

ALU LINE

Uncover the high performance series for non ferrous materials



SQUARE ENDMILLS

Picture	EDP No.	Design	Z	Diameter Range	Page	Stock
	K41	DP/DH/DF with Chip Breaker & Recess	4	5.0 - 25.0	3	●
	NEW	DP/DH/DF Long with Chip Breaker & Recess				
	K60	DP/DH/DF, Recess with Oil Hole	4	6.0 - 20.0	5	●
	K61	DP/DH/DF, Chip Breaker & Recess with Oil Hole	4	6.0 - 20.0	5	●
	K88	DP/DH/DF Long, Recess with Oil Hole	4	6.0 - 20.0	7	○
	K89	DP/DH/DF Long, Chip Breaker & Recess with Oil Hole	4	6.0 - 20.0	7	○

TORUS ENDMILLS

Picture	EDP No.	Design	Z	Diameter Range	Page	Stock
	K43	DP/DH/DF with Chip Breaker & Recess	4	5.0 - 25.0	9	●
	NEW	DP/DH/DF Long with Chip Breaker & Recess				
	K62	DP/DH/DF, Recess with Oil Hole	4	10.0 - 20.0	11	●/○
	K63	DP/DH/DF, Chip Breaker & Recess with Oil Hole	4	10.0 - 20.0	11	●

Legend : ● Ex stock ○ Upon Request

K41



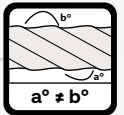
1 Differential Pitch (DP)

- Reduces chatter to provide excellent surface finishing



2 Differential Helix (DH)

- Reduces the cutting force:
- Allows high speed machining
 - Improves surface finishing



3 Differential Fluting (DF)

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



4 Polished Flutes

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



5 Chip Breakers

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



6 D0600 Coating

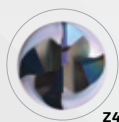
- **High Wear Resistance:**
Extends tool life, reducing the need for frequent replacements and maintenance.
- **Low Friction Coefficient:**
Minimizes heat generation and improves machining efficiency
- **Thermal Stability:**
Suitable for high-speed machining operations, maintaining performance under extreme conditions.
- **Versatility:**
Effective on a wide range of non-ferrous materials including aluminum, copper, and brass



K41 NEW

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

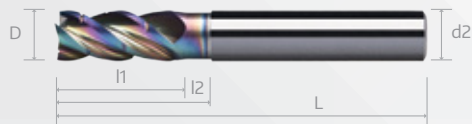
HPMT



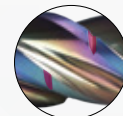
Z4



K41 (with Chip Breaker) - Standard



K41 (with Chip Breaker) - Long



Chip Breaker

Order Number	Dimension (mm)						Stock
	D	l1	l2	L	d2(h6)	c	
K41 0500 075 *	5	22	30	75	6	0.1	•
K41 0600 075 *	6	26	32	75	6	0.1	•
K41 0800 075 *	8	32	38	75	8	0.1	•
K41 1000 100 *	10	42	52	100	10	0.2	•
K41 1200 083 *	12	30	37	83	12	0.2	•
K41 1200 100 *		48	54	100	12	0.2	•
K41 1600 100 *	16	40	51	100	16	0.2	•
K41 1600 125 *		64	76	125	16	0.2	•
K41 2000 125 *	20	50	74	125	20	0.3	•
K41 2000 150 *		80	99	150	20	0.3	•
K41 2500 130 *	25	63	73	130	25	0.3	•
K41 2500 175 *		100	118	175	25	0.3	•

* - DIN 6535

• 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
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CNC Repeatability

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

Cutting Parameters
Page 13

K61



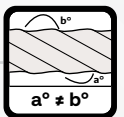
1 Differential Pitch (DP)

- Reduces chatter to provide excellent surface finishing



2 Differential Helix (DH)

- Reduces the cutting force:
- Allows high speed machining
 - Improves surface finishing



3 Differential Fluting (DF)

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



4 Oil Hole For High Performance Milling

- Improves welding resistance
- Enables a wide range of machining processes



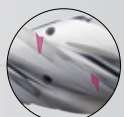
5 Polished Flutes

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



6 Chip Breakers

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



K60

without
Chip Breaker

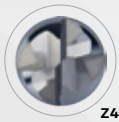


K61

with
Chip Breaker

K60/K61

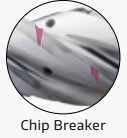
XQ ALU DP/DH/DF ENDMILLS WITH OIL HOLE & RECESS, 4 FLUTES



K60 (without Chip Breaker)



