				30	75	2.8	6	•
G76 0100 050 0400 080				8	50	0.9	4	°	G76 0300 075 0600 350				35	75	2.8	6	•
G76 0100 050 0400 090				9	50	0.9	4	•	G76 0400 050 0600				-	50	-	6	°
G76 0100 050 0400 100	1.2	0.60	1.0	10	50	0.9	4	°	G76 0400 050 0600 100	4	2	3.2	10	50	3.7	6	°
G76 0100 050 0400 120				12	50	0.9	4	•	G76 0400 060 0600				-	60	-	6	°
G76 0100 050 0400 140				14	50	0.9	4	•	G76 0400 060 0600 160				16	60	3.7	6	•
G76 0100 050 0400 160				16	50	0.9	4	°	G76 0400 060 0600 200				20	60	3.7	6	•
G76 0100 060 0400	1.4	0.70	1.1	-	60	-	4	°	G76 0400 075 0600	4	2	3.2	-	75	-	6	°
G76 0100 060 0400 200				20	60	0.9	4	•	G76 0400 075 0600 250				25	75	3.7	6	•
G76 0120 050 0400				-	50	-	4	°	G76 0400 075 0600 300				30	75	3.7	6	•
G76 0120 050 0400 060				6	50	1.1	4	•	G76 0400 075 0600 350				35	75	3.7	6	•
G76 0120 050 0400 080	1.2	0.60	1.0	8	50	1.1	4	°	G76 0400 100 0600	4	2	3.2	-	100	-	6	°
G76 0120 050 0400 100				10	50	1.1	4	°	G76 0400 100 0600 400				40	100	3.7	6	•
G76 0120 050 0400 120				12	50	1.1	4	°	G76 0400 100 0600 450				45	100	3.7	6	°
G76 0140 050 0400				-	50	-	4	°	G76 0400 100 0600 500				50	100	3.7	6	°
G76 0140 050 0400 080	1.4	0.70	1.1	8	50	1.3	4	°									
G76 0140 050 0400 120				12	50	1.3	4	°									
G76 0140 050 0400 160 *				16	50	1.3	4	°									

* - DIN 6535

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

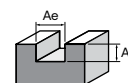
Cutting Parameter

N01	N02	N03	K01	K02	P01	P02	P03	M01	M02	S01	S02	S03	H01	H02	O01	O02	80 - 81
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Note: These recommended cutting data indicators are just for reference. They should be adjusted according to the different cutting condition

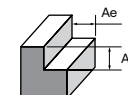


AL SE Single Flute Endmills, 1 Flute - 788, 924



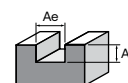
Slotting	N				O			
Working Material	Wrought Aluminium		Cast Aluminium		Copper alloy		Thermoplastic	
Properties	Si < 9%		Si ≥ 9%		-		-	
Cutting depth, ap	1.00 x D		1.00 x D		1.00 x D		1.00 x D	
Cutting Width, ae	1.00 x D		1.00 x D		1.00 x D		1.00 x D	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
2	290	0.022	250	0.018	160	0.013	270	0.020
3		0.038		0.032		0.023		0.035
4		0.063		0.053		0.039		0.058
5		0.081		0.069		0.051		0.076
6		0.101		0.087		0.064		0.095
8		0.139		0.121		0.088		0.129
10		0.179		0.157		0.114		0.166
12		0.221		0.196		0.142		0.210

AL SE Single Flute Endmills, 1 Flute - 788, 924



Side Milling	N				O			
Working Material	Wrought Aluminium		Cast Aluminium		Copper alloy		Thermoplastic	
Properties	Si < 9%		Si ≥ 9%		-		-	
Cutting depth, ap	1.00 x D		1.00 x D		1.00 x D		1.00 x D	
Cutting Width, ae	0.30 x D		0.30 x D		0.30 x D		0.30 x D	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
2	340	0.028	300	0.021	210	0.015	320	0.023
3		0.045		0.036		0.027		0.041
4		0.076		0.061		0.045		0.068
5		0.097		0.079		0.060		0.088
6		0.119		0.097		0.076		0.109
8		0.163		0.134		0.108		0.149
10		0.208		0.173		0.142		0.192
12		0.255		0.214		0.180		0.235

AL SE Endmills, 2 Flutes - 301, G49, G52, G53, G71

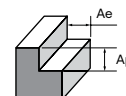


Slotting	N				O			
Working Material	Wrought Aluminium		Cast Aluminium		Copper alloy		Thermoplastic	
Properties	Si < 9%		Si ≥ 9%		-		-	
Cutting depth, ap	1.00 x D		1.00 x D		1.00 x D		1.00 x D	
Cutting Width, ae	1.00 x D		1.00 x D		1.00 x D		1.00 x D	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
1	310	0.010	270	0.008	180	0.004	290	0.009
2		0.012		0.011		0.008		0.011
3		0.021		0.019		0.015		0.019
4		0.035		0.031		0.024		0.031
5		0.045		0.040		0.031		0.041
6		0.056		0.049		0.038		0.051
8		0.077		0.067		0.052		0.070
10		0.098		0.085		0.067		0.091
12		0.122		0.105		0.084		0.113
14		0.138		0.120		0.095		0.128
16		0.154		0.134		0.106		0.142
18		0.169		0.148		0.116		0.155
20		0.183		0.160		0.126		0.166

