


Schedule of Accreditation

issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

 0822 Accredited to ISO/IEC 17025:2017	Chamois Metrology Limited	
	Issue No: 094 Issue date: 10 December 2024	
	Unit 8 The Centre Holywell Business Park Northfield Road Southam Warwickshire CV47 0FP	Contact: Mr S Kelly Tel: +44 (0)1926 812066 Fax: +44 (0)1926 813569 E-Mail: lab@chamois.net Website: www.chamois.net
Calibration performed by the Organisations at the locations specified below		

Locations covered by the organisation and their relevant activities

Laboratory locations:

Location details		Activity	Location code
Address Unit 8 The Centre Holywell Business Park Northfield Road Southam Warwickshire CV47 0FP	Local contact Mr S Kelly	<u>Mass calibration</u> <u>Electrical calibration</u> <u>Pressure calibration</u> <u>Temperature calibration</u> <u>Dimensional calibration</u>	HO

Site activities performed away from the locations listed above:

Location details		Activity	Location code
The location must be suitable for the nature of the particular calibrations undertaken and will be the subject of contract review arrangements between the laboratory and the customer	Local contact Mr S Kelly	<u>Pressure calibration</u>	Site



0822
Accredited to
ISO/IEC 17025:2017

Schedule of Accreditation
issued by
United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

Chamois Metrology Limited
Issue No: 094 Issue date: 10 December 2024

Calibration performed by the Organisation at the locations specified

Calibration and Measurement Capability (CMC)

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
PRESSURE			Methods consistent with EURAMET CG3 and CG17 Including cold set pressure determination of pressure relief valves	HO & Site
Gas pressure (absolute)				
Calibration of pressure measuring instruments and gauges	2 Pa to 160 Pa 160 Pa to 1.4 kPa 1.4 kPa to 15.7 kPa 15.7 kPa to 710 kPa 710 kPa to 27.6 MPa 27.6 MPa to 41.4 MPa	10 % Q [0.0040 %, 32 Pa] Q [0.0030 %, 1.0 Pa] Q [0.0025 %, 1.0 Pa] Q [0.0025 %, 10 Pa] Q [0.0045 %, 10 Pa]	Calibration of pressure measuring devices with an electrical output may be undertaken.	
Gas pressure (gauge)				
Calibration of pressure measuring instruments and gauges and "Pressure equivalent" calibration of Dead Weight Testers (pressure balances supplied with an associated mass set) and Effective area calibration of Dead Weight Testers	- 100 kPa to - 3.5 kPa - 3.5 kPa to 0 Pa 0 Pa to 1.4 kPa 1.4 kPa to 15.7 kPa 15.7 kPa to 710 kPa 710 kPa to 27.6 MPa 27.6 MPa to 41.4 MPa	0.0035 % Q [0.0095 %, 0.60 Pa] Q [0.0040 %, 0.50 Pa] Q [0.0022 %, 0.030 Pa] 0.0017 % 0.0025 % 0.0045 %	Calibrations may also be performed over an environmental temperature range of -10 °C to +150 °C, with an uncertainty of 1 °C on the reported temperature. There will be an additional pressure uncertainty of Q [0.0030 %, 0.030 Pa].	
Gas pressure (differential)				
Calibrations of differential pressure devices with low and high pressure ports at a common mode pressure of 3.5 kPa	6 Pa to 10 kPa (Line pressure 3.5 kPa)	Q [0.0060 %, 0.030 Pa]		
Calibration of pressure indicating instruments and gauges	0 Pa to (7 - line pressure) MPa (Line pressure 200 kPa to 7 MPa) 7 MPa to (27.6 - line pressure) MPa (Line pressure 7 MPa to 27.6 MPa) 0 Pa to (41.4 - line pressure) MPa (Line pressure 27.6 MPa to 41.4 MPa)	Q [0.000060 % of line pressure, 0.0035 % of differential pressure, 5.0 Pa] Q [0.000060 % of line pressure 0.0035 % of differential pressure, 10 Pa] Q [0.000065 % of line pressure, 0.0060 % of differential pressure, 16 Pa]	Differential pressure cells may be calibrated using digital communications protocols Calibrations may also be performed over an environmental temperature range of +2 °C to +8 °C with an uncertainty of ± 1 °C on the reported temperature.	



