9400 Series

Impact Drop Tower System

INSTRON®

INTRODUCING THE 9400 SERIES

You need absolute confidence in your impact testing system - confidence in accurate, reliable, repeatable results, in the system engineering and the manufacturer behind it.

Featuring future-proof high-speed and high throughout capabilities and user-friendly software based on the popular Instron BLUEHILL® platform, Instron Drop Towers give you the confidence you need in your results, time and time again.

At Instron, we maintain our position at the leading edge of impact testing innovation through design and collaboration, both with our customers and leading university and industry researchers. We lead by example, by meeting customer testing needs across any application requirement. Our Sales, R&D, and Tech Support teams work together with you from initial enquiry through to delivery, offering full access to demonstration models at our design facilities around the world. We lead in calibration, with accredited certification available through our dedicated Service teams.

HOW WILL THE 9400 MEET MY NEEDS?

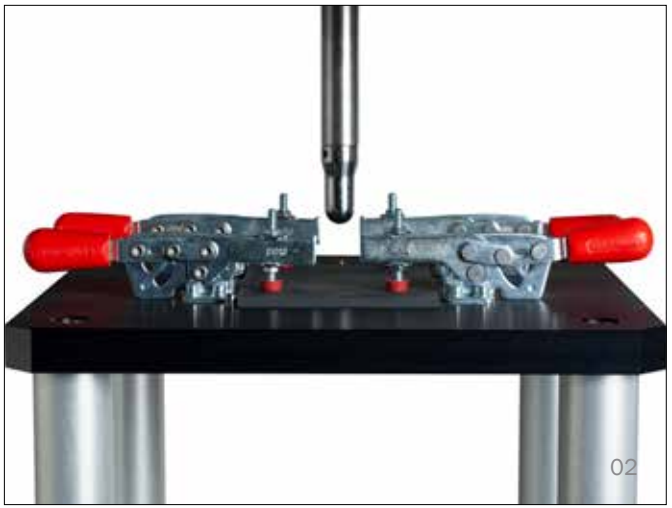
Delivering Your Advanced Materials To Market Faster

Instron Drop Towers are used to develop, fine tune, and validate material models.

Testing materials under real impact conditions is a crucial step prior of product design. Using the characterization data obtained with the Instron 9400, coupled with customer supplied high-speed video, you can have confidence in your results and deliver new materials to your customers faster.

Our Drop Tower impact systems, fixtures, and tups are designed to meet a wide range of applications and testing standards including: ISO, ASTM, ANSI, Airbus, Boeing, BSI, DIN, EN, FDA, Ford, GM, JIS, NASA, GOST, and more.


01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Range of Tests for your Application:

01 Pivoting System for High Throughput Puncture Testing

02 Compression After Impact on Composites

03 Tensile Impact on Plastic and Composites

04 Wedge Peel Impact Testing for Adhesives

05 Puncture Testing on Plastic Materials

HOW WILL THE 9400 MEET MY NEEDS?

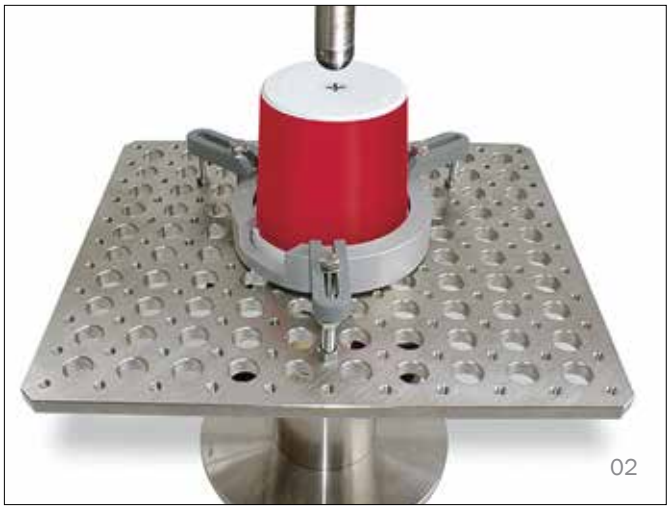
Right-First-Time Products And Continuous Process Improvement

Instron Drop Towers are designed to help you improve your product design process and minimize the risks of production. The 9400 produces reliable, repeatable results whether you are testing materials and components before production to improve product acceptance or testing during production to ensure continuous improvement.

Testing components under real life impact conditions helps you to recognize faults before production starts, reducing risk and cost while accelerating the time-to-market for your new products.

Including Impact Testing during production helps to prevent product recalls and maintain the highest possible quality levels.

