

SATEC™ Series

High Capacity Universal Testing Systems



Revolutionary Products for High Capacity

Affordably Priced Universal Testing Machines for High Capacity Applications in a Compact Package

Instron® introduces its new SATEC™ series of universal testing systems. By building on years of experience, Instron has kept the best of its static hydraulic technology while infusing this new SATEC series with compact packaging, a modern appearance, high-performance electronics and leading edge software.

Cost-Effective Technology for High Capacity Testing

Developed for high capacity testing, these frames use hydraulics to cost-effectively provide the forces necessary for static tension, compression, bend and shear testing. Both models in the series are available in 150 kN, (33,750 lbf), 300 kN (67,500 lbf) and 600 kN (135,000 lbf) capacities.

Single Footprint Design Saves Floor Space

Available in LX and DX models, these new single footprint testing systems combine the load frame, hydraulic power supply, electronics and control panel into a single package - reducing floor space requirements by more than 60%. Labs can now perform high capacity testing affordably and without sacrificing valuable lab space.

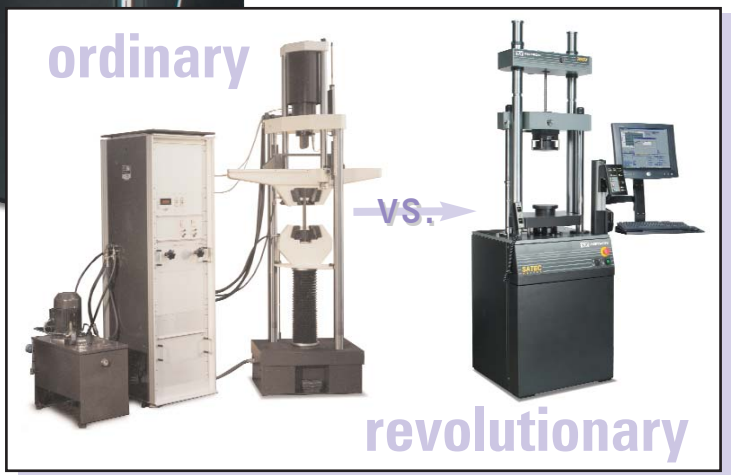
Superior Technology for Measuring Force Directly

SATEC series frames use strain gauge load cell technology to independently and directly measure the force being applied to the specimen. In contrast, older designs that feature pressure transducers measure force indirectly based on oil pressure. Indirect measurement requires cumbersome mechanics and techniques to overcome piston friction, compensate for hydraulic oil weight and prevent the piston from sticking on the cylinder bottom. By eliminating these mechanics and directly measuring force, the load cell technology of the SATEC series offers superior accuracy, precision and repeatability with less maintenance.



▲ 300LX frame configured for metals testing (left). 300DX frame configured for stranded wire testing (right).

► Other systems require a frame, control unit and hydraulic pump - wasting space and complicating cable runs (left). The new SATEC series eliminates these flaws with a single footprint design (right).



User Interfaces for Flexible and Productive Testing

The SATEC™ series comes with a choice of universal testing software providing the ultimate in ease-of-operation and flexibility. Testing can be further enhanced with the addition of the productivity panel that provides convenient access to the most widely used testing functions.

Advanced Electronics for First-Class Testing

Instron® digital control electronics feature advanced designs that provide high accuracy and fast response. Single range signal conditioners provide high resolution throughout the entire measuring range, simplifying control loop tuning and eliminating range change transients. Synchronous data capture on all channels at up to 500 Hz means no data skew and the best possible fidelity. The integrated controller automatically recognizes and calibrates transducers, eliminating switches, pots and dials. This design avoids costly mistakes by preventing operators from running tests with the wrong transducers or setting up transducers incorrectly.

