CSi Custom Scientific Instruments

CSI-137D

Digital Pendulum Impact Tester

CERTIFIED ISO 9001:2015 COMPANY

MADE IN USA

LIFETIME TECHNICAL SUPPORT

1 YEAR WARRANTY

Introduction

The CSI-137D Pendulum Impact Tester is a high-performance pendulum impact tester that precisely determines absorbed impact energy and resistance to breakage of plastic specimens. Innovative mechanical design features make this instrument the most cost-effective and accurate impact tester available on the market. It meets and exceeds all ASTM and ISO requirements and has the flexibility to satisfy future test standards.

The energy utilized in the method is delivered by a single swing of a calibrated pendulum. The CSI Pendulum Impact Testing is available as a: Specimen-in Head Tensile Impact Tester, Specimen-in-Base Tensile Impact Tester, Charpy Impact Tester and Izod Impact Tester

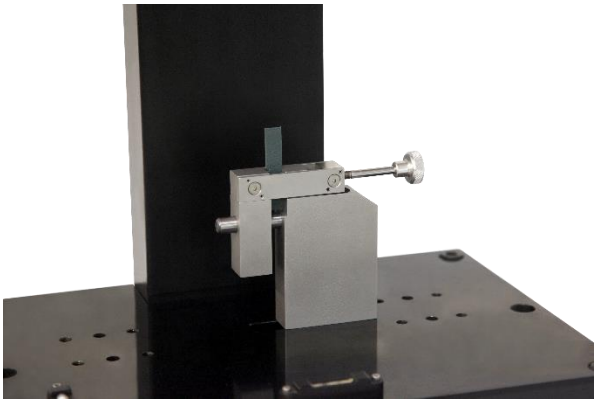
This Impact Tester was designed to meet the demands of the Plastic Industry with its trouble-free design. The base and suspending frame of the CSI Tester are ruggedly constructed to prevent and minimize energy losses to or through the base of the frame.

In Tensile Impact, the specimen can be mounted horizontally in the vase of the machine and clamped on one end to jaw grip-mount to the base or carried in the head of the pendulum. The energy to fracture, by impact is determined by the kinetic energy extracted from the maximum energy of the pendulum in the process of breaking the specimen.

In Izod Testing a notched specimen is held as a vertical cantilever beam. The notch is intended to produce a standard degree of stress concentration.

In Charpy Impact testing a specimen is supported as simple beam and is broken by a blow delivered midway between the supports.

CSI offers two pendulum configurations enabling the user to readily interchange same and to achieve forces of 2 ft-lbf to 16 ft-lbf and in other units as well, covering the aforementioned energy range.



CSI also offers environmental cabinets for low temperature impact testing. The cabinet is equipped with a temperature controller. Refrigeration is liquid CO_2 or N_2

The instrument consists of the following:

- Main Frame
- Pendulum Arm Assembly *(offered separately).*
- Vise/Sample Holder *(offered separately)*
- Computerized Data Acquisition System

Test Standards (and much more!)

- ✓ ASTM D6110
- ✓ ASTM D256
- ✓ ASTM D4812
- ✓ ASTM D1822
- ✓ ISO 180
- ✓ ISO 179
- ✓ ISO 13802
- ✓ ISO 20126

Main Frame

The CSI-137D main frame consists of a massive base with a welded upright post that holds the precision encoder, spindle assembly, pendulum arm assembly and automatic catch assembly:

- ✓ Heavy duty Construction
- ✓ Welded upright frame
- ✓ Two built-in bull's eye level
- ✓ Four Leveling screws on each corner for platform adjustment
- ✓ Pre-positioned mounting holes for quick installation of sample holders and vise
- ✓ Precision Pendulum Spindle to ensure precise energy impact

- ✓ Shaftless angle encoder for angle measurement rotates without friction, allowing for minimal energy loss.
- ✓ High quality, low friction bearing system

Pendulum Arm Assembly

The Pendulum Arm Assembly is supplied as 2 versions: low energy or high energy as per the table below:

Application	Energy Range
Low Energy Kit	0-4.0 ft·lbf (0-5.4 J)
High Energy Kit	8-16.0 ft·lbf (10.8-21.7 J)

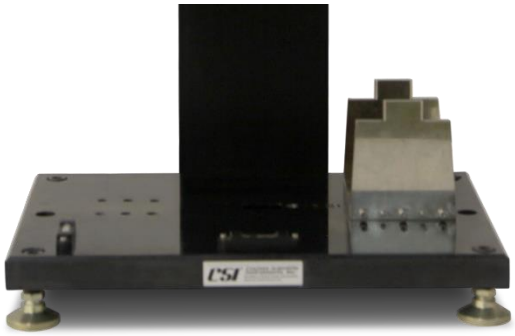
Each kit is configured with the appropriate Izod or Charpy striker/hammer and add-on pendulum weights.

- ✓ Stainless Steel Pendulum Arm with catch
- ✓ Stainless Steel Head
- ✓ Easy to change, hardened striker (Izod and Charpy)
- ✓ Easy to change pendulum assembly and weight design covers a wide energy range with less hardware.
- ✓ Heavy duty pendulum design withstands non-break samples
- ✓ High mass, traditional pendulum design to concentrate energy at the impact point with minimal energy loss due to vibration.
- ✓ Automatic Pendulum Release controlled by software

Vise

The universal Izod vise meets all ASTM and ISO configurations.
The Charpy vise is designed to support all ASTM and ISO configurations (Type 1, 2, and 3)

- ✓ Universal fixture design to easily adapt to all Izod and Charpy configurations, and specimen types with minimal hardware changed. Easily adapts to customer specimen fixtures
- ✓ Specimen Positioning Jig *(for Izod)*
- ✓ Both vises are nickel plated for superior finish and longevity.

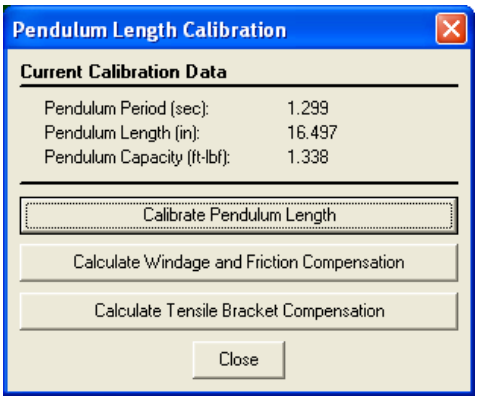


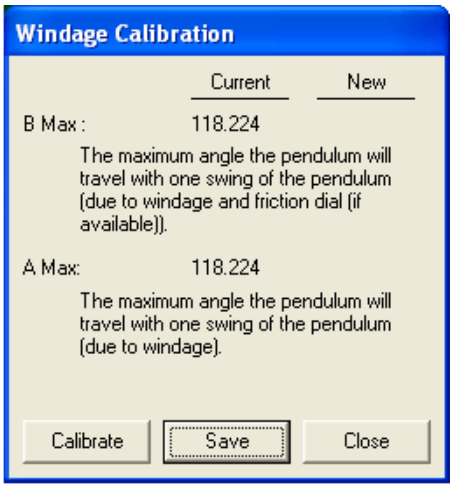
Computerized Data Acquisition System

The CSI-137D is supplied standard with a desktop computer which includes ready to use test software and data acquisition hardware.
The user will be able to calibrate the tester prior to use and calibration data and test reports are saved for future use.
The Data Acquisition System ensures the user to perform accurate and repeatable test results, calibration, generate test reports, check system status and much more. The 4 main functions of the software:

- Calibration

This section provides the calibration of Pendulum Length, Friction and Windage.





