

Certificate of Calibration

Issued By Trescal Ltd

Date of Issue: 19 March 2019

Certificate Number: 2964460001



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APPROVED SIGNATORY

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Grant Mitchell

Customer:

Mecmesin Ltd, Spring Copse Business Park
Slinfold, West Sussex, RH20 3LZ

Equipment Details

Description: Speed Verification Tool (TM0400)

Manufacturer: ELV

Type No: LSU 100

Range:

Serial No: PEQ0115626

Engineer: Afonso Achas

Date of Receipt: 15/Mar/2019

Order No:

Our Reference: 00517782

Date: 19/Mar/2019

Calibration Summary

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

Ambient Conditions

Temperature: 20°C ± 2 °C

Date of next calibration:

The results given within this certificate only relate to the item calibrated. The uncertainty limits quoted refer to the measured values only, with no account being taken of the instruments ability to maintain its calibration. The reported expanded uncertainty is based upon a standard uncertainty multiplied by a coverage factor $k=2$ providing a confidence level of approximately 95%. The uncertainty evaluation has been derived from EA-4/02 M:2013 "Evaluation of the Uncertainty of Measurement In Calibration".

EMS 00004-28-May2018

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Instrument Status:

In Tolerance Out of Tolerance Malfunctioning Operational Damaged

As Received

X

As Returned

X

Action Taken

Full Calibration Special Calibration Operational Verification Adjusted Repaired Returned As Received

X

Receipt Comments:

Technical Remarks:

Calibration Equipment Used

Asset No

Due Date

120500	30/09/2019
121843	31/01/2020
122095	30/09/2019
FC025	31/08/2019
FC160	31/07/2019
FC552	30/09/2019

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Basis of Test: Measured Results

This speed verification instrument has been measured using laboratory standards for the distance between the laser sensors operating the stopwatch, with the datum laser being at the bottom of the column . Repeat readings were taken to determine the accuracy and the measured results reported in the following tables:

Reading Ref	Nominal Length (mm)	Start Position (mm)	Stop Position (mm)	Measured Length (mm)
1	21.00	136.2141	157.0048	20.7907
2	21.00	136.2121	157.0029	20.7908
3	21.00	136.2134	157.0051	20.7917
4	21.00	136.2126	157.0036	20.7910
5	21.00	136.2125	157.0038	20.7913
Mean	21.00	136.2129	157.0040	20.7911
Maximum variation	21.00	0.0020	0.0022	0.0010

Reading Ref	Nominal Length (mm)	Start Position (mm)	Stop Position (mm)	Measured Length (mm)
1	100.00	136.2124	236.0579	99.8455
2	100.00	136.2120	236.0582	99.8462
3	100.00	136.2129	236.0549	99.8420
4	100.00	136.2130	236.0546	99.8416
5	100.00	136.2119	236.0561	99.8442
Mean	100.00	136.2124	236.0563	99.8439
Maximum variation	100.00	0.0011	0.0036	0.0046

The dovetail bracket was measured for the distance between faces with the following results:

Feature	Nominal Length (mm)	Start Position (mm)
Length calibration 1 max	20.00	19.969
Length calibration 1 min	20.00	19.968
Length calibration 2 max	20.00	19.953
Length calibration 2 min	20.00	19.947

Uncertainty of measurement : ± 0.003 mm Linear
 ± 0.005 mm Laser Displacement

Calibration Procedure : QCD/CALP/18

Our Reference : DG296446

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Calibration Procedure: The instrument was placed in the Laboratory for 24 hours prior to calibration for stabilisation purposes. Tests were made by comparison with a standard counter at the given indications. The equipment was calibrated in a controlled environment using devices having known and traceable values. The uncertainties reported refer to the measured values only with no account being taken of the instrument ability to maintain its calibration.

Equipment Calibrated - Refer to Results

Time Checks

<u>UUT Indication</u>	<u>Standard Indication</u>	<u>Standard Equivalent</u>
00 hr 00 min 05.175 sec	5.164 sec	0 min 05.164 sec
00 hr 00 min 09.930 sec	9.930 sec	0 min 09.930 sec
00 hr 00 min 30.043 sec	30.060 sec	0 min 30.060 sec
00 hr 00 min 59.859 sec	59.853 sec	0 min 59.853 sec
00 hr 04 min 59.855 sec	299.835 sec	4 min 59.835 sec
00 hr 09 min 59.962 sec	599.906 sec	9 min 59.906 sec

The overall uncertainty in the measurement was:

± (0.011 seconds of indication)

Specification taken from:

No specification available, results as found.

End of Results