Issue date: 06 April 2025
Valid Until: -

NO: SAMM 571

LABORATORY LOCATION/ CENTRAL OFFICE:	HLB Calibration Laboratory, HLB Precision Industry Lot 1-036, Endah Parade, Jalan 1/149E, Taman Sri Endah, Bandar Baru Seri Petaling, 47000 Kuala Lumpur , 47000, WILAYAH PERSEKUTUAN KUALA LUMPUR MALAYSIA
ACCREDITED SINCE :	06 APRIL 2025
FIELD(S) OF CALIBRATION:	DIMENSIONAL MASS

This laboratory has demonstrated its technical competence to operate in accordance with MS ISO/IEC 17025:2017 (ISO/IEC 17025:2017).

This laboratory's fulfillment of the requirements of ISO/IEC 17025 means the laboratory meets both the technical competence requirements and management system requirements that are necessary for it to consistently deliver technically valid test results and calibrations. The management system requirements in ISO/IEC 17025 are written in language relevant to laboratory operations and operate generally in accordance with the principles of ISO 9001 (see Joint ISO-ILAC-IAF Communiqué dated April 2017).

*** The uncertainty covered by the CMC is expressed as the expanded uncertainty corresponding to a coverage probability of approximately 95 % and have a coverage factor of k=2 unless stated otherwise.**

CENTRAL LOCATION	HLB Calibration Laboratory, HLB Precision Industry Lot 1-036, Endah Parade, Jalan 1/149E, Taman Sri Endah, Bandar Baru Seri Petaling, 47000 Kuala Lumpur , 47000, Wilayah Persekutuan Kuala Lumpur
FIELD(S) OF CALIBRATION :	DIMENSIONAL, MASS

SCOPE OF CALIBRATION : DIMENSIONAL

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
(0.01 Mm Graduation)	0mm to 1.5 mm	None	using Calibration
(external	600 mm to 1000 mm	22 um	Gauge Block
(external Calliper	only)	None	VDI/VDE/DGQ
(quicktests) For	(At designated length	None	Gauge Block
(thickness Gauge)	0mm to3mm	None	using Bench
Accuracy Setting Rod Accuracy	300 mm)	None	1994 Micrometer Callipers as per Clause 10 Table 12, 13 & 14.

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Accuracy -" Upon	600 mm to 1000 mm	None	Dial and Digital
Accuracy), Internal	600 mm to 1000 mm	None	to JIS B 7507:
Anvil	300 mm)	diameter in mm	Block and
Bar	0 mm to 300 mm	Where = nominal length	using Gauge
	0 mm to 300 mm	inmm	Block with
	0 mm to 300 mm	None	references to
	0 mm to 300 mm	None	HLB Test
	0 mm to 300 mm	None	Method HLBTM-
	0 mm to 300 mm	None	4: 2011 for
	0 mm to 300 mm	None	Standard
	0 mm to 300 mm	None	Bar/Setting Rod
Between Reference	0 mm to 600 mm	None	Vernier, Dial and
Bevel Protractor	0° to 360°	5)	Calibrated using
Caliper	350 mm to 450 mm	13 um	using Caliper
	External measurement	None	Calibrate using
	0 mm to 300 mm	0.01 mm	gauge blocks as
	300 mm to 600 mm	0.02 mm	standards based on
	Internal measurement	None	JIS B 7507:2016
	0 mm to 300 mm	0.01 mm	Partial
	0 mm to 300 mm	None	Measuring face
	0 mm to 300 mm	None	contact error
	0 mm to 300 mm	None	Repeatability of
	0 mm to 300 mm	None	partial
	0 mm to 300 mm	None	measuring face
	0 mm to 300 mm	None	contact error
	0 mm to 300 mm	None	Parallelism of
	0 mm to 300 mm	None	jaws
	0 mm to 300 mm	None	Full measuring
	0 mm to 300 mm	None	face contact
	0 mm to 300 mm	None	error
	0 mm to 300 mm	None	Scale shift error
	Omm to 300mm	6 um	Calibrated using caliper
	Omm to 300mm	None	checker and gauge
	300mm to 600mm	None	block with reference to
	300mm to 600mm	None	JIS B 7507:2016
	Up to 300 mm 300 mm to 1000 mm 1000 mm to 2000 mm	17 um 27 um	Calibrated using Gauge Block.with reference to ISO 13385-1:2019
	0 ~ 300 mm	0.02 mm	reference to BS
	0.01 mm to 600 mm	10 um	Caliper Checker JIS B 7507

