

OPTIMUM

LINE

The most versatile program for
multiple materials and applications



SQUARE ENDMILLS

	EDP No.	Design	Z	Diameter Range	Page
	918	DP Endmills	4	1 - 20	4
	981	DP Endmills, Recess	4	3 - 20	4
	918DH NEW	DP/DH Endmills	4	1 - 20	6
	981DH NEW	DP/DH Endmills, Recess	4	3 - 20	6
	986DH NEW	DP/DH Endmills, Recess, Weldon	4	3 - 20	6
	K86 NEW	Short DP/DH Endmills	3	1 - 12	8

R-LIKE ENDMILLS

	EDP No.	Design	Z	Diameter Range	Page
	K47DH NEW	DP/DH R-Like Endmills	4	1 - 20	10
	K52DH NEW	DP/DH R-Like Endmills, Recess	4	3 - 20	10
	K53DH NEW	DP/DH R-Like Endmills, Recess, Weldon	4	3 - 20	10

TORUS ENDMILLS

	EDP No.	Design	Z	Diameter Range	Page
	919	DP Torus Endmills	4	1 - 20	12
	991	DP Torus Endmills, Recess	4	3 - 20	12

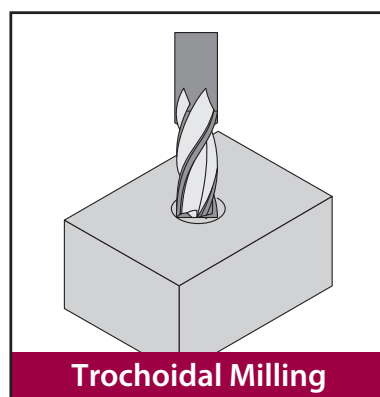
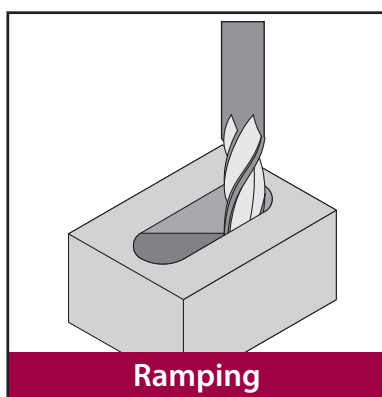
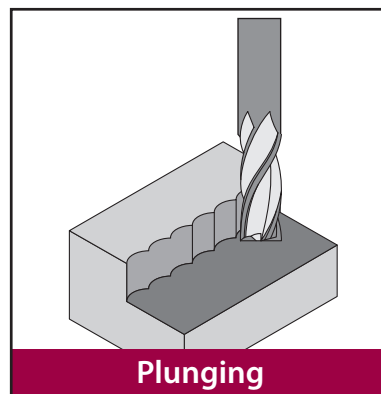
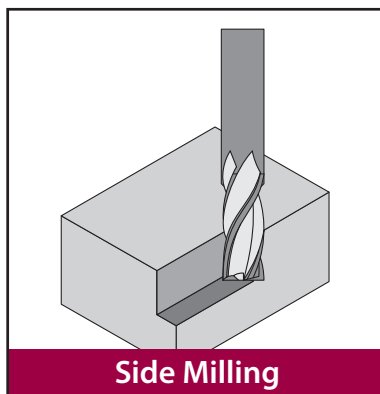
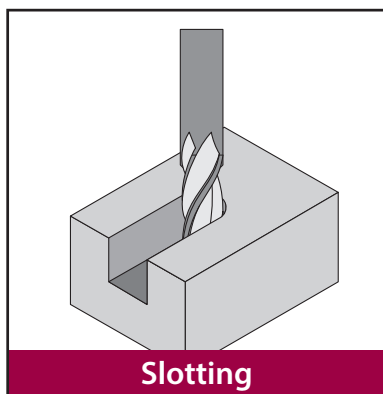
INTRODUCTION

The Optimum Line is designed to bring versatility in a single tool for those seeking a one-stop solution to today's most common machining applications and materials.

Suitable for multiple materials :



Suitable for multiple applications :



SQUARE ENDMILLS



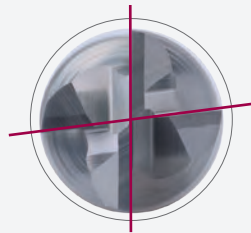
918 DP

981 DP With Recess

01

Differential Pitch (DP)

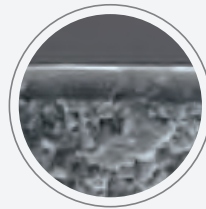
Reduces chatter to provide excellent surface finishing



02

Superior Coating

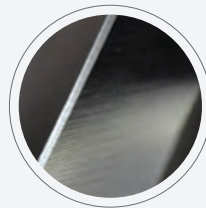
Enhances heat resistance to prolong tool life



03

Ideal Cutting Edge

Provides edge protection to prolong tool life



918 / 981
DP ENDMILLS, 4 FLUTES

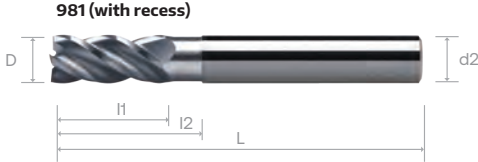
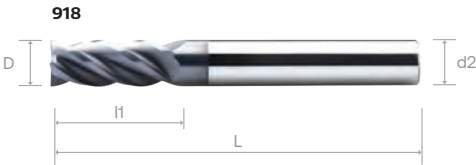


Table with 7 columns: Order Number, Dimension (mm) [D, l1, l2, L, d2(h6)], Stock. Rows include various endmill specifications like 918 0100 050 03, 918 0150 050 03, etc.