K61 (with Chip Breaker)



Order Number	Dimension (mm)						Stock
	D	L1	L2	L	d2(h6)	C	
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	●

Order Number	Dimension (mm)						Stock
	D	L1	L2	L	d2(h6)	C	
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

● 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
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

CNC Repeatability

Ø1 - Ø3 within 10µm

Ø4 - Ø8 within 15µm

≥ Ø10 within 20µm

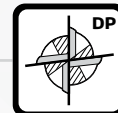
Cutting Parameters
Page 13

K89



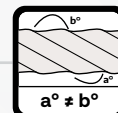
1 Differential Pitch (DP)

- Reduces chatter to provide excellent surface finishing



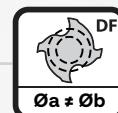
2 Differential Helix (DH)

- Reduces the cutting force:
- Allows high speed machining
 - Improves surface finishing



3 Differential Fluting (DF)

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



4 Oil Hole For High Performance Milling

- Improves welding resistance
- Enables a wide range of machining processes



5 Polished Flutes

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



6 Chip Breakers

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



K88

without
Chip Breaker

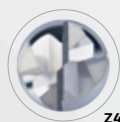


K89

with
Chip Breaker

K88/K89

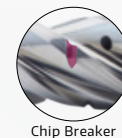
XQ ALU DP/DH/DF LONG ENDMILLS WITH OIL HOLE & RECESS, 4 FLUTES



K88 (without Chip Breaker)



K89 (with Chip Breaker)



Order Number	Dimension (mm)						Stock
	D	l1	l2	L	d2(h6)	C	
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

Order Number	Dimension (mm)						Stock
	D	l1	l2	L	d2(h6)	C	
K89 0600 *	6	20	30	68	6	0.1	o
K89 0800 *	8	26	34	72	8	0.1	o
K89 1000	10	32	40	83	10	0.2	o
K89 1200 *	12	38	50	95	12	0.2	o
K89 1600 *	16	50	62	110	16	0.2	o
K89 2000	20	60	75	150	20	0.3	o

* - DIN 6535

● Ex Stock	ab Lager	De Stock	Da Magazzino	有库存
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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
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

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

Cutting Parameters
Page 14

K43



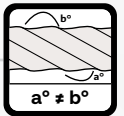
1 Differential Pitch (DP)

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2 Differential Helix (DH)

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- Allows high speed machining
 - Improves surface finishing



3 Differential Fluting (DF)

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



4 Polished Flutes

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



5 Corner Radius

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



6 Chip Breakers

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



7 D0600 Coating

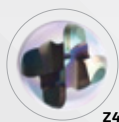
- **High Wear Resistance:**
Extends tool life, reducing the need for frequent replacements and maintenance.
- **Low Friction Coefficient:**
Minimizes heat generation and improves machining efficiency
- **Thermal Stability:**
Suitable for high-speed machining operations, maintaining performance under extreme conditions.
- **Versatility:**
Effective on a wide range of non-ferrous materials including aluminum, copper, and brass