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

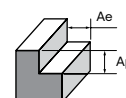


AL SE Endmills, 2 Flutes - 301, G49, G52, G53, G71



Side Milling	N						O	
Working Material	Wrought Aluminium		Cast Aluminium		Copper alloy		Thermoplastic	
Properties	Si < 9%		Si ≥ 9%		-		-	
Cutting depth, ap	1.00 x D		1.00 x D		1.00 x D		1.00 x D	
Cutting Width, ae	0.30 x D		0.30 x D		0.30 x D		0.30 x D	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
1	360	0.014	320	0.010	230	0.006	340	0.012
2		0.016		0.012		0.010		0.013
3		0.025		0.021		0.018		0.022
4		0.041		0.035		0.030		0.037
5		0.052		0.045		0.039		0.048
6		0.064		0.056		0.049		0.059
8		0.087		0.076		0.068		0.081
10		0.111		0.098		0.088		0.104
12		0.136		0.121		0.111		0.128
14		0.156		0.138		0.124		0.147
16		0.175		0.153		0.136		0.166
18		0.192		0.168		0.147		0.181
20		0.209		0.182		0.157		0.197

AL SE Long Endmills , 2 Flutes - G56, G57



Side Milling	N						O	
Working Material	Wrought Aluminium		Cast Aluminium		Copper alloy		Thermoplastic	
Properties	Si < 9%		Si ≥ 9%		-		-	
Cutting depth, ap	1.50 x D		1.50 x D		1.50 x D		1.50 x D	
Cutting Width, ae	0.25 x D		0.25 x D		0.25 x D		0.25 x D	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
6	330	0.061	290	0.052	200	0.049	310	0.055
8		0.083		0.071		0.066		0.076
10		0.107		0.092		0.084		0.098
12		0.131		0.114		0.104		0.123
14		0.150		0.129		0.119		0.138
16		0.168		0.143		0.133		0.154
20		0.205		0.174		0.164		0.188

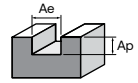
Recommended Cutting Data



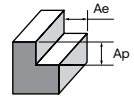
Note: These recommended cutting data indicators are just for reference. They should be adjusted according to the different cutting condition



AL SE Endmills, 3 Flutes - 303, G50, G69, G70, K30, K31



Slotting	N						O	
Working Material	Wrought Aluminium		Cast Aluminium		Copper alloy		Thermoplastic	
Properties	Si < 9%		Si ≥ 9%		-		-	
Cutting depth, ap	1.00 x D		1.00 x D		1.00 x D		1.00 x D	
Cutting Width, ae	1.00 x D		1.00 x D		1.00 x D		1.00 x D	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
1	330	0.008	290	0.006	200	0.003	310	0.007
2		0.010		0.008		0.006		0.009
3		0.016		0.014		0.010		0.015
4		0.026		0.022		0.017		0.024
5		0.033		0.029		0.023		0.031
6		0.041		0.036		0.029		0.038
8		0.056		0.049		0.040		0.052
10		0.071		0.063		0.053		0.067
12		0.088		0.078		0.067		0.084
14		0.100		0.089		0.075		0.095
16		0.112		0.098		0.083		0.106
18		0.123		0.107		0.089		0.116
20		0.133		0.116		0.094		0.125



AL SE Endmills, 3 Flutes - 303, G50, G69, G70, K30, K31

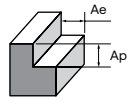
Side Milling	N						O	
Working Material	Wrought Aluminium		Cast Aluminium		Copper alloy		Thermoplastic	
Properties	Si < 9%		Si ≥ 9%		-		-	
Cutting depth, ap	1.00 x D		1.00 x D		1.00 x D		1.00 x D	
Cutting Width, ae	0.30 x D		0.30 x D		0.30 x D		0.30 x D	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
1	380	0.011	340	0.009	250	0.006	360	0.010
2		0.013		0.010		0.008		0.010
3		0.018		0.016		0.014		0.017
4		0.030		0.027		0.022		0.028
5		0.038		0.035		0.029		0.036
6		0.047		0.042		0.036		0.045
8		0.064		0.058		0.050		0.061
10		0.081		0.074		0.064		0.078
12		0.099		0.091		0.080		0.096
14		0.114		0.103		0.091		0.110
16		0.128		0.116		0.101		0.123
18		0.141		0.128		0.109		0.135
20		0.154		0.139		0.117		0.147

ALU LINE
EZ LINE -
ENDMILL
SE 30
NITCo 30
OPTIMUM
SE 45
SE 45X
NITCo 45
SE 60
SE 60X
DM70 -
SE 70
SE GR
TE 45
PLUNGE
-MILL
THREAD
MILL

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

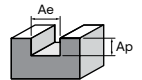


AL SE Long Endmills , 3 Flutes - G51



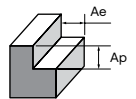
Side Milling	N						O	
Working Material	Wrought Aluminium		Cast Aluminium		Copper alloy		Thermoplastic	
Properties	Si < 9%		Si ≥ 9%		-		-	
Cutting depth, ap	1.00 x D		1.00 x D		1.00 x D		1.00 x D	
Cutting Width, ae	0.30 x D		0.30 x D		0.30 x D		0.30 x D	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
3	305	0.015	270	0.013	200	0.011	285	0.014
4		0.024		0.021		0.018		0.022
5		0.031		0.028		0.024		0.029
6		0.038		0.034		0.029		0.035
8		0.051		0.047		0.040		0.048
10		0.065		0.059		0.052		0.062
12		0.080		0.073		0.065		0.077
14		0.092		0.083		0.073		0.088

AL SE Endmills, 4 Flutes - C45, C51, S42



Slotting	N						O	
Working Material	Wrought Aluminium		Cast Aluminium		Copper alloy		Thermoplastic	
Properties	Si < 9%		Si ≥ 9%		-		-	
Cutting depth, ap	1.00 x D		1.00 x D		1.00 x D		1.00 x D	
Cutting Width, ae	1.00 x D		1.00 x D		1.00 x D		1.00 x D	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
3	350	0.013	310	0.012	220	0.010	330	0.012
4		0.022		0.020		0.016		0.020
5		0.028		0.025		0.021		0.026
6		0.034		0.031		0.027		0.032
8		0.047		0.042		0.037		0.044
10		0.059		0.054		0.048		0.057
12		0.073		0.067		0.060		0.071
14		0.084		0.076		0.068		0.081
16		0.094		0.085		0.074		0.090
20		0.112		0.101		0.086		0.108

