6800 Series

Universal Testing Systems



INSTRON®



6800 SERIES: the NEXT GENERATION of Universal Testing Systems



For over 80 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.

1,500+ employees
A highly-educated, experienced, and diverse workforce

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

50,000+ systems
installed worldwide

80 years of engineering and manufacturing testing systems

Diverse product range
for nearly all global markets and industries

SOLUTIONS FOR ALL OF YOUR TESTING NEEDS

Application-Based Testing Solutions 500 N to 100 kN

The 6800 Series universal testing systems provide exceptional performance with unparalleled accuracy and reliability. Offering up to 5 kHz data acquisition and ±0.5% accuracy down to 1/1000th of load cell capacity, the 6800 Series offers ultimate flexibility for any testing need.

SINGLE COLUMN TESTING SYSTEMS

For low force testing needs, the 6800 Series single column models are available in multiple height configurations, with capacities up to **5 kN**.







SCAN THE QR CODE
to learn more and see
the 6800 Series in action.





TABLE MODEL TESTING SYSTEMS

For higher force testing requirements, the 6800 Series dual-column table models are available in multiple height and width configurations, with capacities up to **100 kN**.

SOLUTIONS FOR ALL OF YOUR TESTING NEEDS

Application-Based Testing Solutions 100 kN to 300 kN

FLOOR MODEL TESTING SYSTEMS

The 68FM-100 testing systems provide up to **100 kN** capacity available in standard and extra height testing space options, and two base height options.





FLOOR MODEL TESTING SYSTEMS

The 68FM-300 testing systems provide up to **300 kN** capacity available in standard, extra height, and extra width testing space options, and two base height options.

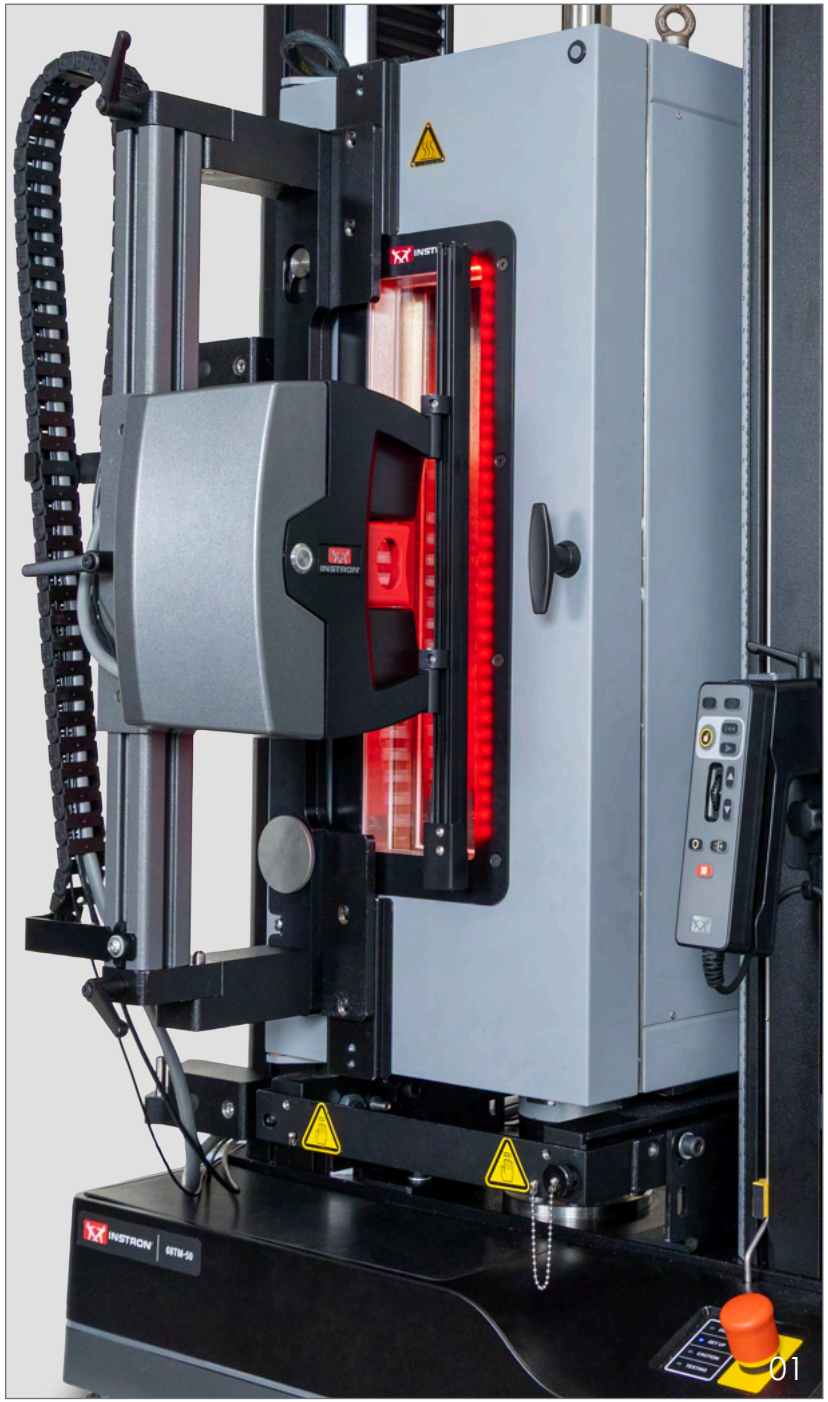
FLEXIBILITY BY DESIGN

Application-Based Testing Solutions

Instron® systems are routinely found in industries that require the testing of plastics, metals, elastomers, composites, and packaging. Some of our key applications can be found in the biomedical, automotive, electronics, and raw materials industries.

