

CERTIFICATE OF CALIBRATION

ISSUED BY **Testing Calibration Services Ltd**

DATE OF ISSUE 28 October 2020 CERTIFICATE NUMBER 29420



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Authorised by

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On Behalf of: Buitink Technology, Typograaf 1, Duiven, 6921 VB, The Netherlands

Location: Buitink Technology, Typograaf 1, Duiven, 6921 VB, The Netherlands

Description: A 300 kN materials testing machine, with digital indicator to a computer readout having 3 ranges in tension and compression for each load cell. There is one load cell associated with the machine of 300 kN capacity (Serial no. 27752).

The range verified was:

0 to 300 kN with a scale interval of 0.002 kN in tension and compression

Machine Type: Testometric FS300CT

Serial No: FS300-1000

Software used: Testometric winTest Analysis 5.0.35 Year of Manufacture: Unknown

Date of Verification: 23 October 2020

Person Calibrating: Daniel Clayton

Classification:

The above testing machine has been verified in tension and compression, for increasing forces only, to BS EN ISO 7500-1: 2018 using verification equipment calibrated to BS EN ISO 376 as listed overleaf.

The machine complied with the requirements of the standard for the following classification and range without requiring adjustment.

300 kN range: Class 0.5, Tension, 300 kN down to 1.2 kN

300 kN range: Class 0.5, Compression, 300 kN down to 2.1 kN

300 kN range: Class 1, Compression, 300 kN down to 1.2 kN

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VERIFICATION EQUIPMENT:

The following equipment was used to effect the verification:

500 kN Load cell, certificate number 2019090136-2, from NPL, calibrated on 09/03/2020.

10 kN load cell, certificate number 1904028, from Element Materials Technology Ltd, calibrated 29/04/2019.

DC Ratio Meter, certificate number 2019100463-1, from NPL, calibrated on 02/01/2020.

The class of the verification equipment was equal to or better than the class to which this testing machine has been verified.

NOTE: The expiry date of the load cell's certificate of calibration is 26 months from the above given date.

METHOD:

The constant indicated force method was used to effect the verification.

No accessories were fitted.

Three verification tests were made on each range.

MEASUREMENTS:

1. The range(s) classified satisfied the requirements of BS EN ISO 7500-1: 2018 in respect to relative error of accuracy, repeatability, zero and resolution (see Table 2 of the specification).
2. The average temperature of the verification equipment was 20.2°C.

NOTE: Clause 9 of BS EN ISO 7500-1: 2018 states that the time between two verifications depends on the type of testing machine, the standard of maintenance and the amount of use. Unless otherwise specified, it is recommended that the verification be carried out at intervals not exceeding 12 months.

The machine shall in any case be verified if it is moved to a new location necessitating dismantling, or it is subject to major repairs or adjustments.

The previous certificate of calibration was number 27809 issued by Testing Calibration Services.

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RESULTS

300 kN range using the 300 kN load cell (Serial No 27752) calibrated in tension:-

Measured Force (kN)	Test 1 (kN)	Test 2 (kN)	Test 3 (kN)	Mean Force (kN)	Relative Error (%)	Relative Uncertainty of mean True Force (%)
1.2	1.203	1.200	1.198	1.200	-0.03	0.39
2.1	2.098	2.099	2.095	2.098	0.12	0.27
3	2.998	3.001	2.995	2.998	0.07	0.26
6	5.990	6.008	6.000	5.999	0.01	0.28
9	9.006	9.012	9.006	9.008	-0.09	0.22
10	10.013	10.014	10.007	10.011	-0.11	0.22
10	10.004	10.001	9.993	10.000	0.00	0.23
12	11.980	11.986	11.993	11.986	0.11	0.23
21	21.024	21.037	21.021	21.027	-0.13	0.22
30	30.097	30.081	30.105	30.094	-0.31	0.22
60	60.13	60.14	60.15	60.14	-0.24	0.22
120	120.06	120.03	120.05	120.05	-0.04	0.22
180	179.86	179.84	179.47	179.72	0.15	0.26
240	239.63	239.60	239.61	239.61	0.16	0.22
300	299.20	299.37	299.22	299.26	0.25	0.22

300 kN range using the 300 kN load cell (Serial No 27752) calibrated in compression:-

Measured Force (kN)	Test 1 (kN)	Test 2 (kN)	Test 3 (kN)	Mean Force (kN)	Relative Error (%)	Relative Uncertainty of mean True Force (%)
1.2	1.208	1.207	1.208	1.207	-0.62	0.30
2.1	2.106	2.110	2.106	2.107	-0.35	0.28
3	3.012	3.010	3.007	3.010	-0.33	0.25
6	6.005	6.018	6.016	6.013	-0.22	0.26
10	10.017	10.018	10.024	10.020	-0.20	0.22
10	9.976	10.008	9.992	9.992	0.08	0.28
12	12.021	11.974	11.982	11.992	0.06	0.33
21	21.014	21.001	20.996	21.004	-0.02	0.22
30	30.025	29.983	30.025	30.011	-0.04	0.24
60	59.96	59.99	59.97	59.97	0.04	0.22
120	119.93	119.84	119.82	119.86	0.11	0.22
180	179.59	179.51	179.47	179.52	0.27	0.22
240	238.93	239.09	239.12	239.05	0.40	0.22
300	298.58	298.60	298.67	298.62	0.46	0.22

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The reported uncertainty is based on a 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 the UKAS requirements.

NOTE: The uncertainties stated refer to the values obtained during verification and make no allowances for factors such as long-term drift, temperature and alignment effects - the influences of such factors should be taken into account by the user of the testing machine.