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Caliper Checker	Up to 300 mm	External measurement =	Calibrated by
	Up to 300 mm	um	using Gauge
	Up to 300 mm	Internal measurement =	Block with
	Up to 300 mm	(2.8+0.003L) um	references to
	Up to 300 mm	Where = nominal length	HLB Test
	Up to 300 mm	inmm	Method HLBTM-
	Up to 300 mm	None	10: 2011 for
	Up to 300 mm	None	Caliper Checker
	0 mm to 600 mm	(0.9+0.8L) um	Calibration by laser
	0 mm to 600 mm	Lis in unit meter	measurement system
Coating Thickness	Up to 1mm	(1.4 +0.12L) um	Calibrated by
Dead Weight	29	mg	using Standard
	59	mg	Weights (ABBA
	10g	mg	Method)
	20g	mg	Reference
	50g	mg	Weights:
	1009	2mg	OIML Class F2
	200 g	2mg	
	500 g	5mg	
	1kg	9mg	
	2kg	0.19	
	5kg	None	
	10 kg	0.2g	
	20 kg	0.2g	
Depth Caliper/gauge	0 mm to 300 mm	(8.3+0.011L) um	Calibrated by
Deviation Of Reading E	450 mm to 600 mm	15 um	Checker and
	25 mm to 50 mm	1.3 um	Gauge Block
	50 mm to 100 mm	1.7 um	with references
	50 mm to 100 mm	None	to HLB Test
	50 mm to 100 mm	None	Method for
	50 mm to 100 mm	None	Electronic
	50 mm to 100 mm	None	(Digital)
	50 mm to 100 mm	None	Indicator;
	50 mm to 100 mm	None	HLBTM-1
	only for dial type)	None	based on HLB
Dial Indicator	0mm to 10 mm	0.004 mm	Calibrated by
	Up to 25 mm	0.004 mm	Calibrated by
	Up to 25 mm	None	using Calibration
	Up to 25 mm	None	Tester with
	Up to 25 mm	None	reference to
	Up to 25 mm	None	JMAS 2001:
	Up to 25 mm	None	1998 (except
	Up to 25 mm	None	No.5) Miniature

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	Up to 25 mm	None	and Long Stroke
	Up to 25 mm	None	Dial Gauge
Dial Test Indicator	0mm to 1.5 mm	0.004 mm	Calibrated by
	0mm	None	Calibrated using gauge tester as standard with
	0mm	None	reference to JIS
	0mm	None	B7533:1990
	Up to 3 mm	(0.3 + 0.06 L) um	Calibration by laser
	Up to 3 mm	None	measurement system
	Up to 3 mm	is measurement length	with reference to
	Up to 3 mm	in unit meter	JIS B 7533
	Omm to 1.6mm	0.7 um	Calibrated using i-
	Omm to 1.6mm	None	Checker with
	Omm to 1.6mm	None	reference to JIS B
	Omm to 1.6mm	None	7533:2015
	0mm to 0.28 mm 0.28 mm to 1.0 mm	10 um	Calibrate using Calibration Tester. with reference to JIS B 7533: 2015
	Up to 1mm	0.7 um	Calibrated by using i-checker as standards based on JIS B 7533:2015
	Up to 0.3 mm 0.3 mm to 0.6 mm 0.6 mm to 2.0 mm	1.4 um 1.5 um	Calibrate by using micrometer head as standards according to JIS B7533:2015
	Up to 0.3 mm 0.3 mm to 0.6 mm 0.6 mm to 2.0 mm	None	Calibrate by using
Dial/digital Thickness	0mm to 25 mm	None	Calibrated using
Diameter Only E	Up to 50 mm	diameter in mm	Comparator with
	Up to 50 mm	None	references to AS
	Up to 50 mm	None	1997: 1977 Plain
	Up to 50 mm	None	Limit Gauge
	Up to 50 mm	None	(Metric Series)
	Up to 50 mm	None	as per Appendix
	Up to 50 mm	None	B (clause B1 or
	Up to 50 mm	None	B2; except
	Up to 50 mm	None	clause B3, B4 &
	Up to 50 mm	None	B5)
Digital Indicator	0mm to 25 mm	1.0 um	Calibrated using
	Omm to 50mm	0.7 um	Calibrated using i-
	Omm to 50mm	None	Checker and gauge

