



SCOPE OF ACCREDITATION TO ISO/IEC 17025-2005

JAPAN QUALITY ASSURANCE ORGANIZATION
 Kyushu testing office
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CALIBRATION

Valid To: March 31, 2018

Certificate Number: 1400.05

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations¹:

I. Chemical Quantities

Parameter/Equipment	Range	CMC ² (±)	Comments
pH Indicator ³ –			DC voltage
Instrumental Error	(0 to 14) pH units	0.0040 pH units	
Linearity	(0 to 14) pH units	0.0040 pH units	
Repeatability	(0 to 14) pH units	0.0040 pH units	
pH Detector ³ –			Standard solutions
Instrumental Error	4 pH units, 9 pH units	0.40 mV/pH	
Linearity	4 pH units, 7 pH units, 9 pH units	0.90 mV	
Repeatability	4 pH units, 7 pH units, 9 pH units	0.80 mV	
pH Meters ³ –			Standard solutions
Instrumental Error	4 pH units, 7 pH units, 9 pH units	0.013 pH units	

Parameter/Equipment	Range	CMC ² (±)	Comments
Analyzer of Atmospheres Concerned ³			
Nitrogen Oxide	(25 to 5000) parts in 10 ⁶	2.0 % of full scale	Standard gases
Carbon Monoxide	(5 to 50000) parts in 10 ⁶	2.0 % of full scale	
Sulfur Dioxide	(25 to 5000) parts in 10 ⁶	2.0 % of full scale	
Oxygen	(5 to 25) vol %	2.0 % of full scale	

II. Dimensional

Parameter/Equipment	Range	CMC ² (±)	Comments
Outside Micrometers ³	Up to 25 mm (Scale Interval 0.1 μm) Up to 50 mm (50 to 200) mm (200 to 300) mm (300 to 400) mm (400 to 500) mm	0.60 μm 2.0 μm 4.0 μm 6.0 μm 7.0 μm 9.0 μm	Gauge blocks
Calipers ³	Up to 350 mm (350 to 550) mm (550 to 600) mm (600 to 1000) mm	0.030 mm 0.040 mm 0.050 mm 0.060 mm	Gauge blocks, step gauges
Height Gauges ³	Up to 200 mm (200 to 600) mm (600 to 1000) mm	0.020 mm 0.030 mm 0.040 mm	Gauge blocks, step gauges
Digital Indicators ³	Up to 100 mm	3.0 μm	Gauge blocks
Depth Micrometer ³	Up to 50 mm (50 to 150) mm (150 to 300) mm	3.0 μm 4.0 μm 7.0 μm	Gauge blocks, depth micro checker

Parameter/Equipment	Range	CMC ² (±)	Comments
Dial Gauges ³	Up to 10 mm (10 to 25) mm (25 to 50) mm (50 to 100) mm	1.8 µm 1.9 µm 2.2 µm 3.2 µm	Gauge blocks, dial gauge tester
Depth Gauges ³	Up to 300 mm (300 to 600) mm	0.040 mm 0.050 mm	Gauge blocks, step gauges, depth micro- checker
Inside Micrometers ³			
Calipers	Up to 200 mm (200 to 300) mm (300 to 400) mm (400 to 500) mm	5.0 µm 7.0 µm 8.0 µm 9.0 µm	Gauge blocks
Bar Inside	Up to 150 mm (150 to 200) mm (200 to 300) mm (300 to 400) mm (400 to 500) mm	4.0 µm 5.0 µm 6.0 µm 8.0 µm 9.0 µm	
Dial Caliper Gauges ³	Up to 50 mm (50 to 100) mm (100 to 150) mm (150 to 200) mm	0.030 mm 0.040 mm 0.050 mm 0.060 mm	Gauge blocks
Standard Bars	Up to 50 mm (50 to 100) mm (100 to 200) mm (200 to 300) mm (300 to 400) mm (400 to 500) mm	0.80 µm 0.90 µm 1.10 µm 1.50 µm 1.80 µm 2.20 µm	Gauge blocks, electrical - comparators
Thickness Gauges ³			
Dial Resolution 0.1 mm	Up to 50 mm	0.020 mm	Gauge blocks
Digital Resolution 0.01 mm	Up to 50 mm	0.020 mm	