Whether you need to test small or large parts, 9400 Drop Towers can be set up to meet your specific application requirements.



Range of Tests for your Application:

01 Airbag Dashboard

02 Plastic Storage Containers

03 Car Bumper

04 LCD Screen

05 PVC Vinyl Material

The development of Instron Drop Tower Systems and Bluehill® Impact Software is based on a full understanding of customer needs for both an enhanced user-experience and outstanding productivity.

The Instron Drop Tower 9400 Series was developed to deliver faster results, fewer errors, and lower training costs for customers who are under pressure to deliver higher quality advanced materials for stronger yet lighter products.

This is achieved by simplifying workflows, providing preconfigured and prompted tests, streamlining data and exporting it for analysis, while providing advanced capability with high speed video and more.

These capabilities all make the 9400 Drop Tower Series:

SIMPLER, SMARTER, SAFER

SIMPLER

Powered by Bluehill® Impact

Bluehill **Impact** is built from the ground up for touch interaction. The Operator Dashboard features large touchpoints to make the user experience simpler and smarter. Easy-to-understand icons and workflows make it easy to train new or experienced users, simplify operator training, and allow you to start testing even faster than ever before.

Simple Setup

The easy set up of the carriage, masses, tups, and supports allow you to benefit from high testing capabilities. Easily switch from high to low loads and from coupon to component testing.

Simple Test Procedures

Thanks to prompted tests and the integrated touch panel, setting up test procedures require just a few clicks. Users can be guided through the entire testing process with step-by-step instructions, ensuring tests remain repeatable, simple, and error-free. Prompts are fully customizable with bespoke text or messages.

Smart Defaults

Bluehill Impact provides a set of pre-configured methods to cover the most common impact testing scenarios.

Quicker Testing

Productivity is increased by 20% thanks to the combination of the new Dashboard and Bluehill Impact providing faster data acquisition and results.

SMARTER

Integrated Innovations for Efficient Tests

Flexible Data Analysis

Users can define unique data flow and procedures ensuring data processing flexibility. Bluehill Impact reports on anomalies and inconsistent results when they are outside set parameters.

Sharing Results

Easily share test method and results within your company or directly with your customers with our new file management system.

Calibration alert

Automatic alerts are generated when Tup calibration period is expiring. This feature helps to reduce the risk of invalid tests and protect your results against inaccuracies.

High-Speed Camera Trigger

Increase your characterization data with the use of high-speed cameras. The 9400 Drop Towers are equipped with a high-speed camera connection to allow for a simultaneous and synchronized acquisition of high speed video with the Force profile.

Transparent panel

View your test from any side and record for future reference. When using a high speed camera, you save time by not having to move accessories when you change specimens or test method.

Tup Force Range Scale (%)

Our tups are calibrated over different percentages of the maximum capacity – this allows you to refine the force scale resulting in better load resolution as well as higher levels of system flexibility.

SAFER

Safety Without Sacrificing Throughput

Fully Enclosed

Integrated safety circuits to protect your operator by disabling the system when any enclosure door is open.

Your results Are Always Saved

Never loose your results, even if power is lost during the test or the operator completes an unscheduled shutdown.

Enhanced Security

Bluehill Impact security allows the Lab manager to configure permissions in the software, granting full permissions to super users and limiting access where needed.

Built-In Safety Notifications

The 9400 system is a fully enclosed system to conform with CE regulations. As an additional safety measure, the system gives clear visual information on the instrument status, so users always know when a test is in progress.

SUPPORT FOR THE LIFE OF YOUR EQUIPMENT

Protecting Your Investment

Instron® is the largest supplier of materials testing systems in the world. Our reliable testing systems can run 24 hours a day, 7 days a week, 365 days of the year. However, if something does go wrong, or if you have a question, we offer a variety of resources to ensure you receive the assistance you need as soon as you need it.

Training

Training courses available on-site or in one of our Regional Training Centers Utilize our Applications Engineering Lab or Custom Solutions Group for the latest technological advances in materials testing

Advanced Support

Our Sales, R&D, and Tech Support teams work together with you from initial enquiry through to delivery, offering full access to demonstration models at our design facilities across the world.

Calibration

Our state-of-the-art Calibration Laboratory offers a comprehensive range of accredited calibration and verification services complying with ASTM, ISO, and Nadcap standards for: force, speed, strain (extensometers), displacement, impact, temperature, torque, creep, strain gauge channel, and alignment.