K43 NEW

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

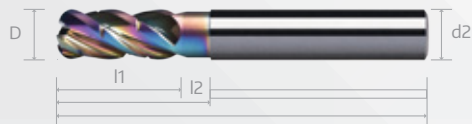
HPMT



Z4



K43 (with Chip Breaker) - Standard



K43 (with Chip Breaker) - Long



Chip Breaker

Order Number	Dimension (mm)						Stock	
	D	l1	l2	L	d2(h6)	R		
K43 0500 075 0600 050 *	5	22	30	75	6	0.5	•	
K43 0600 075 0600 050 *	6	26	32	75	6	0.5	•	
K43 0800 075 0800 050 *	8	32	38	75	8	0.5	•	
K43 1000 100 1000 050 *	10	42	52	100	10	0.5	•	
K43 1200 083 1200 050 *	12	30	37	83	12	0.5	•	
K43 1200 083 1200 200 *			37	83	12	2	•	
K43 1200 083 1200 300 *			37	83	12	3	•	
K43 1200 083 1200 400 *			37	83	12	4	•	
K43 1200 083 1200 500 *			37	83	12	5	•	
K43 1200 100 1200 200 *		48	54	100	12	2	•	
K43 1200 100 1200 300 *			54	100	12	3	•	
K43 1200 100 1200 400 *			54	100	12	4	•	
K43 1600 100 1600 200 *		16	40	51	100	16	2	•
K43 1600 100 1600 300 *				51	100	16	3	•
K43 1600 100 1600 400 *	51			100	16	4	•	
K43 1600 100 1600 500 *	51		100	16	5	•		
K43 1600 125 1600 200 *	64		76	125	16	2	•	
K43 1600 125 1600 300 *			76	125	16	3	•	
K43 1600 125 1600 400 *			76	125	16	4	•	
K43 2000 125 2000 300 *			74	125	20	3	•	
K43 2000 125 2000 400 *	20		74	125	20	4	•	
K43 2000 125 2000 500 *			74	125	20	5	•	
K43 2000 150 2000 300 *		80	99	150	20	3	•	
K43 2000 150 2000 400 *			99	150	20	4	•	
K43 2000 150 2000 500 *	99		150	20	5	•		
K43 2500 130 2500 300 *	25	63	73	130	25	3	•	
K43 2500 130 2500 400 *			73	130	25	4	•	
K43 2500 130 2500 500 *			73	130	25	5	•	
K43 2500 175 2500 300 *			118	175	25	3	•	
K43 2500 175 2500 400 *		100	118	175	25	4	•	
K43 2500 175 2500 500 *			118	175	25	5	•	

* - DIN 6535

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

CNC Repeatability

Ø1 - Ø3 within 10µm

Ø4 - Ø8 within 15µm

≥ Ø10 within 20µm

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

Cutting Parameters
Page 13

K63



1 Differential Pitch (DP)

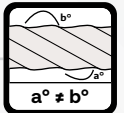
- Reduces chatter to provide excellent surface finishing



2 Differential Helix (DH)

Reduces the cutting force:

- Allows high speed machining
- Improves surface finishing



3 Differential Fluting (DF)

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



4 Oil Hole For High Performance Milling

- Improves welding resistance
- Enables a wide range of machining processes



5 Polished Flutes

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



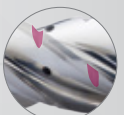
6 Corner Radius

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



7 Chip Breakers

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



K62

without
Chip Breaker

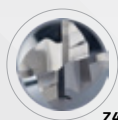


K63

with
Chip Breaker

K62/K63

XQ ALU DP/DH/DF ENDMILLS WITH OIL HOLE & RECESS, 4 FLUTES



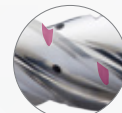
Z4



K62 (without Chip Breaker)



K63 (with Chip Breaker)



Chip Breaker

Order Number	Dimension (mm)						Stock
	D	L1	L2	L	d2(h6)	R	
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	○

Order Number	Dimension (mm)						Stock
	D	L1	L2	L	d2(h6)	R	
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 *			30	72	12	4	●
K63 1200 083 1200 200 *	12	26	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

● 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
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

CNC Repeatability

Ø1 - Ø3 within 10µm

Ø4 - Ø8 within 15µm

≥ Ø10 within 20µm

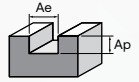
Cutting Parameters
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XQ ALU CUTTER

RECOMMENDED CUTTING DATA

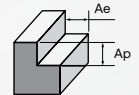


XQ ALU DP/DH/DF Endmills, 4 Flutes - K41, K43, K60, K61, K62, K63



Slotting	N						O	
Working Material	Wrought Aluminium		Cast Aluminium		Copper alloy		Thermoplastic	
Properties	Si < 9%		Si < 9%		-		-	
Cutting Depth, ap	1.00 × D		1.00 × D		1.00 × D		1.00 × D	
Cutting Width, ae	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)
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

XQ ALU DP/DH/DF Endmills, 4 Flutes - K41, K43, 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 × D		1.00 × D		1.00 × D		1.00 × D	
Cutting Width, ae	0.30 × D		0.30 × D		0.30 × D		0.30 × D	
D (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)
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



Recommended Cutting Data

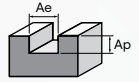
Note: These recommended cutting data indicators are just for reference. They should be adjusted according to the different cutting condition.