Parameter/Equipment	Range	CMC ² (±)	Comments
Thickness Gauges ³ (cont) Digital Resolution 0.001 mm	Up to 20 mm (20 to 50) mm	0.0020 mm 0.0030 mm	Gauge blocks
Cylinder Gauges ³	Up to 1.6 mm	5.0 µm	Dial gauge tester, dial gauge

III. Mechanical

Parameter/Equipment	Range	CMC ² (±)	Comments
Scales & Balances ³ –	1 mg 2 mg (2 to 5) mg 5 mg (5 to 10) mg 10 mg 20 mg (20 to 50) mg 50 mg (50 to 100) mg 100 mg 200 mg (200 to 500) mg 500 mg (500 to 1000) mg 1 g 2 g (2 to 5) g 5 g (5 to 10) g 10 g 20 g (20 to 50) g 50 g (50 to 100) g 100 g (100 to 200) g 200 g (200 to 20 000) g (20 to 160) kg (160 to 300) kg	3600 µg/g 1800 µg/g 1800 µg/g 710 µg/g 1400 µg/g 470 µg/g 300 µg/g 360 µg/g 150 µg/g 220 µg/g 94 µg/g 59 µg/g 59 µg/g 30 µg/g 45 µg/g 18 µg/g 12 µg/g 12 µg/g 5.9 µg/g 8.7 µg/g 3.6 µg/g 2.4 µg/g 2.8 µg/g 1.2 µg/g 1.8 µg/g 1.0 µg/g 1.4 µg/g 1.0 µg/g 1.1 µg/g 30 µg/g 31 µg/g	Calibrations performed using reference weights

Parameter/Equipment	Range	CMC ² (±)	Comments
Vibration Meter – Acceleration (1 to 50) m/s ² Velocity (1 to 50) mm/s Displacement (0.1 to 10) mm	(5 to 2000) Hz (5 to 2000) Hz (5 to 160) Hz	% of measurement value 3.0 % 3.0 % 3.0 %	Secondary vibration calibration system
Vibration Exciter ³ Acceleration (1 to 200) m/s ² Velocity (0.01 to 1) m/s Displacement (1 to 10) mm Frequency	(5 to 10) Hz (10 to 5000) Hz (5 to 10) Hz (10 to 160) Hz (160 to 1000) Hz (1 to 3) kHz (5 to 10) Hz (10 to 20) Hz (20 to 40) Hz (40 to 80) Hz (80 to 160) Hz (160 to 315) Hz (5 to 2000) Hz (2 to 4) kHz (4 to 5) kHz	% of measurement value 4.0 % 3.0 % 6.0 % 3.0 % 7.0 % 8.0 % 3.0 % 4.0 % 3.0 % 5.0 % 9.0 % 16 % 0.02 Hz 0.03 Hz 0.04 Hz	Secondary vibration calibration system Frequency counter
Pressure – Hydraulic-Gauge Pressure ³	Up to 100 MPa	0.0042 MPa or 0.021 % of measurement value, whichever is largest	Dead-weight pressure balance, pressure calibrator

Parameter/Equipment	Range	CMC ² (±)	Comments
Pressure (cont) –			
Air- Gauge Pressure ³	(-95 to 0) kPa	0.035 kPa	Dead-weight pressure balance, pressure calibrator
	(0 to 350) kPa	0.046 kPa or 0.022 % of measurement value, whichever is largest	
	(350 to 2000) kPa	0.15kPa or 0.030 % of measurement value, whichever is largest	
	(2000 to 7000) kPa	1.4 kPa	
Dead-weight Pressure Balances			
Pressure Medium: Oil ³	Up to 100 MPa	0.0048 MPa or 0.016 % of measurement value, whichever is largest	
Pressure Medium: Air ³	Up to 350 kPa	0.063 kPa or 0.030 % of measurement value, whichever is largest	
	(350 to 2000) kPa	0.30 kPa or 0.030 % of measurement value, whichever is largest	
	(2000 to 7000) kPa	2.0 kPa	
Liquid Column Monometer			
Liquid: Mercury ³	Up to 220 kPa	0.15 kPa	
Liquid: Water ³	Up to 20 kPa	0.050 kPa	