0822
Accredited to
ISO/IEC 17025:2017

Schedule of Accreditation
issued by
United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

Chamois Metrology Limited
Issue No: 094 Issue date: 10 December 2024

Calibration performed by the Organisation at the locations specified

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
PRESSURE (cont'd)				
Hydraulic pressure (gauge)				HO & Site
Calibration of pressure measuring instruments and gauges. "Pressure equivalent" calibration of Dead Weight Testers (Pressure balance with associated mass set). Effective area calibration of Dead Weight Testers.	137 kPa to 345 kPa 345 kPa to 7 MPa 7 MPa to 172 MPa 172 MPa to 500 MPa	Q [0.0035 %, 13 Pa] 0.0035 % Q [0.0037 %, 0.24E ⁻⁶ /MPa] 0.0080 %	Including cold set pressure determination of pressure relief valves Absolute pressure calibrations may be undertaken by associated barometric pressure measurement with an additional uncertainty of 15 Pa	
Hydraulic pressure (differential)				
Calibration of pressure indicating instruments and gauges	0 Pa to (172 - line pressure) MPa (Line pressure 1.7 MPa to 172 MPa)	Q [0.000060 % of line pressure, 0.0055 % of differential pressure, 20 Pa]		
MASS	Nominal value (g)	(mg)		HO
	26 000	26		
	20 000	20		
	10 000	10		
	5 000	5.0		
	2 000	2.0		
	1 000	1.0		
	500	0.50		
	200	0.20		
	100	0.10		
	50	0.060		
	20	0.050		
	10	0.040		
	5	0.032		
	2	0.024		
	1	0.020		
	0.5	0.016		
	0.2	0.012		
	0.1	0.010		
	0.05	0.0080		
	0.02	0.0060		
	0.01	0.0050		
	0.005	0.0040		
	0.002	0.0040		
	0.001	0.0040		
			Intermediate values can be calibrated with an uncertainty not less than that interpolated from the next higher and lower nominal value in the table. Calibrations can be given in other units as required. Calibration by substitution	



0822
Accredited to
ISO/IEC 17025:2017

Schedule of Accreditation
issued by
United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

