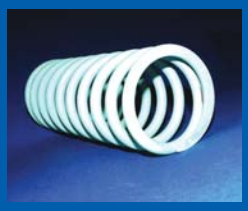

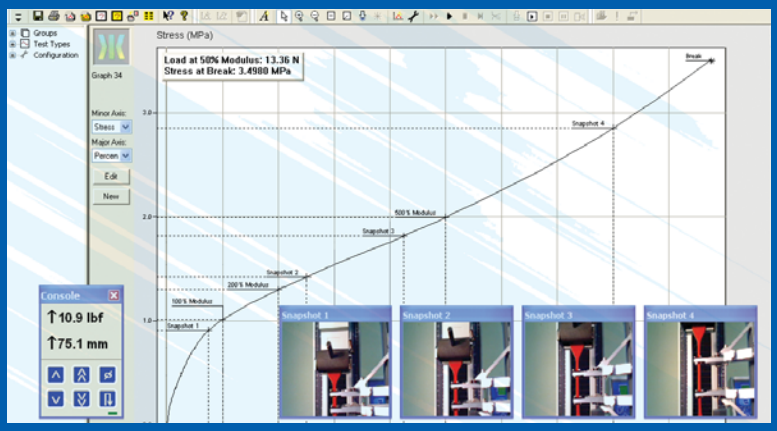

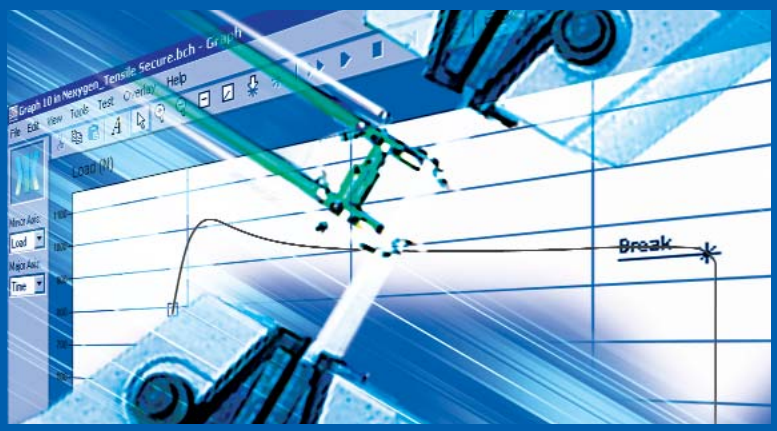

LLOYD INSTRUMENTS™

An AMETEK Company

Materials Testing
Solutions 1 kN - 150 kN
225 lbf - 33722 lbf

AMETEK®
MEASUREMENT & CALIBRATION
TECHNOLOGIES

About Us

Lloyd Instruments is a world-leading manufacturer of innovative materials testing systems offering customers a wide choice of machine models suitable for testing the physical and mechanical properties of any material, component or product.

Lloyd Instruments is part of AMETEK Inc., a global manufacturer of electronic instruments and electromechanical devices with over 80 manufacturing facilities around the world. AMETEK has been a NYSE listed company since 1930 (symbol: AME).

www.ametek.com

Lloyd Instruments offers expert materials test solutions for all types of applications. All of our machines can perform tests such as:

Tensile Strength	Compression
Flexure/Bend Strength	Coefficient of Friction
Puncture Strength	Tear Resistance
Peel Strength	Shear Strength
Delamination Strength	Bond Strength
Adhesion Strength	Break Load
Creep and Stress Relaxation	Crush Resistance
Deformation Strength	Ductility
Elastic Limit	Elongation
Rupture Strength	Young's Modulus
Toughness	Torsion

Contents

LLOYD INSTRUMENTS

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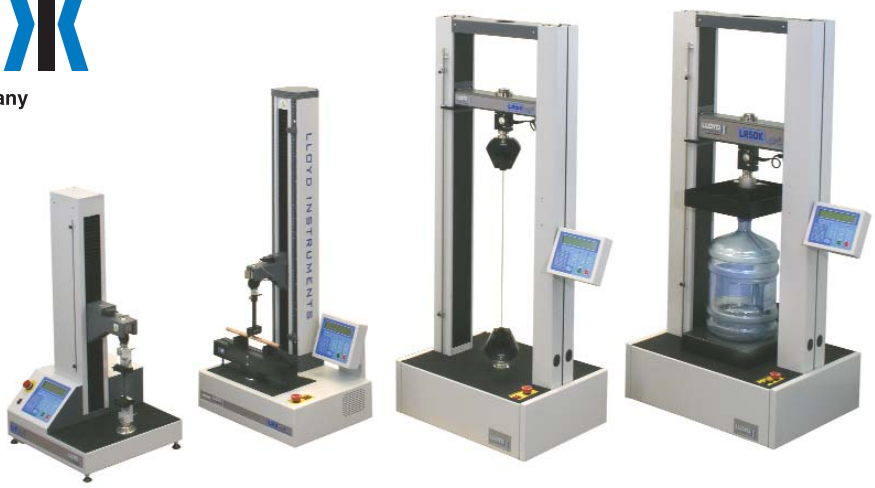

Materials Testing Solutions

1 kN 225 lbf	5 kN 1124 lbf	10 kN 2248 lbf	20 kN 4496 lbf	30 kN 6744 lbf	50 kN 11241 lbf	100 kN 22481 lbf	150 kN 33722 lbf

Lloyd Instruments *Plus* Series of materials testing machines are the culmination of 40 years experience in materials testing. These high performance machines, available in single or twin column design, enable you to make accurate and repeatable force measurements in the range from 0.1 N to 150 kN (0.0225 lbf - 33722 lbf). Depending on the machine, elongations of between 1 micron and 2.5 m (98.4 in) can be measured.

Lloyd Instruments materials testing solutions allow our customers to:

- Develop world-class products through extensive product development testing
- Cost effectively manufacture products to the highest quality
- Demonstrate the superior performance of their products
- Ensure their product is manufactured in conformance with international or industry standards
- Verify their supplier specifications
- Provide traceable test results

The Markets We Serve

Lloyd Instruments *Plus* Series of materials testing machines are suitable for use in quality control, production, laboratory, R&D or education. The application range is extensive with the following markets commonly served:

Plastics
Automotive
Pharmaceutical
Paper and Board
Textiles
Building Materials
Packaging
Medical
Metals
Wood
Electronics
Products and Components

World Class Manufacturing

By partnering with a company operating in a Six Sigma environment, our customers can be assured of complete satisfaction through high quality products and services. Lloyd Instruments Six Sigma programmes enable us to provide complete materials testing solutions by understanding our customers' aims and objectives.

Worldwide Support

Our global network of service and support is available to provide you with applications assistance, training, service and accredited calibrations. Please see our web site for details of your nearest support office.

