



THE FUTURE OF PRECISION MACHINING

# ALU LINE

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X Q A L U C U T T E R

*Versatile - Fast - Durable*

**Engineered To Perfection In Germany**



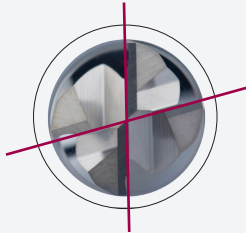
# AL SE XQ High Performance - 4 Flute (K60)

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01

## Differential Pitch (DP)

- Provides excellent surface finishing while eliminating chatter



02

## Differential Helix (DH)

- Reduces machining vibrations allowing for high speed machining and increased productivity

03

## Differential Fluting (DF)

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

04

## 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

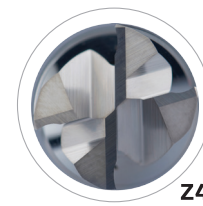
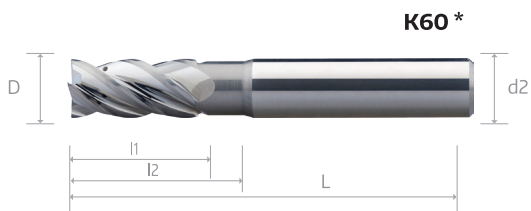


05

## Polished Flutes

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

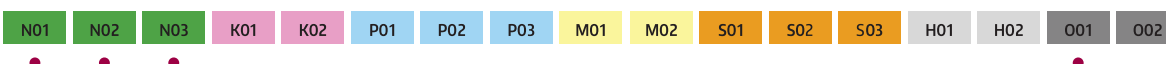
# AL SEXQ DP/DH/DF High Performance Endmills, 4 Radial Coolant Hole, 4 Flute



EDP No. / EDV-Nr / CODE usine / Codice EDP	Dimension ( mm )							K60 *
	D	l1	l2	L	d2 (h6)	C	Coolant Hole	
							T...n	
= * + Ø data								
0600	6	13	20	57	6	0.1	•	
0800	8	20	26	64	8	0.1	•	
1000	10	22	30	72	10	0.2	•	
1200	12	26	36	83	12	0.2	•	
1400	14	26	38	83	14	0.2	○	
1600	16	32	42	92	16	0.2	•	
1800	18	32	42	92	18	0.3	○	
2000	20	38	52	104	20	0.3	•	

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

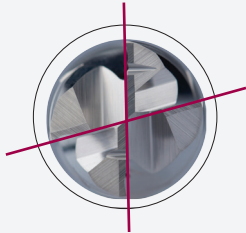
9

# AL SE XQ High Performance - 4 Flute (K61)

01

## Differential Pitch (DP)

- Provides excellent surface finishing while eliminating chatter



02

## Differential Helix (DH)

- Reduces machining vibrations allowing for high speed machining and increased productivity

03

## Differential Fluting (DF)

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

04

## 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

05

## Polished Flutes

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

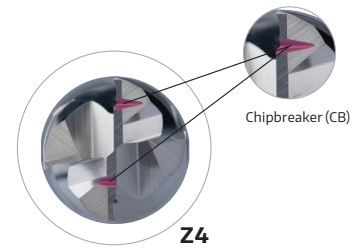
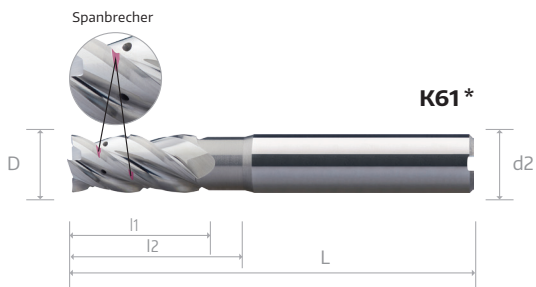


06

## Chipbreakers

- Efficiently shears work materials and shortens chips for improved chips removal