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	Omm to 50mm	None	block with reference to
	Omm to 50mm	None	ASME B 89.1.10M-2001
	Up to 50 mm	None	gauge block
	Up to 50 mm	None	JIS B7536:1982
	0 mm to 50 mm 0 inch to 2 inch	2.3 um 0.0002 inch	Calibrated using Gauge Block according to in house calibration procedure LCP 01440
Error Of Angular E	Up to 300 mm	0.003 mm	Angle Block with
Error Only	Up to 600 mm	None	reference to JIS
	Up to 600 mm	None	B 7517: 2018
	Up to 600 mm	None	Vernier, Dial &
	Up to 600 mm	None	Digital Height
	Up to 600 mm	None	Gauge as per
	Up to 600 mm	None	Table 7 (No.1)
External Measurement	only)	None	with reference to
External Micrometer	25 mm traverse	(0.81+0.012L) ym	Calibrated by
	25 mm travel range	0.001 mm	Calibrate using
	25 mm travel range	None	gauge blocks as
	Frame size	None	standards based on
	Up to 100 mm	0.002 mm	JIS B 7502:2016
	100 mm to 150 mm	0.003 mm	Full surface e
	150 mm to 200 mm	0.004 mm	contact error
	200 mm to 250 mm	0.005 mm	Flatness e
	250 mm to 300 mm	0.006 mm	Parallelism e
	325 mm to 350 mm	0.007 mm	
	350 mm to 400 mm	0.008 mm	
	400 mm to 500 mm	0.010 mm	Note: Standard rod
	400 mm to 500 mm	None	to be provided if the
	400 mm to 500 mm	None	measurement range
	400 mm to 500 mm	None	is > 25 mm
	25 mm 25 mm spindle travel for 50 mm to 100 mm 100 mm to 175 mm frame	1.0 um 1.5 um 2.0 um	Measurement of instrument error, and parallelism and flatness of measuring faces reference to JIS B7502:2016. Setting rod must be provided by customer.
	Up to 100 mm 100 mm to 275 mm	None	Calibrated by using gauge block as standards based on JIS B 7502:2016