Achievements

Visit our web site for details of solutions we have provided to many well-known global companies.

www.lloyd-instruments.com

Accreditations

- ISO 9001:2000
- UKAS accredited force calibration laboratory
- Accredited to ISO 17025 for calibration

SYSTEM CERTIFICATION ISO 9001:2000 SGS

UKAS QUALITY MANAGEMENT 005

UKAS CALIBRATION 0251

LLOYD INSTRUMENTS
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Systems and Accessories

Single and Twin Column Test Machines

Robust, high stiffness load frames are at the core of each materials testing system. Configuring a system could not be easier. Simply choose a suitable machine load frame, load cell, grip for holding the sample, optional materials testing software and accessories such as an extensometer.

Advanced electronics ensures accurate data collection exceeding the requirements of BS EN 7500-1 and ASTM E4.

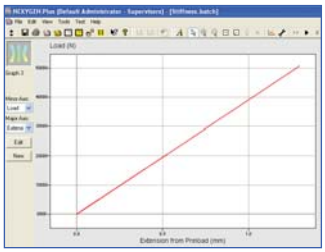
Key Features:

- 8 kHz data sampling rate to capture all data points
- Accurate load rate control and load holding
- Console stores 10 test set-ups and 600 test results
- Multi-lingual and multi-unit display options
- Intelligent plug and play load cells and accessories
- Automatic diagnostics and load cell calibration check
- Comprehensive warranty
- Fast delivery times

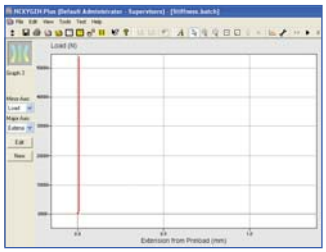
Load System Compliance Compensation

Our advanced frame design and load chain compliance (or stiffness) compensation means extension errors of less than 5 microns at full load are achievable for many compression and flexural tests without the use of an extensometer.

The graphs show the load chain deflection for a typical machine system (left) and a Lloyd Instruments compensated system (right).



Typical system stiffness



Lloyd Instruments system stiffness

High Elongation Sample Testing

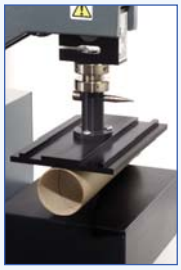
Extended height frames are available for all single and twin column systems for testing samples up to 2.5 m (98.4 in) high depending on the model used. Reduced height versions are also available for short travel tests where space is limited.

Large Sample Testing

Our unique pogo system is compatible with all bench mounted single and twin column machines. This allows testing of very large samples up to 2 x 2 m (78.7 x 78.7 in) in size with the added benefit of optional elevated and low temperature testing capability.

Grips and Fixtures

Choose from a wide range of standard grips and fixtures as well as custom designed versions.



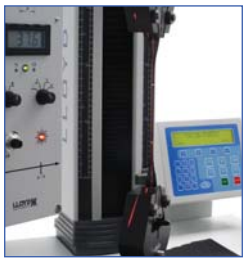
- Wedge action grips for rigid samples
- Pneumatic action grips for faster sample clamping
- Vice action grips for films and semi rigid materials
- Compression platens available in many sizes
- 3 and 4 point bending jigs
- Self tightening grips to reduce operator fatigue
- Bollard grips for wire and rope testing

See our online grips data sheets for more information

Extensometers

Plug and play extensometers are designed for accurate measurement of elongation and determination of results such as modulus, yield and proof stress amongst others.

- Contacting strain gauge type for rigid materials
- Automatic contacting long travel type for rubbers and elastomers
- Non-contacting laser type for high elongations



Laser extensometer

Clip-on extensometer

Safety

All machines conform to CE and other international regulations. Hardware and software overload detection, both in test mode and jog mode, can be configured independently.

Fitting an optional interlocked safety shield enhances operator safety. Shields can be integrated into the test procedure by using our NEXYGEN*Plus* materials testing software, allowing tests to start automatically once the door is closed.

Elevated and Low Temperature Testing

Thermal chambers and furnaces are offered by Lloyd Instruments for testing from -70°C to +1200°C.

Chambers and furnaces can be optionally controlled by NEXYGEN*Plus* software.

NEXYGEN™ PLUS

Materials Testing Software

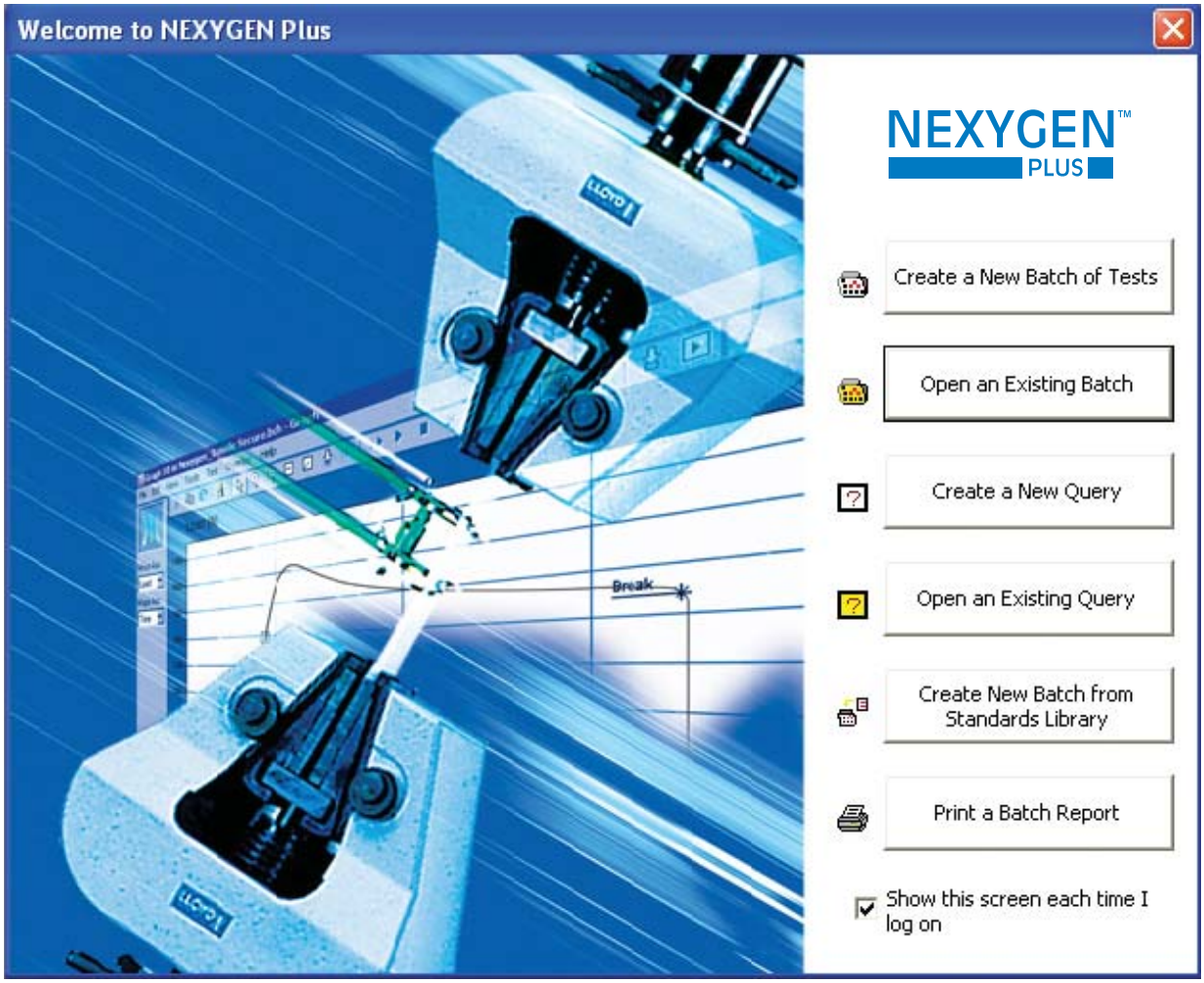
NEXYGEN*Plus* multi-lingual materials testing software is the hub of any Lloyd Instruments materials testing system.

