High Force Universal Testing Machines
100 kN and Above Testing Capacity
For over **70 YEARS** the Instron® brand has been widely recognized for producing some of the most advanced mechanical testing systems in the world. Our systems are designed by industry experts, vetted by active members of major standards organizations, and supported by a global network of skilled and experienced service technicians. This comprehensive approach allows us to back each Instron system with an unmatched level of industry and application expertise designed to support it throughout its lifetime.

- **1500+ employees**
  A highly-educated, experienced, and diverse workforce

- Representing **160 countries**, speaking **40+ languages**

- **50,000+ systems**
  Installed worldwide

- **70+ years** of engineering and manufacturing testing systems

- **Diverse product range**
  For nearly all global markets and industries
HOW WILL HIGH FORCE TESTING SYSTEMS MEET MY NEEDS?

Application-Based Testing Solutions

Instron® high force universal testing machines perform tensile, compression, bend, peel, tear, and other mechanical tests on materials and products to ASTM, ISO, and other industry standards. These systems are available in a range of sizes and maximum force capacities.

From electromechanical systems used to test high-strength metals and advanced composites to static-hydraulic systems for testing materials used in civil infrastructure, Instron has systems suitable for all applications. With over 50,000 systems installed worldwide, businesses and universities involved in quality control and research & development have relied on Instron systems to perform groundbreaking research, develop innovative new materials, and ensure best-in-class manufacturing processes.
 Metals Solutions
From automotive sheet metal to reinforced bar, pipe, and tubing, Instron high force testing systems are ideally suited to meet all of your metals testing needs. As a total solution provider for tension, impact, fatigue, bend/flex, shear, and torsion testing, an Instron system is designed to adapt and grow with the changing needs of your industry.

01 Sheet Metal r & n-value Testing
02 Reinforced Bar Tensile Testing
03 High-Temperature Furnace Testing
04 Plate Steel Tensile Test
05 Fastener Tensile Test
06 Reinforce Bar Bend Test
Instron offers a wide range of grips and adapters compatible with stringent alignment requirements. These accessories allow you to perform tension and/or compression testing without the need to remove the primary grips and compromise system alignment. They are also compatible with chambers for non-ambient testing and advanced extensometry solutions for the most accurate strain measurements.
3300 Electromechanical Testing Systems
Available in 100 kN capacity. Commonly used to perform simple QC tensile, compression, and bend tests.

5900 Electromechanical Testing Systems
Models available in 100 kN, 150 kN, 250 kN, 400 kN and 600 kN Capacity. Commonly used to perform tensile, compression, and bend tests on high-strength metals and alloys, advanced composites, aerospace and automotive structures, bolts, and fasteners.

5900 Static Hydraulic Testing Systems
Models available in 300 kN, 600 kN, 1000 kN, 1500 kN and 2000 kN Capacity. Commonly used to perform tensile, compression, and bend tests on high strength metals and alloys, reinforcing bar, concrete, bolts, and fasteners.
POWER AT YOUR FINGERTIPS
Convenient, Easy-To-Use Features

5900 Productivity Panel

Found on both 5900 Electromechanical and 5900 Static Hydraulic systems, the adjustable user control panel provides multiple function keys and displays that allow the operator to interact with the testing system before, during, and after the test. While working at the load frame, users can perform common testing functions and view key testing information - such as live measurement data and calculation results - without returning to the computer workstation.

View Real-time Data and Results
The 4 user-defined live displays allow you to constantly monitor measurements and real-time results throughout the test.

4 User Defined 'Soft Key' Buttons
Users can toggle the display to enable a variety of operator-initiated test actions..

Protect your Specimen
The Specimen Protect feature prevents the load from exceeding a set threshold, protecting your specimen from damage.

Precise Positioning
The fine position adjustment wheel moves the actuator in very small increments, allowing operators to load specimens without the risk of overload.
Bluehill Universal is the testing industry’s most powerful and advanced testing software and is compatible with all Instron high force systems. Its intuitive workflows are designed to simplify operator training, increase testing efficiency, and minimize safety hazards.

**Live Displays**
Configure unlimited Live Displays to show force, displacement, time, and results that provide users with immediate feedback on current test status.

**Graphs and Controls Charts**
Graphs, most typically displaying force vs. displacement data or stress vs. strain data, can easily be viewed in more detail by pinching to zoom. Multiple graphs can be displayed in the workspace, including control charts in a completely customizable layout.

**Results Table**
Using subsample, users have the ability to sort results by all parameters including operator name, specimen break location, and specific specimen properties.

**Precise Positioning**
Specimen selector allows users to view and manage tests quickly and easily. Press on any specimen to view the graph, results, test inputs, and status, with options to exclude or delete if permissible.
Effortless Workflows
Bluehill Universal’s easy-to-use touch interface optimizes your testing workflow and is designed with ergonomics in mind.

TestProfiler
Build simple cyclic tests that include ramps, holds, and triangle waves. Conditional logic allows you to create looping patterns that help you re-create real-life scenarios with your tests.

Prompted Tests
Users can be guided through the entire testing process with step-by-step instructions, ensuring that your tests remain repeatable, simple, and error-free. The prompts are customizable with your own text and images.
Pre-loaded Templates
Bluehill Universal includes an extensive library of pre-configured methods for some of the most commonly used ASTM, ISO, and EN standards. The methods are packaged in modules that are specific to your testing application.

Instron® Connect
Instron’s unrivaled application expertise and best-in-class service establishes us as the leader in customer satisfaction with the best ownership experience. Instron Connect introduces a powerful communication platform that brings our support engineers even closer to your organization.

Analysis
Replay, analyze, or make modifications to previously tested specimens without having to re-run tests.
Built for Durability

Instron high force systems are designed with durability in mind, protecting your investment and providing decades of repeatable test results.