The 6800 Series universal testing machines are designed to perform tensile, compression, flex, peel, puncture, friction, shear tests, and more. The systems are compatible with hundreds of grips and fixtures found in Instron's expansive accessories catalog, with specific configurations designed to perform many of the most popular ASTM and ISO tests.

SCAN THE QR CODE
to see Instron's full
Accessories Catalog.



01













Tensile Testing

01 Temperature Chamber with AVE3

02 Pneumatic Cord and Yarn Grips

03 Manual Wedge Action Grips & T-Slot Table

04 Long-Travel (XL) Extensometer

05 BioBath & 250 N Pneumatic Grips

06 Hydraulic Wedge Action Grips

07 1 kN Pneumatic Side Action Grips

FLEXIBILITY BY DESIGN

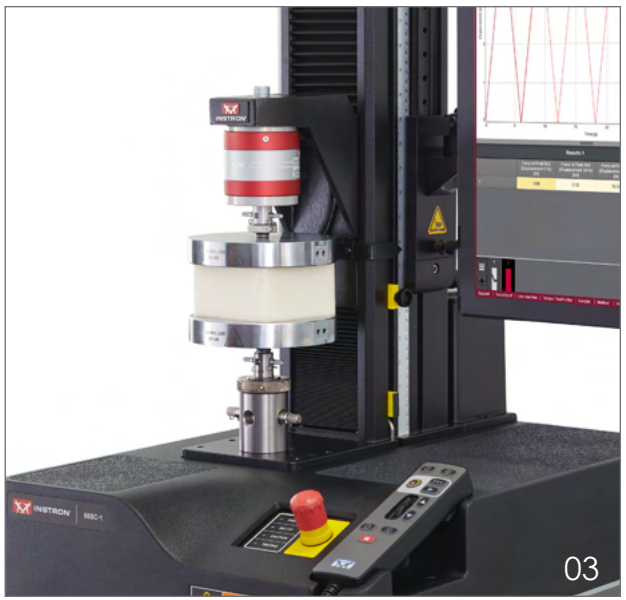
Application-Based Testing Solutions



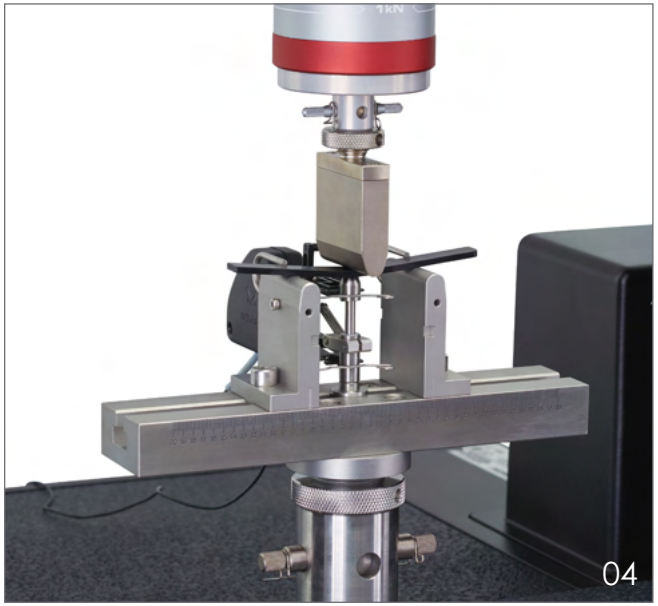
01



02



03


04


05

Compression and Flexure Testing

01 Syringe Compression Fixture

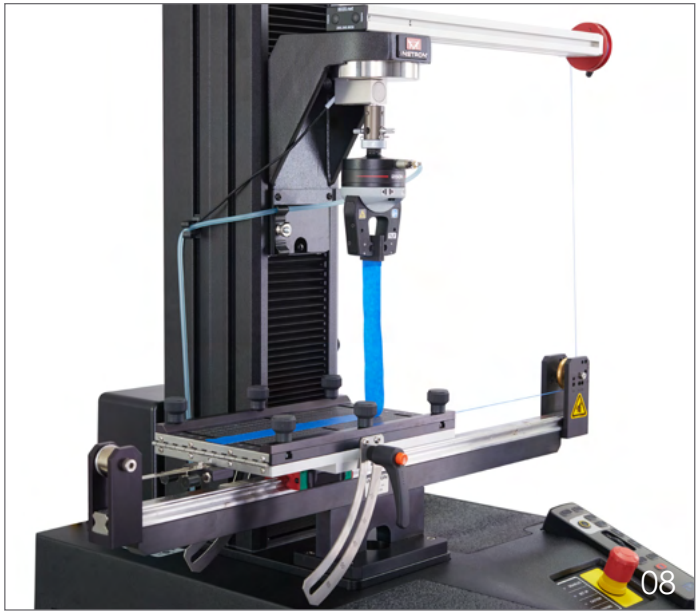
02 Three-Point Bend Fixture

03 Compression Platens

04 Three-Point Bend Fixture with Clip-On Extensometer

05 Compression Fixture with Composite Fixture











Peel, Friction, and Torsion Testing Solutions

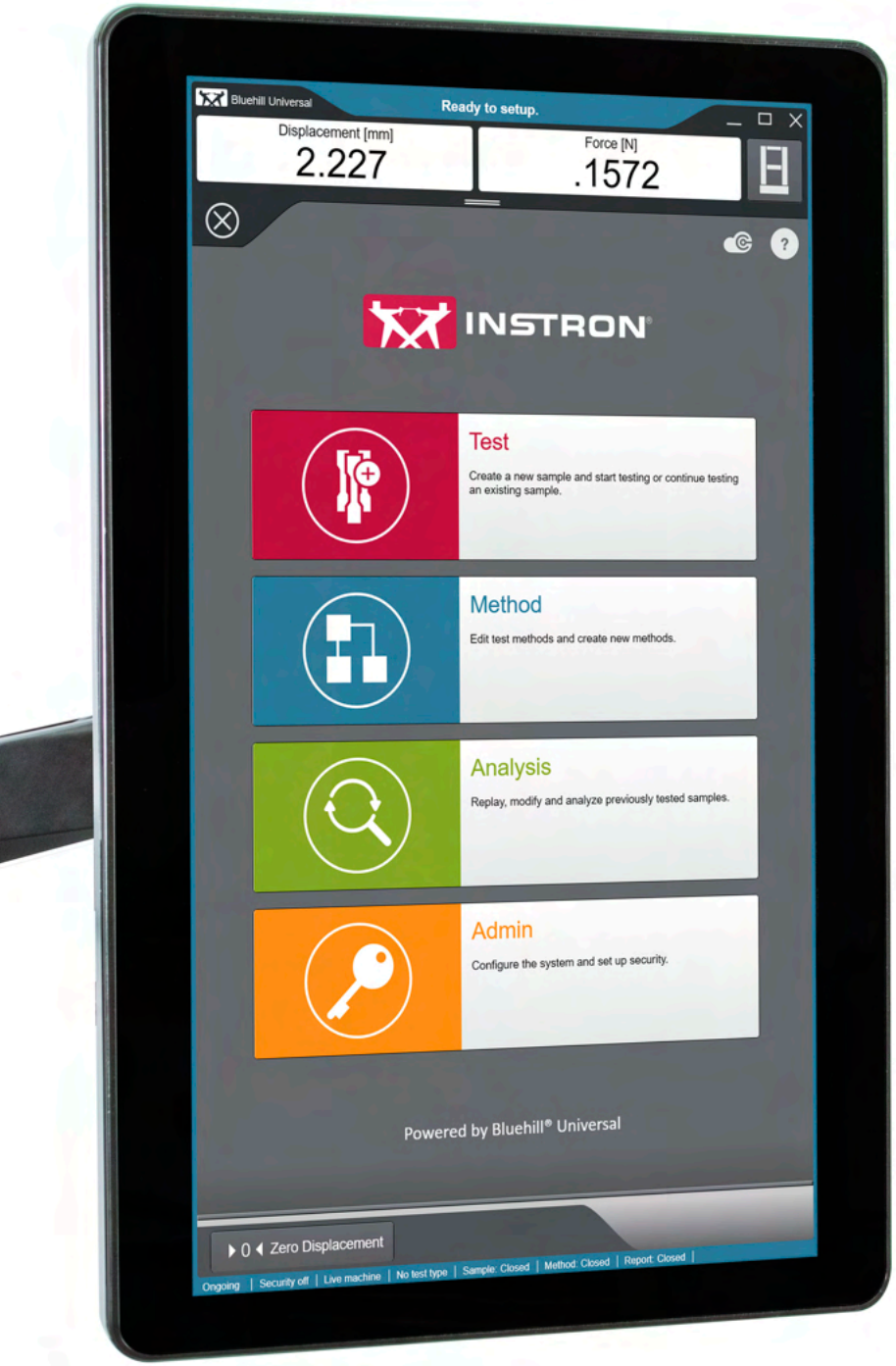
06 Torsion Add-On 3.0

07 Quick-Mount Load Cell Adapter

08 Variable Angle Peel Fixture

09 Fully Enclosed Debris Shield

10 Coefficient of Friction Fixture