This extraordinarily easy to use and flexible software, allows the operator to control and monitor all aspects of the system from a single intuitive user interface.

This ensures fast, reliable and powerful testing in addition to fingertip control of data analysis features.

NEXYGEN*Plus* is supplied as a complete all-inclusive package with no additional modules required. The package includes:

- Complete standards library
- Complete suite of test set-ups
- Video and still picture capture system
- Security and audit trail utility
- SPC trend and histogram charts
- User interface customisation facility
- Data export utility for connection to LIMS and SPC packages

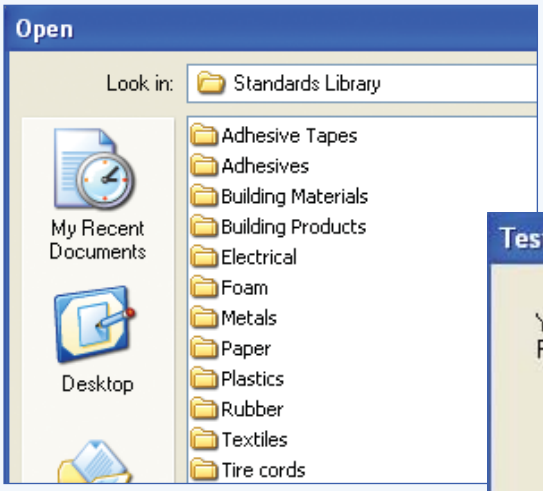


'Welcome' screen

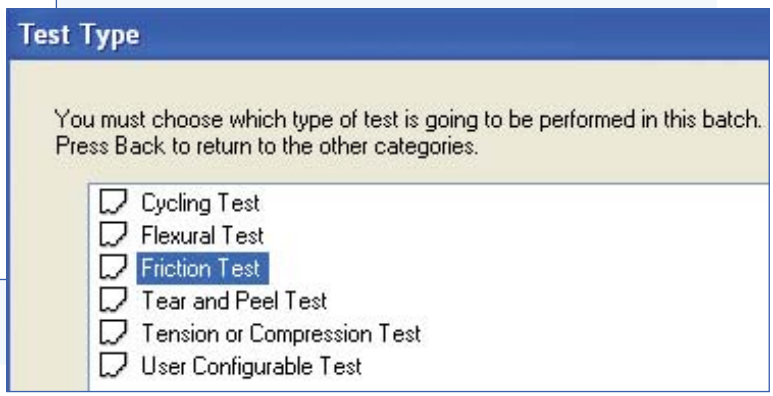
Test Creation

Getting started with NEXYGEN*Plus* could not be simpler thanks to the extensive built-in library of test methods covering ASTM, DIN, EN, ISO and other standards. Unlike similar systems, we supply our complete standards library to all customers, in addition to complete test wizards for tension, compression, tearing, peeling, friction and flexural tests.

The standard User Configurable Test can be used to create specialist multi-stage tests and is particularly beneficial for product and component testing.



Standards library

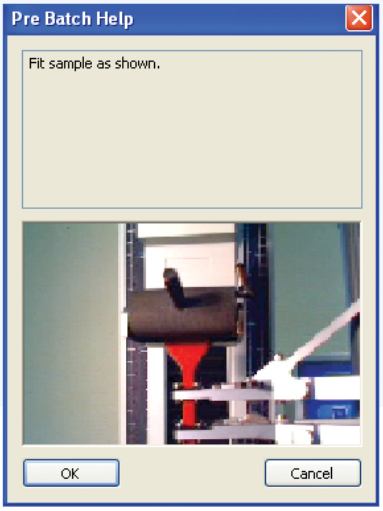


Standard test set-ups

Data Collection

NEXYGEN*Plus* is configured to allow rapid and accurate data collection with many built-in functions to ensure error free testing.

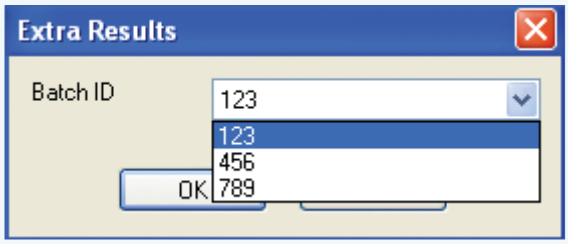
When measuring sample dimensions, operators will save time and avoid data entry errors by using the standard functionality for direct reading of digital callipers and micrometers.



Customisable pre-test user help screen

Ensuring that operators use the correct fixtures and load cell is a common issue in materials testing. NEXYGEN*Plus* features the ability to create help screens that can include pictures for operator guidance in addition to restricting test operation to a particular value load cell.

Clear pass/fail indications are displayed when the test is complete. Supervisors can also be alerted automatically to any failures by an e-mail that includes a copy of the test data.



