Creep Calibration

Instron• has taken force measurement seriously for 60 years.

The Instron Advantage

The Instron Calibration Laboratory has been involved in the verification of such systems for 60 years. As the first materials testing company to use strain gauge technology and as the leader in providing high accuracy systems, we take pride in our knowledge of force measurement and calibrations of the highest quality.

In our commitment to be the leading force calibration service in the industry, the extension of our capability to cover the calibration of creep testing machines to both ISO 7500-1 and ISO 7500-2 is natural.

Instron Calibration Laboratory is accredited to work with these internationally recognized standard methods for the verification of testing machines used for uniaxial creep testing in tension in accordance with ISO 204. All our calibration certificates provide comprehensive uncertainty of measurement data as required for testing laboratories to fully comply with ISO 17025.

When Do You Need to Verify Your Creep Testing Machine?

When you use a creep testing system, you need to have confidence that the data is sound. An Instron verification of your machine gives you a statement of how well your system is performing to particular performance requirements and has current calibration certification to show proof of compliance. Instron creep calibrations are carried out against ISO standards using traceable equipment and a fully trained and accredited calibration staff. Such calibrations provide a high integrity independent calibration report that fully meets ISO 9000 and ISO 17025 needs. This verification is most important when the machine is first installed or when a major part is replaced. It should also be performed as part of the periodic re-calibration and certification and certainly prior to the commencement of the creep test if the predicted test life exceeds the date of expiry of the verification certificate.

Creep Verification Certificate

Instron• certificates are designed to help you meet your quality program requirements. All of them include a unique certificate number and date of issue.

The scope and uncertainties of any accredited calibration lab can be found on the accrediting agency's website.

CERTIFICATE OF CALIBRATION

ISSUED BY: **INSTRON CALIBRATION LABORATORY**

DATE OF ISSUE: **23-Aug-2005** CERTIFICATE NO: **1234568**

UKAS CALIBRATION

0019

INSTRON LIMITED
CORONATION ROAD, HIGH WYCOMBE,
BUCKINGHAMSHIRE, HP12 3SY
Tel: +44(0) 1494 456815 Fax: +44(0) 1494 456814
E Mail: extra-uk@instron.com
Enquiries: Mr. D.J.Willmott

APPROVED SIGNATORY
D.J.Willmott

CUSTOMER: New Co Ltd

LOCATION:
The Creep Lab
987 The Street
Little Ville
Big Town
Ireland

Complete description of the machine eliminates all doubts about what has been verified.

M/C DESCRIPTION: Crowther Creep Testing Machine

Lever Ratio: 10

We verify many other brands in addition to Instron.

IDENTIFICATION: CROWTHER **SERIAL NO:** CRWTH 13

Machine Masses: Independent **Identification Reference:** CR1~30
Certificate No.: 0123/456789
Calibration Date: 1-Jan-1999

FORCE RANGE: 30kN

DATE OF VERIFICATION: 21-Aug-2005

The scope of the verification is defined here.

CLASSIFICATION: The above testing machine has been verified over the range specified below for increasing force only ISO 7500-2:1999 using verfication equipment calibrated to ISO 376.

Tested Range	System Class*	Direction of Loading
0.1 to 2.8 Tons f	1	Increasing
Secondary Class		
0.3 to 2.8 Tons f	0.5	Increasing

Comments of any issues identified during verification.

NOTE: Machine's permissible lever deviation from the horizontal position is not marked or indicated as required by ISO7500-2 Para 5.5.6 . Verification results achieved with the lever maintained within the range of +1.7 and -1.1 degrees of horizontal

** Note that system class is derived from assessment of the following: accuracy, repeatability, discrimination threshold, lever deviation (for lever machines) and proving device classification.*

The reported expanded uncertainty is based on a standard uncertainty multipled by a coverage factor k = 2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom AccreditationService. It provides traceability of measurement to recognised national standards, and to units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory. UKAS is one of the signatories to the International Laboratory Accreditation Co-operation (ILAC) Arrangement for the mutual recognition of calibration certificates.

Creep Verification Certificate

The certificate number is printed on every page for quick reference.

CERTIFICATE OF CALIBRATION

UKAS ACCREDITED CALIBRATION LABORATORY No. 0019

CERTIFICATE NUMBER
1234568

METHOD OF VERIFICATION:

The verification was carried out in accordance with ISO7500-2:1999. The method of verification of the load applied by the machine was in conformance with the procedures detailed in paragraph 5 of the standard.

The verification was carried out as found.

Prior to verification, the machine was inspected for good working order and found to satisfy the guidelines of paragraph 4 of ISO 7500-2:1999.

Note machine condition checked before verification.

The following calibration equipment was used to effect the verification:

Description	Reference No.	Lab/Certification No.
Loadcell (Class 0.5)	N45-30K	0157/055213
Loadcell (Class 0.5)	N45-50K	0157/055212

Method of verification and conformance to relevant standards is clearly stated so your auditors, customers and you have the information required.