# AL SEXQ DP/DH/DF/CB High Performance Endmills, 4 Radial Coolant Hole, 4 Flute



EDP No. / EDV-Nr / CODE usine / Codice EDP	Dimension ( mm )							K61*
	D	I1	I2	L	d2 (h6)	C	Coolant Hole	
							T...n	
= * + Ø data								
0600	6	13	20	57	6	0.1	•	
0800	8	20	26	64	8	0.1	•	
1000	10	22	30	72	10	0.2	•	
1200	12	26	36	83	12	0.2	•	
1400	14	26	38	83	14	0.2	○	
1600	16	32	42	92	16	0.2	•	
1800	18	32	42	92	18	0.3	○	
2000	20	38	52	104	20	0.3	•	

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

10

# AL SE XQ High Performance Torus - 4 Flute (K62)

01

## Differential Pitch (DP)

- Provides excellent surface finishes while eliminating chatter

02

## Differential Helix (DH)

- Reduces machining vibrations allowing for high speed machining and increased productivity

03

## Differential Fluting (DF)

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

04

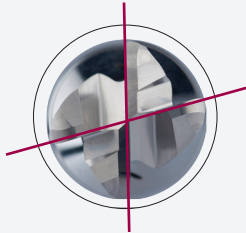
## Oil Hole for High Performance Milling

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

05

## Polished Flutes

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

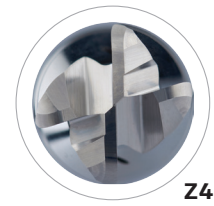
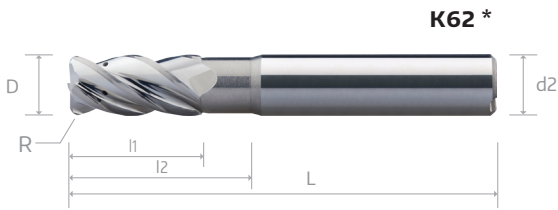


06

## Corner Radius

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

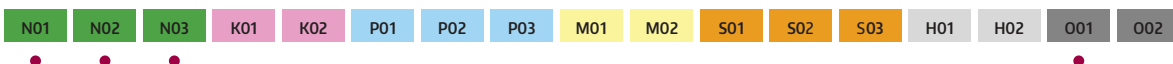
# AL SER XQ DP/DH/DF High Performance Torus Endmills, 4 Radial Coolant Hole, 4 Flute



EDP No. / EDV-Nr / CODE usine / Codice EDP	Dimension ( mm )						K62*
	D	l1	l2	L	d2 (h6)	R	Coolant Hole
							T ... n
= * + Ø data							
1000 072 1000 200	10	22	30	72	10	2	•
1000 072 1000 250	10	22	30	72	10	2.5	•
1000 072 1000 300	10	22	30	72	10	3	•
1000 072 1000 400	10	22	30	72	10	4	•
1200 083 1200 200	12	26	36	83	12	2	•
1200 083 1200 250	12	26	36	83	12	2.5	•
1200 083 1200 300	12	26	36	83	12	3	•
1200 083 1200 400	12	26	36	83	12	4	•
1600 092 1600 200	16	32	42	92	16	2	•
1600 092 1600 250	16	32	42	92	16	2.5	•
1600 092 1600 300	16	32	42	92	16	3	•
1600 092 1600 400	16	32	42	92	16	4	•
2000 104 2000 200	20	38	52	104	20	2	•
2000 104 2000 250	20	38	52	104	20	2.5	•
2000 104 2000 300	20	38	52	104	20	3	•
2000 104 2000 400	20	38	52	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

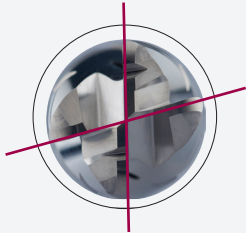
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# AL SE XQ High Performance Torus - 4 Flute (K63)

01

## Differential Pitch (DP)

- Provides excellent surface finishes while eliminating chatter



02

## Differential Helix (DH)

- Reduces machining vibrations allowing for high speed machining and increased productivity