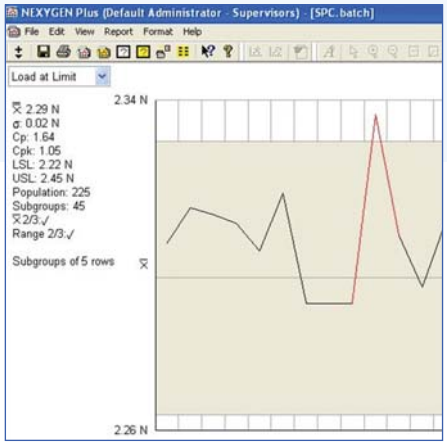
Facility to enter sample identification data

Reporting and Exporting Test Data

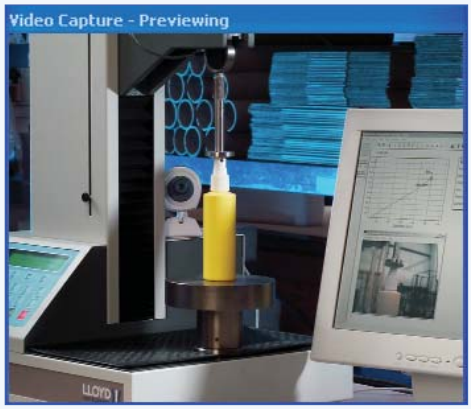
NEXYGEN*Plus* software features many flexible data analysis tools allowing you to quickly analyse the captured data.

Built in SPC functionality enables continuous monitoring of process parameters such as C_p and C_{pk}.

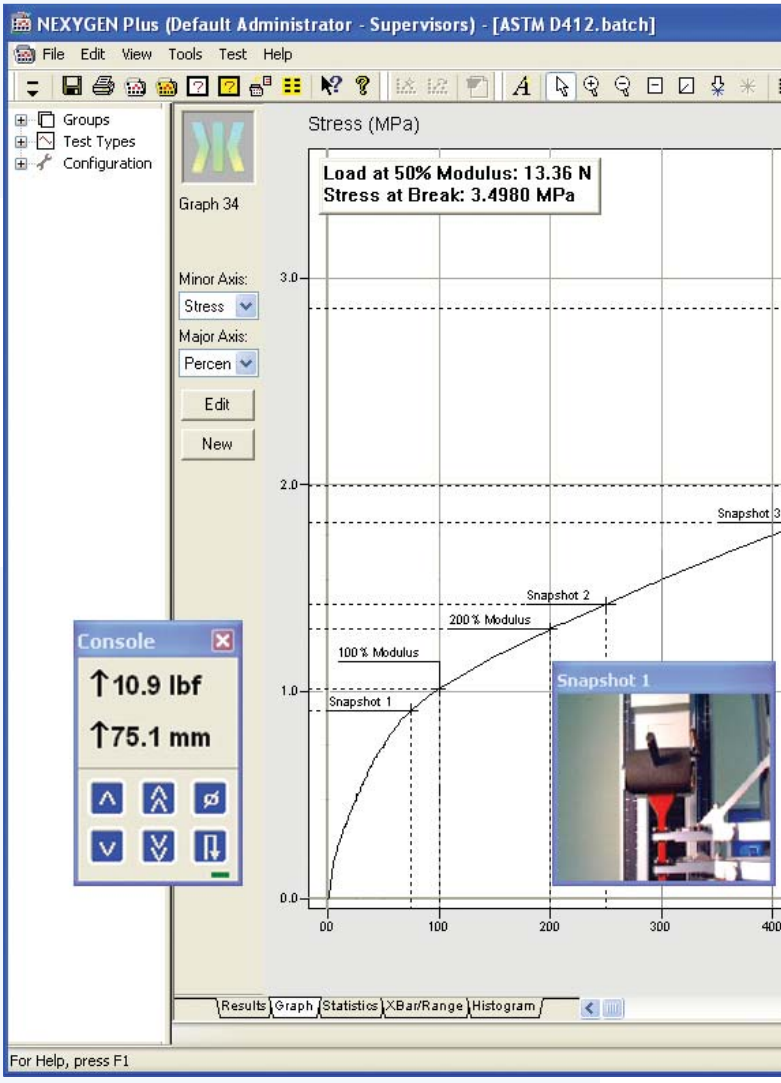
Microsoft® Office integration allows seamless transfer of data to familiar Windows® packages such as Word and Excel® for further analysis. You can also export data to your favourite LIMS, SPC or data management systems by using our versatile data export facility.



SPC chart



Video capture is particularly useful when testing products and components



Still picture capture system

Video and Still Picture Capture

Whether for advanced sample failure analysis or presentation of test results, video and stills capture is a feature unique to NEXYGEN*Plus*.

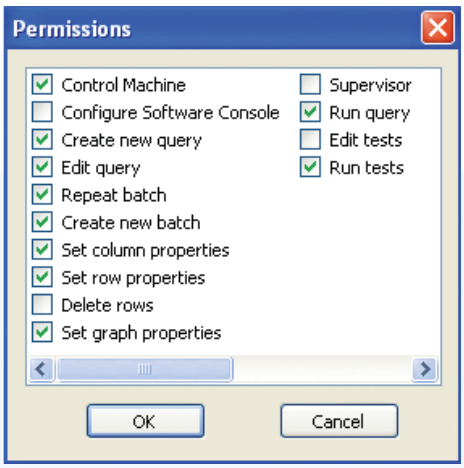
Entire tests can be videoed and synchronised with the stress/strain data and replayed for detailed post-test analysis.

Alternatively, still images can be taken at specific points during the test. These still images are recorded on the graph for easy analysis.

To utilise these powerful features, simply connect your web cam or analogue video camera to your PC.

Test Data Security and Audit Trails

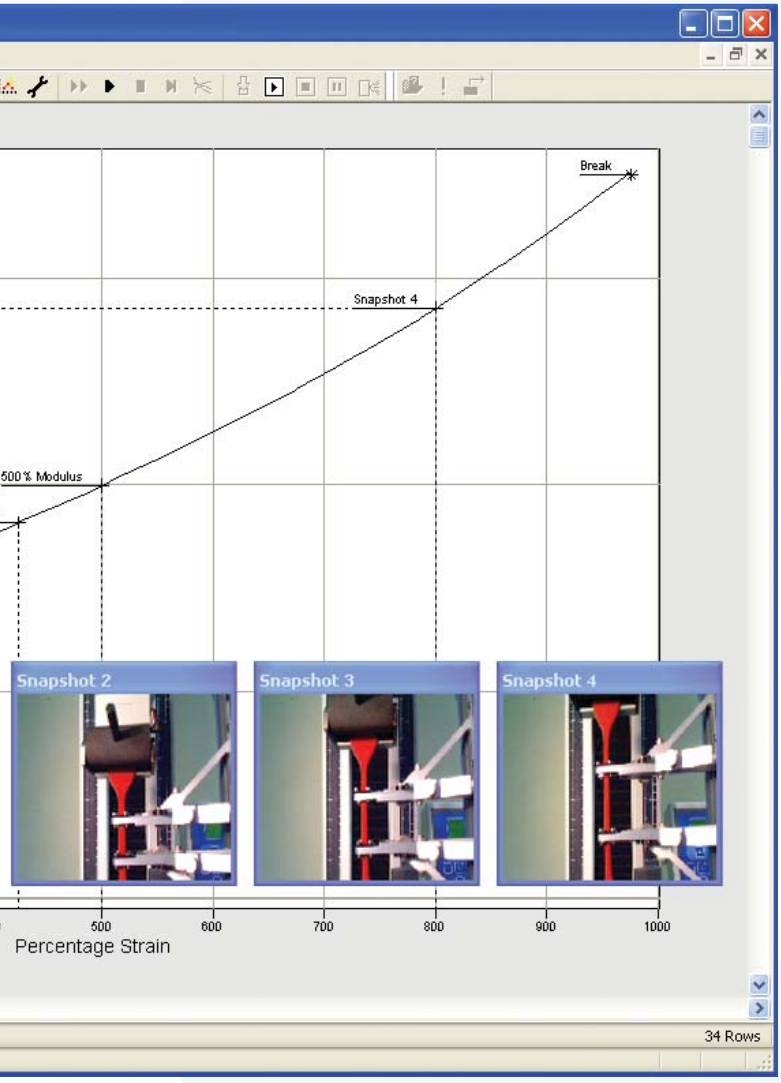
The NEXYGEN*Plus* security and audit trail module enables supervisors to manage user access and data traceability. The module can also be configured to assist manufacturers with FDA 21 CFR Part 11 compliance requirements.



