

Certificate of Calibration

Issued By Trescal Ltd

SUPPLEMENT TO CALIBRATION CERTIFICATE NUMBER: 3037640001

Date of Issue: 26 June 2019 Certificate Number: 3037640001S



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APPROVED SIGNATORY

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David Gresty

Customer:

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

Equipment Details

Description: Speed Verification Tool

Manufacturer: ELV

Type No: LSU 100

Date of Receipt: 17/Jun/2019

Range:

Order No: WARRANTY

Serial No: TM0409

Our Reference: 00527565

Engineer: Alexandre Duarte

Date: 18/Jun/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:

Supplementary certificate due to errors reported at mean measured values

Calibration Equipment Used

Asset No	Due Date
120500	30/09/2019
122119	30/09/2019
FC160	31/07/2019
FC418	30/06/2020
FC463	31/12/2019
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	99.6415	120.5452	20.9037
2	21	99.6419	120.5453	20.9034
3	21	99.6427	120.5451	20.9024
4	21	99.6421	120.5445	20.9024
5	21	99.6400	120.5456	20.9056
Mean		99.6416	120.5451	20.9035
Maximum variation		0.0027	0.0011	0.0032

Reading Ref	Nominal Length (mm)	Start Position (mm)	Stop Position (mm)	Measured Length (mm)
1	100	99.6321	199.4877	99.8556
2	100	99.6365	199.4878	99.8513
3	100	99.6357	199.4844	99.8487
4	100	99.6334	199.4856	99.8522
5	100	99.6320	199.4850	99.8530
Mean		99.6339	199.4861	99.8522
Maximum variation		0.0045	0.0034	0.0069

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

Feature	Position	Nominal Distance (mm)	Measured Results (mm)	Mean Value (mm)	Parallelism (mm)
Upwards Distance	1	20	19.983	19.997	0.025
	2		19.993		
	3		19.996		
	4		20.004		
	5		20.008		

Feature	Position	Nominal Distance (mm)	Measured Results (mm)	Mean Value (mm)	Parallelism (mm)
Downwards Distance	1	20	19.983	19.991	0.019
	2		19.986		
	3		19.991		
	4		19.992		
	5		20.002		

Note! The Position 1 is located next to the body of the dovetail bracket.

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

Calibration Procedure : QCD/CALP/18
Our Reference : AFD300379

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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 05.194 sec	5.199 sec	0 min 05.199 sec
00 hr 00 min 9.995 sec	10.021 sec	0 min 10.021 sec
00 hr 00 min 29.953 sec	29.925 sec	0 min 29.925 sec
00 hr 01 min 00.094 sec	60.101 sec	1 min 00.101 sec
00 hr 04 min 59.865 sec	299.831 sec	4 min 59.831 sec
00 hr 10 min 00.045 sec	599.960 sec	9 min 59.960 sec

The overall uncertainty in the measurement was:

$\pm (0.01 \quad \text{seconds of indication})$

Specification taken from:

No specification available, results as found.

End of Results