Control Options for a Variety of Applications

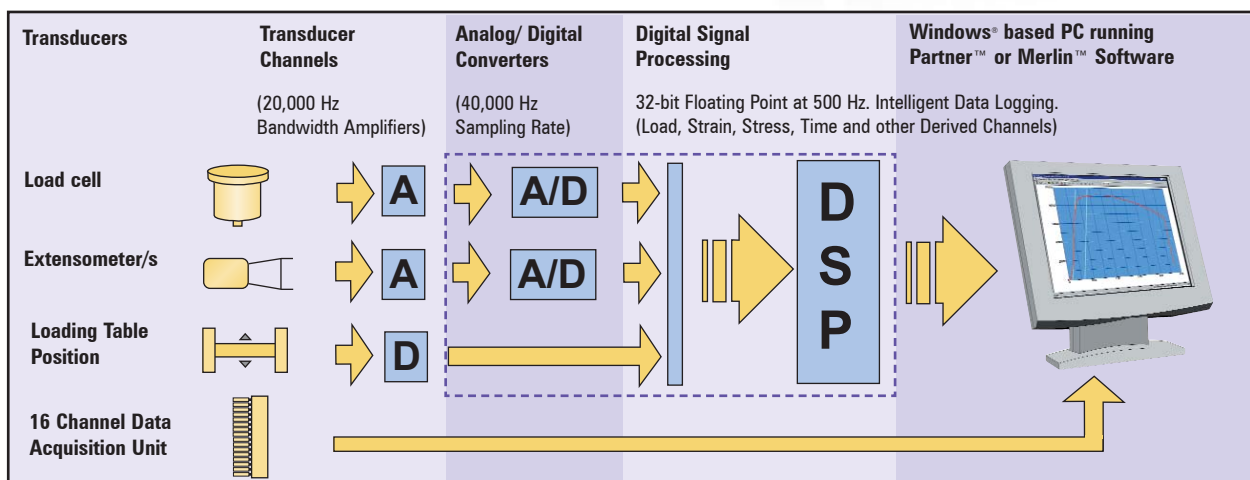
- **Manually controlled** systems for the traditional means of testing. Operators can set and vary the loading speed by adjusting controls mounted at the frame. Labs can run simple tests or maintain consistency with legacy test procedures.
- **Servo controlled** systems for the modern approach to testing. The PC and digital electronics perform closed loop control of the system's servo valve for the most precise and repeatable testing.
- **Servo/ Manual controlled** systems provide the best of both worlds! Test operators can switch back and forth from manual loading to computer controlled servo technology. This option is ideal for labs accustomed to manual testing but wishing to transition to servo. Also perfect for labs that wish to experiment manually on new materials before configuring computer controlled test methods.

Technical Specifications

Controller Data Sampling:	40 kHz.
Controller Data Capture:	Selectable up to 500 Hz. * Intelligent data capture. Synchronous on all channels.
Digital Signal Processor:	32-bit floating point. Self-test diagnostics. Real-time closed-loop control. Real-time data acquisition.
Data Transfer to PC:	750 kbaud high speed serial link.
Transducer Inputs:	Comes with 1 load cell, 1 load channel and 1 position channel. Optional transducers and channels for position and strain are available.
Load Accuracy:	± 0.5% of reading down to 1/250 of load cell capacity
Strain Accuracy:	± 0.5% of reading down to 1/50 of full range to ASTM E 83 class B-1, B-2 or ISO 9513 class 0.5 extensometer
Noise Level:	Below 70 dB
Certifications:	Conform to all relevant European standards and carry a CE mark
Transducer Resolutions:	1 part in 500,000 of ± full scale (19 bits)

* Software data capture rate may vary

Controller Technology



DX Line

Two Test Spaces for the Ultimate in Versatility

Versatile Frame Design

The DX models feature two test spaces so that users can quickly change between tension and compression testing without having to remove heavy fixtures. This flexible design helps to ensure safety, reduces operator fatigue and improves productivity.

These systems feature rigid chrome plated columns, an adjustable upper crosshead which can be positioned via notches and a standard motorized lower crosshead to permit flexibility in configuring the size of the test spaces.

Built-In Wedge Grips

A variety of tensile applications can be performed using the wedge action grips located inside of the crosshead and may eliminate the additional expense of external grips. However, external grips can be connected as needed to enhance the versatility of the frame.

crosshead options



▲ Crosshead Options:

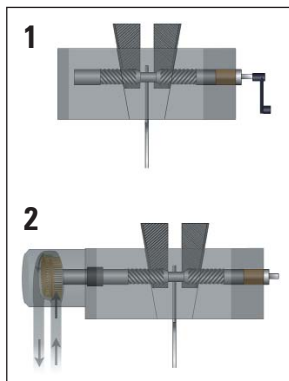
1. Standard crossheads with in-head wedge grip pockets are simple, functional and ideal when budget constraints are a primary concern.
2. Optional crossheads with fully-open front wedge grips make it easier to insert and remove samples for increased productivity.