SIMPLER

Powered by Bluehill® Universal Software

The 6800 Series universal testing systems are powered by Instron's Bluehill Universal software. Equipped with easy-to-understand icons and workflows, Bluehill Universal software makes it simple to train users and set up tests, helping you maximize lab efficiency while minimizing costly errors.

QuickTest

For when you need results fast, QuickTest allows you to enter a few simple parameters and run your test within seconds.

Pre-Loaded Templates

Bluehill Universal software 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.

Workflow

Workflows guide you through the entire testing process with step-by-step instructions, ensuring that your tests remain repeatable, simple, and error-free. The prompts can be easily customized with your own text and images.



Auto Positioning

Auto Positioning saves the correct fixture separation starting location for each test method. This ensures all operators run each test from exactly the same place across all shifts every day.



TestProfiler

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

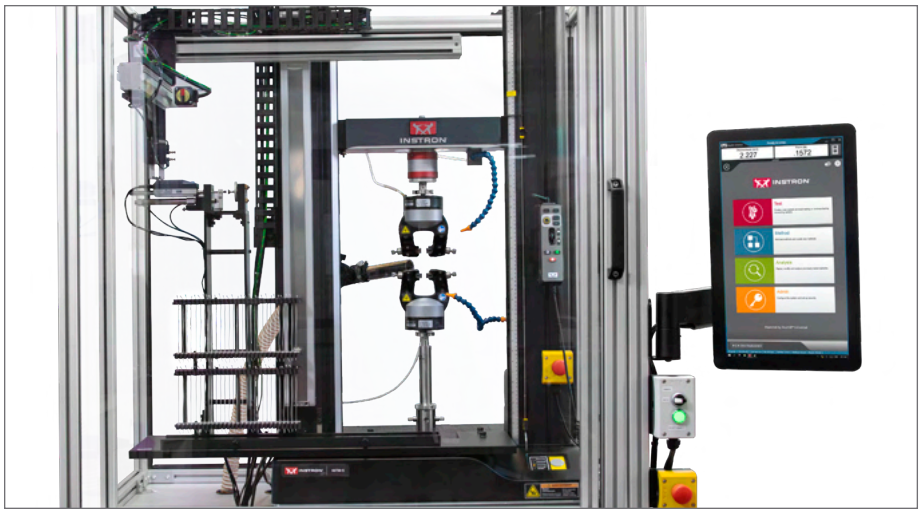
SMARTER

Advanced Performance and Applications

The 6800 Series can be expanded to include digital input/output channels and up to 11 sensor conditioning modules to ensure compatibility with advanced accessories and external devices.

