



C. D. Measurements Ltd

SPECIALISTS IN ENGINEERING METROLOGY

Slipsure

Professional Gauge Block Calibration Software for Windows



The initial version of the SLIPSURE gauge block calibration software was released over 25 years ago and subsequently evolved by incorporating feedback and requirements of users and UKAS accredited laboratories. This software plays a significant part in improving the efficiency and cost effectiveness of laboratories employing computer data logging for efficient gauge block calibration.

More recently, in response to the introduction of the International Standard, ISO 3650 1999, for Metric and BS 4311 2007 Imperial sizes of block gauges, a completely new Windows version of the Slipsure gauge block calibration software has been developed.


This ISO standard differs fundamentally from earlier versions of gauge block standards, particularly in the way permissible tolerances for length and uniformity of length are defined. These features have been incorporated into the new software whilst at the same time retaining the traditional characteristics and ease of use expected by calibration laboratories applying computerised gauge block calibration techniques.

The ISO standard also covers gauge lengths up to and including 1000mm. Irrespective of whether these longer length gauges are measured using traditional gauge block comparators, the measured data can be entered via the computer keyboard and the calibration certificates generated.

Slipsure software is compatible with most makes of gauge block comparators including Tesa, Mahr, Cary, Steinmeyer where on-line data acquisition via RS232 and USB interfaces can be achieved. This mode of operation with automatic correction for master gauge errors has been found to be the most reliable and cost effective way of calibrating gauge blocks.

CERTIFICATE OF CALIBRATION

ISSUED BY: C. D. Measurements Ltd
DATE OF ISSUE: 02 Jan 2010 CERT NUMBER: Demo Set



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APPROVED SIGNATORY

A.N. O'Brien

CUSTOMER: ABC Engineering Ltd, Britannia Works, Leeds Rd, Manchester
DESCRIPTION: A used set of metric steel gauge blocks
Type: M90 Grade: Grade 0 Set Serial No.: A13579

PREVIOUS CERTIFICATE: n/a
Laboratory Approval No.: n/a **Cert No.:** n/a **Drawn:** n/a

SPECIFICATION: BS EN ISO 3650:1999 Grade 0
REPORT: Co-efficient of expansion 11.7 ppm/°C

The gauges were measured for central length and variation of length by comparison with calibrated grade N master gauges blocks, set serial number Master Set - 1, using a TESLA gauge block comparator.

The measured deviation in central length from the nominal size is shown on page 2.

The gauges were inspected and were found to not satisfy the requirements of BS EN ISO 3650:1999 Grade 0.

DATE OF CALIBRATION: 01 Jan 2010

The reported expanded uncertainty is based on standard uncertainty multiplied by a coverage factor k=2 providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to recognised national standards, and to units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full, except with prior written approval of issuing laboratory.

Sample Certificate Front Page

CERTIFICATE OF CALIBRATION

ISSUED BY: C. D. Measurements Ltd
LABORATORY APPROVAL No.: XXXX CERT NUMBER: Demo Set

CONTINUATION SHEET

Page 2 of 2

Set Serial No.: A13579

Results corrected to 20°C

The centre measured deviation from nominal in units of 0.0001 mm

Nominal (mm)	Error	Nominal (mm)	Error	Nominal (mm)	Error	Nominal (mm)	Error
1.0005	+2	1.15	+1	1.30	-1	7.60	-5
1.001	-4	1.15	-1	1.40	-3	7.50	+1
1.002	-1	1.17	-1	1.41	-2	8.00	-6 Tv
1.003	-5	1.18	-2	1.42	-2	8.50	0
1.004	Missing	1.18	-5	1.43	-1	9.00	-6
1.005	-6	1.20	-2	1.44	-1	9.50	-11
1.006	-4	1.21	-1	1.45	-1	10.00	-13 Tv
1.007	-10 Tv	1.22	-5	1.46	0	20.00	-5
1.008	-2	1.23	0	1.47	-1	30.00	-5
1.009	-1	1.24	-4	1.48	Missing	40.00	+2
1.01	-5	1.25	-3	1.48	-2 Tv Tv	50.00	-14
1.02	-11 Tv	1.26	-4	1.50	0	60.00	+3
1.03	0	1.27	0	1.50	-3	70.00	-16
1.04	-2 Tv Tv	1.28	0	1.50	+6	80.00	-26
1.05	-5	1.29	0	1.50	-1	90.00	-24
1.06	-5 Tv	1.30	-2	1.50	-1	100.00	-23
1.07	-6	1.31	-1	1.50	0	1.00A	-1
1.08	-7	1.32	-2	1.50	-5	1.00B	-1
1.09	-4	1.33	0	1.50	-4		
1.10	-8	1.34	-2	1.50	-3		
1.11	-5	1.35	-3	1.50	-2		
1.12	-2	1.36	-5	1.50	-1		
1.13	-6	1.37	-3	1.50	-3		
1.14	-6	1.38	-5	1.50	-2		

Uncertainty of Measurement (±) Units 0.00001 mm

Gauges Above 0 mm up to 10 mm	8
Gauges Above 10 mm up to 25 mm	10
Gauges Above 25 mm up to 50 mm	12
Gauges Above 50 mm up to 75 mm	15
Gauges Above 75 mm up to 100 mm	15

BS EN ISO 3650:1999 Grade 0
Tv - exceeded the validation in length tolerance
Tc - exceeded the deviation of length at any point tolerance

DATE OF CALIBRATION: 01 Jan 2010

The reported expanded uncertainty is based on standard uncertainty multiplied by a coverage factor k=2 providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Sample Certificate Continuation Page

Slipsure incorporates its own powerful certificate designer, allowing the user complete freedom to create personalised certificates with the addition of graphical images, and uncertainty statements. Plain paper printing and eliminates the requirement for costly pre-printed headed paper, and giving perfect alignment of graphics and text. An option to produce certificates as a PDF is available when customers require access to electronic copies.

Measurement Features

Slipsure automatically compensates for Master Gauge Error, and when measuring dissimilar materials Elastic Compression and Thermal Expansion. Gauges are automatically checked against required standards with pass information displayed during gauge measurement. On completion of a test, the set can be instantly checked against other standards. The ability to enter "one off" customer standards has been incorporated for full flexibility for those unique customer sets. Gauges can be re-measured and / or replaced, with the ability to produce certificates for both 'As Received' and 'As Dispatched' conditions. All the measurement data can be recalled and printed for internal assessment purposes.

Software Features

Slipsure provides the user with a straightforward software system with many time saving benefits. The use of default information reduces the amount of data input required and can be configured to give you the optimum for your measurement practices. Non-standard sets can be created and stored for future use. Repeat test can be performed to reduce the data input to a minimum. The calibration process can be interrupted and re-started at any point as all measurement data is stored as the test is being performed. Consequently, in the event of power failure, a maximum of one gauge measurement will be lost. The use of the CD Measurements address file across our range of metrology software eliminates the continual re-typing of customer address data.

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