Mechanical limit switch provides safety and protects your frame.

Tracking neatly routes hoses for optional hydraulic grip actuation.

Strain gauged load cell directly measures force.

grip control



▲ Grip Control Options:

1. Manual cranks provide a cost-effective means of grip control.
2. Hydraulic motors increase efficiency by opening and closing grips at the touch of a button.

Extensometer and load cell connections plug directly into the base of the frame for quick and correct setup.

Model 300DX shown with optional hydraulic grip actuation, monitor mounting arm, productivity panel and compression platens.

tension

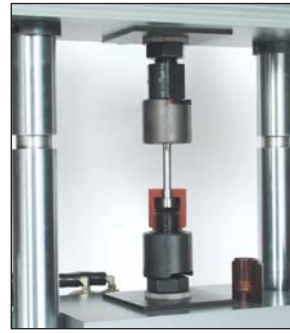
Chrome plated columns for durability.



▲ In-head grips are available in V-slot or flat faces for testing samples such as bar, plate, tube, pipe, sheet and wire.



▲ Furnaces and mounting hardware can be added to test materials at elevated temperatures.



▲ External fixtures and tension rods can be adapted to accommodate a wider variety of tensile specimens.



▲ PC with universal testing software provides the ultimate in ease of operation and flexibility.

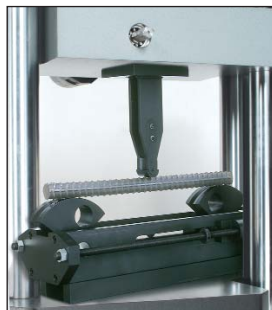


▲ The productivity panel can be added for convenient access to commonly used testing functions including start and stop, channel zero, load/unload and reset gauge length.

system controls

Pump and crosshead controls are conveniently mounted near the testing space for productive testing.

compression shear and flexure



▲ External fixtures and adapters can be added to perform bend, flexure, shear and compression tests on a variety of specimens including rebar (left), concrete (center) and soil samples (right).

small footprint

LX Line

Large Single Test Space for the Ultimate in Adaptability

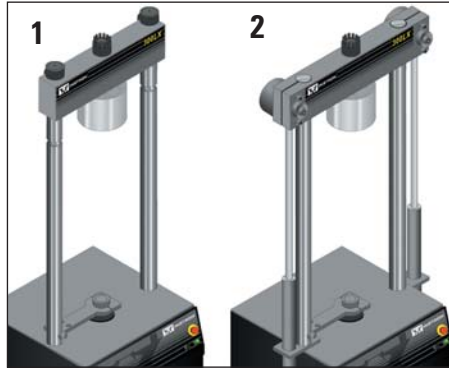
Adaptable Frame Design

The LX models feature an ultra-large single test opening and long test stroke. This design offers the ultimate in adaptability by accommodating a myriad of specimen sizes, grips, fixtures and extensometry. The LX design includes a rigid two-column frame, adjustable crosshead and double-acting hydraulic cylinder with anti-rotation mounted in the machine table.

Application Range

The LX is ideally suited for tensile proof and ultimate strength tests on specimens such as fasteners, chain, threaded end, shoulder end, wire, rod and sheet materials. With appropriate fixtures, the LX frame can also be used for compression, bend and shear testing.

crosshead adjustment



▲ Crosshead adjustment options:

1. Manual crosshead locks and notched columns are simple, functional and ideal when budget constraints are a primary concern.
2. Automatic lifts and locks make it easier to adjust the test opening for different sizes of specimens.

flexible test space



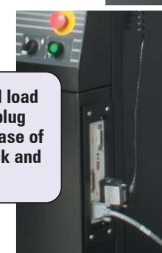
▲ Easily accessible test space is ideal for automatic extensometers.