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	0~ 25mm	0.002 mm	Gauge Block reference to ISO
	100 mm to 150 mm frame (25 mm traverse)	None	Calibrated using Gauge Block according to
	100 mm to 150 mm frame (25 mm traverse)	None	ISO 3611:2010
	Up to 1 inch	0.0003 inch	
	1 inch to 6 inch frame (1 inch traverse)	0.0003 inch	
	Up to 50 mm	0.003 mm	
	50 mm to 150 mm	0.004 mm	Calibrated using Gauge
Feeler Gauge	0mm to3mm	0.0009 mm	Calibrated by
	0.005 mm to 3 mm	1.8 um	Calibrated using digital displacement indicator as standard with reference to
	0.005 mm to 3 mm	None	JIS B7524:2008
	0.05 mm to 1.0 mm	None	Calibrate using Mu Checker. with reference to JIS B 7524: 2008
Film Thickness	Up to 1mm	(0.6 + 0.15L) um	Calibrated by
Flatness Of	0 mm to 300 mm	inmm	Block with
Flatness Of E	0 mm to 600 mm	None	Test Indicator
Flatness Of Faces	600 mm to 1000 mm	None	Clause 12 Table
Flatness Of Fixed E	(For frame up to	Where = nominal	using Gauge
Foil)	Up to 1mm	thickness in mm	Measuring
	Up to 1mm	None	Equipment with
	Up to 1mm	None	reference to HLB
	Up to 1mm	None	Test Method for
	Up to 1mm	None	Film Thickness
	Up to 1mm	None	Standard
	Up to 1mm	None	(Thickness Foil)
	Up to 1mm	None	HLBTM-2: 2011
For External	600 mm to 1000 mm	None	9 No.1 & 2.
	600 mm to 1000 mm	None	
For Internal	600 mm to 1000 mm	None	
Forward Accuracy	0mm to 1.5 mm	None	references to JIS
Gap Gauge/snap	From 3 mm to 100 mm	(1.1+0.013L) um	Calibrated using
Gauge	Up to 50 mm	Where = nominal	using Bench
	(at designated length	None	Gauge Block
	1 kgf to 3 kgf	0.005 kgf	poise weights.

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	3 kgf to 50 kgf	0.01 kof	Calibrations may be
	50 kgf to 100 kgf	0.1 kof	given in other units
	50 kgf to 100 kgf	None	by conversion from
	50 kgf to 100 kgf	None	SI units.
Gauge)	only)	None	2618: 2005 Part
Gauge/width Gauge	From 3 mm to 100 mm	Where = nominal length in	Gauge Block
	From 3 mm to 100 mm	mm	with references
	From 3 mm to 100 mm	None	to
	From 3 mm to 100 mm	None	2618: 2005 Part
	From 3 mm to 100 mm	None	4.7 Test
	From 3 mm to 100 mm	None	Instructions for
	From 3 mm to 100 mm	None	Gap Gauges —
	From 3 mm to 100 mm	None	Clause 3
Height Gauge	0 mm to 600 mm	None	using Caliper
	Up to 600 mm	Where = nominal length	using Gauge
	Up to 600 mm	Where = nominal length	using Gauge
	up to 600 mm	20 um	Measurement of instrument error and
	up to 600 mm	None	parallelism of reference surface with measuring surface of scriber
	up to 600 mm	None	reference to JIS
	up to 600 mm	None	B7517:2018
	Up to 300 mm	(1.8 + 0.009 L) um	Calibration by gauge
	Up to 300 mm	is length in mm	block and precision
	Up to 300 mm	None	square with reference
	Up to 300 mm	None	to BS EN ISO 13225
	Omm to 600mm	8 um	Calibrated using caliper
	Omm to 600mm	None	checker and gauge
	Omm to 600mm	None	block with reference to
	Omm to 600mm	None	JIS B 7517:2018