Configuration of user access rights

Electronic signatures and the ability to restrict user access rights increase security and avoid costly errors.

Integrated audit trails covering operator usage and test results guarantee that all changes to test procedures are recorded in a simple retrievable format.



Automated sample handling system

Test Automation and Customisation

To facilitate the increasing use of automation in manufacturing, NEXYGEN*Plus* has been developed with powerful utilities for systems integration. Typical integration projects include, automated sample handling, in-line testing and the monitoring of parameters from additional measurement systems such as thermocouples and strain gauges.

NEXYGEN*Plus* can be configured to suit your exact operational requirements.

Quick and easy customisation of the user interface and other functionality can be achieved via the integrated Microsoft® VBA module.

LLOYD INSTRUMENTS™
An AMETEK Company

Materials Testing Applications

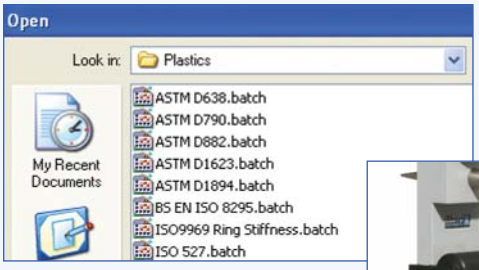
A single machine can be used for a vast number of applications.

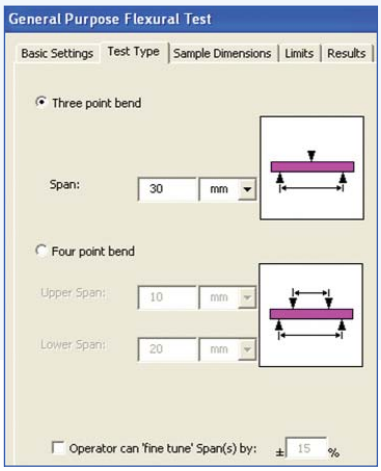
The following section details common applications and key international standards by industry sector.

Plastics

The testing of raw materials requires highly accurate and repeatable data to allow preparation of material data sheets. A wide range of grips is available, including pneumatic grips for reducing operator fatigue and constant pressure gripping.

Our extensometers enable our customers to accurately measure parameters such as modulus, yield strength and elongation to failure. For flexural and compression tests, Lloyd Instruments machines can compensate for load frame and fixture deflection ensuring highly accurate data acquisition.





Test Type	Standard / Application
Tensile strength, elongation to break, yield strength, modulus, Poisson's ratio	ASTM D638, ASTM D1708, ASTM D2990, ASTM D3291, ASTM D3807, ASTM D3846, ASTM D3914, ASTM D4321, ASTM D4475, ASTM D4476, ISO 527, BS 2782, DIN 53504
Compression	ASTM D695, ASTM D2412, ISO 604, BS 2782
Flexural	ASTM D790, ISO 178, BS 2782
Shear	ASTM D732
Friction	ASTM D1894

For details of our Davenport™ equipment for measuring melt index, HDT/VICAT, density and falling dart impact properties of plastic films, please see the back cover.

Products and Components

The testing of many products and components often requires test methods that are not based on international standards.

NEXYGEN*Plus* software can be configured for any multi-stage test method that is required. Configurable user access rights and audit trails benefit customers working in the medical device or pharmaceutical industries.

Markets served include:

Medical device, automotive, pipes, building materials, electronics, aerospace, packaging, defence and many more.

Dedicated FTPlus friction tester

Packaging

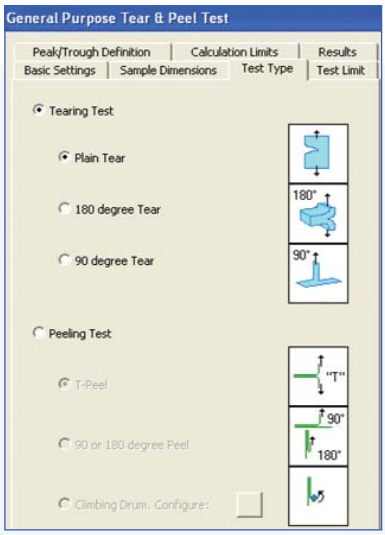
The testing of packaging requires an extremely versatile materials testing system due to the varying requirements within industries such as pharmaceutical, cosmetics, food and beverages. A single system from Lloyd Instruments will allow you to test in compliance with all standards shown below and many more.

Test Type	Standard / Application
Tensile strength, elongation, yield strength	ASTM D882, ISO 527
Static and kinetic coefficients of friction	ASTM D1894, ISO 8295
Tearing strength	ASTM D1004, ASTM D1938, ISO 6383
90° and 180° peeling of heat bonded seals	Seal Strength
Puncture resistance	ASTM D5748, EN 14477
Cardboard compression, flexure, ECT, BCT, FCT, SCT	ISO 5628, ISO 3037, ISO 12048, EN 23035, ISO 9895

Adhesive Tapes

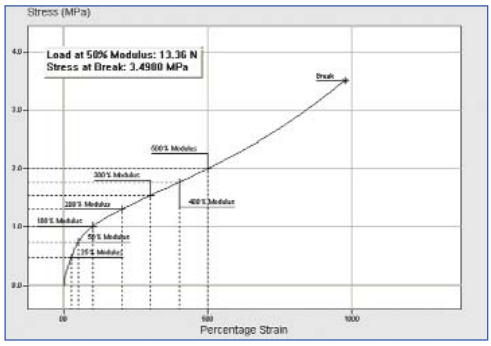
Lloyd Instruments 1 kN (225 lbf) LF*Plus* materials testing system can be configured to test in accordance with the FINAT methods below.