AL SE Endmills, 4 Flutes - C45, C51, S42

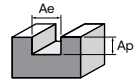


Side Milling	N						O	
Working Material	Wrought Aluminium		Cast Aluminium		Copper alloy		Thermoplastic	
Properties	Si < 9%		Si ≥ 9%		-		-	
Cutting depth, ap	1.00 x D		1.00 x D		1.00 x D		1.00 x D	
Cutting Width, ae	0.30 x D		0.30 x D		0.30 x D		0.30 x D	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
3	400	0.014	360	0.013	260	0.011	380	0.013
4		0.024		0.021		0.019		0.022
5		0.031		0.027		0.025		0.028
6		0.038		0.033		0.031		0.035
8		0.051		0.046		0.043		0.048
10		0.065		0.059		0.055		0.062
12		0.080		0.073		0.069		0.077
14		0.092		0.084		0.078		0.088
16		0.104		0.094		0.086		0.099
20		0.128		0.115		0.104		0.121

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

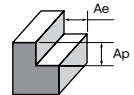


AL SE DP Torus Roughing Endmills, 3 Flutes - G72, G73



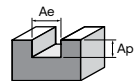
Slotting	N						O	
Working Material	Wrought Aluminium		Cast Aluminium		Copper alloy		Thermoplastic	
Properties	Si < 9%		Si ≥ 9%		-		-	
Cutting depth, ap	1.00 x D		1.00 x D		1.00 x D		1.00 x D	
Cutting Width, ae	1.00 x D		1.00 x D		1.00 x D		1.00 x D	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
6	330	0.045	290	0.040	200	0.032	310	0.042
8		0.061		0.055		0.045		0.057
10		0.077		0.070		0.059		0.073
12		0.095		0.087		0.074		0.090
16		0.120		0.108		0.089		0.111
20		0.142		0.126		0.098		0.129

AL SE DP Torus Roughing Endmills, 3 Flutes - G72, G73



Side Milling	N						O	
Working Material	Wrought Aluminium		Cast Aluminium		Copper alloy		Thermoplastic	
Properties	Si < 9%		Si ≥ 9%		-		-	
Cutting depth, ap	1.00 x D		1.00 x D		1.00 x D		1.00 x D	
Cutting Width, ae	0.30 x D		0.30 x D		0.30 x D		0.30 x D	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
6	380	0.052	340	0.047	250	0.040	360	0.049
8		0.070		0.064		0.055		0.066
10		0.089		0.081		0.071		0.084
12		0.109		0.100		0.088		0.103
16		0.140		0.126		0.110		0.130
20		0.168		0.151		0.128		0.155

XQ ALU CUTTERS DP/DH/DF ENDMILLS, 4 Flutes - K60, K61, K62, K63



Slotting	N						O	
Working Material	Wrought Aluminium		Cast Aluminium		Copper alloy		Thermoplastic	
Properties	Si < 9%		Si ≥ 9%		-		-	
Cutting depth, ap	1.00 x D		1.00 x D		1.00 x D		1.00 x D	
Cutting Width, ae	1.00 x D		1.00 x D		0.30 x D		1.00 x D	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
6	650	0.034	550	0.027	400	0.023	600	0.030
8		0.046		0.037		0.032		0.040
10		0.059		0.048		0.042		0.051
12		0.073		0.060		0.054		0.063
14		0.083		0.068		0.060		0.071
16		0.093		0.075		0.065		0.078
18		0.102		0.081		0.069		0.084
20		0.111		0.087		0.073		0.090

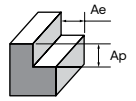
Recommended Cutting Data



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

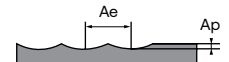


XQ ALU CUTTERS DP/DH/DF ENDMILLS, 4 Flutes - K60, K61, K62, K63



Side Milling	N						O	
Working Material	Wrought Aluminium		Cast Aluminium		Copper alloy		Thermoplastic	
Properties	Si < 9%		Si ≥ 9%		-		-	
Cutting depth, ap	1.00 x D		1.00 x D		1.00 x D		1.00 x D	
Cutting Width, ae	0.30 x D		0.30 x D		0.30 x D		0.30 x D	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
6	750	0.039	700	0.030	500	0.025	720	0.033
8		0.053		0.042		0.034		0.045
10		0.067		0.054		0.045		0.057
12		0.082		0.067		0.057		0.070
14		0.094		0.077		0.063		0.080
16		0.105		0.086		0.069		0.089
18		0.116		0.094		0.075		0.097
20		0.126		0.102		0.080		0.105