Chamois Metrology Limited
Issue No: 094 Issue date: 10 December 2024

Calibration performed by the Organisation at the locations specified

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
ELECTRICAL				HO
All electrical measurements are carried out using the method of direct comparison or transfer to laboratory reference standards unless otherwise determined in the remark's column.				
DC Voltage	0 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1050 V	Q [10 μ V/V, 0.50 μ V] Q [10 μ V/V, 1.0 μ V] Q [10 μ V/V, 10 μ V] Q [10 μ V/V, 200 μ V] Q [10 μ V/V, 2.0 mV]	All electrical values can be sourced or measured by comparison unless otherwise stated	
DC Current	0 μ A to 200 μ A 200 μ A to 2 mA 2 mA to 20 mA 20 mA to 100 mA 100 mA to 200 mA 200 mA to 2 A 2 A to 20 A	Q [20 μ A/A, 1.0 nA] Q [20 μ A/A, 10 nA] Q [20 μ A/A, 75 nA] Q [40 μ A/A, 150 nA] Q [35 μ A/A, 0.70 μ A] Q [250 μ A/A, 30 μ A] Q [500 μ A/A, 1.0 mA]	Using nominal 10 Ω shunt	HO
DC Current	100 mA to 202 mA 202 mA to 2.02 A 2.02 A to 20 A 20 A to 1000 A	Q [62 μ A/A, 5.5 μ A] Q [90 μ A/A, 72 μ A] Q [330 μ A/A, 8.0 mA] Q [0.22 %, 100 mA]	These values can be sourced Simulation using multi turn coil	
DC Resistance	0 Ω to 2 Ω 2 Ω to 20 Ω 20 Ω to 200 Ω 200 Ω to 2 k Ω 2 k Ω to 20 k Ω 20 k Ω to 200 k Ω 200 k Ω to 2 M Ω 2 M Ω to 20 M Ω 20 M Ω to 200 M Ω 200 M Ω to 1 G Ω	Q [15 $\mu\Omega/\Omega$, 20 $\mu\Omega$] Q [15 $\mu\Omega/\Omega$, 20 $\mu\Omega$] Q [15 $\mu\Omega/\Omega$, 150 $\mu\Omega$] Q [15 $\mu\Omega/\Omega$, 1.0 m Ω] Q [15 $\mu\Omega/\Omega$, 15 m Ω] Q [15 $\mu\Omega/\Omega$, 100 m Ω] Q [15 $\mu\Omega/\Omega$, 1.5 Ω] Q [20 $\mu\Omega/\Omega$, 20 Ω] Q [400 $\mu\Omega/\Omega$, 500 Ω] Q [0.35 %, 12 k Ω]		
AC VOLTAGE	60 mV to 200 mV 20 Hz to 55 Hz 55 Hz to 10 kHz 10 kHz to 30 kHz 30 kHz to 100 kHz 200 mV to 2 V 20 Hz to 55 Hz 55 Hz to 10 kHz 10 kHz to 30 kHz 30 kHz to 100 kHz 100 kHz to 500 kHz 2 V to 20 V 20 Hz to 55 Hz 55 Hz to 10 kHz 10 kHz to 30 kHz 30 kHz to 100 kHz 100 kHz to 500 kHz	Q [150 μ V/V, 15 μ V] Q [120 μ V/V, 15 μ V] Q [350 μ V/V, 16 μ V] Q [600 μ V/V, 20 μ V] Q [140 μ V/V, 40 μ V] Q [120 μ V/V, 40 μ V] Q [260 μ V/V, 40 μ V] Q [350 μ V/V, 100 μ V] Q [0.65 %, 15 mV] Q [150 μ V/V, 260 μ V] Q [140 μ V/V, 260 μ V] Q [260 μ V/V, 330 μ V] Q [550 μ V/V, 1.2 mV] Q [0.65 %, 120 mV]		HO



0822
Accredited to
ISO/IEC 17025:2017

Schedule of Accreditation
issued by
United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

Chamois Metrology Limited
Issue No: 094 Issue date: 10 December 2024

Calibration performed by the Organisation at the locations specified

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
AC VOLTAGE (cont'd)	20 V to 200 V 20 Hz to 10 kHz 10 kHz to 30 kHz 30 kHz to 100 kHz	Q [140 μ V/V, 7.0 mV] Q [260 μ V/V, 7.0 mV] Q [600 μ V/V, 15 mV]		
AC CURRENT	200 V to 1 kV 45 Hz to 10 kHz 10 kHz to 30 kHz 20 μ A to 200 μ A 55 Hz to 5 kHz 5 kHz to 10 kHz	Q[200 μ V/V, 25 mV] Q [380 μ V/V, 30 mV] Q [0.050 %, 50 nA] Q [0.060 %, 50 nA]		
	200 μ A to 2 mA 55 Hz to 10 kHz	Q [0.050 %, 500 nA]		
	2 mA to 20 mA 55 Hz to 10 kHz	Q [0.050 %, 5.0 μ A]		
	20 mA to 200 mA 55 Hz to 10 kHz	Q [0.050 %, 50 μ A]		
	200 mA to 2 A 55 Hz to 1 kHz	Q [0.060 %, 500 μ A]		
AC CURRENT	2 A to 20 A 55 Hz to 1 kHz	Q [0.060 %, 4.0 mA]		
	25 μ A to 200 μ A 40 Hz to 45 Hz 45 Hz to 1 kHz	Q [0.17 %, 410 nA] Q [0.080 %, 390 nA]	These values can be sourced	HO
	200 μ A to 2 mA 40 Hz to 45 Hz 45 Hz to 1 kHz	Q [0.18 %, 1.0 μ A] Q [0.075 %, 0.70 μ A]		
	2 mA to 20 mA 40 Hz to 45 Hz 45 Hz to 1 kHz	Q [0.18 %, 1.1 μ A] Q [0.073 %, 7.4 μ A]		
	20 mA to 200 mA 40 Hz to 45 Hz 45 Hz to 1 kHz	Q [0.18 %, 120 μ A] Q [0.077 %, 86 μ A]		
	200 mA to 2 A 40 Hz to 45 Hz 45 Hz to 1 kHz	Q [0.18 %, 1.1 mA] Q [0.085 %, 770 μ A]		
	2 A to 20 A 40 Hz to 45 Hz 45 Hz to 100 Hz	Q [0.16 %, 11 mA] Q [0.037 %, 6.6 mA]		
	20 A to 100 A at 50 Hz	Q [0.22 %, 100 mA]	Simulation using a multi turn coil	
	100 A to 1000 A at 50 Hz	Q [0.22 %, 400 mA]		