9400 SERIES SPECIFICATIONS

		9440
Energy range	J ft-lb	0.3 - 405 0.22 - 299
Impact velocity	m/s ft/s	0.77 - 4.65 2.53 - 15.3
Drop height	m in	0.03 - 1.10 1.18 - 43.3
Mass range[1]	kg lbs	1.00 - 37.5 2.2 - 82.7
Mass increments	kg lbs	0.5 1.1
Force transducers	kN lbs	0.45 to 90 101 to 22000
Machine dimensions (w x d x h)	mm in	985 x 610 x 2620 38.7 x 24 x 103
With thermostatic chamber (w x d x h)	mm in	985 x 695 x 2620 38.7 x 27.4 x 103
Test area dimensions (w x d x h)	mm in	490 x 450 x 565 19.3 x 17.7 x 22.2
With thermostatic chamber (w x d x h)	mm in	370 x 300 x 495 14.6 x 11.8 x 19.5
Machine weight	kg lbs	340 749
With thermostatic chamber	kg lbs	550 1213
Load on slab in static condition[2]	kg/m2 N/m2	1000 10000
Concentrated load on feet	kg/cm2 N/cm2	1.5 15
Electrical supply	-	220-240V 50/60Hz 100-120V 50/60Hz
Compressed air supply	bar psi	6 to 10 72.5

1 Includes an average tup weight of 0,5 kg (1,10lbs)
2 Load in dynamic conditions depends on the test type and impact forces

		9450
Energy range	J ft-lb	0,59 - 757 0,44 - 558
Impact velocity	m/s ft/s	0,77 - 4,65 2,53 - 15,3
Drop height	m in	0,03 - 1,10 1,18 - 43,3
Mass range[1]	kg lbs	2,00 - 70,0 4,41 - 154
Mass increments	kg lbs	0,5 1,1
Force transducers	kN lbs	0,45 to 222 101 to 50000
Machine dimensions (w x d x h)	mm in	1015 x 866 x 2720 40 x 34 x107
With thermostatic chamber (w x d x h)	mm in	1015 x 1015 x 2720 40 x 40 x 107
Test area dimensions (w x d x h)	mm in	700 x 720 x 570 27.5 x 28.3 x 22.4
With thermostatic chamber (w x d x h)	mm in	550 x 540 x 500 21,6 x 21,3 x 19,7
Machine weight	kg lbs	550 1212
With thermostatic chamber	kg lbs	700 1543
Load on slab in static condition[2]	kg/m2 N/m2	1570 15402
Concentrated load on feet	kg/cm2 N/cm2	3,4 33
Electrical supply	-	220-240V 50/60Hz 100-120V 50/60Hz
Compressed air supply	bar psi	6 to 10 72,5

1 Includes an average tup weight of 0,7 kg (1,54lbs)
2 Load in dynamic conditions depends on the test type and impact forces

9400 SERIES SPECIFICATIONS

		9450 with High-Energy System
Energy range	J ft-lb	0,59 - 1800 0,44 - 1330
Impact velocity	m/s ft/s	0,77 - 24 2,53 - 78,7
Drop height	m in	0,03 - 29,4 (equivalents) 1,18 - 1160 (equivalents)
Mass range[1]	kg lbs	2,00 - 70,0 4,41 - 154
Mass increments	kg lbs	0,5 1,1
Force transducers	kN lbs	0,45 to 222 101 to 50000
Machine dimensions (w x d x h)	mm in	1015 x 866 x 3180 40 x 34 x 125,2
With thermostatic chamber (w x d x h)	mm in	1015 x 1150 x 3180 40 x 45,3 x 125,2
Test area dimensions (w x d x h)	mm in	700 x 720 x 570 27.5 x 28.3 x 22.4
With thermostatic chamber (w x d x h)	mm in	550 x 540 x 500 21,6 x 21,3 x 19,7
Machine weight	kg lbs	775 1708
With thermostatic chamber	kg lbs	925 2039
Load on slab in static condition[2]	kg/m2 N/m2	2020 19816
Concentrated load on feet	kg/cm2 N/cm2	4,3 43
Electrical supply	-	220-240V 50/60Hz 100-120V 50/60Hz
Compressed air supply	bar psi	6 to 10 72,5

1 Includes an average tup weight of 0,7 kg (1,54lbs)
2 Load in dynamic conditions depends on the test type and impact forces