03

## Differential Fluting (DF)

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

04

## 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

05

## Polished Flute

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

06

## Corner Radius

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



07

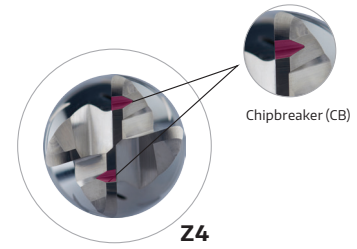
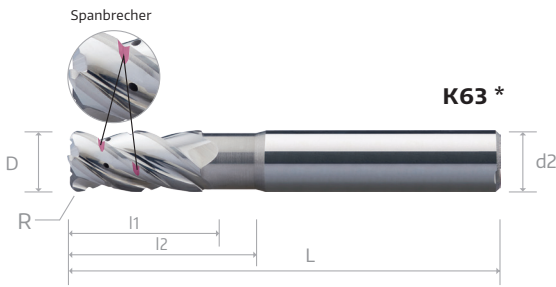
## Chipbreakers

- Efficiently shears work materials and shortens chips for improved chips removal





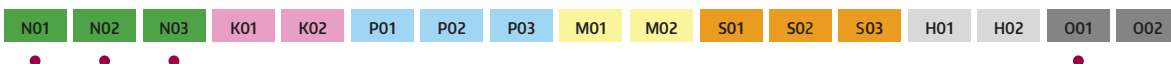
# AL SER XQ DP/DH/DF/CB High Performance Torus Endmills, 4 Radial Coolant Hole, 4 Flute



EDP No. / EDV-Nr / CODE usine / Codice EDP	Dimension ( mm )							K63*
	D	l1	l2	L	d2 (h6)	R	Coolant Hole	
							T...n	
= * + Ø data								
1000 072 1000 200	10	22	30	72	10	2	•	
1000 072 1000 250	10	22	30	72	10	2.5	•	
1000 072 1000 300	10	22	30	72	10	3	•	
1000 072 1000 400	10	22	30	72	10	4	•	
1200 083 1200 200	12	26	36	83	12	2	•	
1200 083 1200 250	12	26	36	83	12	2.5	•	
1200 083 1200 300	12	26	36	83	12	3	•	
1200 083 1200 400	12	26	36	83	12	4	•	
1600 092 1600 200	16	32	42	92	16	2	•	
1600 092 1600 250	16	32	42	92	16	2.5	•	
1600 092 1600 300	16	32	42	92	16	3	•	
1600 092 1600 400	16	32	42	92	16	4	•	
2000 104 2000 200	20	38	52	104	20	2	•	
2000 104 2000 250	20	38	52	104	20	2.5	•	
2000 104 2000 300	20	38	52	104	20	3	•	
2000 104 2000 400	20	38	52	104	20	4	•	

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

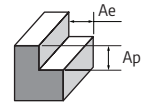
Material Group | Material-Gruppe | Groupe Matiere | Gruppo Materiali | 材质主类



Cutting Parameter

10

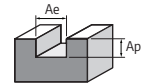
Modifiche Tecniche possibili senza preavviso



## XQ High Performance Endmills with coolant hole, 4 Flute

Side Milling	N01		N02		N03		O01	
<b>Working Material</b>	Wrought Aluminium		Cast Aluminium		Copper Alloy		Thermoplastics	
<b>Properties</b>	Si < 9%		Si ≥ 9%		-		-	
<b>Cutting Depth, Ap (mm)</b>	1.00 × D		1.00 × D		1.00 × D		1.00 × D	
<b>Cutting Width, Ae (mm)</b>	0.40 × D		0.40 × D		0.40 × D		0.40 × D	
<b>D (mm)</b>	<b>Vc (m/min)</b>	<b>Fz (mm)</b>	<b>Vc (m/min)</b>	<b>Fz (mm)</b>	<b>Vc (m/min)</b>	<b>Fz (mm)</b>	<b>Vc (m/min)</b>	<b>Fz (mm)</b>
4	850	0.046	680	0.042	220	0.025	700	0.014
5		0.058		0.053		0.032		0.020
6		0.069		0.063		0.038		0.026
8		0.092		0.084		0.050		0.040
10		0.116		0.105		0.063		0.054
12		0.139		0.126		0.076		0.073
14		0.162		0.147		0.088		0.085
16		0.185		0.168		0.101		0.101
18		0.208		0.189		0.113		0.114
20		0.231		0.210		0.126		0.126