Test Type	Standard / Application
180° peel	FTM1
90° peel	FTM2
Low speed release	FTM3
Loop tack	FTM9
Dynamic shear	FTM18



Rubber

The testing of rubber materials commonly requires machines capable of measuring very high strain in addition to testing at temperatures above and below ambient.



Lloyd Instruments offers extended column machines ideal for rubber applications that are compatible with long travel contacting and non-contacting extensometers.

Thermal chambers for testing between -70ºC and +300°C are also available for the study of material properties at temperatures other than ambient.

Standard test methods within NEXYGEN*Plus* software include:

Test Type	Standard / Application
Tensile	ISO 37, ASTM D412, ASTM D413, ASTM D429, ASTM D4482
Tear	ASTM D624

Metals

The key to accurate metals testing to international standards is the ability to measure the stress and strain to a very high degree of accuracy.

For metals testing, Lloyd Instruments offers a wide range of extensometers to measure such parameters as Young's modulus and proof stress.

Furnaces for testing metals up to 1200°C are also available. Standard test methods within NEXYGEN*Plus* software allow simple and fast test creation to international standards such as:

Test Type	Standard / Application
Tensile	EN 10002, EN ISO 8496, ISO 6892, ASTM E8, ASTM A370
N value	ISO 10275
Bending	ASTM E290, ASTM E1012, EN 13523, EN ISO 7438, EN ISO 8491
Erichsen cupping test	DIN 50101

Floor mounted LR100KPlus 100 kN (22481 lbf) test machine

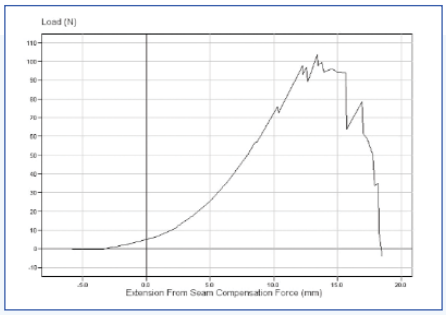
Textiles

The Lloyd Instruments *Plus* Series capability covers the testing of a wide range of textile products including:

Geo-textiles	Knitted products	Ropes
Fibre and yarn	Thermal insulation	Nets
Coated textiles	Non-wovens	Webbing

Test types include:

Seam slippage	Tensile strength
Compressive strength	Puncture resistance
Tear resistance	Trouser tear



Test Type	Standard / Application
Tensile textiles	ASTM D1682, EN ISO 13934, ASTM D1578, EN ISO 13934, EN ISO 13935, EN 29073, EN ISO 2062
Tensile geo-textiles	ASTM D4884, ASTM D4632, ASTM D4595, EN ISO 10319, EN ISO 10321

Foams

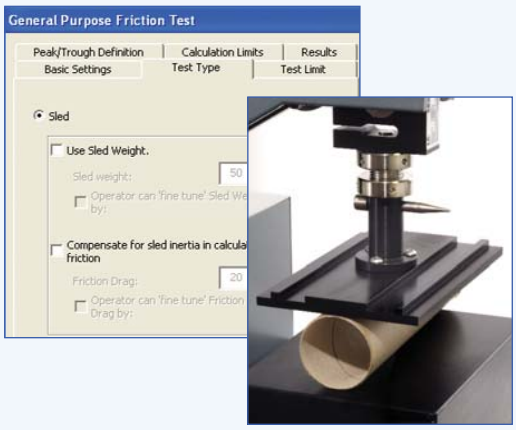
Several compression/relaxation tests can be performed on foam samples, measuring the forces at various percentages of compression to international standards such as ASTM D3574.

Test Type	Standard / Application
Compression	ASTM D3574, ISO 3386, BS 4098
Tensile	ASTM D3574

Paper and Board

Tests such as Z direction fibre strength, bending, friction and compressibility can be easily performed using NEXYGEN*Plus* software. Data from all tests can be combined into a single material properties data sheet.

Test Type	Standard / Application
Tensile wet & dry	EN 1607, EN 1608, ASTM C203
Flexural	EN 12089, ASTM C446, ASTM C203
Compression	EN 826, ASTM C165, EN 1605, EN 12089
Friction	TAPPI



Food

Lloyd Instruments also supplies a dedicated food texture analyser featuring all the benefits of the *Plus* Series machines and NEXYGEN*Plus* software.

Please contact Lloyd Instruments for further details.

Texture analysers are used to measure properties including:

TPA	Consistency	Gumminess
Adhesiveness	Crispness	Hardness
Chewiness	Firmness	Springiness
Cohesiveness	Gel strength	Stickiness

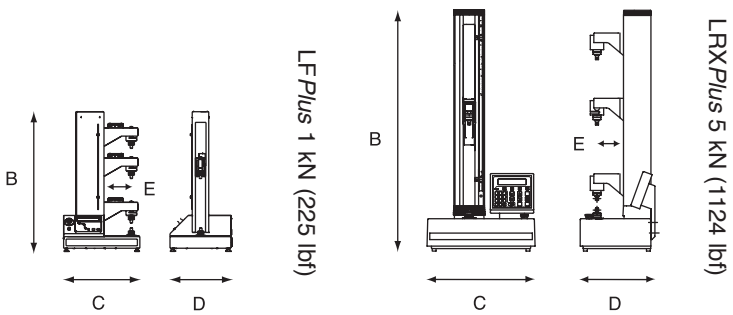
Our application knowledge and expertise is immense.
If you don't see your application here, please contact us.