When testing on a 6800 Series frame, you can capture synchronized data at a rate of up to 5 kHz with adjustable bandwidth so you never miss a test event.





Automated Testing Solutions

Automated testing systems built on the 6800 Series enable a new dimension of testing productivity, improve safety, reduce variability, save time, and increase throughput. From XY stages to 6-axis robots, automated testing systems can be configured for any application.



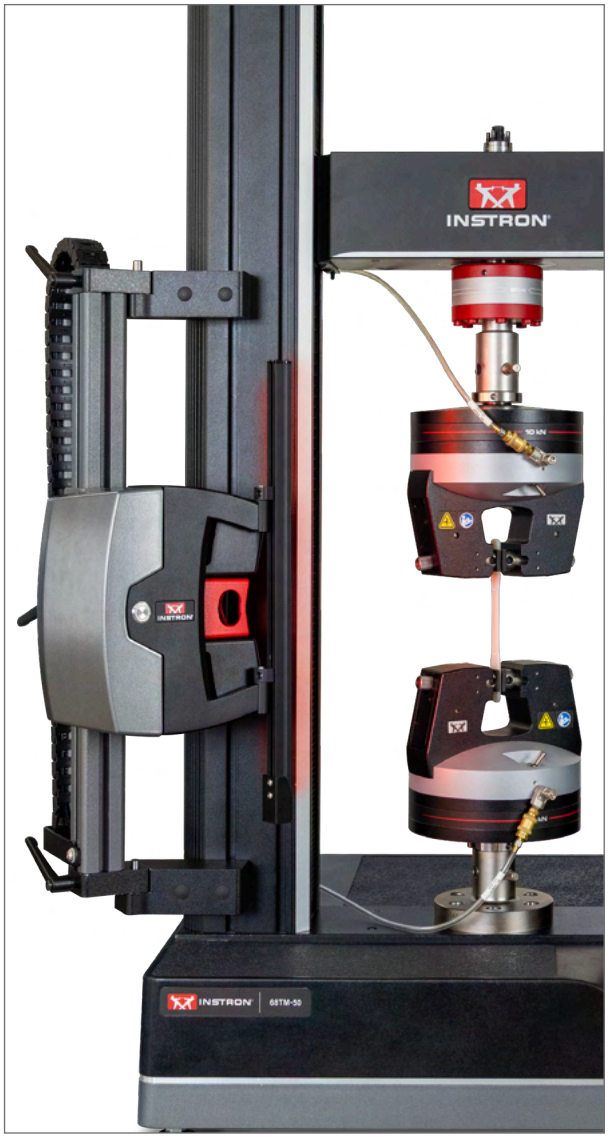
Torsion Add-On 3.0

The Torsion Add-On easily mounts to any 6800 system to enable biaxial testing of components such as bone screws, Luer locks, electrical knobs, and more.



AutoX750

High accuracy automatic contacting extensometer produces reliable and repeatable results with no manual steps.



AVE3

The AVE3 is a non-contacting video extensometer that delivers precise and repeatable strain measurements without physically interacting with the specimen or influencing its material properties.

SAFER

Safety Without Sacrificing Throughput



Operator Protect

The 6800 Series is built on Instron's patented Operator Protect architecture. An intelligent workflow keeps equipment and operators safer by controlling system status and speed from setup to test completion.

Built-in Safety Coaching

The 6800 Series provides clear visual feedback regarding the system status at all times, making it easy to understand when the system is in a safe setup mode. It also provides a clear reminder to exit the test space once these safety limits are removed.

Smart-Close Air Kit

Finger pinch hazards from low-force pneumatic grips are reduced through lower grip-closing pressure and restricted speed during the setup phase of your test.



The 6800 Series handset brings system controls closer than ever before with an all-new ergonomic handset, mounted directly to the frame. Operators can use the handset in the mounted position or removed from its dock.

Customizable Soft Keys

With 2 user-defined “Soft Key” buttons, you can initiate a variety of commands. The Soft Keys can be defined per method, allowing you to customize them for each test.

Virtual Interlock

With Instron’s patent-pending system architecture, the machine’s movement is restricted during setup to prevent unintended motion of the crosshead.

Variable Speed Jog

During setup mode, your system will default to a safe speed appropriate for an operator to work in the test space.

Precise Positioning

The Fine Position adjustment thumbwheel with tactile feedback allows for precision positioning of the crosshead in 4 µm increments when performing sensitive testing.

Specimen Protection

Specimen Protection prevents unwanted forces from being applied to the specimen by automatically making fine adjustments to the crosshead, protecting your valuable specimen from damage.

BUILT TO LAST

Protecting Your Investment



Instron 2580 Series Load Cells

The 2580 Series load cells are specifically designed for use with 6800 Series testing systems, offering exceptional performance with the ability to measure forces as low as 1/1000th of the force capacity to an accuracy of ±0.5% of reading. The Instron® designed and manufactured load cells can withstand loads up to 150% of their force capacity without damage and 300% without mechanical failure. Automatic transducer recognition and electrical calibration makes them easy to use.



Collision Mitigation

Reduce damage to equipment and delicate specimens by stopping the crosshead if force is detected upon return or during a jog.

Load Cell Overload Protection

The 6800 Series systems automatically stop when the load cell reaches maximum capacity to prevent damage to the load cell, system, and accessories.



Simplified Maintenance

The 6800 Series controller electronics can be quickly and easily removed and re-installed by a trained Field Service Engineer. Combined with advanced diagnostics and the ability to remove the system covers to perform maintenance without first removing large and/or heavy accessories means that Service visits are faster and more efficient than ever, increasing your lab's up-time and throughput.