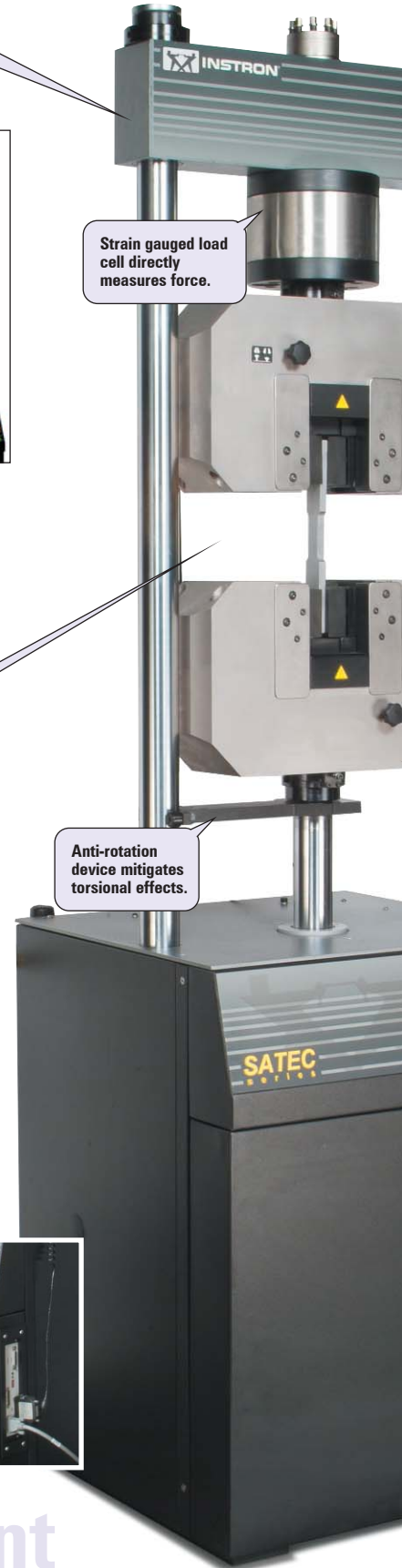
▲ Furnace and mounting hardware can be added to test materials at elevated temperatures.



▲ Large test space accommodates sizeable fixturing.



Extensometer and load cell connections plug directly into the base of the frame for quick and correct setup.

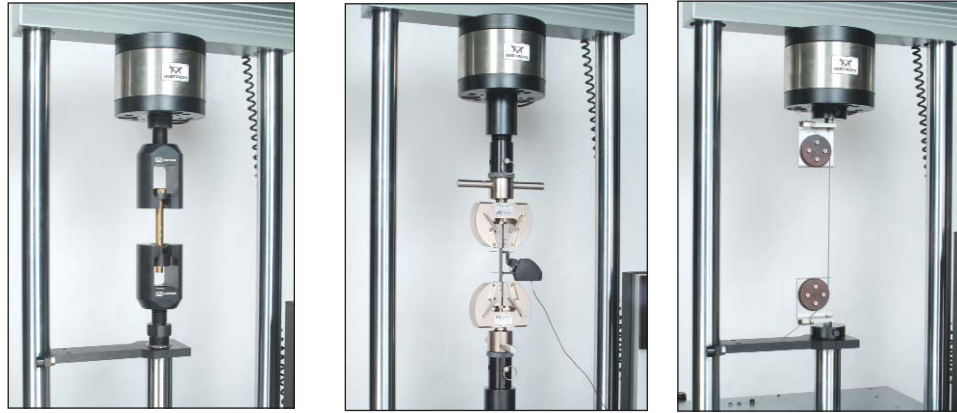


Strain gauged load cell directly measures force.

Anti-rotation device mitigates torsional effects.

small footprint

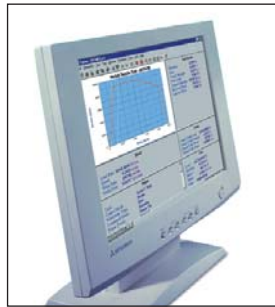
tension



▲ External fixtures, tension couplings and adapters can be added to accommodate a wide variety of tensile specimens including fasteners (left), composites (center) and wire (right).

system controls

Chrome plated columns for durability.



▲ PC with universal testing software provides the ultimate in ease of operation and flexibility.



▲ The productivity panel can be added for convenient access to commonly used testing functions including start and stop, channel zero, load/unload and reset gauge length.

Pump and crosshead controls are conveniently mounted near the testing space for productive testing.

compression shear and flexure



▲ Shear fixture can be adapted to test fasteners, bar and components.



▲ Bend fixtures can be mounted to compression platens or to large tension grips.

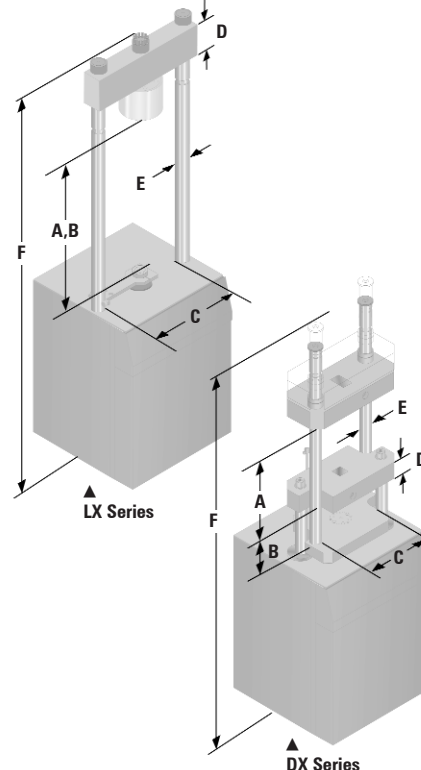


▲ Compression platens can be added to test a variety of materials and components.

▲ Model 300LX shown with optional pneumatic grips and productivity panel.

Specifications

		LX Series			DX Series		
		150LX	300LX	600LX	150DX	300DX	600DX
Frame Capacity	kN	150	300	600	150	300	600
	kgf	15000	30000	60000	15000	30000	60000
	lbf	33750	67500	135000	33750	67500	135000
Tension Opening (A)	mm	489 - 946	489 - 946	489 - 946	77 - 889	77 - 889	77 - 914
	in	19.25 - 37.25	19.25 - 37.25	19.25 - 37.25	3 - 35	3 - 35	3 - 36
Compression Opening (B)	mm	489 - 946	489 - 946	489 - 946	26 - 533	26 - 533	32 - 565
	in	19.25 - 37.25	19.25 - 37.25	19.25 - 37.25	1 - 21	1 - 21	1.25 - 22.25
Between Columns (C)	mm	508	508	609	381	381	508
	in	20	20	24	15	15	20
Power Stroke	mm	305	305	305	152	152	152
	in	12	12	12	6	6	6
Crosshead Thickness (D)	mm	178	178	203	98	98	178
	in	7	7	8	3.875	3.875	7
Column Diameter (E)	mm	64	64	76	64	64	76
	in	2.5	2.5	3	2.5	2.5	3
Table Size (width x depth)	mm	508 x 254	508 x 254	609 x 406	355 x 355	355 x 355	508 x 558
	in	20 x 10	20 x 10	24 x 16	14 x 14	14 x 14	20 x 22
Testing Speed at full load, max.	mm/min	228	152	76	76	76	76
	in/min	9	6	3	3	3	3
Adjusting Speed, max.	mm/min	228	152	76	380	380	380
	in/min	9	6	3	15	15	15
Flat Specimen, Size (thick. x width)	mm	n/a	n/a	n/a	25 x 51	25 x 51	44 x 70
	in				1 x 2	1 x 2	1.75 x 2.75
Round Specimen, Size (diameter)	mm	n/a	n/a	n/a	32	32	51
	in				1.25	1.25	2
Frame Weight	kg	590	590	1474	1000	1000	2041
	lb	1300	1300	3250	2250	2250	4500
Maximum Height (F)	mm	2356	2356	2502	2353	2353	2458
	in	92.75	92.75	98.5	92.63	92.63	96.75
Required Floor Space (width x depth)	mm	675 x 675	675 x 675	915 x 877	675 x 675	675 x 675	915 x 877
	in	26.5 x 26.5	26.5 x 26.5	36 x 34.5	26.5 x 26.5	26.5 x 26.5	36 x 34.5



Common Specifications

- Power Requirements:** Available with 115/230 V, 1 Ph, 60 Hz, 25/12.5A or 110/220 V, 1 Ph, 50 Hz, 25/12.5A or 100/200 V, 1 Ph, 50/60 Hz, 25/12.5A
- Operating temperature:** +10°C to +38°C (+50°F to 100°F)

Notes:

- All specifications are listed for standard systems. Consult with an Instron® sales engineer to confirm test space requirements when adding frame options and accessories.
- Tension opening does not include crosshead thickness.

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