Technical Specification

	Single Column Machines		
Model	**LF*Plus***	**LRX*Plus***	**LR5K*Plus***
Force Capacity	1 kN (225 lbf)	5 kN (1124 lbf)	5 kN (1124 lbf)
Force Capacity - Extended Machine Version	1 kN (225 lbf)	2.5 kN (562 lbf)	5 kN (1124 lbf)
Maximum Crosshead Travel *(Between Eye Ends)*	500 mm (19.7 in)	735 mm (29 in)	975 mm (38.4 in)
Maximum Crosshead Travel - Extended Machine Version *(Between Eye Ends)*	750 mm (29.5 in)	1370 mm (54 in)	1463 mm (57.6 in)
Crosshead Speed Range	0.05 to 1270 mm/min (0.002 to 50 in/min) at full load	0.01 to 1016 mm/min (0.0004 to 40 in/min) at full load	0.01 to 1016 mm/min (0.0004 to 40 in/min) at full load
Maximum Return Speed	1270 mm/min (50 in/min)	1016 mm/min (40 in/min)	1016 mm/min (40 in/min)
Speed Accuracy	< 0.2% at steady state	< 0.2% at steady state	< 0.2% at steady state
Minimum Load Resolution *(Load Cell Specific)*	0.0001 N	0.0001 N	0.0001 N
Load Cell Accuracy	< 0.5%	< 0.5%	< 0.5%
Extension Resolution	< 2 microns	< 0.1 microns	< 0.1 microns
Data Sampling Rate	8 kHz	8 kHz	8 kHz
Extensometer Inputs	Digital and Analogue	Digital and Analogue	Digital and Analogue
Load Measuring System	EN ISO 7500: 2004 Class 0.5 ASTM E4	EN ISO 7500: 2004 Class 0.5 ASTM E4	EN ISO 7500: 2004 Class 0.5 ASTM E4
A Width Between Columns *(Daylight)*	N/A	N/A	404 mm (16 in)
B Machine Height	923 mm (36 in)	1260 mm (49.6 in)	1555 mm (61.2 in)
B Machine Height - Extended Machine Version	1173 mm (46 in)	1995 mm (78.5 in)	2055 mm (80.9 in)
C Machine Width *(with Console)*	500 mm (19.7 in)	564 mm (22.2 in)	820 mm (32.3 in)
D Machine Depth	400 mm (15.7 in)	400 mm (15.7 in)	480 mm (18.9 in)
E Throat Depth	179 mm (7 in)	135 mm (5.3 in)	N/A
Weight	46 kg (102 lb)	50 kg (110 lb)	99 kg (218 lb)
Weight - Extended Machine Version	48 kg (106 lb)	52 kg (115 lb)	103 kg (227 lb)
Humidity	5 - 85% RH (Non-condensing)	5 - 85% RH (Non-condensing)	5 - 85% RH (Non-condensing)
Operating Temperature	5 to 35ºC (41 to 95ºF)	5 to 35ºC (41 to 95ºF)	5 to 35ºC (41 to 95ºF)
Storage Temperature	-20 to 55ºC (-4 to 131ºF)	-20 to 55ºC (-4 to 131ºF)	-20 to 55ºC (-4 to 131ºF)
Supply Voltage	230Vac ±10% 50-60 Hz Fuse T1AH250V 115Vac ±10% 50-60 Hz Fuse T2AH250V	230Vac ±10% 50-60 Hz Fuse T3.15AH250V 115Vac ±10% 50-60 Hz Fuse T6.3AH250V	230Vac ±10% 50-60 Hz Fuse T3.15AH250V 115Vac ±10% 50-60 Hz Fuse T6.3AH250V
Maximum Power Requirement	120VA max	500VA max	500VA max

* Includes same electronics as used in all *Plus* Series machines

Single Column Machines

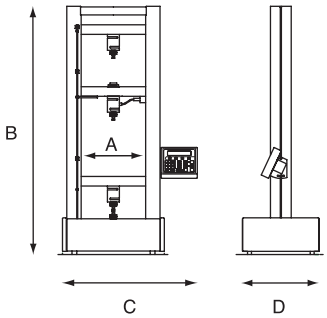


Twin Column Machines

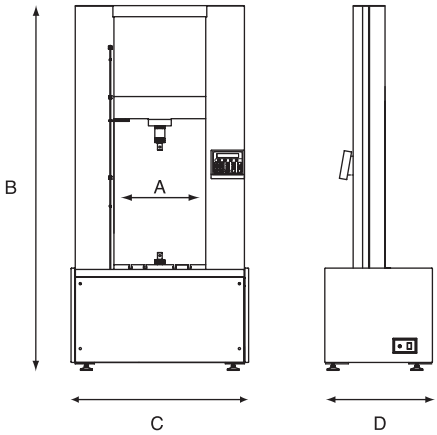
Bench Mounted Machines

LR10K*Plus*	EZ20 *(Plus*)*	LR30K*Plus*	EZ50 *(Plus*)*	LR50K*Plus*	LS100*Plus*
10 kN (2248 lbf)	20 kN (4496 lbf)	30 kN (6744 lbf)	50 kN (11241 lbf)	50 kN (11241 lbf)	100 kN (22481 lbf)
10 kN (2248 lbf)	20 kN (4496 lbf)	30 kN (6744 lbf)	50 kN (11241 lbf)	50 kN (11241 lbf)	100 kN (22481 lbf)
950 mm (37.4 in)	870 mm (34.3 in)	870 mm (34.3 in)	855 mm (33.7 in)	855 mm (33.7 in)	824 mm (32.4 in)
1435 mm (56.5 in)	1370 mm (54 in)	1370 mm (54 in)	1355 mm (53.4 in)	1355 mm (53.4 in)	1012 mm (39.8 in)
0.01 to 508 mm/min (0.0004 to 20 in/min) at full load	0.001 to 508 mm/min (0.00004 to 20 in/min) at full load 0.01 to 1016 mm/min (0.0004 to 40 in/min) at half load	0.001 to 508 mm/min (0.00004 to 20 in/min) at full load	0.01 to 254 mm/min (0.0004 to 10 in/min) at full load	0.001 to 508 mm/min (0.00004 to 20 in/min) at full load	0.001 to 254 mm/min (0.00004 to 10 in/min) 0 to 50 kN 0.001 to 101.6 mm/min (0.00004 to 4 in/min) 50 to 100 kN
508 mm/min (20 in/min)	1016 mm/min (40 in/min)	508 mm/min (20 in/min)	254 mm/min (10 in/min)	508 mm/min (20 in/min)	254 mm/min (10 in/min)
< 0.2% at steady state	< 0.2% at steady state	< 0.2% at steady state	< 0.2% at steady state	< 0.2% at steady state	< 0.2% at steady state
0.0001 N	0.0001 N	0.0001 N	0.0001 N	0.0001 N	0.0001 N
< 0.5%	< 0.5%	< 0.5%	< 0.5%	< 0.5%	< 0.5%
< 0.05 microns	< 0.1 microns	< 0.05 microns	< 0.03 microns	< 0.05 microns	< 0.03 microns
8 kHz	8 kHz	8 kHz	8 kHz	8 kHz	8 kHz
Digital and Analogue	Digital and Analogue	Digital and Analogue	Digital and Analogue	Digital and Analogue	Digital and Analogue
EN ISO 7500: 2004 Class 0.5 ASTM E4	EN ISO 7500: 2004 Class 0.5 ASTM E4	EN ISO 7500: 2004 Class 0.5 ASTM E4	EN ISO 7500: 2004 Class 0.5 ASTM E4	EN ISO 7500: 2004 Class 0.5 ASTM E4	EN ISO 7500: 2004 Class 0.5 ASTM E4
404 mm (16 in)	404 mm (16 in)	404 mm (16 in)	404 mm (16 in)	404 mm (16 in)	404 mm (16 in)
1555 mm (61.2 in)	1567 mm (61.7 in)	1567 mm (61.7 in)	1567 mm (61.7 in)	1567 mm (61.7 in)	1567 mm (61.7 in)
2055 mm (80.9 in)	2067 mm (81.4 in)	2067mm (81.4 in)	2067 mm (81.4 in)	2307 mm (90.8 in)	1857 mm (73.1 in)
820 mm (32.3 in)	868 mm (34.2 in)	868 mm (34.2 in)	868 mm (34.2 in)	868 mm (34.2 in)	868 mm (34.2 in)
480 mm (18.9 in)	596 mm (23.5 in)	596 mm (23.5 in)	596 mm (23.5 in)	596 mm (23.5 in)	596 mm (23.5 in)
N/A	N/A	N/A	N/A	N/A	N/A
99 kg (218 lb)	148 kg (326 lb)	148 kg (326 lb)	148 kg (326 lb)	148 kg (326 lb)	200 kg (441 lb)
103 kg (227 lb)	152 kg (335 lb)	152 kg (335 lb)	152 kg (335 lb)	152 kg (335 lb)	204 kg (450 lb)
5 - 85% RH (Non-condensing)	5 - 85% RH (Non-condensing)	5 - 85% RH (Non-condensing)	5 - 85% RH (Non-condensing)	5 - 85% RH (Non-condensing)	5 - 85% RH (Non-condensing)
5 to 35ºC (41 to 95ºF)	5 to 35ºC (41 to 95ºF)	5 to 35ºC (41 to 95ºF)	5 to 35ºC (41 to 95ºF)	5 to 35ºC (41 to 95ºF)	5 to 35ºC (41 to 95ºF)
-20 to 55ºC (-4 to 131ºF)	-20 to 55ºC (-4 to 131ºF)	-20 to 55ºC (-4 to 131ºF)	-20 to 55ºC (-4 to 131ºF)	-20 to 55ºC (-4 to 131ºF)	-20 to 55ºC (-4 to 131ºF)
230Vac ±10% 50-60 Hz Fuse T3.15AH250V	230Vac ±10% 50-60 Hz Fuse T5AH250V	230Vac ±10% 50-60 Hz Fuse T5AH250V	230Vac ±10% 50-60 Hz Fuse T5AH250V	230Vac ±10% 50-60 Hz Fuse T5AH250V	230Vac ±10% 50-60 Hz Fuse T5AH250V
115Vac ±10% 50-60 Hz Fuse T6.3AH250V	115Vac ±10% 50-60 Hz Fuse T10AH250V	115Vac ±10% 50-60 Hz Fuse T10AH250V	115Vac ±10% 50-60 Hz Fuse T10AH250V	115Vac ±10% 50-60 Hz Fuse T10AH250V	115Vac ±10% 50-60 Hz Fuse T10AH250V
500VA max	< 1000VA	< 1000VA	< 1000VA	< 1000VA	< 1000VA