Ingress Improvements

Testing is a messy process, and a reduction in debris ingress has been achieved through gasketing and a patent-pending airflow design. We took additional design steps with the 6800 Series floor models: Internal electrical and mechanical hardware is located safely away from the test area, and an abrasion-resistant coating is applied to the 12 mm metal work surface for durability.



BUILT TO PERFORM

Protecting Your Investment

Precision Guidance for Alignment and Bending

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

Stiff Frames for High-Strength Materials

The 6800 Series is built for high performance. It features pre-loaded bearings, precision ball screws, an extra thick crosshead and base beam, and low-stretch drive belts to ensure superior performance and longevity.

Larger Motors for Better Reliability

The 6800 Series load frames use powerful motors with reserve capacity that allow for quicker rates of acceleration. Maintenance-free brushless AC servomotors enable cyclic, creep, and relaxation testing for up to 10 days (up to 1 Hz at 25 °C).

Servo-Controlled Drive System

Along with a powerful motor, the 6800 Series drive system consists of a rugged steel casting with a dual-belt drive system. Unlike systems that use gear-reducers, which create backlash and lower drive system stiffness, the dual-belt system provides synchronous movement of the ball screws, eliminating crosshead tilt and aiding system alignment.



Built to Perform

The high force system has been fortified against shock and vibration which allows for continuous testing at the maximum rated frame capacity, and the maintenance-free brushless AC servomotors support continuous cyclic, creep, and relaxation testing for up to 10 days.

Built to Last

Reduction in debris ingress has been achieved on floor models through gasketing and a patent-pending airflow design. Internal electrical and mechanical hardware is located safely away from the test area. The 12 mm metal work surface is treated with an abrasion-resistant coating for durability.

Ergonomic Design

The tall base option on floor model systems provides an ergonomically comfortable testing station. The contoured design provides easy access to the testing space for fixture assembly as well as a comfortable reach to an all-new ergonomic handset which offers customizable soft keys, Specimen Protection, and a fine position adjustment wheel.

SUPPORT FOR THE LIFE OF YOUR EQUIPMENT

Protecting Your Investment

Instron® is one of the largest suppliers of materials testing systems in the world. Our reliable systems are engineered to perform critical tests around the clock. And when questions arise or support is needed, we offer a wide range of resources to ensure you get the help you need, quickly and efficiently.



Instron Connect

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.



Mobile Support

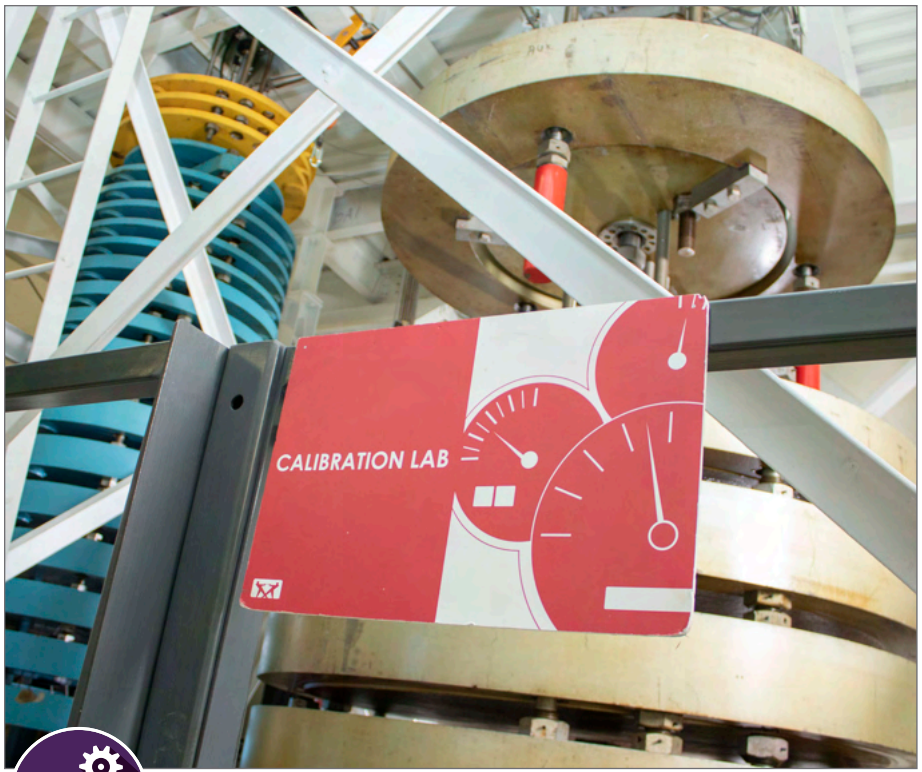
Instron offers access to a troubleshooting tool that can help you self-diagnose issues with easy-to-follow steps created by our technical experts.