Table with 7 columns: Order Number, Dimension (mm) [D, l1, l2, L, d2(h6)], Stock. Rows include various endmill specifications like 981 0300 050 03, 981 0300 050 04, etc.

* - DIN 6535

Table with 5 columns for stock status: Ex Stock, Upon Request, and their equivalents in German, French, Italian, and Chinese.

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

Table with 16 columns for material groups: N01, N02, N03, K01, K02, P01, P02, P03, M01, M02, S01, S02, S03, H01, H02, O01, O02.

Table with 2 columns: Ø mm, Tol. µm. Rows show ranges like 3.0 ~ 6.0, 6.0 ~ 30.0.

Cutting Parameters

Table with 1 column: 14 - 16

SQUARE ENDMILLS

918DH DP/DH

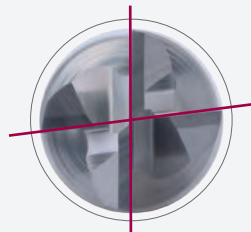
981DH DP/DH With Recess

986DH DP/DH With Recess and Weldon

01

Differential Pitch (DP)

Reduces chatter to provide excellent surface finishing



02

Differential Helix (DH)

Reduces the cutting force:

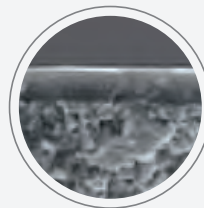
- Allows high speed machining, increasing productivity
- Improves surface finishing



03

Superior Coating

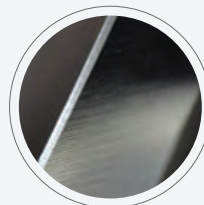
Enhances heat resistance to prolong tool life



04

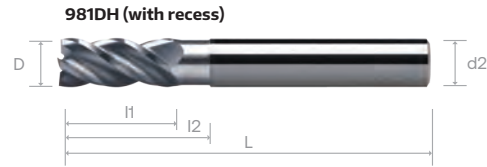
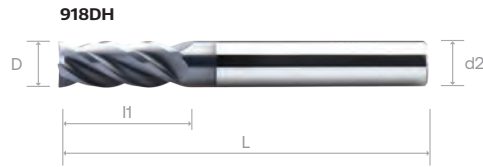
Ideal Cutting Edge

Provides edge protection to prolong tool life



918DH / 981DH / 986DH NEW

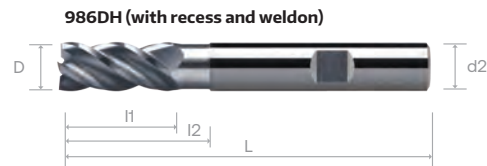
DP/DH ENDMILLS, 4 FLUTES



Order Number	Dimension (mm)					Stock
	D	L1	L2	L	d2(h6)	
918DH 0100 050 04	1	3		50	4	•
918DH 0150 050 04	1.5	4.5		50	4	•
918DH 0200 050 04	2	6.5		50	4	•
918DH 0250 050 04	2.5			50	4	•
918DH 0300 050 03				50	3	•
918DH 0300 050 04	3	9		50	4	•
918DH 0300 050 06				50	6	•
918DH 0400	4	12		50	4	•
918DH 0400 057 06				57	6	•
918DH 0500	5	15		50	5	•
918DH 0500 057 06				57	6	•
918DH 0600 060	6	20		60	6	•
918DH 0800 22	8	22		64	8	•
918DH 1000 072 27	10	27		72	10	•
918DH 1200 083	12			83	12	•
918DH 1400 083	14	32		83	14	•
918DH 1600 092	16			92	16	•
918DH 1800 092 32	18			92	18	•
918DH 2000	20	38		100	20	•

Order Number	Dimension (mm)					Stock
	D	L1	L2	L	d2(h6)	
981DH 0300 050 03			14	50	3	•
981DH 0300 050 04	3	9	14	50	4	•
981DH 0300 050 06			14	50	6	•
981DH 0400			20	50	4	•
981DH 0400 057 06 *	4	12	20	57	6	•
981DH 0500			22	50	5	•
981DH 0500 057 06 *	5	15	20	57	6	•
981DH 0600 060 *	6	20	24	60	6	•
981DH 0800 22 *	8		28	64	8	•
981DH 1000 072	10	22	32	72	10	•
981DH 1200 083 26 *	12		37	83	12	•
981DH 1400 083 26	14	26	37	83	14	•
981DH 1600 092 *	16		42	92	16	•
981DH 1800 092 32 *	18	32	42	92	18	•
981DH 2000 *	20	38	50	100	20	•

* - DIN 6535



Order Number	Dimension (mm)					Stock
	D	L1	L2	L	d2(h6)	
986DH 0300 050 06	3	9	14	50	6	•
986DH 0400 057 06	4	12	20	57	6	•
986DH 0500 057 06	5	15	20	57	6	•
986DH 0600 060	6	20	24	60	6	•
986DH 0800 22	8		28	64	8	•
986DH 1000 072	10	22	32	72	10	•
986DH 1200 083 26	12		37	83	12	•
986DH 1400 083 26	14	26	37	83	14	•
986DH 1600 092	16		42	92	16	•
986DH 1800 092 32	18	32	42	92	18	•
986DH 2000 100	20	38	50	100	20	•