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	Up to 300 mm 300 mm to 1000 mm	6 um 13 um	Calibrated using Gauge Block, L-square and Dial Gauge. with reference to ISO 13225:2012
	Up to 150 mm 150 mm to 300 mm 300 mm to 600 mm	8 um 12 um	Calibrated by using caliper checker and gauge block as standards based on JIS B 7517:2018
	0mm to 300 mm 300 mm to 600 mm	11 um	caliper checker, gauge block and dial test indicator as
	0mm to 300 mm 300 mm to 600 mm	None	standards according
	0mm to 300 mm 300 mm to 600 mm	None	to JIS B7517:2018
	0mm to 300 mm 300 mm to 600 mm	None	Calibrate by using
	0 mm to 300 mm 300 mm to 600 mm	11 um	gauge block and dial test indicator as standards according
	0 mm to 300 mm 300 mm to 600 mm	None	to JIS B7517:2018
	0 inch to 6 inch	0.0003 inch	according to BS EN ISO 13225:2012
	Up to 25 mm	None	
	25 mm to 100 mm frame (25 mm traverse)	None	
Indication	Up to 300 mm	None	references to
Indication Error E	(0.01 mm graduation)	None	using Calibration
Indicator Calibration	Up to 50 mm	0.0008 mm	Calibrated by
Instrumental E	Up to 600 mm	inmm	Block with
Instrumental Error	0 mm to 300 mm	Where = nominal length	using Gauge
Instrumental Error E	0 mm to 600 mm	None	Checker, Dial
	Up to 600 mm	inmm	Block based on
	only)	None	12.1 — Clause 3
	Up to 50 mm	None	Block with
Lateral Warp E	0mm to3mm	None	references to JIS B 7524: 2008
	0mm to3mm	None	Feeler Gauge as
	0mm to3mm	None	per Table 4
Lever Gauges	Up to 200 mm	0.007 mm	Calibrated using
Measurement	600 mm to 1000 mm	None	with references

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	600 mm to 1000 mm	None	2016 Vernier,
	600 mm to 1000 mm	None	
	600 mm to 1000 mm	None	
	220 mV to 2.2 V	5 + 0.7 uv	using Fluke
	2.2Vto11V	3.5 + 2.5	5720A
	11 V to 22V	3.5 +4	
	22 V to 220 V	5 + 40 pV	
	220 V to 1100 V	6.5 + 0.4 mV	
	220 to 2.2 mA	35 + 7 nA	using Fluke
	2.2 mA to 22 mA	35 + 40 nA	5720A
	22 mA to 100 mA	45 + 0.7	
	100 mA to 220 mA	(45 + 0.2 +	
	100 mA to 220 mA	0.7 pA	
	220 mAto1A	80 + 12	
	1Ato2.2A	(80 + 10 +	
	1Ato2.2A	12 yA	
	2.2Ato11A	0.36 + 0.48 mA	Measurement
	2.2Ato11A	None	using Fluke
	2.2Ato11A	None	5725A
	1.90	95	using Fluke
	(See Matrix E)	None	using Fluke
	(See Matrix E)	None	5720A
	220 V to 1100 V	See Matrix E	Measurement
	(See Matrix E)	None	using Fluke
	(See Matrix E)	None	5725A
	(see Matrix F)	None	using Fluke
	(see Matrix F)	None	5720A
	2.2Ato11A	see Matrix F	Measurement
	(see Matrix F)	None	using Fluke
	(see Matrix F)	None	5725A
	Range	Expressed as	Remarks
	service inspection	None	
Measuring Face Of Base	0 mm to 300 mm	None	references to JIS B 7518: 2018
Measuring Faces	(Graduation: 0.001mm)	0.0014 mm	Electronic Dial Thickness
	(Graduation: 0.001mm)	None	Gauge; HLBTM-
	(Graduation: 0.001mm)	None	1.604861111
Measuring Faces Micrometer Screw	300 mm)	None	with references to JIS B 7502:
Measuring Instrument	Up to 1mm	Where = nominal	using Film
	Up to 1mm	thickness in mm	Thickness
	Up to 1mm	None	Standard with
	Up to 1mm	None	reference to AS