Training

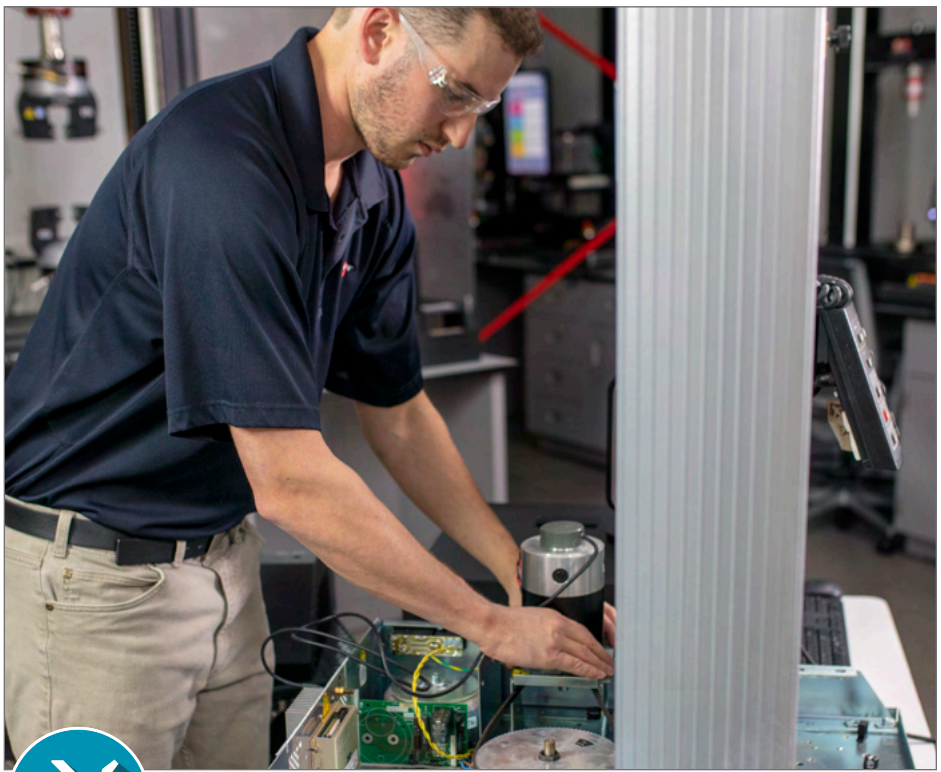
Training courses are available on-site, regionally, at an Instron factory, or online. Utilize our Applications Engineering Lab or Custom Solutions Group for all the latest technological advances in materials testing.

SCAN THE QR CODE
to learn more about how Instron
can help protect your investment.



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.



On-Site Services

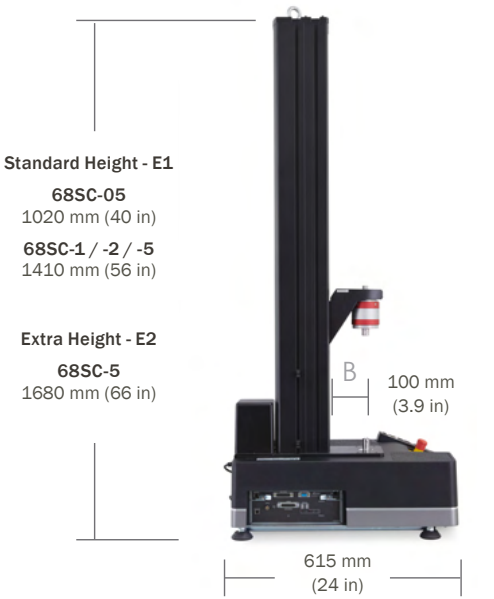
When on-site assistance is needed, our team of 300+ global Field Service Engineers can help get you back up and running. Our factory-trained technicians are located all around the world and speak 40+ languages to help solve problems no matter where they occur.

6800 SERIES SPECIFICATIONS

Single Columns

		68SC-05	68SC-1	68SC-2	68SC-5
Force Capacity	kN	0.5	1	2	5
	lbf	112	225	450	1125
Crosshead Travel	mm	505	868	868	868 (E1), 1112 (E2)
	in	19.9	34.2	34.2	34.2 (E1), 43.8 (E2)
Vertical Test Space (A)	mm	738	1118	1118	1118 (E1), 1375 (E2)
	in	29.1	44.0	44.0	44.0 (E1), 54.1 (E2)
Horizontal Test Space (B)	mm	100	100	100	100
	in	3.9	3.9	3.9	3.9
Maximum Speed	mm/min	2540	2540	2540	2540
	in/min	100	100	100	100
Minimum Speed	mm/min	0.001	0.001	0.001	0.001
	in/min	0.00004	0.00004	0.00004	0.00004
Maximum Return Speed	mm/min	2540	2540	2540	2540
	in/min	100	100	100	100
Position Control Resolution	nm	9.5	9.5	9.5	9.5
	µin	0.38	0.38	0.38	0.38
Frame Axial Stiffness	kN/mm	8.5	8.5	8.5	8.5
	lb/in	48500	48500	48500	48500
Maximum Force at Full Speed	kN	0.5	1	2	2.5
	lbf	112	225	450	562
Maximum Speed at Full Force	mm/min	2540	2540	2540	1270
	in/min	100	100	100	50
Footprint Dimensions (h × w × d)*	mm	1020 × 460 × 615	1410 × 460 × 615	1410 × 460 × 615	1410 × 460 × 615
	in	40 × 18 × 24	56 × 18 × 24	56 × 18 × 24	56 × 18 × 24
Weight	kg	55	62	62	62 (E1), 67 (E2)
	lb	121	136	136	136 (E1), 148 (E2)
Maximum Power Requirements	VA	700	700	700	700





* The footprint width is for the system only. The Operator Dashboard monitor may add 250 mm (10 in) to the overall width of the frame.
The extra height (E2) option for the 68SC-5 adds 27 cm (10 in) to the overall height of the frame.

Table Models





		68TM-5	68TM-10	68TM-30	68TM-50	68TM-100
Force Capacity	kN	5	10	30	50	100
	lbf	1125	2250	6750	11250	22480
Crosshead Travel	mm	1163 (E1), 1648 (E2)	1163 (E1), 1648 (E2)	1119 (E1), 1605 (E2)	1119 (E1), 1605 (E2)	1097 (E1), 1582 (E2)
	in	45.8 (E1), 64.9 (E2)	45.8 (E1), 64.9 (E2)	44.1 (E1), 63.1 (E2)	44.1 (E1), 63.1 (E2)	43.2 (E1), 62.3 (E2)
Vertical Test Space (A)*	mm	1234 (E1), 1739 (E2)	1234 (E1), 1739 (E2)	1190 (E1), 1695 (E2)	1190 (E1), 1695 (E2)	1168 (E1), 1672 (E2)
	in	48.6 (E1), 68.5 (E2)	48.6 (E1), 68.5 (E2)	46.8 (E1), 66.7 (E2)	46.8 (E1), 66.7 (E2)	46 (E1), 65.8 (E2)
Horizontal Test Space (B)	mm	420	420	420 (F1), 947 (F2)	420	420
	in	16.5	16.5	16.5 (F1), 37.2 (F2)	16.5	16.5
Maximum Speed	mm/min	3048	2032	1016	762	508
	in/min	120	80	40	30	20
Minimum Speed	mm/min	0.001	0.001	0.001	0.001	0.001
	in/min	0.00004	0.00004	0.00004	0.00004	0.00004
Maximum Return Speed	mm/min	3500	2100	1100	800	508
	in/min	138	83	43	31	20
Footprint Dimensions (h × w × d)**	mm	1640 × 760 × 715	1640 × 760 × 715	1640 × 760 × 715	1640 × 760 × 715	1640 × 760 × 715
	in	65 × 30 × 28	65 × 30 × 28	65 × 30 × 28	65 × 30 × 28	65 × 30 × 28
Position Control Resolution	nm	9.9	4.9	2.6 (F1), 2.8 (F2)	1.8	2.69
	µin	0.39	0.19	0.10 (F1), 0.11 (F2)	0.07	0.08
Frame Axial Stiffness	kN/mm	45	50	140 (F1), 88 (F2)	180	180
	lb/in	256,950	285,500	799,000 (F1), 502,000 (F2)	1,027,000	1,027,000
Maximum Force at Full Speed	kN	2.5	5	15	25	50
	lbf	563	1125	3372	5620	11250
Maximum Speed at Full Force	mm/min	1524	1016	508	381	254
	in/min	60	40	20	15	10
Weight	kg	139 (E1), 154 (E2)	139 (E1), 154 (E2)	196 (E1+F1), 215 (E2+F1) 453 (E1+F2), 471 (E2+F2)	255 (E1), 278 (E2)	266 (E1), 295 (E2)
	lb	307 (E1), 340 (E2)	307 (E1), 340 (E2)	433 (E1), 473 (E2) 999 (E1+F2), 1038 (E2+F2)	562 (E1), 612 (E2)	586 (E1), 651 (E2)
Maximum Power Requirements	VA	1400	1400	1400 (F1) 1500 (F2)	1400	1200

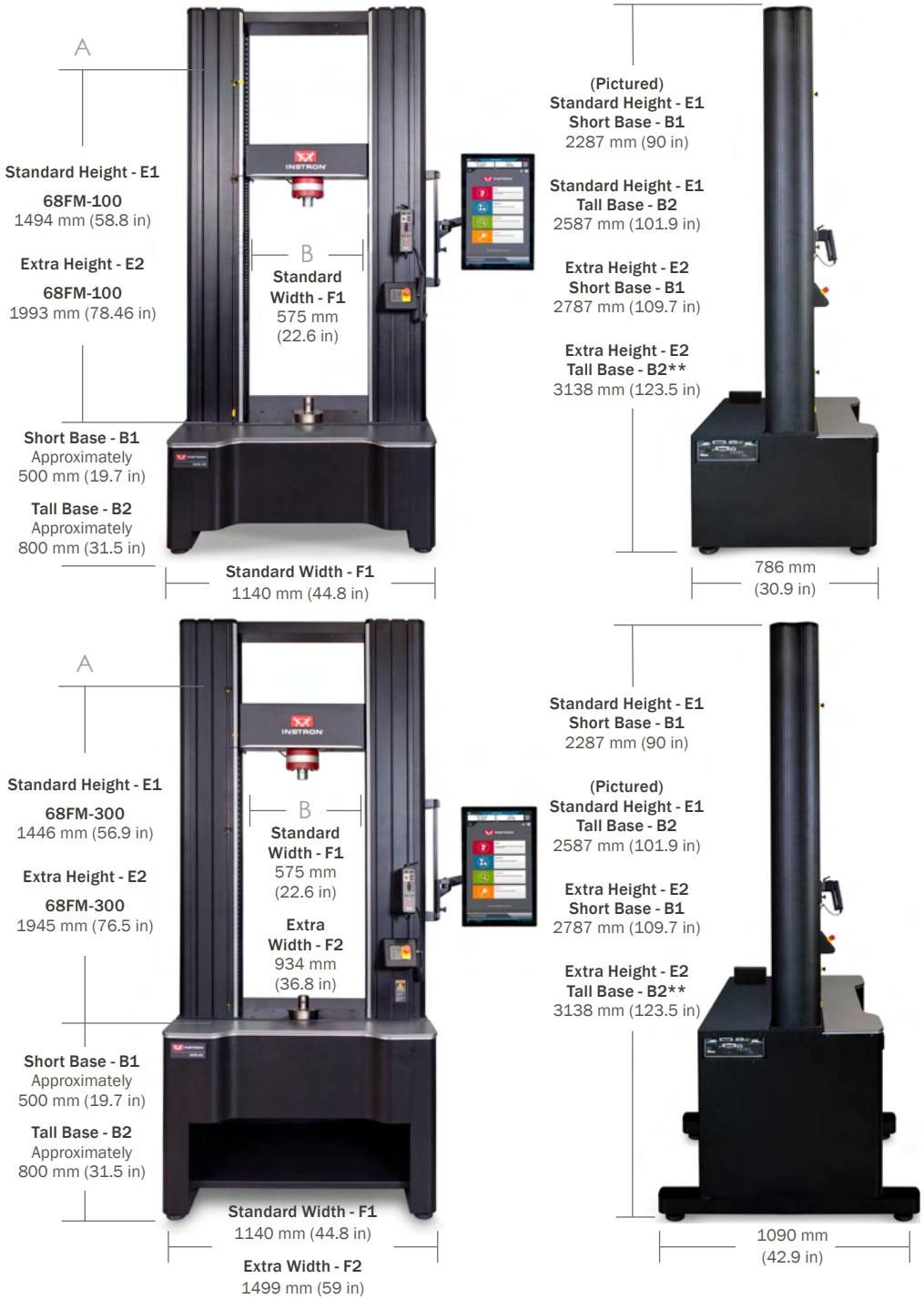
* The F2 option for 68TM-30 reduces test space by 53 mm (2 in).