## XQ High Performance Endmills with coolant hole, 4 Flute



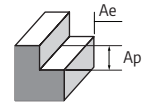
Slotting	N01		N02		N03		O01	
<b>Working Material</b>	Wrought Aluminium		Cast Aluminium		Copper Alloy		Thermoplastics	
<b>Properties</b>	Si < 9%		Si ≥ 9%		-		-	
<b>Cutting Depth, Ap (mm)</b>	1.00 × D		1.00 × D		1.00 × D		1.00 × D	
<b>Cutting Depth, Ae (mm)</b>	1.00 × D		1.00 × D		1.00 × D		1.00 × D	
<b>D (mm)</b>	<b>Vc (m/min)</b>	<b>Fz (mm)</b>	<b>Vc (m/min)</b>	<b>Fz (mm)</b>	<b>Vc (m/min)</b>	<b>Fz (mm)</b>	<b>Vc (m/min)</b>	<b>Fz (mm)</b>
4	650	0.034	550	0.029	180	0.021	600	0.013
5		0.042		0.037		0.026		0.017
6		0.050		0.044		0.032		0.023
8		0.067		0.059		0.042		0.033
10		0.084		0.074		0.053		0.045
12		0.101		0.088		0.063		0.058
14		0.118		0.103		0.074		0.073
16		0.134		0.118		0.084		0.090
18		0.151		0.132		0.095		0.104
20		0.168		0.147		0.105		0.117



Recommended Cutting Data

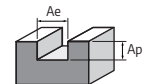
Note: These recommended cutting conditions indicate just references. It should be adjusted due to different cutting conditions.

## XQ High Performance Endmills with coolant hole and chipbreaker, 4 Flute



Side Milling	N01		N02		N03		O01	
Working Material	Wrought Aluminium		Cast Aluminium		Copper Alloy		Thermoplastics	
Properties	Si < 9%		Si ≥ 9%		-		-	
Cutting Depth, Ap (mm)	1.00 × D		1.00 × D		1.00 × D		1.00 × D	
Cutting Width, Ae (mm)	0.40 × D		0.40 × D		0.40 × D		0.40 × D	
D (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)
4	760	0.049	680	0.044	220	0.026	700	0.015
5		0.061		0.055		0.033		0.021
6		0.073		0.066		0.040		0.028
8		0.097		0.088		0.053		0.042
10		0.121		0.110		0.066		0.057
12		0.146		0.132		0.079		0.076
14		0.170		0.154		0.093		0.089
16		0.194		0.176		0.106		0.107
18		0.218		0.198		0.119		0.119
20		0.243		0.221		0.132		0.132

## XQ High Performance Endmills with coolant hole and chipbreaker, 4 Flute



Slotting	N01		N02		N03		O01	
Working Material	Wrought Aluminium		Cast Aluminium		Copper Alloy		Thermoplastics	
Properties	Si < 9%		Si ≥ 9%		-		-	
Cutting Depth, Ap (mm)	1.00 × D		1.00 × D		1.00 × D		1.00 × D	
Cutting Width, Ae (mm)	1.00 × D		1.00 × D		1.00 × D		1.00 × D	
D (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)
4	650	0.035	550	0.031	180	0.022	600	0.014
5		0.044		0.039		0.028		0.017
6		0.053		0.046		0.033		0.024
8		0.071		0.062		0.044		0.035
10		0.088		0.077		0.055		0.047
12		0.106		0.093		0.066		0.061
14		0.123		0.108		0.077		0.076
16		0.141		0.123		0.088		0.095
18		0.159		0.139		0.099		0.109
20		0.176		0.154		0.110		0.123



Recommended Cutting Data

Note: These recommended cutting conditions indicate just references. It should be adjusted due to different cutting conditions.



THE FUTURE OF PRECISION MACHINING

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