

Deutsche Akkreditierungsstelle

Annex to the Accreditation Certificate D-K-21339-01-00 according to DIN EN ISO/IEC 17025:2018

Valid from: 18.03.2024

Date of issue: 18.03.2024

Holder of accreditation certificate:

Klingelberg GmbH
Peterstraße 45, 42449 Hückeswagen

with the location

Klingelberg GmbH
Peterstraße 45, 42449 Hückeswagen

The calibration laboratory meets the requirements of DIN EN ISO/IEC 17025:2018 to carry out the conformity assessment activities listed in this annex. The calibration laboratory meets additional legal and normative requirements, if applicable, including those in relevant sectoral schemes, provided that these are explicitly confirmed below.

The management system requirements of DIN EN ISO/IEC 17025 are written in the language relevant to the operations of calibration laboratories and confirm generally to the principles of DIN EN ISO 9001.

Calibrations in the fields:

Dimensional quantities

Length

- **Gear quantities** ^{a)}

^{a)} **also on-site calibration**

This certificate annex is only valid together with the written accreditation certificate and reflects the status as indicated by the date of issue. The current status of any given scope of accreditation can be found in the directory of accredited bodies maintained by Deutsche Akkreditierungsstelle GmbH at <https://www.dakks.de>.

Abbreviations used: see last page

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This document is a translation. The definitive version is the original German annex to the accreditation certificate.

Annex to the Accreditation Certificate D-K-21339-01-00

permanent laboratory

Calibration- and measuring capabilities (CMC)

Measurement quantity / Calibration item	Range	Measurement conditions / procedure	Expanded uncertainty of measurement	Remarks	
<p>Gear measurement technology Coordinate and precision measuring machines with tactile probing for gearing and rotational - symmetrical test parts</p> <p>Calibration software "Stylus-Manager" and evaluation software "GINA" from KlingelInberg GmbH</p>	The proven classification applies only to the measuring range covered by the gear standard $\pm 20\%$	Calibration with tactile probing using gearing standards, classification of measuring systems (A, B, C, D) VDI/ VDE 2612 Bl.6:2022 VDI/ VDE 2612 Bl.1:2018			
	Reference diameter: $d = 100\text{ mm}$ face width: $b = 100\text{ mm}$ Helix angle: $\beta \leq 20^\circ$	Metrological traceability by gear standards $d = 100\text{ mm}$ $\beta = 0^\circ$ $\beta = 15^\circ\text{ r+l}$ $\beta = 20^\circ\text{ r+l}$ $b = 100\text{ mm}$			
			f_{Ha}	10 μm	The specified measurement uncertainties apply exemplary to the classification of measuring machine group A
			f_{α}	0.7 μm	
			F_{α}	1.2 μm	
			$f_{H\beta}$	1.1 μm	
			$f_{i\beta}$	0.8 μm	
	F_{β}	1.3 μm			
	Reference diameter: $d = 200\text{ mm}$ face width: $b = 100\text{ mm}$ Helix angle: $\beta \leq 20^\circ$	$d = 200\text{ mm}$ $\beta = 0^\circ$ $\beta = 15^\circ\text{ r+l}$ $\beta = 20^\circ\text{ r+l}$ $b = 100\text{ mm}$			
			f_{Ha}	1.1 μm	The specified measurement uncertainties apply exemplary to the classification of measuring machine group A
			f_{α}	0.7 μm	
			F_{α}	1.3 μm	
$f_{H\beta}$			1.1 μm		
$f_{i\beta}$			0.8 μm		
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Calibration software "Stylus-Manager" and evaluation software "GINA" from Klingelberg GmbH	Reference diameter: $d \leq 350$ mm Helix angle: $\beta \geq 0^\circ$ $M_n \geq 1$	Calibration according to: DIN EN ISO 10360-3:2000 and DIN EN ISO 10360-5:2020		
		f_p	0.7 μm	The specified measurement uncertainties apply exemplary to the classification of measuring machine group A
		F_p	1.0 μm	
		F_r	1.2 μm	
		Reference diameter: $d \leq 350$ mm Helix angle: $\beta \geq 0^\circ$ $M_n \geq 1$	Calibration according to: DIN ISO 1328-1:2018	
M_{dk}	5.0 μm		The specified measurement uncertainties apply exemplary to the classification of measuring machine group A The M_{dk} is calculated from the measured points of the pitch-deviation- measurement	

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Measurement quantity / Calibration item	Calibration- and measuring capabilities (CMC)				
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<p>Gear measurement technology Coordinate and precision measuring machines with tactile probing for gearing and rotational - symmetrical test parts</p> <p>Calibration software "Stylus-Manager" and evaluation software "GINA" from KlingelInberg GmbH</p>	The proven classification applies only to the measuring range covered by the gear standard $\pm 20\%$	Calibration with tactile probing using gearing standards, classification of measuring systems (A, B, C, D) VDI/ VDE 2612 Bl.6:2022 VDI/ VDE 2612 Bl.1:2018			
		reference diameter: $d = 100\text{ mm}$ face width: $b = 100\text{ mm}$ Helix angle: $\beta \leq 20^\circ$	Metrological traceability by gear standards $d = 100\text{ mm}$ $\beta = 0^\circ$ $\beta = 15^\circ\text{ r+l}$ $\beta = 20^\circ\text{ r+l}$ $b = 100\text{ mm}$		
		f_{Ha}	1,0 μm	The specified measurement uncertainties apply exemplarily to the classification of measuring machine group A	
		f_{ia}	0,7 μm		
		F_α	1,2 μm		
		$f_{H\beta}$	1,1 μm		
		$f_{i\beta}$	0,8 μm		
		F_β	1,3 μm		
		reference diameter: $d = 200\text{ mm}$ face width: $b = 100\text{ mm}$ Helix angle: $\beta \leq 20^\circ$	$d = 200\text{ mm}$ $\beta = 0^\circ$ $\beta = 15^\circ\text{ r+l}$ $\beta = 20^\circ\text{ r+l}$ $b = 100\text{ mm}$		
		f_{Ha}	1,1 μm	The specified measurement uncertainties apply exemplarily to the classification of measuring machine group A	
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		Reference diameter: $d \leq 350$ mm Helix angle: $\beta \geq 0^\circ$ $M_n \geq 1$	Calibration according to: DIN EN ISO 10360-3:2000 and DIN EN ISO 10360-5:2020	
Calibration software "Stylus-Manager" and evaluation software "GINA" from Klingelberg GmbH		f_p	0.7 μm	The specified measurement uncertainties apply exemplary to the classification of measuring machine group A
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		Reference diameter: $d \leq 350$ mm Helix angle: $\beta \geq 0^\circ$ $M_n \geq 1$	Calibration according to: DIN ISO 1328-1:2018	
		M_{dk}	5.0 μm	The specified measurement uncertainties apply exemplary to the classification of measuring machine group A The M_{dk} is calculated from the measured points of the pitch-deviation- measurement

Abbreviations used:

CMC	Calibration and measurement capabilities
DIN	German Institute for Standardization e.V.
VDE	Association of Electrical Engineering, Electronics and Information Technology e.V.
VDI	Association of German Engineers e.V.

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β	Helix angle	F_p	Total pitch error
d	Reference diameter	f_p	Single pitch deviation
F_α	Total profile deviation $f_{H\alpha}$	F_r	Runout error
	Profile angle deviation	M_{dk}	Dimension over balls
$f_{i\alpha}$	Profile form deviation	M_n	Normal module
F_β	Total helix deviation	r+l	Right hand and left hand
$f_{i\beta}$	Helix form deviation		
$f_{H\beta}$	Helix slope deviation		

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