AL SE Miniature Endmills With Long Neck, 2 Flutes - G68



Profiling		N									O		
Working Material		Wrought Aluminium			Cast Aluminium			Copper alloy			Thermoplastic		
Properties		Si < 9%			Si ≥ 9%			-			-		
D	Effective Length	Ap	Vc	Fz	Ap	Vc	Fz	Ap	Vc	Fz	Ap	Vc	Fz
0.2	0.5	0.100	25	0.008		23	0.008	0.100	25	0.008	0.100	24	0.008
	1.0	0.040	24	0.007	0.040	21	0.007	0.040	22	0.007	0.040	22	0.007
	1.5	0.028	22	0.007	0.028	20	0.007	0.028	21	0.007	0.028	21	0.007
0.3	1.0	0.100	38	0.010	0.100	34	0.010	0.100	36	0.011	0.100	36	0.010
	2.0	0.050	33	0.009	0.050	30	0.009	0.050	32	0.009	0.050	31	0.009
	3.0	0.030	28	0.007	0.030	25	0.008	0.030	27	0.008	0.030	26	0.007
0.4	2.0	0.080	47	0.011	0.080	42	0.011	0.080	45	0.012	0.080	45	0.011
	3.0	0.058	44	0.010	0.058	39	0.011	0.058	42	0.012	0.058	42	0.010
	4.0	0.040	37	0.009	0.040	33	0.009	0.040	35	0.009	0.040	35	0.009
	5.0	0.033	34	0.008	0.033	31	0.008	0.033	33	0.008	0.033	32	0.008
0.5	2.0	0.125	63	0.014	0.125	57	0.014	0.125	61	0.015	0.125	60	0.014
	4.0	0.063	51	0.011	0.063	46	0.011	0.063	49	0.012	0.063	48	0.011
	6.0	0.043	42	0.009	0.043	38	0.009	0.043	41	0.009	0.043	40	0.009
	8.0	0.033	34	0.008	0.033	31	0.008	0.033	33	0.008	0.033	33	0.007
0.6	2.0	0.200	75	0.017	0.200	68	0.017	0.200	73	0.018	0.200	72	0.017
	4.0	0.100	66	0.015	0.100	59	0.015	0.100	63	0.016	0.100	62	0.015
	6.0	0.060	56	0.013	0.060	50	0.013	0.060	54	0.014	0.060	53	0.013
	8.0	0.045	51	0.011	0.045	46	0.012	0.045	49	0.013	0.045	48	0.011
	10.0	0.038	41	0.009	0.038	37	0.009	0.038	40	0.009	0.038	39	0.009
0.7	2.0	0.350	88	0.019	0.350	79	0.019	0.350	85	0.020	0.350	84	0.019
	4.0	0.140	82	0.018	0.140	74	0.018	0.140	79	0.019	0.140	78	0.018
	6.0	0.088	71	0.015	0.088	64	0.015	0.088	68	0.016	0.088	67	0.015
	8.0	0.063	65	0.014	0.063	59	0.014	0.063	63	0.015	0.063	62	0.014
	10.0	0.050	54	0.012	0.050	48	0.012	0.050	51	0.013	0.050	51	0.012
	4.0	0.160	94	0.020	0.160	85	0.020	0.160	91	0.021	0.160	89	0.020
0.8	6.0	0.115	87	0.018	0.115	79	0.018	0.115	85	0.019	0.115	83	0.018
	8.0	0.080	74	0.016	0.080	67	0.016	0.080	72	0.017	0.080	71	0.015
	10.0	0.068	68	0.014	0.068	61	0.014	0.068	65	0.015	0.068	65	0.014
	12.0	0.053	61	0.013	0.053	55	0.013	0.053	59	0.014	0.053	58	0.013
0.9	6.0	0.150	98	0.020	0.150	89	0.020	0.150	95	0.021	0.150	94	0.020
	8.0	0.113	91	0.018	0.113	82	0.018	0.113	88	0.019	0.113	87	0.018
	10.0	0.083	84	0.017	0.083	75	0.017	0.083	80	0.018	0.083	79	0.017
	15.0	0.058	62	0.013	0.058	55	0.013	0.058	59	0.014	0.058	59	0.013

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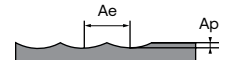
Recommended Cutting Data



