

Certificate of Calibration

Issued By Trescal Ltd

SUPPLEMENT TO CALIBRATION CERTIFICATE NUMBER: 3003790004

Date of Issue: 20 May 2019 Certificate Number: 3003790004S



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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: 03/May/2019

Range:

Order No: 260933

Serial No: TM0405

Our Reference: 00527566

Engineer: Joe Williams

Date: 14/May/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 incorrect dimensional datasheet being attached

Calibration Equipment Used

Asset No	Due Date
121580	31/07/2019
121843	31/01/2020
122119	30/09/2019
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	96.0811	116.8828	20.8017
2	21	96.0802	116.8857	20.8055
3	21	96.0790	116.8847	20.8057
4	21	96.0755	116.8828	20.8073
5	21	96.0801	116.8849	20.8048
Mean		96.0792	116.8842	20.8050
Maximum variation		0.0056	0.0029	0.0056

Reading Ref	Nominal Length (mm)	Start Position (mm)	Stop Position (mm)	Measured Length (mm)
1	100	95.9114	196.2234	100.3120
2	100	95.9168	196.2277	100.3109
3	100	95.9127	196.2266	100.3139
4	100	95.9114	196.2278	100.3164
5	100	95.9117	196.2280	100.3163
Mean		95.9128	196.2267	100.3139
Maximum variation		0.0054	0.0046	0.0055

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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	19.938	19.931	0.011
	2		19.934		
	3		19.928		
	4		19.927		
	5		19.927		

Feature	Position	Nominal Distance (mm)	Measured Results (mm)	Mean Value (mm)	Parallelism (mm)
Downwards Distance	1	20	19.895	19.899	0.017
	2		19.892		
	3		19.896		
	4		19.909		
	5		19.905		

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 04.946 sec	4.934 sec	0 min 04.934 sec
00 hr 00 min 10.097 sec	10.113 sec	0 min 10.113 sec
00 hr 00 min 29.933 sec	29.934 sec	0 min 29.934 sec
00 hr 00 min 59.999 sec	60.002 sec	1 min 00.002 sec
00 hr 04 min 59.958 sec	299.948 sec	4 min 59.948 sec
00 hr 09 min 59.845 sec	599.774 sec	9 min 59.774 sec

The overall uncertainty in the measurement was:

± (0.01 seconds of indication)

Specification taken from:

No specification available, results as found.

End of Results