A detailed list of all the proving equipment used is always clearly stated.

The class of the verification equipment used was better than or equal to the classification of the machine tested.
The average ambient temperature at the time of the verification was 22.7 °C.
The value of acceleration due to gravity & air bouyancy effects used to calculate the force exerted by the masses was 9.8138 m/sec2.

RESULTS:

The results obtained are shown in the table below:

Applied Load	Relative Discrimination Threshold	Run1	Run2	Run3	Mean	Rel Accy. Error	Rel. Rept. Error	Expanded Measurement Uncertainty	
(Tons)	(%)	Tons f	Tons f	Tons f	Tons f	(%)	(%)	(±%)	(± Tons f)
0.01	0.02	0.0995	0.0995	0.0996	0.0995	0.54	0.03	0.22	0.0002
0.02	0.01	0.1991	0.1991	0.1992	0.1991	0.51	0.07	0.22	0.0004
0.03	0.01	0.2987	0.2988	0.2989	0.2988	0.48	0.05	0.22	0.0007
0.05	0.01	0.4981	0.4982	0.4983	0.4982	0.43	0.04	0.22	0.0011
0.06	0.01	0.5978	0.5980	0.5980	0.5979	0.42	0.03	0.22	0.0013
0.12	0.00	1.1969	1.1970	1.1971	1.1970	0.32	0.02	0.22	0.0026
0.18	0.01	1.7964	1.7964	1.7965	1.7964	0.27	0.01	0.22	0.0039
0.23	0.00	2.2956	2.2958	2.2960	2.2958	0.26	0.01	0.22	0.005
0.28	0.00	2.7948	2.7951	2.7952	2.7950	0.25	0.02	0.22	0.0061

Data summary gives you a quick overview of the results, including uncertainty of measurement. The uncertainty is calculated as per the ISO guide to the Expression of Uncertainty in Measurement (GUM).

Lever Balance - minimum force on the specimen with no mass on the scale pan
: 0.0952 Tons f (Uncertainty of Measurement of ±0.22%)

CALIBRATOR:

Instron Creep Team

NOTES AND OBSERVATIONS:

Any additional notes or observations are recorded below:

1. Dedicated masses - individual identification markings were difficult to read. Masses remarked for easier identification.

Comments of any observations identified during verification.

NOTE: Clause 8 of ISO 7500-2:1999 states; The machine shall be verified at intervals not exceeding 5 years. However, if the predicted test life exceeds the date of the expiry of the verification certificate, then the machine shall be reverified prior to commencement of the creep test. Any machine shall also be reverified if it has been dismantled for moving or subject to major repair or adjustment.

The reported expanded uncerainty 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 UKAS requirements.

Which Standard to Use?

ISO 7500-1

This standard applies to testing machines with a force measuring system comprised of a load cell plus conditioning and indicator.

ISO 7500-2

This standard applies to testing machines of the following types:

- Deadweight machines with or without guides
- Overslung or underslung lever machines
- Jockey weight machines, either with overslung or underslung lever
- Any combination of the types mentioned above

Instron•'s Comprehensive Service

The verification shall only be carried out if the machine is in good working order.

The Instron Service Engineer will perform a general inspection of the testing machine prior to calibrating the applied load, ensuring:

1. That the system is not affected adversely by:
   a. Significant wear of knife edges, supporting points, bearings, grips or pull rod guides
   b. Looseness on column mounting and fixed crossheads
2. That the lever system can swing freely over its operating range
3. That the machine is not affected by environmental conditions, such as vibrations or local temperature variations
4. That as far as possible the line of action of force runs through the center of the knife-edges or ball seatings of the load train
5. That the structure and gripping systems will permit the force to be applied axially

Having confirmed these points the load applied by the testing machine can be verified.

Some providers' calibration equipment and methods may only be able to handle certain versions or capacities. Instron undertakes to cover all variations of machines, offering a design and manufacture service for any additional jigs or fixtures that may be required.

INSTRON

Corporate Headquarters
825 University Avenue Norwood, MA 02062-2643
Tel: +1 800 473 7838 or +1 781 575 5000 Fax: +1 781 575 5725

Instron Industrial Products
900 Liberty Street, Grove City, PA 16127-9969, USA
Tel: +1 724 458 9610 or +1 800 7263 8378 Fax: +1 724 478 9614

European Headquarters
Coronation Road, High Wycombe, Bucks HP12 3SY, United Kingdom
Tel: +44 1494 456815 Fax: +44 1494 456814

www.instron.com

Instron is a registered trademark of Instron Corporation. Other names, logos, icons and marks identifying Instron products and services referenced herein are trademarks of Instron Corporation and may not be used without the prior written permission of Instron. Other product and company names listed are trademarks or trade names of their respective companies. Copyright © 2005 Instron Corporation. All rights reserved.
All of the specifications shown in this brochure are subject to change without notice.

WB1236