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



AL SE Miniature Endmills With Long Neck, 2 Flutes - G68



Profiling		N									O		
Working Material		Wrought Aluminium			Cast Aluminium			Copper alloy			Thermoplastic		
Properties		Si < 9%			Si ≥ 9%			-			-		
D	Effective Length	Ap	Vc	Fz	Ap	Vc	Fz	Ap	Vc	Fz	Ap	Vc	Fz
1	6.0	0.168	109	0.022	0.168	98	0.022	0.168	105	0.023	0.168	104	0.022
	8.0	0.125	101	0.020	0.125	91	0.020	0.125	97	0.021	0.125	96	0.020
	10.0	0.100	93	0.019	0.100	84	0.019	0.100	90	0.020	0.100	88	0.019
	12.0	0.083	85	0.017	0.083	76	0.017	0.083	81	0.018	0.083	81	0.017
	14.0	0.073	77	0.015	0.073	69	0.015	0.073	74	0.016	0.073	73	0.015
	16.0	0.063	68	0.014	0.063	62	0.014	0.063	66	0.015	0.063	65	0.014
1.2	6.0	0.240	141	0.028	0.240	127	0.028	0.240	136	0.029	0.240	134	0.028
	8.0	0.200	131	0.026	0.200	118	0.026	0.200	126	0.027	0.200	125	0.026
	10.0	0.150	121	0.024	0.150	109	0.024	0.150	117	0.025	0.150	115	0.024
	12.0	0.120	112	0.022	0.120	100	0.022	0.120	107	0.023	0.120	106	0.022
1.4	6.0	0.350	176	0.034	0.350	158	0.034	0.350	169	0.036	0.350	167	0.034
	8.0	0.280	165	0.032	0.280	148	0.032	0.280	158	0.034	0.280	156	0.032
	10.0	0.200	153	0.030	0.200	138	0.030	0.200	148	0.032	0.200	146	0.030
	12.0	0.175	142	0.027	0.175	128	0.027	0.175	137	0.028	0.175	135	0.027
	14.0	0.140	130	0.025	0.140	117	0.025	0.140	125	0.026	0.140	124	0.025
	16.0	0.128	130	0.025	0.128	117	0.025	0.128	125	0.026	0.128	124	0.025
1.5	6.0	0.375	189	0.036	0.375	170	0.036	0.375	182	0.038	0.375	179	0.036
	8.0	0.300	176	0.034	0.300	159	0.034	0.300	170	0.036	0.300	167	0.034
	10.0	0.250	164	0.031	0.250	148	0.031	0.250	158	0.033	0.250	156	0.031
	12.0	0.188	152	0.029	0.188	137	0.029	0.188	147	0.030	0.188	144	0.029
	14.0	0.168	152	0.029	0.168	137	0.029	0.168	147	0.030	0.168	144	0.029
	16.0	0.150	140	0.027	0.150	125	0.027	0.150	134	0.028	0.150	132	0.027
	18.0	0.125	127	0.024	0.125	115	0.024	0.125	123	0.025	0.125	121	0.024
	20.0	0.115	127	0.024	0.115	115	0.024	0.115	123	0.025	0.115	121	0.024
1.6	6.0	0.533	201	0.038	0.533	181	0.038	0.533	194	0.040	0.533	191	0.038
	8.0	0.320	188	0.036	0.320	169	0.035	0.320	181	0.037	0.320	178	0.036
	10.0	0.268	175	0.033	0.268	157	0.033	0.268	168	0.035	0.268	166	0.033
	12.0	0.228	175	0.033	0.228	157	0.033	0.228	168	0.035	0.228	166	0.033
	14.0	0.200	162	0.031	0.200	146	0.031	0.200	156	0.033	0.200	154	0.031
	16.0	0.160	149	0.028	0.160	134	0.028	0.160	143	0.029	0.160	141	0.028
	18.0	0.145	149	0.028	0.145	134	0.028	0.145	143	0.029	0.145	141	0.028
	20.0	0.133	136	0.026	0.133	121	0.026	0.133	129	0.027	0.133	131	0.025
1.8	6.0	0.600	226	0.043	0.600	204	0.043	0.600	218	0.045	0.600	215	0.043
	8.0	0.450	226	0.043	0.450	204	0.043	0.450	218	0.045	0.450	215	0.043
	10.0	0.360	212	0.040	0.360	191	0.040	0.360	204	0.042	0.360	201	0.040
	12.0	0.300	197	0.037	0.300	177	0.037	0.300	189	0.039	0.300	187	0.037
	14.0	0.258	197	0.037	0.258	177	0.037	0.258	189	0.039	0.258	187	0.037
	16.0	0.225	182	0.035	0.225	164	0.035	0.225	175	0.037	0.225	173	0.035
	18.0	0.180	167	0.032	0.180	150	0.032	0.180	161	0.034	0.180	159	0.032
	20.0	0.163	167	0.032	0.163	150	0.032	0.163	161	0.034	0.163	159	0.032
2	6.0	0.668	251	0.047	0.668	226	0.047	0.668	242	0.049	0.668	239	0.047
	8.0	0.500	251	0.047	0.500	226	0.047	0.500	242	0.049	0.500	239	0.047
	10.0	0.400	235	0.044	0.400	212	0.044	0.400	227	0.046	0.400	223	0.044
	12.0	0.333	219	0.041	0.333	197	0.041	0.333	211	0.043	0.333	208	0.041
	14.0	0.285	219	0.041	0.285	197	0.041	0.285	211	0.043	0.285	208	0.041
	16.0	0.250	202	0.038	0.250	182	0.038	0.250	195	0.040	0.250	192	0.038
	18.0	0.223	202	0.038	0.223	182	0.038	0.223	195	0.040	0.223	192	0.038
	20.0	0.200	186	0.035	0.200	167	0.035	0.200	179	0.037	0.200	177	0.035
	25.0	0.168	170	0.032	0.168	153	0.032	0.168	164	0.034	0.168	161	0.032
	30.0	0.133	153	0.029	0.133	138	0.029	0.133	148	0.030	0.133	146	0.029

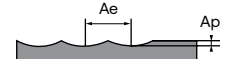
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ALU LINE
EZ LINE -
ENDMILL
SE 30
NITCO 30
OPTIMUM
SE 45
SE 45X
NITCO 45
SE 60
SE 60X
DM70 -
SE 70
SE GR
TE 45
PLUNGE
MILL
THREAD
MILL