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	Up to 1mm	None	3894.3 — 2002
	Up to 1mm	None	(Appendix D,
	Up to 1mm	None	except clause
	None	None	
	None	None	
	None	None	
Measuring Surface Of Scriber	0 mm to 600 mm	None	Gauge as per Table 7 (No.1, 2
	0 mm to 600 mm	None	and 4, except
	0 mm to 600 mm	None	No.3)
Measuring Surface To Measuring Surface Of Main	0 mm to 300 mm	None	Digital Depth Gauge (as per Table 7, except
Neighbouring Error Narrow-range Neighbouring Error Backward Error	0mm to 1.5 mm	None	B 7533: 2015 Dial Test Indicator (Level Type) as per
Of Base	0 mm to 600 mm	None	references to JIS
Only	Up to 600 mm	None	JIS B 7517:
	Up to 600 mm	None	2018 Vernier,
	Up to 600 mm	None	Dial and Digital
	Up to 600 mm	None	Height Gauge as
	Up to 600 mm	None	per Table 7
	Up to 600 mm	None	(No.1)
Parallelism	0 mm to 600 mm	None	B 7517: 2018
Parallelism Of	300 mm)	None	Optical Parallel
	0 mm to 300 mm	None	Vernier, Dial &
Parallelism Of E	(Graduation: 0.01mm)	0.006 mm	Test Method for
Parallelism Of Faces	600 mm to 1000 mm	None	
	600 mm to 1000 mm	None	
Plain Plug Gauge/pin	Up to 50 mm	(0.81+0.014L) ym	Calibrated by
Precision Linear	Up to 600 mm	(1.2+0.0023L) ym	Calibrated by
	Up to 600 mm	(1.2+0.0023L) ym	Calibrated by
Reference Surface	0 mm to 600 mm	None	and Gauge with
Repeatability	0mm to 1.5 mm	None	Table 5 (No.1, 2, 3.4 and 5,
	0mm to 1.5 mm	None	except No.6)
Repeatability E	(0.01 mm graduation)	None	references to JIS B 7503: 2017
	(0.01 mm graduation)	None	Dial Gauge as
	(0.01 mm graduation)	None	per Table 2 (No.
	(0.01 mm graduation)	None	1,2,384
	(0.01 mm graduation)	None	except No.5)
	only)	None	
	Up to 50 mm	None	reference to HLB Test Method
	Up to 50 mm	None	HLBTM-9: 2011

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Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	Up to 50 mm	None	for Indication
	Up to 50 mm	None	Calibration
	Up to 50 mm	None	Tester
Request	600 mm to 1000 mm	None	Calipers as per
Retrace Error E	(0.01 mm graduation)	None	Tester with
Scale	0 mm to 300 mm	None	No.4)
	0 mm to 600 mm	Lis in unit meter	measurement system
	0 mm to 600 mm	None	with reference to
	0 mm to 600 mm	None	JIS B 7541
Setting Rod/standard	0 mm to 300 mm	(1.4+0.011L) um	Calibrated by
Standard (thickness	Up to 1mm	Where = nominal	using Length
Standard Weight /	1g	mg	Calibrated by
Straightness & Parallelism Of Blade	Up to 300 mm	None	VDI/VDE/DGO 2618: 2008 Part
	Up to 300 mm	None	7.2 — Clause 3
Surface Of Base To	0 mm to 600 mm	None	Digital Height
Tester	Up to 50 mm	None	using Gauge
	HRB 80	HRB 0.4	test block as per
	HRC 25	HRC 0.5	calibration
	HRC 40	HRC 0.4	procedure MSP-
	HRC 60	HRC 0.4	CP-01 with
	HRC 60	None	reference to JIS
	HRC 60	None	B7726 and
	HRC 60	None	ASTM E18
	0.40 um	0.080 ym	using roughness
	0.40 um	None	Specimen as per
Thickness E	0mm to3mm	None	Comparator with
	service inspection	None	
Vernier/dial/digital	0 mm to 300 mm	10 um	Calibrated by
	0 mm to 600 mm	13 um	Calibrated by
Weighing Machines/balances	Up to 100 g Up to 500 g Up to 1 kg Up to 3 kg Up to 5 kg	0.002 g 0.01g 0.02 g 0.05 g	Calibrated by using Standard Weight based on UKAS LAB 14; 2019 [Clause 4.3.3 (a), 4.3.3 (c) & 4.3.3 (d)]
	Up to 10 kg	0.2g	
	Up to 20 kg	0.59	
	Up to 30 kg	29	
	Up to 100 kg	10g	
Wide-range E	0mm to 1.5 mm	None	Tester with

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SCOPE OF CALIBRATION : MASS

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks