

Annex to declaration of accreditation (scope of accreditation)
 Normative document: EN ISO/IEC 17025:2017
 Registration number: **K 033**

of **IAC B.V.**
IAC - Meettechnische Service

This annex is valid from: **08-12-2021** to **01-08-2024**

Replaces annex dated: **22-07-2021**

Location(s) where activities are performed under accreditation

Head Office

Doordistel 28
 7891 WT
 Klazienaveen
 The Netherlands

Location	Abbreviation/ location code
Doordistel 28 7891 WT Klazienaveen The Netherlands	KL
On site at the customer	OS

HCS code	Measured quantity, Instrument, Measure	Range	CMC ¹	Remarks	Location
DM 0 0	DIMENSIONAL QUANTITIES				
DM 1 0	Length gauges			$l = \text{nominal value}$	
	Steel/steel, ceramics/steel	$0.5 \text{ mm} \leq l \leq 100 \text{ mm}$	$0.08 \mu\text{m} + 4.0 \cdot 10^{-6} \cdot l$	Gauge block comparator	KL

¹ Calibration and Measurement Capability (CMC): Demonstrated measurement uncertainty, with coverage probability of 95%, in a given measurement point or measurement range. Measurement uncertainty, U , is calculated according to EA-4/02 "Evaluation of the Uncertainty of Measurement in Calibration".

This annex has been approved by the Board of the Dutch Accreditation Council, on its behalf,

J.A.W.M. de Haas

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HCS code	Measured quantity, Instrument, Measure	Range	CMC ¹	Remarks	Location
DM 1 0	Steel / tungsten	$0.5 \text{ mm} \leq l \leq 100 \text{ mm}$	$0.08 \text{ } \mu\text{m} + 5.0 \cdot 10^{-6} \cdot l$	Gauge block comparator	KL
	General, special dimensions	$0.5 \text{ mm} \leq l \leq 100 \text{ mm}$	$0.08 \text{ } \mu\text{m} + 4.0 \cdot 10^{-6} \cdot l$	Gauge block comparator in combination with laser-interferometer	KL
	Gauge blocks	$l \leq 1200 \text{ mm}$	$1.0 \text{ } \mu\text{m} + 1.0 \cdot 10^{-6} \cdot l$	Laser interferometer with Coordinate measuring machine	KL
	Step gauge blocks				
	External dimensions	$l \leq 1200 \text{ mm}$	$1.0 \text{ } \mu\text{m} + 1.0 \cdot 10^{-6} \cdot l$		KL
	Internal dimensions	$0.6 \text{ mm} \leq l \leq 1200 \text{ mm}$	$1.0 \text{ } \mu\text{m} + 1.0 \cdot 10^{-6} \cdot l$		KL
DM 2 0	Translations / Line scales	$l \leq 30 \text{ m}$	$0.015 \text{ } \mu\text{m} + 0.9 \cdot 10^{-6} \cdot l$		KL, OS
	Lineair displacement	$l \leq 30 \text{ m}$	$0.5 \text{ } \mu\text{m} + 1.5 \cdot 10^{-6} \cdot l$		KL, OS
	Lineair displacement Master Scanner	$0 < l \leq 60 \text{ mm}$	$0.3 \text{ } \mu\text{m} + 5 \cdot 10^{-6} \cdot l$		KL, OS
	Straightness deviation of translation axis	until 1.5 mm	$1.0 \text{ } \mu\text{m} + 1.0 \cdot 10^{-6} \cdot l$	$l \leq 3 \text{ m}$	KL, OS
	Pitch and yaw deviation of translation axis	until 0.4°	$(1.0 + 0.5 \cdot \{l / 1 \text{ m}\})''$	$l \leq 30 \text{ m}$	KL, OS
	Combined translations			$l_1 = \text{smallest translation length}$ $l_2 = \text{largest translation length}$	
	Squareness of 2 translation axis	+/- 1500 mm	$1.5 + 2.0 \cdot 10^{-6} \cdot l_2$	$l_1 \leq l_2 \leq 3 \text{ m}$ Laser with pentagon prism	KL, OS
DM 3 0	Length measuring instruments			$l = \text{nominal indication/dimension}$	
	Setting rods, Length gauges with flat or spherical ends	$10 \text{ mm} \leq l \leq 600 \text{ mm}$	$1.0 \text{ } \mu\text{m} + 3 \cdot 10^{-6} \cdot l$	Laser interferometer and one axis length measuring machine	KL

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	External screw micrometers	$l \leq 600$ mm	$4.0 \mu\text{m} + 5 \cdot 10^{-6} \cdot l$		KL
	2-point Internal screw micrometers	$l \leq 150$ mm	$4.0 \mu\text{m} + 5 \cdot 10^{-6} \cdot l$		KL
	3-point Internal screw micrometers	$3 \text{ mm} \leq l \leq 150$ mm	$4.0 \mu\text{m} + 5 \cdot 10^{-6} \cdot l$		KL
	Dial indicators	$l \leq 100$ mm	$1.0 \mu\text{m} + 5 \cdot 10^{-6} \cdot l$	Laser interferometer Dial gauge tester	KL, OS KL
		$l \leq 25$ mm	$3.0 \mu\text{m} + 6.5 \cdot 10^{-6} \cdot l$	Dial gauge tester	KL
	Test indicators	$l \leq 2$ mm	$2.0 \mu\text{m} + 5 \cdot 10^{-6} \cdot l$	Dial gauge tester	KL
	Vertical Height	$l \leq 1\,000$ mm	$1.5 \mu\text{m} + 1.5 \cdot 10^{-6} \cdot l$	Laser interferometer	KL, OS
	Calipers	$l \leq 1.200$ mm	$9 \mu\text{m} + 0,5 \cdot B + 5 \cdot 10^{-6} \cdot l$	B scale division	KL
DM 4 0	Diameter			Parallel and tapered to 1:1 d = nominal diameter	
	Plain plug gauges	$0.8 \text{ mm} \leq d \leq 10$ mm	$2.5 \mu\text{m} + 5 \cdot 10^{-6} \cdot d$	2-D Scanning	KL, OS
		$10 \text{ mm} \leq d \leq 320$ mm	$1.5 \mu\text{m} + 5 \cdot 10^{-6} \cdot d$	2-D Scanning	KL, OS
DM 4 0	Plain plug gauges	$0.1 \text{ mm} \leq d \leq 200$ mm	$1.1 \mu\text{m} + 5 \cdot 10^{-6} \cdot d$	only parallel on universal length measuring machine	KL
	Plain ring gauges	$2.4 \text{ mm} \leq d \leq 10$ mm	$2.5 \mu\text{m} + 5 \cdot 10^{-6} \cdot d$	2-D Scanning	KL, OS
		$10 \text{ mm} \leq d \leq 330$ mm	$1.5 \mu\text{m} + 5 \cdot 10^{-6} \cdot d$	2-D Scanning	KL, OS
		$1.5 \text{ mm} \leq d \leq 300$ mm	$1.0 \mu\text{m} + 5 \cdot 10^{-6} \cdot d$	only parallel on universal length measuring machine	KL
DM 5 0	Form deviations				
	Straightness deviation	1.5 mm	$1.0 \mu\text{m} + 1.0 \cdot 10^{-6} \cdot l$	l = axis length ≤ 3 m	KL, OS
	Roundness deviation			d = nominal diameter	
	External	until 0.3 mm	$0.3 \mu\text{m}$	$1 \text{ mm} \leq d \leq 300$ mm	KL

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	Internal	until 0.3 mm	0.3 μm	$1.5 \text{ mm} \leq d \leq 300 \text{ mm}$	KL
	Profile deviation			Parallel and tapered objects to 1:1 d = nominal diameter, in- and external 2-D Scanning	
	Axial length (l_A)	$l_A \leq 275 \text{ mm}$	$1.0 \mu\text{m} + 5 \cdot 10^{-6} \cdot l_A$	idem 4.1.8.3 2-D Scanning	KL, OS
	Radial length (l_R)	$l_R \leq 15 \text{ mm}$	$1.5 \mu\text{m} + 5 \cdot 10^{-6} \cdot d$	idem 4.1.8.3 2-D Scanning	KL, OS
DM 5 0	Flatness Moody	1 mm	$0.5 \mu\text{m} + 0.2 \cdot V$	V = measured flatness deviation. With maximal size $\leq 10 \text{ m}$	KL, OS
	Flatness Flattest	1 mm	$0.5 \mu\text{m} + 3 \cdot 10^{-6} \cdot l$	l = diagonal maximum 20 x 30 measurement steps	KL, OS
DM 7 0	Thread quantities			d = nominal diameter, α = flank angle	
	Screw plug gauges			Parallel and tapered with 2-D Scanning Parallel with Length Measuring Machine (LMM)	
	Major diameter, Minor diameter	$0.8 \text{ mm} \leq d \leq 320 \text{ mm}$	$2.5 \mu\text{m} + 5 \cdot 10^{-6} \cdot d$	2-D Scanning	KL, OS
	Pitch diameter, Simple pitch diameter	$0.75 \text{ mm} \leq d \leq 320 \text{ mm}$	$2.5 \mu\text{m} + 5 \cdot 10^{-6} \cdot d$	$\alpha \geq 27^\circ$, 2-D Scanning	KL, OS
			$4.0 \mu\text{m} + 5 \cdot 10^{-6} \cdot d$	$\alpha < 27^\circ$, 2-D Scanning	KL, OS
		$0.8 \text{ mm} \leq d \leq 200 \text{ mm}$	$3.0 \mu\text{m} + 5 \cdot 10^{-6} \cdot d$	$\alpha = 27^\circ$ of 30° , LMM	KL
			$4.0 \mu\text{m} + 5 \cdot 10^{-6} \cdot d$	$\alpha = 15^\circ$, LMM	KL

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	Screw ring gauges			Parallel and tapered with 2-D Scanning Parallel with LMM	
DM 7 0	Major diameter, Minor diameter	$2.4 \text{ mm} \leq d \leq 10 \text{ mm}$	$3.0 \mu\text{m}$	2-D Scanning	KL, OS
		$10 \text{ mm} \leq d \leq 330 \text{ mm}$	$2.5 \mu\text{m} + 5 \cdot 10^{-6} \cdot d$	2-D Scanning	KL, OS
	Pitch diameter, Simple pitch diameter	$2.4 \text{ mm} \leq d \leq 10 \text{ mm}$	$3.0 \mu\text{m}$	$\alpha \geq 27^\circ$, 2-D Scanning	KL, OS
			$4.5 \mu\text{m}$	$\alpha < 27^\circ$, 2-D Scanning	KL, OS
		$10 \text{ mm} \leq d \leq 330 \text{ mm}$	$2.5 \mu\text{m} + 5 \cdot 10^{-6} \cdot d$	$\alpha \geq 27^\circ$, 2-D Scanning	KL, OS
			$3.5 \mu\text{m} + 5 \cdot 10^{-6} \cdot d$	$\alpha < 27^\circ$, 2-D Scanning	KL, OS
		$1.5 \text{ mm} \leq d \leq 10 \text{ mm}$	$5.0 \mu\text{m}$	$\alpha = 27^\circ$ of 30° , LMM	KL
			$6.0 \mu\text{m}$	$\alpha = 15^\circ$, LMM	KL
		$10 \text{ mm} \leq d \leq 95 \text{ mm}$	$4.0 \mu\text{m} + 5 \cdot 10^{-6} \cdot d$	$\alpha = 27^\circ$ of 30° , LMM	KL
		$10 \text{ mm} \leq d \leq 200 \text{ mm}$	$5.0 \mu\text{m} + 5 \cdot 10^{-6} \cdot d$	$\alpha = 15^\circ$, LMM	KL
	Other screw thread quantities (internal-external thread)			Parallel and tapered to 1:1 external: $2 \leq d \leq 330 \text{ mm}$ internal: $2.4 \leq d \leq 330 \text{ mm}$	
	Pitch (p)	$0.1 \text{ mm} \leq p \leq 40 \text{ mm}$	$0.75 \mu\text{m}$	2-D Scanning	KL, OS
	Profile deviations				
DM 7 0	Axial length (l_A)	$l_A \leq 275 \text{ mm}$	$1.0 \mu\text{m} + 5 \cdot 10^{-6} \cdot l_A$	2-D Scanning	KL, OS
	Radial length (l_R)	$l_R \leq 15 \text{ mm}$	$1.5 \mu\text{m} + 5 \cdot 10^{-6} \cdot d$	2-D Scanning	KL, OS
	Flank angle (α)	$10^\circ \leq \alpha \leq 45^\circ$	0.1°	2-D Scanning	KL, OS
	Top angle (β)	$20^\circ \leq \beta \leq 90^\circ$	0.1°	2-D Scanning	KL, OS
	Taper (γ)	$0^\circ \leq \gamma \leq 45^\circ (= 1:1)$	0.1°	2-D Scanning	KL, OS

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DM 8 1	Machine tools, work pieces			/= nominal value	
	Distance between two parallel planes of a product				
	External dimension	$l \leq 1200 \text{ mm}$	$1.0 \mu\text{m} + 1.0 \cdot 10^{-6} \cdot l$	Laser interferometer with 3D-CMM	KL
	Internal dimension	$0.6 \text{ mm} \leq l \leq 1200 \text{ mm}$	$1.0 \mu\text{m} + 1.0 \cdot 10^{-6} \cdot l$	Laser interferometer with 3D-CMM	KL
DM 9 0	Angle				
	Round tables, Index tables, Angle measuring equipment, rotary-axis	360°	1"	Combination of incremental angular encoder with laser-interferometer with angular optics	KL, OS

Remark:

All calibrations with 2-D Scanning are also performed on-site at the customer (OS) under measurement laboratory conditions.