• Ex Stock	ab Lager	De Stock	Da Magazzino	有库存
○ Upon Request	auf Anfrage	à la demande	Su ordinazione	无库存

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

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

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

Cutting Parameters

14 - 16

SQUARE ENDMILLS

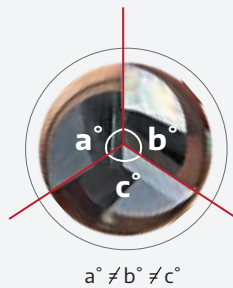
K86 Short DP/DH



01

Differential Pitch (DP)

Reduces chatter to provide excellent surface finishing

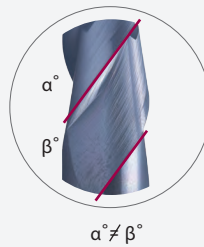


02

Differential Helix (DH)

Reduces the cutting force:

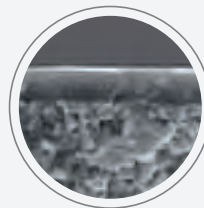
- Allows high speed machining, increasing productivity
- Improves surface finishing



03

Superior Coating

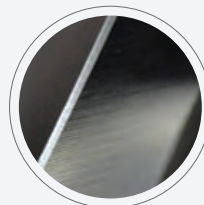
Enhances heat resistance to prolong tool life



04

Ideal Cutting Edge

Provides edge protection to prolong tool life

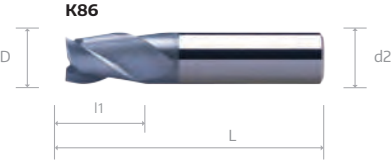
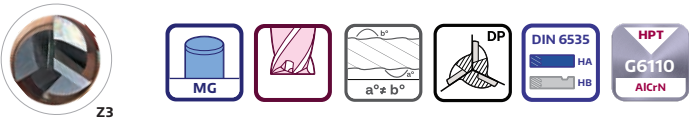


K86

NEW

SHORT DP/DH ENDMILLS, 3 FLUTES

HPMT



Order Number	Dimension (mm)					Stock
	D	L1	L2	L	d2(h6)	
K86 0100 038 03	1	2		38	3	•
K86 0150 038 03	1.5			38	3	•
K86 0200 038 06	2	4		38	6	•
K86 0250 038 06	2.5	5		38	6	•
K86 0300 038 06	3			38	6	•
K86 0350 038 06	3.5	6		38	6	•
K86 0400 038 06	4	7		38	6	•
K86 0450 038 06	4.5	8		38	6	•
K86 0500 038 06	5			38	6	•
K86 0550 038 06	5.5			38	6	•
K86 0575 038 06	5.75			38	6	•
K86 0600 038 06	6	10		38	6	•
K86 0700 042 08	7			42	8	•
K86 0800 042 08	8	11		42	8	•
K86 0900 048 10	9			48	10	•
K86 1000 050 10	10	13		50	10	•
K86 1200 055 12	12	15		55	12	•

• Ex Stock	ab Lager	De Stock	Da Magazzino	有存库
○ Upon Request	auf Anfrage	à la demande	Su ordinazione	无存库

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
•	•	•	•	•	•	•	•	•	•	•	•	•				

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

Cutting Parameters

17

R-LIKE ENDMILLS



K47DH DP/DH

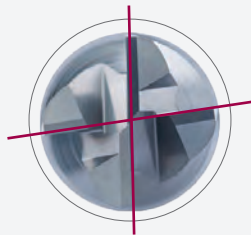
K52DH DP/DH with Recess

K53DH DP/DH with Recess and Weldon

01

Differential Pitch (DP)

Reduces chatter to provide excellent surface finishing

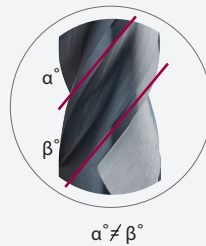


02

Differential Helix (DH)

Reduces the cutting force:

- Allows high speed machining, increasing productivity
- Improves surface finishing

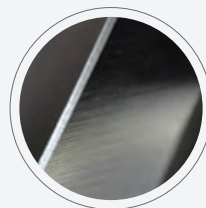


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03

Ideal Cutting Edge

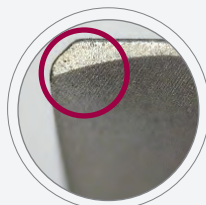
Provides edge protection to prolong tool life



04

R-Like

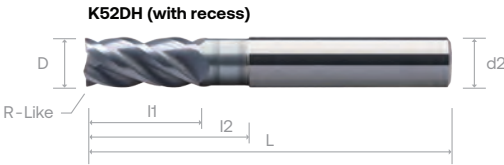
Enhances edge protection to prolong tool life



