Element Materials Technology Sheffield Ltd
3 Ignite
Magna Way
Rotherham
S60 1FD
UNITED KINGDOM

P +44 (0) 114 272 6581
production.sheffield@element.com
www.element.com

CALIBRATION CERTIFICATE

PPT GROUP UK LTD
JAMES HEAL
HALEY HILLS MILLS
HALIFAX
WEST YORKSHIRE
HX3 6ED

Certificate No:	2606070
Issue Date:	30 June 2026
Calibration Date:	26 June 2026
Technician:	L Shenton
Checked By:	L Mangham

Description: A 25 kN tension and compression strain gauged load cell, used with an associated digital indicator, both manufactured by Interface.

Identification: 1283597 on load cell. TM0516
17989278 on indicator.

Basis of calibration: Element Calibration Procedure CP-F-02

Calibration Location: Element Sheffield (address shown in header)

Signed for and on behalf of Element Sheffield:

L Shenton

Force Calibration Supervisor

UKAS CALIBRATION
0157

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.
The certificate and results within, relates only to the item calibrated as shown on the first page of the certificate.

When Element is making statements of conformity a simple acceptance rule has been applied.
Uncertainty budgets have been determined and are available on request.

element™

Element Materials Technology Sheffield Ltd
3 Ignite
Magna Way
Rotherham
S60 1FD
UNITED KINGDOM

P +44 (0) 114 272 6581
production.sheffield@element.com
www.element.com

CALIBRATION CERTIFICATE

Method:

The calibration was made in the laboratory's No. 4 Force Standard Machine in terms of the SI unit of force, the kilonewton (kN). The uncertainty of the forces applied during the calibration is ± 1 part in 1 000 (±0.1%).

Three tests were made in compression and in tension. The forces were applied to the device in compression through a ball seating unit, provided by Element. In tension the forces were applied to the device through adaptors, also provided by Element.

The device was calibrated in the 'as found' condition. No adjustments have been made.

Measurements:

1. The temperature during the calibration tests varied between 21.3°C and 21.7°C.

2. Before calibration commenced the device was zeroed using the Tare button. The no-load readings for compression and tension are shown in the table below. The results on the following pages have been adjusted using a linear progression between the initial and final zero values based on these zero readings.

	Compression			Tension		
	Run 1	Run 2	Run 3	Run 1	Run 2	Run 3
Initial Zero	0.000	0.000	0.000	0.000	0.000	0.000
Final Zero	-4.264	-2.829	-1.120	3.623	2.896	3.850

3. The differences of output reading for the forces applied are given in table 1: no correction for temperature has been applied to the result.

Notes:

1. If the device has been subjected to any major repairs or adjustments it should then be recalibrated.

2. The uncertainty stated above is for the calibration force and does not take into account the characteristics of the device being calibrated.

element™

Element Materials Technology Sheffield Ltd
3 Ignite
Magna Way
Rotherham
S60 1FD
UNITED KINGDOM

P +44 (0) 114 272 6581
production.sheffield@element.com
www.element.com

CALIBRATION CERTIFICATE

Table 1 : Compression

Applied Force	Output				Coverage Factor	Relative Uncertainty of Mean	Uncertainty in terms of Force
	Test 1	Test 2	Test 3	Mean			
kN	N	N	N	N	k	%	kN
2.5	-2499.778	-2499.559	-2499.710	-2499.682	2.00	0.10	0.0025
5	-4999.832	-4999.257	-4999.518	-4999.535	2.00	0.10	0.0050
7.5	-7499.928	-7499.589	-7499.105	-7499.541	2.00	0.10	0.0075
10	-9999.059	-9999.357	-9998.794	-9999.070	2.00	0.10	0.0100
12.5	-12498.42	-12499.03	-12498.05	-12498.50	2.00	0.10	0.0125
15	-14997.66	-14998.80	-14998.01	-14998.16	2.00	0.10	0.0150
17.5	-17497.04	-17498.56	-17497.86	-17497.82	2.00	0.10	0.0175
20	-19996.50	-19998.47	-19997.75	-19997.57	2.00	0.10	0.0200
22.5	-22496.35	-22498.16	-22497.31	-22497.27	2.00	0.10	0.0225
25	-24997.81	-24998.50	-24997.18	-24997.83	2.00	0.10	0.0250

For a given applied force F (in kN), the expected deflection D (in N) OR For a given deflection D (in N), the applied force F (in kN) is calculated from the following:

$$D=B_0+B_1F+B_2F^2+B_3F^3 \qquad F=A_0+A_1D+A_2D^2+A_3D^3$$

where:

B_0 =	6.90670E-01	A_0 =	6.90687E-04
B_1 =	-1.00020E+03	A_1 =	-9.99796E-04
B_2 =	3.10281E-02	A_2 =	3.10359E-11
B_3 =	-8.14790E-04	A_3 =	8.15079E-16

NOTE:

The uncertainties stated above refer to the values obtained during calibration 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 device.

element™

Element Materials Technology Sheffield Ltd
3 Ignite
Magna Way
Rotherham
S60 1FD
UNITED KINGDOM

P +44 (0) 114 272 6581
production.sheffield@element.com
www.element.com

CALIBRATION CERTIFICATE

Table 2 : Tension

Applied Force	Output				Coverage Factor	Relative Uncertainty of Mean	Uncertainty in terms of Force
	Test 1	Test 2	Test 3	Mean			
kN	N	N	N	N	k	%	kN
2.5	2499.458	2499.535	2499.174	2499.389	2.00	0.10	0.0025
5	4998.870	4998.318	4997.759	4998.316	2.00	0.10	0.0050
7.5	7497.118	7496.997	7496.320	7496.812	2.00	0.10	0.0075
10	9995.827	9995.665	9994.946	9995.479	2.00	0.10	0.0100
12.5	12494.61	12494.91	12494.02	12494.51	2.00	0.10	0.0125
15	14993.97	14994.19	14993.77	14993.98	2.00	0.10	0.0150
17.5	17493.54	17493.91	17494.48	17493.98	2.00	0.10	0.0175
20	19993.94	19993.98	19993.25	19993.72	2.00	0.10	0.0200
22.5	22494.53	22495.07	22501.09	22496.89	2.00	0.10	0.0229
25	24995.24	24997.33	24997.07	24996.55	2.00	0.10	0.0250

For a given applied force F (in kN), the expected deflection D (in N) OR For a given deflection D (in N), the applied force F (in kN) is calculated from the following:

$$D=B_0+B_1F+B_2F^2+B_3F^3 \qquad F=A_0+A_1D+A_2D^2+A_3D^3$$

where:

B_0 =	1.23324E+00	A_0 =	-1.23522E-03
B_1 =	9.99343E+02	A_1 =	1.00066E-03
B_2 =	6.08547E-04	A_2 =	-6.84296E-13
B_3 =	7.66392E-04	A_3 =	-7.65032E-16

NOTE:

The uncertainties stated above refer to the values obtained during calibration 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 device.

End of Certificate.

UKAS CALIBRATION 0157