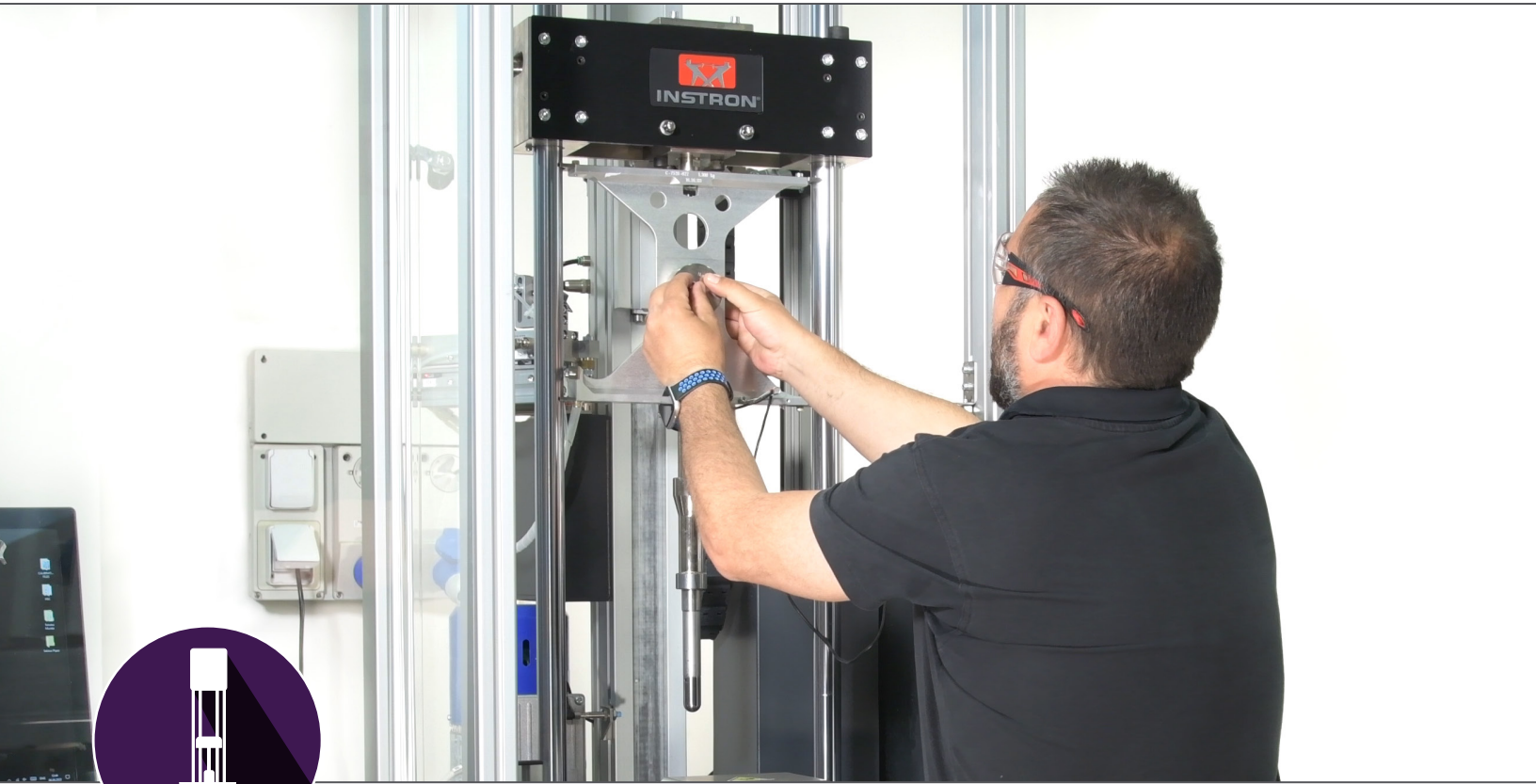




The difference is measurable®

DROP TOWER ON-SITE TUP CALIBRATION

Instron® Professional Services



Regular calibration of your drop tower impact tester's TUP is essential to avoid potential risk exposure from inaccurate test results that can affect the quality of your product to market.