K47DH / K52DH / K53DH

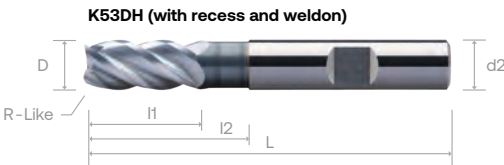
NEW

DP/DH R-LIKE ENDMILLS, 4 FLUTES



Order Number	Dimension (mm)						Stock
	D	l1	l2	L	d2(h6)	R-Like	
K47DH 0100 050 04	1	3		50	4	0.02	●
K47DH 0150 050 04	1.5	4.5		50	4	0.05	●
K47DH 0200 050 04	2	6.5		50	4	0.05	●
K47DH 0250 050 04	2.5			50	4	0.05	●
K47DH 0300 050 03	3	9		50	3	0.1	●
K47DH 0300 050 06				50	6	0.1	●
K47DH 0400	4	12		50	4	0.1	●
K47DH 0400 057 06				57	6	0.1	●
K47DH 0500	5	15		50	5	0.1	●
K47DH 0500 057 06				57	6	0.1	●
K47DH 0600 060	6	20		60	6	0.1	●
K47DH 0800 22	8	22		64	8	0.2	●
K47DH 1000 072 27	10	27		72	10	0.2	●
K47DH 1200 083	12	32		83	12	0.2	●
K47DH 1400 083	14			83	14	0.2	●
K47DH 1600 092	16			92	16	0.2	●
K47DH 1800 092 32	18			92	18	0.2	●
K47DH 2000	20	38		100	20	0.2	●

Order Number	Dimension (mm)						Stock
	D	l1	l2	L	d2(h6)	R-Like	
K52DH 0300 050 03	3	9	14	50	3	0.1	●
K52DH 0300 050 06			14	50	6	0.1	●
K52DH 0400	4	12	20	50	4	0.1	●
K52DH 0400 057 06			20	57	6	0.1	●
K52DH 0500	5	15	22	50	5	0.1	●
K52DH 0500 057 06			20	57	6	0.1	●
K52DH 0600 060	6	20	24	60	6	0.1	●
K52DH 0800 22	8	22	28	64	8	0.2	●
K52DH 1000 072	10		32	72	10	0.2	●
K52DH 1200 083 26	12	26	37	83	12	0.2	●
K52DH 1400 083 26	14		37	83	14	0.2	●
K52DH 1600 092	16	32	42	92	16	0.2	●
K52DH 1800 092 32	18		42	92	18	0.2	●
K52DH 2000	20	38	50	100	20	0.2	●



Order Number	Dimension (mm)						Stock
	D	l1	l2	L	d2(h6)	R-Like	
K53DH 0300 050 06	3	9	14	50	6	0.1	●
K53DH 0400 057 06	4	12	20	57	6	0.1	●
K53DH 0500 057 06	5	15	20	57	6	0.1	●
K53DH 0600 060	6	20	24	60	6	0.1	●
K53DH 0800 22	8	22	28	64	8	0.2	●
K53DH 1000 072	10		32	72	10	0.2	●
K53DH 1200 083 26	12	26	37	83	12	0.2	●
K53DH 1400 083 26	14		37	83	14	0.2	●
K53DH 1600 092	16	32	42	92	16	0.2	●
K53DH 1800 092 32	18		42	92	18	0.2	●
K53DH 2000 100	20	38	50	100	20	0.2	●

● Ex Stock	ab Lager	De Stock	Da Magazzino	有存库
○ Upon Request	auf Anfrage	à la demande	Su ordinazione	无存库

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
●	●	●	●	●	●	●	●	●	●	●	●	●	○			

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

Cutting Parameters

14 - 15

TORUS ENDMILLS



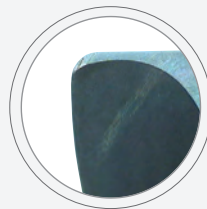
919 DP Torus

991 DP Torus With Recess

01

S-Gash (Unique Radius Design)

Smooth joining area at the radius to deliver tighter accuracy



S-Gash

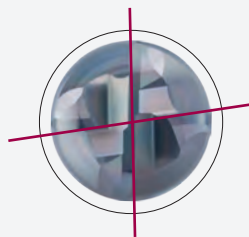


Smooth joint at radius

02

Differential Pitch (DP)

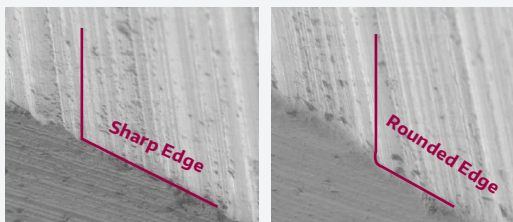
Reduces chatter to provide excellent surface finishing



03

Cutting Edge Preparation

Better stress distribution on the cutting edge to prolong tool life



Before

After



919 / 991
DP TORUS ENDMILLS, 4 FLUTES

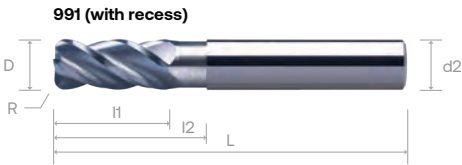
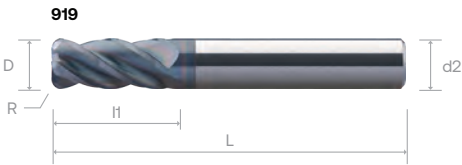


Table with 8 columns: Order Number, Dimension (mm) [D, l1, l2, L, d2(h6), R], Stock. Rows list various endmill specifications and their availability.

Table with 8 columns: Order Number, Dimension (mm) [D, l1, l2, L, d2(h6), R], Stock. Rows list various endmill specifications and their availability.

* - DIN 6535

Table with 5 columns: Stock status (Ex Stock, Upon Request) and language (German, French, Italian, Chinese).