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

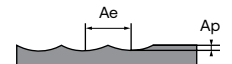


AL SE Miniature Endmills With Long Neck, 2 Flutes - G68



Profiling		N									O		
Working Material		Wrought Aluminium			Cast Aluminium			Copper alloy			Thermoplastic		
Properties		Si < 9%			Si ≥ 9%			-			-		
D	Effective Length	Ap	Vc	Fz	Ap	Vc	Fz	Ap	Vc	Fz	Ap	Vc	Fz
2.5	8.0	0.833	314	0.058	0.833	283	0.058	0.833	303	0.061	0.833	298	0.058
	10.0	0.625	314	0.058	0.625	283	0.058	0.625	303	0.061	0.625	298	0.058
	12.0	0.625	314	0.058	0.625	283	0.058	0.625	303	0.061	0.625	298	0.058
	14.0	0.500	294	0.054	0.500	265	0.054	0.500	284	0.057	0.500	279	0.054
	16.0	0.418	273	0.050	0.418	246	0.050	0.418	263	0.053	0.418	260	0.050
	18.0	0.358	273	0.050	0.358	246	0.050	0.358	263	0.053	0.358	260	0.050
	20.0	0.313	253	0.047	0.313	228	0.047	0.313	244	0.049	0.313	240	0.047
	25.0	0.250	233	0.043	0.250	209	0.043	0.250	224	0.045	0.250	221	0.043
3	30.0	0.208	212	0.039	0.208	191	0.039	0.208	204	0.041	0.208	202	0.039
	8.0	1.500	377	0.068	1.500	339	0.068	1.500	363	0.071	1.500	358	0.068
	10.0	1.000	377	0.068	1.000	339	0.068	1.000	363	0.071	1.000	358	0.068
	12.0	0.750	377	0.068	0.750	339	0.068	0.750	363	0.071	0.750	358	0.068
	14.0	0.750	377	0.068	0.750	339	0.068	0.750	363	0.071	0.750	358	0.068
	16.0	0.600	353	0.064	0.600	318	0.064	0.600	340	0.067	0.600	335	0.064
	18.0	0.500	328	0.059	0.500	295	0.059	0.500	316	0.062	0.500	312	0.059
	20.0	0.500	328	0.059	0.500	295	0.059	0.500	316	0.062	0.500	312	0.059
4	25.0	0.375	304	0.055	0.375	273	0.055	0.375	292	0.058	0.375	288	0.055
	10.0	2.000	450	0.096	2.000	405	0.096	2.000	433	0.101	2.000	427	0.096
	15.0	1.333	450	0.096	1.333	405	0.096	1.333	433	0.101	1.333	427	0.096
	20.0	0.800	421	0.089	0.800	380	0.089	0.800	407	0.093	0.800	400	0.089
	25.0	0.668	392	0.083	0.668	353	0.083	0.668	378	0.087	0.668	372	0.083
	30.0	0.573	392	0.083	0.573	353	0.083	0.573	378	0.087	0.573	372	0.083
	40.0	0.400	333	0.071	0.400	300	0.071	0.400	321	0.075	0.400	317	0.071

AL BN Ballnose Cutters, 2 Flutes - G74, G75



Roughing	N						O	
Working Material	Wrought Aluminium		Cast Aluminium		Copper alloy		Thermoplastic	
Properties	Si < 9%		Si ≥ 9%		-		-	
Cutting depth, ap	0.10 × D		0.10 × D		0.10 × D		0.10 × D	
Cutting Width, ae	0.35 × D		0.35 × D		0.30 × D		0.35 × D	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
3	450	0.027	400	0.023	350	0.019	380	0.020
4		0.037		0.032		0.026		0.027
5		0.048		0.041		0.033		0.035
6		0.059		0.050		0.041		0.043
8		0.080		0.069		0.057		0.059
10		0.102		0.088		0.074		0.076
12		0.126		0.108		0.092		0.094
16		0.164		0.141		0.119		0.122
20		0.202		0.173		0.144		0.149

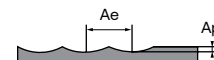
Recommended Cutting Data



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

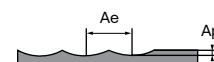


AL BN Ballnose Cutters, 2 Flutes - G74, G75



Finishing	N						O	
Working Material	Wrought Aluminium		Cast Aluminium		Copper alloy		Thermoplastic	
Properties	Si < 9%		Si ≥ 9%		-		-	
Cutting depth, ap	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	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
3	470	0.021	420	0.018	370	0.014	400	0.015