Twin Column Bench Mounted Machines



Twin Column Floor Standing Machines



Floor Standing Machines

LR100K*Plus*	LR150K*Plus*
100 kN (22481 lbf)	150 kN (33722 lbf)
100 kN (22481 lbf)	150 kN (33722 lbf)
1150 mm (45.3 in)	1150 mm (45.3 in)
1620 mm (63.8 in)	1620 mm (63.8 in)
0.001 to 508 mm/min (0.00004 to 20 in/min) at full load	0.001 to 254 mm/min (0.00004 to 10 in/min) at full load
508 mm/min (20 in/min)	254 mm/min (10 in/min)
< 0.2% at steady state	< 0.2% at steady state
0.0001 N	0.0001 N
< 0.5%	< 0.5%
< 0.05 microns	< 0.04 microns
8 kHz	8 kHz
Digital and Analogue	Digital and Analogue
EN ISO 7500: 2004 Class 0.5 ASTM E4	EN ISO 7500: 2004 Class 0.5 ASTM E4
620 mm (24.4 in)	620 mm (24.4 in)
2471 mm (97.3 in)	2471 mm (97.3 in)
2970 mm (116.9 in)	2970 mm (116.9 in)
1509 mm (59.4 in)	1509 mm (59.4 in)
733 mm (29.9 in)	733 mm (29.9 in)
N/A	N/A
900 kg (1984 lb)	900 kg (1984 lb)
910 kg (2006 lb)	910 kg (2006 lb)
5 - 85% RH (Non-condensing)	5 - 85% RH (Non-condensing)
5 to 35ºC (41 to 95ºF)	5 to 35ºC (41 to 95ºF)
-20 to 55ºC (-4 to 131ºF)	-20 to 55ºC (-4 to 131ºF)
230Vac ±10% 50-60 Hz Fuse T5AH250V 115Vac ±10% 50-60 Hz Fuse T10AH250V	230Vac ±10% 50-60 Hz Fuse T5AH250V 115Vac ±10 50-60 Hz Fuse T10AH250V
< 1000VA	< 1000VA

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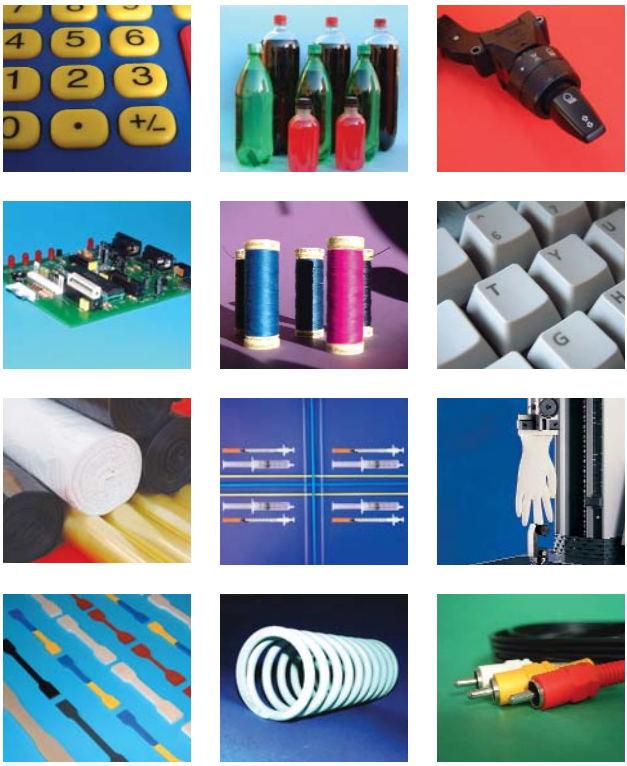

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- Instruments for Intrinsic Viscosity (IV) Measurement of PET Resins
- Density Measuring Columns (meets ASTM D1505, ISO 1183, BS 2782 Part 6: Method 620D)

SYSTEM CERTIFICATION ISO 9001:2000 SGS

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