Table with 2 columns: Ø mm, Tol. µm. Rows show size ranges and tolerances.

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



Cutting Parameters

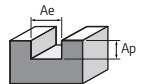
15 - 17

DP/DH / DP Torus / R-Like Endmills, 4 Flutes - 918, 981, 918DH, 981DH, 986DH, 919, 991, K47DH, K52DH, K53DH



Ramp/ Helical	P01		P02		P03		M01		M02		K01		K02		N01		N02		N03		S01		S02	
Working Material	Carbon Steel		Alloy Steel		Prehardened Steel		Stainless Steel				Grey Cast iron		Ductile Cast Iron		Wrought Aluminium		Cast Aluminium		Copper Alloy		Titanium Alloy		Nickel Alloy	
Properties	-		520 < Rm < 1200		35 ≤ HRC < 45		High Machinability		Low Machinability		-		-		Si < 9%		Si ≥ 9%		-		-		-	
Ramping Depth	1.00 × D		1.00 × D		1.00 × D		1.00 × D		1.00 × D		1.00 × D		1.00 × D		1.00 × D		1.00 × D		1.00 × D		1.00 × D		1.00 × D	
Ramping Angle	5°		5°		3°		3°		2°		5°		3°		10°		10°		8°		2°		1°	
D (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)
1	150	0.002	120	0.002	110	0.002	90	0.002	60	0.002	130	0.002	80	0.002	250	0.004	220	0.003	210	0.003	45	0.003	20	0.003
2		0.005		0.005		0.005		0.005		0.006		0.005		0.005		0.005		0.005		0.005		0.007		0.007
3		0.007		0.007		0.007		0.008		0.009		0.007		0.007		0.010		0.008		0.008		0.011		0.011
4		0.010		0.010		0.010		0.011		0.013		0.010		0.010		0.013		0.012		0.012		0.015		0.015
5		0.013		0.013		0.013		0.014		0.016		0.013		0.014		0.017		0.016		0.016		0.019		0.019
6		0.015		0.015		0.015		0.018		0.020		0.015		0.017		0.021		0.021		0.021		0.024		0.024
8		0.021		0.021		0.021		0.024		0.027		0.021		0.022		0.030		0.029		0.030		0.032		0.032
10		0.026		0.027		0.026		0.030		0.035		0.026		0.028		0.038		0.038		0.040		0.041		0.041
12		0.033		0.033		0.033		0.038		0.043		0.033		0.034		0.048		0.049		0.050		0.050		0.050
14		0.038		0.038		0.038		0.043		0.050		0.038		0.039		0.054		0.056		0.057		0.058		0.058
16		0.043		0.042		0.043		0.049		0.055		0.043		0.044		0.060		0.062		0.064		0.064		0.064
18		0.048		0.046		0.048		0.054		0.061		0.048		0.049		0.066		0.064		0.070		0.070		0.070
20	0.053	0.051	0.053	0.058	0.066	0.053	0.054	0.072	0.069	0.077	0.077	0.077												

DP/DH / DP Torus / R-Like Endmills, 4 Flutes - 918, 981, 918DH, 981DH, 986DH, 919, 991, K47DH, K52DH, K53DH

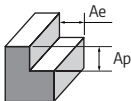


Slotting	P01		P02		P03		M01		M02		K01		K02		N01		N02		N03		S01		S02	
Working Material	Carbon Steel		Alloy Steel		Prehardened Steel		Stainless Steel				Grey Cast iron		Ductile Cast Iron		Wrought Aluminium		Cast Aluminium		Copper Alloy		Titanium Alloy		Nickel Alloy	
Properties	-		520 < Rm < 1200		35 ≤ HRC < 45		High Machinability		Low Machinability		-		-		Si < 9%		Si ≥ 9%		-		-		-	
Cutting Depth, Ap (mm)	1.00 × D		1.00 × D		0.80 × D		0.80 × D		0.40 × D		1.00 × D		0.80 × D		1.00 × D		1.00 × D		1.00 × D		0.40 × D		0.30 × D	
Cutting Width, Ae (mm)	1.00 × D		1.00 × D		1.00 × D		1.00 × D		1.00 × D		1.00 × D		1.00 × D		1.00 × D		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)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)
1	200	0.003	160	0.003	150	0.003	120	0.003	80	0.003	170	0.003	110	0.003	330	0.005	300	0.004	280	0.004	60	0.004	30	0.004
2		0.006		0.006		0.006		0.006		0.007		0.006		0.006		0.007		0.006		0.006		0.009		0.009
3		0.009		0.009		0.009		0.010		0.011		0.009		0.009		0.011		0.010		0.010		0.014		0.014
4		0.012		0.012		0.012		0.014		0.016		0.012		0.013		0.016		0.015		0.015		0.019		0.019
5		0.016		0.016		0.016		0.018		0.020		0.016		0.017		0.021		0.020		0.020		0.024		0.024
6		0.019		0.019		0.019		0.022		0.025		0.019		0.021		0.026		0.026		0.026		0.030		0.030
8		0.026		0.026		0.026		0.030		0.034		0.026		0.028		0.037		0.036		0.038		0.040		0.040
10		0.033		0.034		0.033		0.038		0.044		0.033		0.035		0.048		0.047		0.050		0.051		0.051
12		0.041		0.041		0.041		0.047		0.054		0.041		0.043		0.060		0.061		0.062		0.063		0.063
14		0.047		0.047		0.047		0.054		0.062		0.047		0.049		0.068		0.070		0.071		0.072		0.072
16	0.054	0.053	0.054	0.061	0.069	0.054	0.055	0.075	0.078	0.080	0.080	0.080												
18	0.060	0.058	0.060	0.067	0.076	0.060	0.061	0.083	0.080	0.088	0.088	0.088												
20	0.066	0.064	0.066	0.073	0.082	0.066	0.067	0.090	0.086	0.096	0.096	0.096												



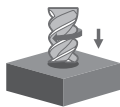
Recommended Cutting Data
Note: These recommended cutting data indicators are just for reference. They should be adjusted according to the different cutting condition.