Since there are no existing ASTM or ISO standards for the calibration of a TUP, Instron has developed thorough procedures to meet the testing standards for calibrating drop tower impact testers. These procedures ensure the calibration of critical equipment parameters. After completion, a comprehensive calibration certificate will be issued.

ON-SITE TUP CALIBRATION SERVICE

Instron's on-site TUP calibration service is carried out by one of our factory-trained Field Service Engineers directly on your testing instrument, enabling you to be back up and testing in a few hours, minimizing the disruption of your testing.

This service includes:

- Calibration of strain-gauged TUP's from 1kN up to 100kN.
- Calibration of Piezoelectric TUP's from 4.5kN up to 22kN.

CALIBRATION CERTIFICATES

On completion of your calibration you will receive a fully compliant ISO/IEC 17025 accredited certificate of calibration. Accredited by NVLAP, a signatory to the International Laboratory Accreditation Cooperation Mutual Recognition Arrangement (ILAC MRA), Instron's calibration certificates provide you with the confidence of global acceptance.

Our certificates are quality-compliant and carry a unique certificate number and date.


CERTIFICATE OF CALIBRATION

ISSUED BY: INSTRON CALIBRATION LABORATORY - NVLAP Lab Code 200301-0

Date of Issue: see signature date Certificate Number: E007012723094328

INSTRON
 Instron
 825 University Avenue
 Norwood, MA 02062-2643
 Telephone: +44 (0) 1494 456815
 Fax: +44 (0) 1494 456667
 Email: Calibration_Europe@instron.com

Type of Calibration: Impact
Relevant Standard: Instron Internal Procedure
Date of Calibration: 28/03/2023



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APPROVED SIGNATORY

Digitally signed by Jesus Vazquez
 Reason: I attest to the accuracy and integrity of this document
 Date: 2023.04.12 12:16:28 +02'00'

Calibration Results

TUP Model/Serial Number: 7519.302/M2433 Customer asset number: N/A

PASS 100% range from 9000 to 45000N
 PASS 50% range from 4500 to 22500N
 PASS 20% range from 1800 to 9000N
 PASS 10% range from 900 to 4500N

Customer

Name: Instron P.O. Number: SV2304000075/1
 Address: 825 University Ave Contact: Mr Jones
 Norwood, MA 02062 Email: J.Jones@instron.com

Country: U.S.A.

Transducer

Manufacturer: Instron
 Model Number: 7519.302
 Serial Number: M1234
 Capacity (N): 45000
 Type: Strain Gauge

Data Acquisition System

Manufacturer: Instron
 Model and Serial Number: 7519 - 10021
 Channel Number: 1

Certification Statement

The calibration of the TUP was completed using internal work instruction ICA-8-224 - TUP calibration in the field, to determine if the accuracy of the whole measuring system is within 1% of the concerned force level and for the different load ranges.

The verification was conducted in the customer site identified above and all equipment used conform to a controlled Quality Assurance program, which meets the specifications outlined in ANSI/NCSL Z540-1, ISO 10012-1, ISO 9001:2015, ISO/IEC 17025:2017.

The Simple Acceptance decision rule has been agreed to and employed in the determination of conformance to the identified metrological specification.

Methodology

The calibration of the whole measuring system has been conducted using ISO 376 certified load cell(s) applying a series of forces at equal intervals over the range(s) indicated in the Calibration Results above. The indicated force is compared with the applied force obtaining the error in force units. Between the second and third run, the UUT has been rotated 180° in order to determine the possible misalignment effect between the UUT and the standard load cell.

The temperature at start and end has been recorded:
 Temperature at start: 22°C Temperature at end: 22.3°C

The calibration has been done 'AS FOUND' conditions.