		9450 with Large Base
Energy range	J ft-lb	0,59 - 757 0,44 - 558
Impact velocity	m/s ft/s	0,77 - 4,65 2,53 - 15,3
Drop height	m in	0,03 - 1,10 1,18 - 43,3
Mass range[1]	kg lbs	2,00 - 70,0 4,41 - 154
Mass increments	kg lbs	0,5 1,1
Force transducers	kN lbs	0,45 to 222 101 to 50000
Machine dimensions (w x d x h)	mm in	1520 x 940 x 2870 60 x 37 x 113
With thermostatic chamber (w x d x h)	mm in	-
Test area dimensions (w x d x h)	mm in	1200 x 730 x 745 47.2 x 28.7 x 29.3
With thermostatic chamber (w x d x h)	mm in	-
Machine weight	kg lbs	1125 2480
With thermostatic chamber	kg lbs	-
Load on slab in static condition[2]	kg/m2 N/m2	1200 11772
Concentrated load on feet	kg/cm2 N/cm2	3,4 33
Electrical supply	-	220-240V 50/60Hz 100-120V 50/60Hz
Compressed air supply	bar psi	6 to 10 72,5

1 Includes an average tup weight of 0,7 kg (1,10lbs)
2 Maximum parallelepiped inscribable in the base
3 Load in dynamic conditions depends on the test type and impact forces

9400 SERIES SPECIFICATIONS

		9450 with Large Base & High-Energy System
Energy range	J ft-lb	0,59 - 1800 0,44 - 1330
Impact velocity	m/s ft/s	0,77 - 24 2,53 - 78,7
Drop height	m in	0,03 - 29,4 (equivalents) 1,18 - 1160 (equivalents)
Mass range[1]	kg lbs	2,00 - 70,0 4,41 - 154
Mass increments	kg lbs	0,5 1,1
Force transducers	kN lbs	0,45 to 222 101 to 50000
Machine dimensions (w x d x h)	mm in	1520 x 940 x 3330 60 x 37 x 132
With thermostatic chamber (w x d x h)	mm in	-
Test area dimensions (w x d x h)	mm in	1200 x 730 x 745 47.2 x 28.7 x 29.3
With thermostatic chamber (w x d x h)	mm in	-
Machine weight	kg lbs	1200 2646
With thermostatic chamber	kg lbs	-
Load on slab in static condition[2]	kg/m2 N/m2	1280 12557
Concentrated load on feet	kg/cm2 N/cm2	3,6 35
Electrical supply	-	220-240V 50/60Hz 100-120V 50/60Hz
Compressed air supply	bar psi	6 to 10 72,5

1 Includes an average tup weight of 0,7 kg (1,10lbs)
2 Maximum parallelepiped inscribable in the base
3 Load in dynamic conditions depends on the test type and impact forces

DROP TOWER SPECIFICATIONS

Data Acquisition Rate and Points:

65’536 points acquired up to 4 MHz, simultaneous on Strain Gauge, Piezoelectric, and Analog channels.

High Speed Camera trigger:

Guarantees simultaneous acquisition across HSC and data acquisition system. Output voltage: 0 to +12 V nominal (*), positive polarity. Output current: maximum 10 mA.

(*) max value depends on absorbed current

Testing Speed Accuracy:

Measured by optical detector ±1%, repeatability ±2% of set value.

Drop Position Accuracy:

Measured by digital encoder ±1 mm, repeatability ±0.5 mm of set value.

Load Measurement:

Piezoelectric and Strain Gauge sensors with selectable working ranges among 10-20-50-100% of the full scale. Traceable and accredited verification certificate can be released for the evaluation of measurement uncertainty.

Overload Capacity:

From 160% to 600% depending on the transducer type.

Force Measurement Accuracy:

Indicated error ≤1% of rated output at full scale and Resolution at zero force for all selectable working ranges 0.04%, both estimated according to ISO 7500-1 Annex C; Linearity ≤1% of the full scale (including charge amplifier for Piezoelectric load cells).

Instrument Supplies:

Electrical 100-120 V, 220-240 V; 50-60 Hz; UL/CSA-ready option available.
Compressed air 6 to 10 bar (72.5 to 145 psi)

Touch Screen:

Flat screen, 21.5”, industrially-rated touch monitor.

Operative System:

Built-in computer is installed with Windows 10 LTSB

Dashboard Overall Dimensions:

525 x 460 x 420 mm (W x D x H)

Extras:

Compatible with Bluetooth/Wi-Fi keyboard and mouse.

Dashboard Supplies:

2 Electrical electrical supplies are required. Multitension 50-60 Hz UL/CSA-ready.

Notes:
These specifications were developed in accordance with Instron’s standard procedures and are subject to change without notice.
All systems conform to all relevant European standards and carry a CE mark.

INSTRON®

"True innovation occurs when product designers and developers show relentless curiosity towards the needs of their customers. This builds an understanding that allows them to anticipate and create a new suite of solutions that are Simpler, Smarter, and Safer."

Yahya Gharagozlou

Group President
ITW Test & Measurement
(Instron is an ITW Company)

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9400 Series Brochure_V1