4		0.028		0.024		0.020		0.021
5		0.037		0.031		0.025		0.027
6		0.045		0.038		0.031		0.033
8		0.061		0.052		0.043		0.045
10		0.078		0.067		0.056		0.058
12		0.097		0.083		0.069		0.072
16		0.126		0.108		0.090		0.093
20		0.155		0.132		0.109		0.113

AL BN Miniature Ballnose Cutters With Long Neck, 2 Flutes - G76



Profiling		N									O		
Working Material		Wrought Aluminium			Cast Aluminium			Copper alloy			Thermoplastic		
Properties		Si < 9%			Si ≥ 9%			-			-		
D	Effective Length	Ap	N	Fz	Ap	N	Fz	Ap	N	Fz	Ap	N	Fz
0.2	0.5	0.029	50000	0.007		50000	0.007	0.024	50000	0.006	0.026	50000	0.006
	1.0	0.020	50000	0.007	0.018	50000	0.007	0.017	50000	0.006	0.018	50000	0.006
	1.5	0.012	50000	0.007	0.011	50000	0.007	0.010	50000	0.006	0.010	50000	0.006
0.3	1.0	0.030	50000	0.007	0.028	50000	0.007	0.025	50000	0.006	0.027	50000	0.006
	2.0	0.017	50000	0.006	0.016	50000	0.006	0.014	50000	0.005	0.016	50000	0.005
	3.0	0.012	50000	0.006	0.011	50000	0.006	0.010	50000	0.005	0.010	50000	0.005
0.4	1.0	0.058	50000	0.011	0.053	50000	0.010	0.048	50000	0.009	0.052	50000	0.010
	2.0	0.040	50000	0.010	0.037	50000	0.009	0.034	50000	0.008	0.036	50000	0.009
	3.0	0.023	50000	0.008	0.021	50000	0.008	0.019	50000	0.007	0.021	50000	0.008
0.5	4.0	0.014	50000	0.007	0.013	50000	0.007	0.012	50000	0.006	0.013	50000	0.006
	5.0	0.012	50000	0.006	0.011	50000	0.006	0.010	50000	0.005	0.010	50000	0.005
	2.0	0.050	50000	0.014	0.046	50000	0.013	0.042	50000	0.012	0.045	50000	0.013
0.6	3.0	0.043	50000	0.013	0.040	50000	0.012	0.036	50000	0.011	0.039	50000	0.012
	4.0	0.029	50000	0.012	0.026	50000	0.011	0.024	50000	0.010	0.026	50000	0.011
	5.0	0.026	50000	0.011	0.024	50000	0.010	0.022	50000	0.009	0.023	50000	0.010
0.8	6.0	0.019	50000	0.010	0.017	50000	0.009	0.016	50000	0.008	0.017	50000	0.009
	8.0	0.012	50000	0.008	0.011	50000	0.008	0.010	50000	0.007	0.010	50000	0.008
	2.0	0.091	50000	0.024	0.083	50000	0.022	0.076	50000	0.020	0.082	50000	0.022
1.0	3.0	0.059	50000	0.022	0.054	50000	0.020	0.049	50000	0.018	0.053	50000	0.019
	4.0	0.037	50000	0.020	0.034	50000	0.019	0.031	50000	0.017	0.034	50000	0.018
	5.0	0.029	50000	0.017	0.026	50000	0.015	0.024	50000	0.014	0.026	50000	0.015
1.0	6.0	0.022	50000	0.016	0.020	50000	0.014	0.018	50000	0.013	0.019	50000	0.014
	8.0	0.022	50000	0.014	0.020	50000	0.013	0.018	50000	0.012	0.019	50000	0.013
	2.0	0.173	50000	0.031	0.158	50000	0.029	0.144	50000	0.026	0.156	50000	0.028
1.0	4.0	0.112	50000	0.030	0.103	50000	0.028	0.094	50000	0.025	0.101	50000	0.027
	5.0	0.085	50000	0.029	0.078	50000	0.026	0.071	50000	0.024	0.076	50000	0.026
	6.0	0.060	50000	0.026	0.055	50000	0.024	0.050	50000	0.022	0.054	50000	0.024
1.0	7.0	0.044	50000	0.023	0.041	50000	0.021	0.037	50000	0.019	0.040	50000	0.021
	8.0	0.029	50000	0.019	0.026	50000	0.018	0.024	49920	0.016	0.026	50000	0.017
	10.0	0.029	50000	0.018	0.026	50000	0.017	0.024	46000	0.015	0.026	49680	0.016
1.0	3.0	0.288	50000	0.032	0.264	50000	0.030	0.240	50000	0.027	0.259	50000	0.029
	4.0	0.202	50000	0.031	0.185	50000	0.029	0.168	50000	0.026	0.181	50000	0.028
	5.0	0.130	50000	0.030	0.119	50000	0.028	0.108	50000	0.025	0.117	50000	0.027
	6.0	0.086	50000	0.029	0.079	50000	0.026	0.072	50000	0.024	0.078	50000	0.026