XQ ALU CUTTER

RECOMMENDED CUTTING DATA

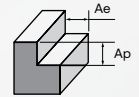


XQ ALU DP/DH/DF Long Endmills, with Internal Coolant, 4 Flutes - K88



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 (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)
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 ALU DP/DH/DF Long Endmills, with Internal Coolant & 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 (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)	Vc (m/min)	Fz (mm)
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



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,
40460 Shah Alam, Selangor Darul Ehsan,
Malaysia

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

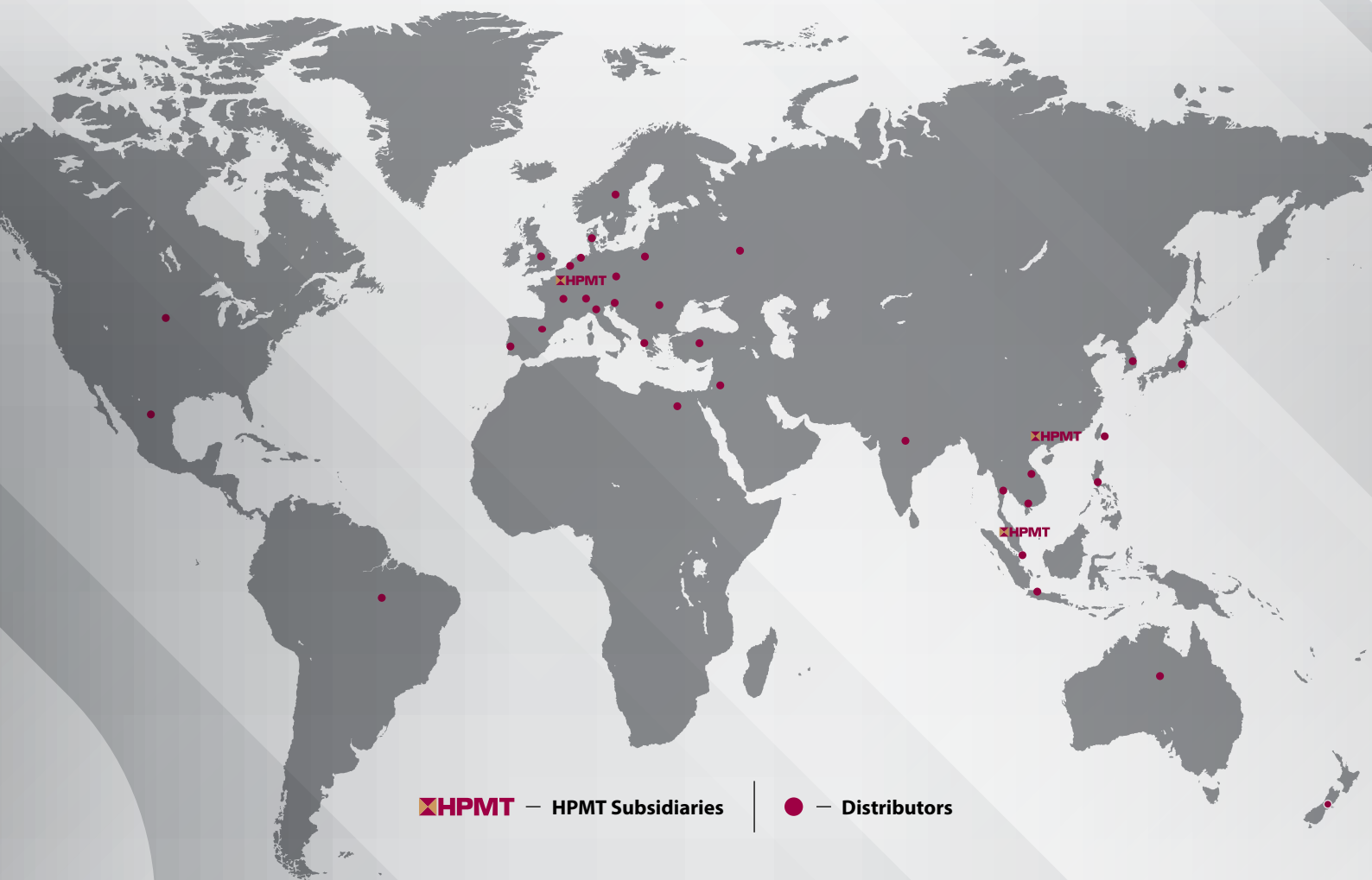
Proof has been furnished by means of an audit that the
requirements of ISO 9001:2015 are met.

Validity: The certificate is valid from 2024-08-15 until 2027-08-14.
First certification 2005

2024-08-14

A handwritten signature in blue ink, likely of the certification body representative.

TÜV Rheinland Cert GmbH
Am Grauen Stein · 51105 Köln



 — HPMT Subsidiaries

 — Distributors



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