DP/DH / DP Torus / R-Like Endmills, 4 Flutes -
918, 981, 918DH, 981DH, 986DH, 919, 991, K47DH, K52DH, K53DH



Side Milling	P01		P02		P03		M01		M02		K01		K02		N01		N02		N03		S01		S02								
Working Material	Carbon Steel		Alloy Steel		Prehardened Steel		Stainless Steel				Grey Cast iron		Ductile Cast Iron		Wrought Aluminium		Cast Aluminium		Copper Alloy		Titanium Alloy		Nickel Alloy								
Properties	-		520 < Rm < 1200		35 ≤ HRC < 45		High Machinability		Low Machinability		-		-		Si < 9%		Si ≥ 9%		-		-		-								
Cutting Depth, Ap (mm)	1.00 × D		1.00 × D		1.00 × D		1.00 × D		1.00 × D		1.00 × D		1.00 × D		1.00 × D		1.00 × D		1.00 × D		1.00 × D		1.00 × D								
Cutting Width, Ae (mm)	0.25 × D		0.20 × D		0.18 × D		0.18 × D		0.15 × D		0.25 × D		0.18 × D		0.30 × D		0.30 × D		0.30 × D		0.15 × D		0.10 × D								
D (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)							
1	280	0.005	230	0.006	190	0.005	160	0.004	100	0.005	250	0.007	140	0.004	400	0.006	380	0.005	360	0.004	70	0.005	40	0.004							
2		0.009		0.009		0.009		0.009		0.011		0.010		0.009		0.009		0.009		0.010		0.009		0.009	0.011	0.008	0.009	0.009	0.011	0.008	
3		0.017		0.014		0.014		0.014		0.017		0.016		0.014		0.014		0.014		0.014		0.014		0.014	0.018	0.014	0.014	0.014	0.018	0.013	
4		0.023		0.020		0.019		0.020		0.024		0.022		0.019		0.020		0.019		0.020		0.019		0.021	0.024	0.018	0.021	0.020	0.021	0.024	0.018
5		0.030		0.025		0.024		0.025		0.030		0.029		0.025		0.027		0.026		0.027		0.026		0.027	0.031	0.025	0.027	0.026	0.027	0.031	0.025
6		0.036		0.031		0.031		0.031		0.037		0.036		0.030		0.034		0.034		0.034		0.034		0.034	0.039	0.033	0.034	0.034	0.035	0.039	0.033
8		0.049		0.043		0.042		0.043		0.049		0.049		0.041		0.046		0.046		0.046		0.046		0.050	0.053	0.046	0.050	0.046	0.050	0.053	0.046
10		0.062		0.056		0.056		0.056		0.062		0.063		0.052		0.060		0.059		0.060		0.059		0.062	0.066	0.061	0.059	0.062	0.059	0.066	0.061
12		0.075		0.070		0.070		0.070		0.076		0.075		0.069		0.076		0.074		0.076		0.069		0.076	0.080	0.075	0.076	0.076	0.076	0.080	0.075
14		0.086		0.079		0.080		0.078		0.085		0.085		0.075		0.087		0.085		0.087		0.075		0.087	0.081	0.086	0.085	0.086	0.086	0.090	0.081
16	0.094	0.087	0.090	0.086	0.093	0.095	0.082	0.097	0.095	0.097	0.082	0.097	0.089	0.089	0.095	0.097	0.095	0.099	0.101	0.089											
18	0.103	0.092	0.098	0.092	0.102	0.103	0.089	0.106	0.102	0.106	0.089	0.106	0.102	0.099	0.102	0.106	0.102	0.099	0.111	0.094											
20	0.113	0.098	0.104	0.099	0.107	0.112	0.094	0.115	0.110	0.115	0.094	0.115	0.110	0.106	0.110	0.115	0.110	0.106	0.122	0.102											

DP/DH / DP Torus / R-Like Endmills, 4 Flutes -
918, 981, 918DH, 981DH, 986DH, 919, 991, K47DH, K52DH, K53DH