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ALU LINE
EZ LINE -
ENDMILL
SE 30
NITCo 30
OPTIMUM
SE 45
SE 45X
NITCo 45
SE 60
SE 60X
DM70 -
SE 70
SE GR
TE 45
PLUNGE
MILL
THREAD
MILL

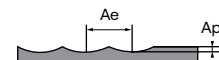
Recommended Cutting Data



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



AL BN Miniature Ballnose Cutters With Long Neck, 2 Flutes - G76

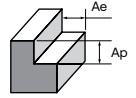


Profiling		N									O		
Working Material		Wrought Aluminium			Cast Aluminium			Copper alloy			Thermoplastic		
Properties		Si < 9%			Si ≥ 9%			-			-		
D	Effective Length	Ap	N	Fz	Ap	N	Fz	Ap	N	Fz	Ap	N	Fz
1.0	7.0	0.086	50000	0.028	0.079	50000	0.025	0.072	46660	0.023	0.078	50000	0.025
	8.0	0.086	50000	0.028	0.079	50000	0.025	0.072	46660	0.023	0.078	50000	0.025
	9.0	0.065	50000	0.026	0.059	50000	0.024	0.054	46660	0.022	0.058	50000	0.024
	10.0	0.055	50000	0.025	0.050	50000	0.023	0.046	46660	0.021	0.049	50000	0.023
	12.0	0.036	41470	0.025	0.033	38020	0.023	0.030	34560	0.021	0.032	37330	0.023
	14.0	0.029	41470	0.025	0.026	38020	0.023	0.024	34560	0.021	0.026	37330	0.023
	16.0	0.022	41470	0.024	0.020	38020	0.022	0.018	34560	0.020	0.019	37330	0.022
	20.0	0.014	31100	0.024	0.013	28510	0.022	0.012	25920	0.020	0.013	27990	0.022
1.2	6.0	0.158	50000	0.034	0.145	49420	0.031	0.132	44930	0.028	0.143	48520	0.030
	8.0	0.086	50000	0.034	0.079	49280	0.031	0.072	44800	0.028	0.078	48380	0.030
	10.0	0.076	49760	0.029	0.070	45620	0.026	0.064	41470	0.024	0.069	44790	0.026
	12.0	0.065	49760	0.028	0.059	45620	0.025	0.054	41470	0.023	0.058	44790	0.025
1.4	8.0	0.158	47170	0.041	0.145	43240	0.037	0.132	39310	0.034	0.143	42460	0.037
	12.0	0.076	43550	0.032	0.070	39920	0.030	0.064	36290	0.027	0.069	39190	0.029
	16.0	0.050	32260	0.030	0.046	29570	0.028	0.042	26880	0.025	0.045	29030	0.027
1.5	8.0	0.173	47170	0.043	0.158	43240	0.040	0.144	39310	0.036	0.156	42460	0.039
	12.0	0.130	43550	0.036	0.119	39920	0.033	0.108	36290	0.030	0.117	39190	0.032
	16.0	0.055	36000	0.034	0.050	33000	0.031	0.046	30000	0.028	0.049	32400	0.030
	18.0	0.055	32260	0.032	0.050	29570	0.030	0.046	26880	0.027	0.049	29030	0.029
1.6	8.0	0.317	50000	0.048	0.290	48050	0.044	0.264	43680	0.040	0.285	47170	0.043
	12.0	0.141	44880	0.038	0.129	41140	0.035	0.118	37400	0.032	0.127	40390	0.035
	16.0	0.086	40440	0.037	0.079	37070	0.034	0.072	33700	0.031	0.078	36400	0.033
1.8	20.0	0.058	29950	0.036	0.053	27460	0.033	0.048	24960	0.030	0.052	26960	0.032
	8.0	0.374	48670	0.058	0.343	44620	0.053	0.312	40560	0.048	0.337	43810	0.052
	12.0	0.151	40440	0.043	0.139	37070	0.040	0.126	33700	0.036	0.136	36400	0.039
	16.0	0.098	38400	0.040	0.090	35200	0.036	0.082	32000	0.033	0.088	34560	0.036
	20.0	0.065	29950	0.040	0.059	27460	0.036	0.054	24960	0.033	0.058	26960	0.036
2.0	4.0	0.576	45360	0.090	0.528	41580	0.083	0.480	37800	0.075	0.518	40820	0.081
	6.0	0.576	45360	0.082	0.528	41580	0.075	0.480	37800	0.068	0.518	40820	0.073
	8.0	0.403	45360	0.082	0.370	41580	0.075	0.336	37800	0.068	0.363	40820	0.073
	10.0	0.302	42340	0.072	0.277	38808	0.066	0.252	35280	0.060	0.272	38100	0.065
	12.0	0.017	38100	0.067	0.016	34930	0.062	0.014	31750	0.056	0.016	34290	0.060
	14.0	0.173	38100	0.067	0.158	34930	0.062	0.144	31750	0.056	0.156	34290	0.060
	16.0	0.173	35380	0.043	0.158	32430	0.040	0.144	29480	0.036	0.156	31840	0.039
	18.0	0.130	32660	0.042	0.119	29940	0.039	0.108	27220	0.035	0.117	29400	0.038
	20.0	0.108	32660	0.042	0.099	29940	0.039	0.090	27220	0.035	0.097	29400	0.038
	22.0	0.072	25700	0.041	0.066	23560	0.037	0.060	21420	0.034	0.065	23130	0.037
3.0	25.0	0.072	24190	0.040	0.066	22180	0.036	0.060	20160	0.033	0.065	21770	0.036
	30.0	0.043	24190	0.040	0.040	22180	0.036	0.036	20160	0.033	0.039	21770	0.036
	8.0	0.720	32160	0.134	0.660	29480	0.123	0.600	26800	0.112	0.648	28940	0.121
	10.0	0.605	31800	0.134	0.554	29150	0.123	0.504	26500	0.112	0.544	28620	0.121
	16.0	0.454	31440	0.097	0.416	28820	0.089	0.378	26200	0.081	0.408	28300	0.087
	20.0	0.259	26950	0.080	0.238	24710	0.074	0.216	22460	0.067	0.233	24260	0.072
	25.0	0.173	25440	0.080	0.158	23320	0.074	0.144	21200	0.067	0.156	22900	0.072
	30.0	0.173	23400	0.079	0.158	21450	0.073	0.144	19500	0.066	0.156	21060	0.071
	35.0	0.115	18430	0.077	0.106	16900	0.070	0.096	15360	0.064	0.104	16590	0.069
	10.0	0.720	24840	0.180	0.660	22770	0.165	0.600	20700	0.150	0.648	22360	0.162
4.0	16.0	0.605	24840	0.180	0.554	22770	0.165	0.504	20700	0.150	0.544	22360	0.162
	20.0	0.454	21530	0.144	0.416	19730	0.132	0.378	17940	0.120	0.408	19380	0.130
	25.0	0.346	19380	0.130	0.317	17770	0.119	0.288	16150	0.108	0.311	17440	0.117
	30.0	0.230	17880	0.107	0.211	16390	0.098	0.192	14900	0.089	0.207	16090	0.096
	35.0	0.173	17880	0.107	0.158	16390	0.098	0.144	14900	0.089	0.156	16090	0.096
	40.0	0.144	17880	0.107	0.132	16390	0.098	0.120	14900	0.089	0.130	16090	0.096
	45.0	0.115	13250	0.102	0.106	12144	0.094	0.096	11040	0.085	0.104	11920	0.092
	50.0	0.115	13250	0.102	0.106	12144	0.094	0.096	11040	0.085	0.104	11920	0.092

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

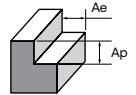


XQ DP/DH/DF Long Endmills, with internal coolant, 4 Flutes - K88



Side Milling	N						O	
Working Material	Wrought Aluminium		Cast Aluminium		Copper alloy		Thermoplastic	
Properties	Si < 9%		Si ≥ 9%		-		-	
Cutting depth, ap	1.50 × D		1.50 × D		1.50 × D		1.50 × D	
Cutting Width, ae	0.20 × D		0.20 × D		0.20 × D		0.20 × D	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
6	600	0.031	560	0.026	400	0.024	580	0.030
8		0.044		0.037		0.035		0.041
10		0.060		0.048		0.047		0.053
12		0.077		0.061		0.059		0.066
16		0.085		0.069		0.065		0.074
20		0.092		0.076		0.069		0.080

XQ DP/DH/DF Long Endmills, with internal coolant and chip breaker, 4 Flutes - K89



Side Milling	N						O	
Working Material	Wrought Aluminium		Cast Aluminium		Copper alloy		Thermoplastic	
Properties	Si < 9%		Si ≥ 9%		-		-	
Cutting depth, ap	2.00 × D		2.00 × D		2.00 × D		2.00 × D	
Cutting Width, ae	0.20 × D		0.20 × D		0.20 × D		0.20 × D	
D	Vc	Fz	Vc	Fz	Vc	Fz	Vc	Fz
6	600	0.028	560	0.024	400	0.022	580	0.027
8		0.040		0.034		0.032		0.037
10		0.054		0.044		0.042		0.048
12		0.070		0.056		0.054		0.060
16		0.078		0.063		0.059		0.067
20		0.085		0.069		0.063		0.073