The results indicated on this certificate and the following report relate only to the items calibrated. If there are methods or data included that are not covered by the NVLAP accreditation it will be identified in the comments. Any limitations of use as a result of this calibration will be indicated in the comments. This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government. This report shall not be reproduced, except in full, without the approval of the issuing laboratory.

ICA-8-247 TUP Calibration version 20210318

NVLAP symbol and the Accredited Laboratory Combined ILAC MRA mark provides international recognition and acceptance.

All Instron certificates are diligently checked and digitally signed by an authorized signatory.

The certificate contains a complete description of the equipment being tested.

Method of conformance to relevant quality standards clearly stated for risk reduction during audits and other regulatory evaluations.

Summary of results provides ease of understanding of calibration data.

Summary of checks and inspections

BASIC FRAME

	Run 1	Run 2	Run 3	Mean	Tolerance	Status
Level of frame - Plane of swing (mm/in)	1.62	1.20	1.96	1.59	2 mm	Pass
Level of frame - Perpendicular to the plane of swing (mm/in)	2.20	1.84	1.60	1.88	2 mm	Pass
Transverse play bearing (mm)	1.75	1.75	1.75	1.75	0.25 mm	Fail
Radial play bearing (mm)	0.01	0.01	0.01	0.01	0.05 mm	Pass
Reference plane on frame?	Yes					

Hammer weight (kg): 1.270
 Frame weight + extra weight (frame support if applies) (kg): 270
 Mass ratio: 307.17
 Mass ratio (relation between hammer weight and frame weight should be greater than 40): Pass

PENDULUM AND IMPACT VELOCITY CHECKS

	Run 1	Run 2	Run 3	Run 4	Mean	Tolerance, 1% of L
Pendulum length Lp (mm)	394.35	394.35	394.36		394.35	±3.944 mm
Period of one oscil. Tp (sec)	1.265	1.265	1.264	1.262	1.264	

Center of percussion L (mm): 396.65 Uncertainty of M: ±0.38 mm $L = (g/4\pi^2)T^2$

Impact velocity v1 (m/s)	Nominal	Tolerance	Gravity	Status	
Impact velocity v1 (m/s)	3.799 m/s	3.5 m/s	±0.35 m/s	9.805	Pass

BENEFITS OF INSTRON CALIBRATION

Instron is accredited by NVLAP under Lab Code 200301-0. This ensures that Instron has proven technical competence and necessary quality systems in place to ensure consistent calibration processes which maximize customer confidence.

- All global calibration laboratory procedures follow latest versions of ISO or ASTM calibration standards.
- Our field calibration kits are carefully monitored by our global calibration laboratory for expiration to ensure the integrity of your data.
- Our Field Service Engineers are audited in accordance with our accreditation to ISO 17025 by NVLAP under Lab Code 200301-0 a signatory of the International Laboratory Accredited Cooperation Mutual Recognition Arrangement (ILAC MRA).
- Instron has a global presence, with an accredited calibration laboratory and Field Service Engineers located in key regions around the world. This means that no matter where you are located, you can access our high-quality calibration services and support.

OTHER SERVICES FOR DROP TOWER SYSTEMS

Instron also offers other preventative maintenance and calibration services including temperature checks, crosshead measurement, speed verification and measurement of the system's falling weight.



INSTRON SERVICE AGREEMENTS

Instron offers a variety of different service agreement options, where you can combine preventative maintenance, calibration and Instron Connect into a single plan for all of your Instron systems, bringing you consistency in your lab.



ACCESS YOUR CALIBRATION CERTIFICATES WITH INSTRON CONNECT

Instron Connect includes a number of technologies that create a secure connection between the testing systems at your facility and Instron. These technologies include a support portal and an AI driven mobile app where you can access your Instron system's preventative maintenance reports, service history and calibration certificates at any time.

www.instron.com



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