0822
Accredited to
ISO/IEC 17025:2017

Schedule of Accreditation
issued by
United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

Chamois Metrology Limited
Issue No: 094 Issue date: 10 December 2024

Calibration performed by the Organisation at the locations specified

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
AC RESISTANCE 55 Hz to 1 kHz	30 $\mu\Omega$ to 10 m Ω 10 m Ω to 100 m Ω 100 m Ω to 1 Ω 1 Ω to 10 10 Ω to 100 Ω 100 Ω to 1 k Ω	26 $\mu\Omega$ 0.26 % 0.26 % 0.16 % 0.16 % 0.16 %		HO
CAPACITANCE	1 nF 10 nF 20 nF 50 nF 100 nF 1 μ F 10 μ F	29 pF 61 pF 99 pF 220 pF 370 pF 5.1 nF 78 nF	For the calibration of measuring devices	
FREQUENCY	10 MHz Clock frequency 10 mHz to 80 MHz 1 mHz to 80 MHz	1.0 parts in 10^8 5.0 parts in 10^8 Q [5.0 parts in 10^8 , 5.0 μ Hz]	Frequency may also be expressed in terms of time; 1/f, for repetitive signals or in other units such as revolutions per minute. Calibration of measuring devices Calibration of sources	HO
TIME INTERVAL	0 s to 1 day	100 ms	Manually triggered single events.	HO
RPM	60 RPM to 60000 RPM	Q [0.0050 %, 0.01 RPM]	Generate	HO
OSCILLOSCOPES				
Vertical deflection coefficients				HO
DC	30 mV to 300 mV 300 mV to 120 V	1.1 % 0.30 %	Square-wave & DC signals appropriate for the calibration of oscilloscope vertical deflection coefficients	
Peak to Peak Voltage 1 kHz	30 mV to 300 mV 300 mV to 6 V	1.3 % 0.70 %		
Horizontal deflection coefficients				
Time	10 ns to 1 s	0.10 %	Pulse markers The uncertainties quoted above are based on the readout resolution of typical oscilloscopes.	



0822
Accredited to
ISO/IEC 17025:2017

Schedule of Accreditation
issued by
United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

Chamois Metrology Limited
Issue No: 094 Issue date: 10 December 2024

Calibration performed by the Organisation at the locations specified

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (<i>k</i> = 2)	Remarks	Location Code
ELECTRICAL SIMULATION OF TEMPERATURE Thermocouple capabilities listed below are given for type T Base and Type S Noble, using EMF sensitivity values as listed in BS EN 60584-1:2013. Other Thermocouple types can be calibrated, the uncertainties will correspond to the appropriate sensitivities listed. Calibrations which include the internal reference junction (CJC) are available for types: J, K, N, T, E, R, S, B & C				HO
Base Metal Thermocouples Noble Metal Thermocouples	-200 °C to +1400 °C 0 °C to 500 °C 500 °C to 1800 °C	0.050 °C 0.080 °C 0.050 °C	Excluding automatic CJC	
Base Metal Thermocouples Noble Metal Thermocouples	-200 °C to +1400 °C 0 °C to 500 °C 500 °C to 1800 °C	0.17 °C 0.26 °C 0.25 °C	Including automatic CJC	
Cold Junction Compensation	0 °C to 30 °C	0.15 °C		
Resistance thermometers by simulation Values below are based upon a PT100. Other resistance thermometer types, including thermocouples with a defined resistance scale can also be calibrated based on the resistance capabilities listed above.				
Resistance thermometer simulation	-200 °C to + 830 °C	0.0050 °C		
TEMPERATURE Temperature indicators and recorders, with temperature sensor(s)	0.01 °C (Water Triple Point) -95 °C to +140 °C 140 °C to 150 °C 150 °C to 660 °C	0.0050 °C 0.055 °C 0.080 0.10 °C	Fixed point Calibrations within both metal and liquid media	HO
Resistance thermometers	0.01 °C (Water Triple Point) -95 °C to +140 °C 140 °C to 150 °C 150 °C to 660 °C	0.0050 °C 0.055 °C 0.080 °C 0.10 °C	Calibrations within both metal and liquid media	
Thermocouples Base Metal	-95 °C to 0 °C 0 °C to 30 °C 30 °C to 660 °C	0.40 °C 0.10 °C 0.40 °C	Calibrations within both metal and liquid media	
Noble Metal Type R and S Type B	0 °C to 660 °C 0 °C to 660 °C	0.40 °C 2.0 °C	Calibrations within both metal and liquid media	
Metal Block Calibrators and portable liquid baths	-100 °C to +250 °C 250 °C to 660 °C	0.050 °C 0.13 °C	Method consistent with Euramet CG 13 Includes axial, radial and stability information	