** The footprint width is for the system only. The Operator Dashboard monitor may add 450 mm (18 in) to the overall width of the frame. The extra height (E2) option adds 530 mm (21 in) to the overall height of the frame.

6800 SERIES SPECIFICATIONS

Floor Models

		68FM-100	68FM-300
Force Capacity	kN	100	300
	lbf	22480	67440
Crosshead Travel	mm	1407 (E1), 1906 (E2)	1359 (E1), 1858 (E2)
	in	55.3 (E1), 75 (E2)	53.5 (E1), 73.1 (E2)
Vertical Test Space (A)	mm	1494 (E1), 1993 (E2)	1446 (E1), 1945 (E2)
	in	58.81 (E1), 78.46 (E2)	56.9 (E1), 76.5 (E2)
Horizontal Test Space (B)	mm	575 (F1)	575 (F1), 934 (F2)
	in	22.6 (F1)	22.6 (F1), 36.8 (F2)
Maximum Speed	mm/min	1016 (1PH), 1080 (3PH)	508 (1PH), 560 (3PH)
	in/min	40 (1PH), 42 (3PH)	20 (1PH), 22 (3PH)
Minimum Speed	mm/min	0.00005	0.00005
	in/min	0.000002	0.000002
Maximum Return Speed (1 & 3 Phase)	mm/min	1016 (1PH), 1160 (3PH)	508 (1PH), 640 (3PH)
	in/min	40 (1PH), 45.6 (3PH)	20 (1PH), 25.1 (3PH)
Position Control Resolution	nm	2.215625	1.140395
	µin	0.087	0.044
Frame Axial Stiffness	kN/mm	300	350
	lb/in	1713044	1998552
Maximum Force at Full Speed	kN	50 (1PH), 75 (3PH)	125 (1PH), 150 (3PH)
	lbf	11240 (1PH), 16860 (3PH)	28100 (1PH), 33720 (3PH)
Maximum Speed at Full Force	mm/min	508 (1PH), 762 (3PH)	153 (1PH), 280 (3PH)
	in/min	20 (1PH), 30 (3PH)	6 (1PH), 11 (3PH)
Footprint Dimensions (h × w × d)*	mm	2287 (B1), 2587 (B2) × 1140 (F1), 1499 (F2) × 786	
	in	90 (B1), 101.9 (B2) × 44.89 (F1), 59 (F2) × 30.9	
Weight**	kg	799.2 (E1), 860.9 (E2)	871.5 (E1), 947.6 (E2)
	lb	1762 (E1), 1898 (E2)	1921 (E1), 2089 (E2)
Maximum Power Requirements	VA	3000 (1PH), 4200 (3PH)	3000 (1PH), 4200 (3PH)



* Standard height and short base dimensions only. The extra height (E2) option adds 499 mm (19.6 in) to overall height, the tall base (B2) option adds 300 mm (11.8 in) to overall height. The footprint width is for the system only. The Operator Dashboard monitor may add 500 mm (19.7 in) to the overall width of the frame. Extra Height (E2) with Tall Base (B2) footprint also includes stabilizers, adding 91 kg (200 lb) to the weight.

** Tall Base variants add 62 kg (136 lb) to the weight. Extra wide (F2) variants add 300 kg (661 lb) to the weight.

SPECIFICATIONS & REQUIREMENTS

Data Acquisition Rate at the PC:

Up to 5 kHz simultaneous on force, displacement, and strain channels

Strain Measurement Accuracy:

Meets or exceeds ASTM E83, BS 3846, ISO 9513, and EN 10002-4 standards

Displacement Measurement Accuracy:

±0.01 mm or 0.05% of displacement (whichever is greater)

Testing Speed Accuracy:

(Zero or constant load) ±0.1% of set speed

Single Phase Voltage[1] :

100, 120, 220, or 240 VAC ±10%, 47 to 63 Hz

Three Phase Voltage[2] :

208, 240, 400 VAC ±10%, 47 to 63 Hz

Operating Temperature:

+5 to +40°C (+41 to +104°F)

Storage Temperature:

-25 to +55°C (-13 to +131°F)

Load Measurement Accuracy:

± 0.5% of reading down to 1/1000th of load cell capacity with 2580 Series load cells

± 0.5% of reading down to 1/250th of load cell capacity with 2530 Series load cells

± 1.0% of reading down to 1/500th of load cell capacity with 2530 Series load cells

Ingress Protection (IP) Rating:

IP 2X. Protective measures may be required if excessive dust, corrosive fumes, electromagnetic fields, or hazardous conditions are encountered.

Humidity Range:

+10 to +90%, non-condensing at 20°C

UL & CE Status:

All 6800 Series machines are CE marked. 68TM frames are UL Certified as standard;[3] UL inspection and labeling is available for 68SC and 68FM frames.

Notes:

1. Applies to all 68SC, 68TM, and 68FM systems. 6800 Series floor model systems come with reduced load and speed rating at 208 to 240 VAC -5% / +10%.
2. Applies to 68FM-100 and 68FM-300.
3. Applies to 68TM frames shipped on or after October 26, 2026.

These specifications were developed in accordance with Instron's standard procedures and are subject to change without notice.

6800 SERIES:
the **NEXT**
GENERATION of
Universal 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.

www.instron.com

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