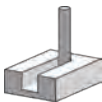


Plunging	P01		P02		K01		N01		N02		N03	
Working Material	Carbon Steel		Alloy Steel		Grey Cast iron		Wrought Aluminium		Cast Aluminium		Copper Alloy	
Properties	-		520 < Rm < 1200		-		Si < 9%		Si ≥ 9%		-	
Cutting Depth, Ap (mm)	1.00 × D		1.00 × D		1.00 × D		1.00 × D		1.00 × D		1.00 × D	
Cutting Width, Ae (mm)	-		-		-		-		-		-	
D (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)
1	120	0.007	110	0.008	120	0.007	150	0.009	140	0.009	130	0.008
2		0.018		0.016		0.018		0.018		0.018		0.017
3		0.028		0.024		0.028		0.028		0.028		0.027
4		0.038		0.033		0.038		0.038		0.037		0.036
5		0.048		0.042		0.048		0.048		0.047		0.046
6		0.059		0.052		0.059		0.058		0.057		0.056
8		0.080		0.070		0.080		0.078		0.077		0.075
10		0.101		0.090		0.101		0.099		0.098		0.097
12		0.126		0.113		0.126		0.121		0.121		0.120
14		0.144		0.129		0.144		0.140		0.139		0.138
16		0.162		0.144		0.162		0.158		0.157		0.156
18		0.179		0.158		0.179		0.176		0.174		0.173
20		0.196		0.170		0.196		0.193		0.191		0.189



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

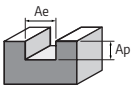
DP/DH / DP Torus / R-Like Endmills, 4 Flutes -
918, 981, 918DH, 981DH, 986DH, 919, 991



Trochoidal Milling	P01		P02		P03		M01		M02		K01		K02		N01		N02		N03		S01		S02	
Working Material	Carbon Steel		Alloy Steel		Prehardened Steel		Stainless Steel				Grey Cast iron		Ductile Cast Iron		Wrought Aluminium		Cast Aluminium		Copper Alloy		Titanium Alloy		Nickel Alloy	
Properties	-		520 < Rm < 1200		35 ≤ HRC < 45		High Machinability		Low Machinability		-		-		Si < 9%		Si ≥ 9%		-		-		-	
Maximum Slot Width	1.25 × D		1.25 × D		1.25 × D		1.25 × D		1.25 × D		1.25 × D		1.25 × D		1.25 × D		1.25 × D		1.25 × D		1.25 × D		1.25 × D	
Cutting Depth, Ap (mm)	1.50 × D		1.50 × D		1.50 × D		1.50 × D		1.50 × D		1.50 × D		1.50 × D		1.50 × D		1.50 × D		1.50 × D		1.50 × D		1.50 × D	
Cutting Width, Ae (mm)	0.10 × D		0.10 × D		0.08 × D		0.10 × D		0.08 × D		0.10 × D		0.10 × D		0.12 × D		0.12 × D		0.12 × D		0.10 × D		0.08 × D	
D (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)
1	350	0.017	290	0.013	250	0.012	200	0.010	120	0.008	320	0.015	170	0.010	450	0.020	420	0.019	380	0.018	100	0.006	45	0.003
2		0.018		0.015		0.016		0.017		0.017		0.016		0.018		0.021		0.020		0.019		0.014		0.008
3		0.026		0.024		0.025		0.027		0.027		0.025		0.029		0.024		0.024		0.025		0.024		0.013
4		0.035		0.033		0.035		0.037		0.038		0.034		0.040		0.032		0.032		0.034		0.034		0.020
5		0.044		0.043		0.045		0.048		0.050		0.043		0.052		0.041		0.041		0.043		0.045		0.027
6		0.054		0.053		0.055		0.060		0.063		0.053		0.065		0.050		0.050		0.053		0.057		0.036
8		0.075		0.073		0.078		0.084		0.091		0.073		0.092		0.070		0.070		0.074		0.084		0.054
10		0.098		0.096		0.102		0.112		0.122		0.095		0.122		0.091		0.092		0.096		0.116		0.079
12		0.121		0.120		0.128		0.142		0.157		0.118		0.155		0.113		0.114		0.119		0.151		0.105
14		0.138		0.136		0.144		0.158		0.174		0.133		0.174		0.128		0.130		0.135		0.165		0.110
16	0.153	0.149	0.158	0.173	0.188	0.147	0.189	0.142	0.144	0.149	0.176	0.111												
18	0.167	0.162	0.171	0.186	0.200	0.160	0.202	0.155	0.156	0.162	0.184	0.109												
20	0.180	0.174	0.182	0.197	0.209	0.172	0.212	0.168	0.168	0.174	0.189	0.104												



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



Short DP/DH Endmills, 3 Flutes - K86

Slotting	P01		P02		P03		M01		M02		K01		K02		N01		N02		N03		S01		S02	
Working Material	Carbon Steel		Alloy Steel		Prehardened Steel		Stainless Steel				Grey Cast iron		Ductile Cast Iron		Wrought Aluminium		Cast Aluminium		Copper Alloy		Titanium Alloy		Nickel Alloy	
Properties	-		520 < Rm < 1200		-		High Machinability		Low Machinability		-		-		Si < 9%		Si ≥ 9%		-		-		-	
Cutting Depth, Ap (mm)	1.00 × D		1.00 × D		1.00 × D		0.80 × D		0.80 × D		1.00 × D		1.00 × D		1.00 × D		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		1.00 × D		1.00 × D		1.00 × D		1.00 × D		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)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)
1	135	0.002	120	0.001	95	0.001	100	0.001	44	0.001	110	0.002	209	0.001	220	0.005	200	0.005	165	0.003	66	0.001	110	0.001
2		0.006		0.004		0.002		0.003		0.004		0.006		0.002		0.008		0.008		0.008		0.002		0.002
3		0.011		0.007		0.004		0.006		0.007		0.011		0.003		0.014		0.013		0.013		0.004		0.004
4		0.016		0.010		0.007		0.009		0.010		0.017		0.007		0.019		0.019		0.018		0.007		0.007
5		0.022		0.014		0.010		0.013		0.014		0.023		0.009		0.025		0.024		0.024		0.010		0.010
6		0.028		0.018		0.013		0.017		0.017		0.029		0.011		0.031		0.030		0.030		0.013		0.013
8		0.041		0.028		0.019		0.026		0.024		0.043		0.016		0.045		0.042		0.043		0.019		0.019
10		0.056		0.040		0.025		0.038		0.030		0.061		0.021		0.060		0.056		0.058		0.025		0.025
12		0.074		0.054		0.030		0.052		0.036		0.081		0.026		0.077		0.070		0.074		0.030		0.030



