



*The difference is measurable®*

## PENDULUM CALIBRATION

Instron® Professional Services



Instron is a leading provider in calibrating Pendulum Impact Testers and is an active participant in the development of ISO 13082-99 and ASTM D256-2010 standards. This service ensures that testing parameters are being met and that associated results are being calculated accurately.

Regular calibration of your Pendulum Impact Tester is essential to avoid potential risk exposure from inaccurate test results that can affect the quality of your product to market.

### PENDULUM CALIBRATION SERVICE

- ISO 13082-99 is a direct calibration, which includes Charpy, Izod and tensile impact testing.
- ASTM D256-2010 is the standard test method for determining the Izod pendulum impact resistance of plastics.
- Our pendulum calibration service calibrates the system's frame, hammer and test specimen supports.
- The calibration will be performed by a factory-trained Field Service Engineer, who can make on-site system adjustments if required.

## 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

DATE OF ISSUE: See signature      CERTIFICATE NUMBER: E200070623081004




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Approved signatory

*[Signature]* Digitally signed by Jesus Vazquez  
Reason: I attest to the accuracy and integrity of this document  
Date: 2023.07.06 09:20:04 +02'00'

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**Type of Calibration:** CHАРRY  
**Relevant Standard(s):** ISO 13802-2015  
ISO 179-1:2010  
**Date of Calibration:** 06-Jun-23

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**Customer**

Name: Instron  
Address: 825 University Avenue  
Norwood, MA 02062  
USA  
Contact: James O'Donovan  
Email: james\_odonovan@instron.com  
Contract No.: X120918\_3  
P.O.: SV2306060077/1

**Machine**

Manufacturer: CEAST  
Model: 7614.000  
Serial No.: 32709  
Inventory No.: 1234  
Description: 9050 Table Pendulum with manual release function  
Striker model: 7600.004  
Striker s/n: N.009  
Pot. Energy: 4 J  
Support model: 7610.101  
Support s/n: 7610.1321

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**Temperature**

Start temperature: 23.7° C  
End temperature: 24° C  
Average temperature: 23.9° C

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**Methodology**

The machine above has been calibrated, as defined by the calibration type, to the requirements of the ISO 13802-2015 and ISO 179-1:2010, using certified measuring & gauging equipment.

Instron procedure ICA-8-208, includes a full inspection and dimensional checks of the frame, pendulum, striker, supports and energy indicator of the impact testing machine, in accordance with ISO 13802-2015 and ISO 179-1:2010. The results of these checks, including the energy readings taken to calculate the losses due to friction, are detailed in the Verification results section below.

The system was calibrated in the 'As Found' condition with no adjustments or repairs carried out. This is also the 'As Left' condition.

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

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**Verification results**

BASIC FRAME CHECKS	BEARING CHECKS	PENDULUM & IMPACT LENGTH CHECKS	POTENTIAL ENERGY CHECKS	ENERGY vs ANGLE CHECKS	STRIKER CHECKS	SUPPORTS CHECKS
PASS	PASS	PASS	PASS	PASS	PASS	PASS

Note: Uncertainty of Measurement values are not included in the indicated assessment of compliance with requirements detailed by ISO 13802-2015 and ISO 179-1:2010 standard(s).

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

The certificate contains a complete description of the equipment being testing, including any customer reference numbers.

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/m)	0.24	0.26	0.30	0.27	2 mm	Pass
Level of frame - Perpendicular to the plane of swing (mm/m)	0.52	0.56	0.60	0.56	2 mm	Pass
Transverse play bearing (mm)	0.11	0.11	0.10	0.11	0.25 mm	Pass
Radial play front bearing (mm)	0.01	0.01	0.01	0.01	0.05 mm	Pass
Radial play rear bearing (mm)	0.02	0.02	0.02	0.02	0.05 mm	Pass
Reference plane on frame?	Yes					
Hammer weight (kg)	1.156					
Frame weight + extra weight (frame support if applies) (kg)	220					
Mass ratio	190.25					
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)	229.74	229.74	229.75	229.74	229.74	±2.297 mm
Period of one oscill. Tp (sec)	0.964	0.962	0.960	0.961	0.961	
Center of percussion L (mm)	Result	Uncertainty of M:	$L = (g/4\pi^2)T_p^2$			
	229.64	±0.29 mm				

	Impact velocity v <sub>i</sub> (m/s)	Nominal	Tolerance	Gravity	Status
Impact velocity v <sub>i</sub> (m/s)	2.900 m/s	2.9 m/s	±0.29 m/s	9.809	Pass

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## 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.
- Instron can perform calibration on all Instron Pendulum Impact models and a variety of other Pendulum Impact testers.



### 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 CERTIFICATE 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](http://www.instron.com)



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