Parameter/Equipment	Range	CMC ² (±)	Comments	
Volumetric Instrument – One Mark Pipettes	(0.5 to 2) ml (2 to 5) ml (5 to 10) ml (10 to 25) ml (25 to 50) ml (50 to 100) ml	0.010 ml 0.015 ml 0.020 ml 0.030 ml 0.050 ml 0.080 ml	Scales & balances, liquid-in-glass thermometer	
Graduated pipettes	(0.1 to 1) ml (1 to 2) ml (2 to 5) ml (5 to 10) ml (10 to 25) ml (25 to 50) ml	0.010 ml 0.015 ml 0.030 ml 0.050 ml 0.10 ml 0.20 ml		
Burettes	(1 to 5) ml (5 to 10) ml (10 to 25) ml (25 to 50) ml (50 to 100) ml	0.010 ml 0.020 ml 0.030 ml 0.050 ml 0.10 ml		
One Mark Volumetric Flask	(5 to 10) ml (10 to 25) ml (25 to 50) ml (50 to 100) ml (100 to 250) ml (250 to 500) ml (500 to 1000) ml (1000 to 2000) ml	0.025 ml 0.040 ml 0.040 ml 0.060 ml 0.15 ml 0.25 ml 0.40 ml 0.60 ml		
Graduated Measuring Cylinders	Up to 5 ml (5 to 25) ml (25 to 100) ml (100 to 200) ml (200 to 300) ml (300 to 500) ml (500 to 1000) ml (1000 to 2000) ml	0.10 ml 0.20 ml 0.50 ml 1.0 ml 1.5 ml 2.5 ml 5.0 ml 10 ml		
Torque Tools ³	(0.2 to 500) N·m	0.70 % of reading		Torque wrench tester, torque analyzer

IV. Thermodynamics

Parameter/Equipment	Range	CMC ² (±)	Comments
Digital Thermometer	(-50 to 350) °C	0.080 °C	Digital thermometer, ice point
Liquid-in-glass Thermometer	(-50 to 350) °C	0.090 °C	Digital thermometer, ice point
Mechanical Thermometer	(-50 to 350) °C	0.20 °C	Digital thermometer, ice point
Temperature Test Chamber ³	(-80 to 350) °C	0.20 °C	Digital thermometer

¹ This laboratory offers commercial and field calibration service.

² Calibration and Measurement Capability Uncertainty (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. CMC's represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of $k = 2$. The actual measurement uncertainty of a specific calibration performed by the laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.

³ Field calibration service is available for this calibration and this laboratory meets A2LA R104 – *General Requirements: Accreditation of Field Testing and Field Calibration Laboratories* for these calibrations. Please note the actual measurement uncertainties achievable on a customer's site can normally be expected to be larger than the CMC found on the A2LA Scope. Allowance must be made for aspects such as the environment at the place of calibration and for other possible adverse effects such as those caused by transportation of the calibration equipment. The usual allowance for the actual uncertainty introduced by the item being calibrated, (e.g. resolution) must also be considered and this, on its own, could result in the actual measurement uncertainty achievable on a customer's site being larger than the CMC. CMC for the on-site calibrations assume that the environmental conditions are maintained as in the primary laboratory.



Accredited Laboratory

A2LA has accredited

**JAPAN QUALITY ASSURANCE ORGANIZATION
KYUSHU TESTING OFFICE**
Fukuoka-ken, JAPAN

for technical competence in the field of

Calibration

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets the requirements of any additional program requirements in the field of calibration. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009).

Presented this 4th day of March 2016.



A handwritten signature in blue ink, appearing to read "J. C. Bunt".

Senior Director Quality & Communication
For the Accreditation Council
Certificate Number 1400.05
Valid to March 31, 2018

For the calibrations to which this accreditation applies, please refer to the laboratory's calibration Scope of Accreditation.