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

Certificate

Standard **ISO 9001:2015**

Certificate Registr. No. **01 100 053515**

Certificate Holder:



HPMT Industries Sdn. Bhd.

No. 5, Jalan Sungai Kayu Ara 32/39, Taman Berjaya,
Seksyen 32, Shah Alam, Selangor Darul Ehsan, Malaysia

Scope:

Design and Manufacturing of Standard and Custom-made Metal
Removing Cutting Tools

Proof has been furnished by means of an audit that the
requirements of ISO 9001:2015 are met.

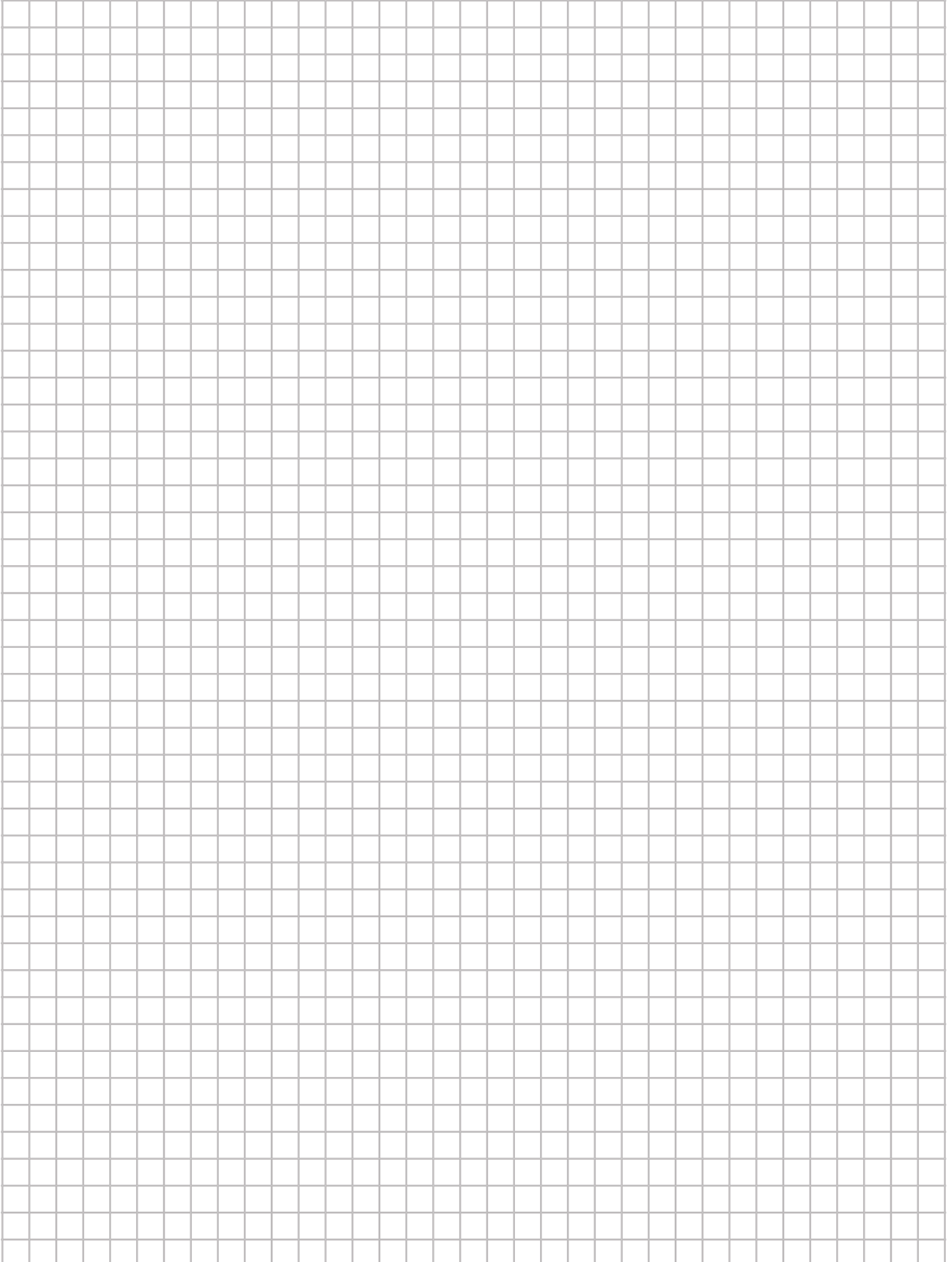
Validity:

The certificate is valid from 2021-08-15 until 2024-08-14.
First certification 2005

2021-12-13

A handwritten signature in blue ink, likely belonging to a representative of TUV Rheinland.

TÜV Rheinland Cert GmbH
Am Grauen Stein · 51105 Köln





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