Tough Frames for Tough Materials
Large diameter columns, integrated hydraulic grips, and thick base beams allow Instron’s Static Hydraulic systems to stand up to the strongest materials in the world.

Guarding for Debris
Precision components are protected from the debris and scale produced when testing reinforced bar and concrete.

Hydraulically Driven for High Forces
Driven by a hydraulic actuator, these systems can withstand the shock load associated with high energy breaks, reducing wear on mechanical components and dissipating high-energy efficiently.

Variable Pressure Hydraulic Pumps
All static hydraulic machines are powered by Instron’s variable pressure pump technology that builds pressure proportional to tensile load. The system remains at a low idle pressure between tests, which reduces heat generation, noise level, maintenance, and energy consumption.
Stiff Frames for High-Strength Materials

Pre-loaded bearings, precision ball screws, a thick crosshead and base beam, and low-stretch drive belts contribute to better performance by producing more accurate modulus and strain values and minimizing the energy stored during a test. This is especially evident when testing high-strength materials such as aerospace composites, metal alloys, and crystalline polymers.

Precision Guidance for Alignment

When performing a uniaxial test, accurate stress and strain results can only be achieved with a system that contains robust, precise guide columns that ensure minimal specimen bending under load.

Large Motors for Better Reliability

Reliability is built into 5900 Series load frames through the use of powerful motors with reserve capacity. This allows for quicker rates of acceleration when starting a test and faster turnaround time when performing a cyclic test. It also ensures that your testing always occurs at the required speed for the duration of each test.

Servo-Controlled Drive System

Along with a powerful motor, the 5900 Series drive system consists of a rugged steel casting with a dual-belt drive system. Unlike gear-reducers, which create backlash and lower drive system stiffness, the dual-belt system provides synchronous movement of the ball screws, which eliminates crosshead tilt and aids alignment.
Load Cell Construction

The highest quality mechanical and electrical components ensure maximum performance levels and produce the most accurate results. Temperature compensation, on-board calibration ID, data storage, and superior resistance to off-center loading are some of the features that set Instron-designed load cells apart from the competition.

Unparalleled Load Verification

Instron’s significant investment in primary force calibration standards is unique in the industry and ensures the highest level of force measurement accuracy. Our factory-based calibration laboratory possesses capabilities normally found only in a National Standards Laboratory.

Superior Stiffness and Alignment

All 5900 Series systems are designed to provide higher stiffness and precise alignment for testing everything from medical devices to high-strength composites. Rigid mechanical design ensures the best possible conditions for repeatable tests and reliable results.

Engineered for Precision

Instron’s commitment to quality means no detail is overlooked. Every component is designed and manufactured knowing that it ultimately effects the accuracy of the testing data.
System Safety
5900 systems automatically detect and stop at maximum load cell capacity to prevent damage to the load cell, system, or accessories.

Specimen Safety
Specimen Protect prevents excessive forces from being applied to the specimen during setup, protecting your critical specimens from damage.

Operator Safety
Operator safety is an integral component of all Instron® test systems and has led to the creation of features such as E-stops, dual limit switches, optional debris shields, and other types of guarding.

Designed for Safety
Safety forms the core of Instron’s high force systems. A host of safety features have been engineered into the systems to ensure safety of your operators, specimens, system, and data.
Extend
Instron’s Extend Retrofit program updates your legacy systems to the 5900 control platform, which ensures the reliability of your older system and increases its capabilities.

T-Slot Table
Available for testing components, parts, or unusual shapes, the T-Slot table mounts to the load frame base and uses standard hold-down clamps to secure the test piece. (Wide model shown)

Furnace
Furnace are available for testing up to 1050° C, meeting temperature stability requirements of ISO6892-2, ASTM E21, JIS G0567, EN 2002-2 & EN10002-5.

Flexibility for Customization
Instron’s high force systems are ready to grow with the needs of your operation. With hundreds of modular accessories, your system can be used for tests ranging from adhesive peel to concrete compression.
The AVE 2 is a non-contacting video extensometer that provides accurate and repeatable strain measurement without affecting material properties.

Standard and custom extra wide and extra tall models are available to suit a variety of unique applications such as large samples or high extension materials. (Extra tall and wide model shown)

This high-accuracy automatic extensometer produces reliable and repeatable results with no manual steps. (Biaxial model shown)
Instron® is among the largest suppliers of materials testing systems in the world. Our reliable testing systems are designed to run critical tests 24 hours a day. 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.

Instron Connect allows you to securely share your screen with Instron service professionals and submit service requests directly through your test system. You can also use this portal to easily send test methods and sample data files for review.

6800 Series testing systems can send errors and diagnostics to our expert technical support teams around the world for troubleshooting.

Training courses are available on-site, regionally, at an Instron factory, or online. Utilize our Applications Engineering Lab or Custom Solutions Group for the latest technological advances in materials testing.
On-Site Services

When on-site assistance is needed, our team of 300+ global service engineers can help get you back up and running. Our factory-trained technicians are located all around the world and speak 40+ languages to help solve problems no matter where they occur.

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.
## Specifications

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Accurate, Trusted, Reliable
HIGH FORCE
Testing Systems
THE WORLD STANDARD

We stake our reputation on the integrity of data. From the measurement of primary test data to result generation, we design and manufacture the full data integrity chain (e.g. load cells, sensor conditioning, and software). Additionally, we calibrate more than 90,000 of these sensors annually with the lowest accumulated uncertainty.

30,000+
We service and calibrate more than 30,000 Instron systems in active use worldwide every year.

96%
96% of the Fortune 100 list of the world's largest manufacturing companies use Instron test systems.

18,000+
Instron systems have been cited in more than 18,000 patents since 1975.