- Sample Testing

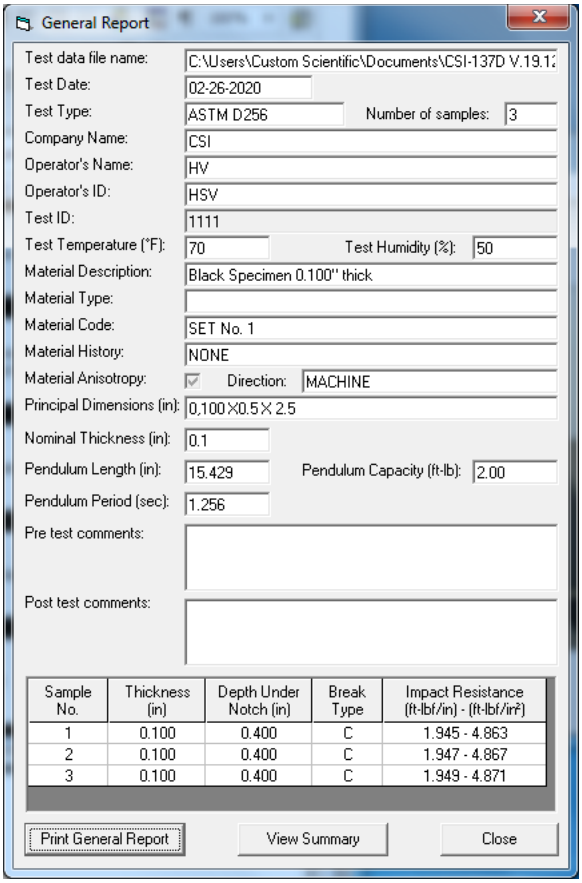
This function provides all of the data storage and acquisition, stabilization, test period timing, and other associated tasks for the testing of materials. The operator inputs the data file name, test standard, sample dimensions, sample identification, pretest comments, and other pertinent data. At the end of the test run, the user may select to run another test and use or modify the previous test parameters. The impact resistance is automatically calculated.

- Test Reporting of Data

The test software main menu for test reports allows the operator to view, print, and edit test information Test Results are available in formats such as:

- General Report – displays test results for all specimens tested along with the test information and pre-test comments. You may choose to print a report. The general report is displayed to allow the user review of the test information and data collected during the test. All pertinent information is indicated.

- Edit Test Data - This feature permits the user to modify text entered during a particular test session.



Technical Specifications

Energy Capacity Range	0 to 16 ft·lbf (0 to 21.7J)
Striking Angle:	120°
Distance between center of pendulum and sample	16 in. (406.4 mm)
Striker Velocity	3.5 m/s
Low Energy Kit	Range: 0-4.0 ft·lbf (0-5.4 J) Pendulum Arm Included Striker Included *(Izod or Charpy)* Head Included Mounting Hardware Included Add-on Weights #1 Included *(for 2-4 ft·lbf (2.7-5.4 J)*
High Energy Kit	Range: 8-16.0 ft·lbf (10.8-21.7 J) Pendulum Arm Included Striker Included *(Izod or Charpy)* Head Included Mounting Hardware Included Add-on Weights #2 Included *(for 4-8 ft·lbf (5.4-10.8 J)* Add-on Weights #3 Included *(for 8-16 ft·lbf (10.8-21.7J)*
Documentation	NIST Calibration Certificate, Conformance Certificate, Operator's Manual, Software User's Guide
Warranty	12 months
Technical Support	Lifetime

Optional Features

Low Temperature Cold Box	For low temperature (-60°C) testing with liquid CO_2 or N_2
Conversion Kits	• From Izod to Charpy (and vice versa) • Specimen-in Head Tensile Impact Tests • Specimen-in-Base Tensile Impact Tests
ISO 202126 Kit	Complete package to test according to specified test standard

Dimensions and Weights

Approx. Physical Weight:	125 lbs. *(CSI-137D only)*
Approx. Physical Dimensions:	22" x 12" x 30"H *(CSI-137D only)*
Approx. Shipping Weight:	330 lbs. *(CSI-137D + Computer Package)*
Approx. Shipping Dimensions:	43" x 24" x 42" *(CSI-137D + Computer Package)*

Installation Requirements

Electrical Specification:	115/220VAC, 60/50Hz, 1Ph, 30A

Custom Scientific Instruments

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