0822
Accredited to
ISO/IEC 17025:2017

Schedule of Accreditation
issued by
United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

Chamois Metrology Limited
Issue No: 094 Issue date: 10 December 2024

Calibration performed by the Organisation at the locations specified

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ($k = 2$)	Remarks	Location Code
DIMENSIONAL Orifice plates	BS EN ISO 5167-2:2022 (drain hole corrections can be made using equation (1) in PD ISO/TR 15377:2018 when appropriate) 10.0 to 300 bore (d) diameters 300 to 700 bore (d) diameters Perpendicularity of bore Plate thickness (E) Edge thickness (e) Surface roughness - Ra Flatness of face Bevel angle (α) Edge radius (G) Plate eccentricity Drain hole diameter	 12 16 0.20 ° 10 40 0.10 10 1.0 ° 20 10 40	NOTES RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED The uncertainty quoted is for the departure from either flatness, straightness, parallelism, or squareness, i.e. the distance separating the two parallel planes which just enclose the surface under consideration.	HO
END				



0822
Accredited to
ISO/IEC 17025:2017

Schedule of Accreditation
issued by
United Kingdom Accreditation Service
2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

Chamois Metrology Limited
Issue No: 094 Issue date: 10 December 2024

Calibration performed by the Organisation at the locations specified

Appendix - Calibration and Measurement Capabilities

Introduction

The definitive statement of the accreditation status of a calibration laboratory is the Accreditation Certificate and the associated Schedule of Accreditation. This Schedule of Accreditation is a critical document, as it defines the measurement capabilities, ranges and boundaries of the calibration activities for which the organisation holds accreditation.

Calibration and Measurement Capabilities (CMCs)

The capabilities provided by accredited calibration laboratories are described by the Calibration and Measurement Capability (CMC), which expresses the lowest measurement uncertainty that can be achieved during a calibration. If a particular device under calibration itself contributes significantly to the uncertainty (for example, if it has limited resolution or exhibits significant non-repeatability) then the uncertainty quoted on a calibration certificate will be increased to account for such factors.

The CMC is normally used to describe the uncertainty that appears in an accredited calibration laboratory's schedule of accreditation and is the uncertainty for which the laboratory has been accredited using the procedure that was the subject of assessment. The measurement uncertainty is calculated according to the procedures given in the GUM and is normally stated as an expanded uncertainty at a coverage probability of 95 %, which usually requires the use of a coverage factor of $k = 2$. An accredited laboratory is not permitted to quote an uncertainty that is smaller than the published measurement uncertainty in certificates issued under its accreditation.

Expression of CMCs - symbols and units

It should be noted that the percentage symbol (%) represents the number 0.01. In cases where the measurement uncertainty is stated as a percentage, this is to be interpreted as meaning percentage of the measurand. Thus, for example, a measurement uncertainty of 1.5 % means $1.5 \times 0.01 \times q$, where q is the quantity value.

The notation $Q[a, b]$ stands for the root-sum-square of the terms between brackets: $Q[a, b] = [a^2 + b^2]^{1/2}$