

AUTOMATIC FLEXURAL TESTING MACHINES

STANDARDS: EN 1338, 1340, 12390-5, 12390-6, BS 1881, ASTM C78, C293, C496

The LiYA Automatic range of 100 kN, 200 kN, 300 kN and 400 kN capacity Flexural Testing Machines have been designed for reliable and consistent testing of flexural test on standard concrete beams, concrete or natural stone kerbs, concrete paving flags, and natural stone slabs and tensile splitting test of concrete paving blocks with suitable apparatus.

Machines confirms all EN, ASTM and BS standards written above. These also meet the requirements of CE norms for the safety and health of the operator.

Tests can be performed by either Digital Readout Unit or on a computer with using free Software.

The Automatic Flexural Testing Machines allow inexperienced operators to perform the tests. Once the machine is switched on and the specimen is placed. The only required operations are;

- Setting test parameters, including pace rate (only required when the specimen type is changed).
- Pressing the START button on the control unit
- The machine automatically starts the rapid approach, switches the test speed after 1% of the load capacity of the machine and stops once the specimen failure.

The LiYA range of Flexural Machines have the accuracy of Class 1 starting from 2% of the full capacity.



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The Automatic Flexural Testing Machines consist of;

Heavy Duty Welded Load Frame,

Automatic Hydraulic Power Pack,

Digital data acquisition & control system,

Flexural test assemblies should be ordered separately.

Flexural Load Frame

The multipurpose LiYA Flexural Testing Frames are designed for minimum deflection at maximum load resulting in very high accuracy. The load frame is a welded steel fabrication carrying the ram fitted to the steel base. All Frames have a single acting up stroking ram with over travel switch protection to stop the machine when maximum ram travel is reached. A load cell is used for load measurements on all frames.

Flexural Frames are designed to accept all accessories required for flexural or compression tests.



LT-C0300/1



LT-C0225/1



LT-C0601/1

Flexural Frames are 100 kN, 200 kN, 300 kN capacity U Type, 300 kN, 400 kN capacity C Type and 200 kN, 300 kN, 400 kN capacity two column open structure designed to allow easy and practical front loading of the specimen.

The very rigid C type design is ideal either for conventional flexural test or for more sophisticated tests such as deformability and ductility index.

The load frame provides the stability needed for accurate and repeatable test results over the years of operation.

All frames can be connected to LiYA compression machine as a second frame or can be used with any LiYA power pack as an independent Flexural Machine.

The main characteristics are:

- High stability welded assembly
- High accuracy load measurement with load cells
- Can accept wide range of accessories for mentioned standards
- Can be connected to LIYA Compression Machine or Hydraulic Power Pack

Flexural Testing Accessories

Flexural Testing Assembly for Concrete Beams

The test assembly is used for 3 or 4 point flexural tests on 100 or 150 mm Concrete Beams.

The set consist of 2 upper and 2 lower rollers of Ø3,8 x 16 cm.

The distance of lower bearers can be adjusted between 100mm and 800mm. The distance between upper bearers can be set to 100 mm or 150 mm.

For 3 point testing one of the bearers can be removed and the other placed in the center.



Flexural Testing Assembly for Concrete Kerbs

The test assembly is used for flexural tests on Concrete Kerbs.

The set consists of 2 lower rollers of Ø 2 x 62 cm and Ø 40 mm upper loading piston with ball seating assembly.

The distance of lower rollers can be adjusted between 100 mm to 800 mm.

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Flexural Test Assembly for Concrete Paving Flags and Concrete Terrazzo Tiles, Natural Stone Kerbs and Slabs

The test assembly is used for flexural tests on Concrete Paving Flags and Concrete Terrazzo Tiles, Natural Stone Kerbs and Slabs.

The set consists of 2 lower rollers and upper roller of Ø 2x 62 cm.

The distance of lower rollers can be adjusted between 100 mm to 800 mm.



Splitting Tensile Test Device for Block Pavers

Splitting Tensile Test Device for Block Pavers is accessory for compression machines for measuring the splitting tensile strengths of 60-100 mm height x 220 mm length concrete block pavers according to the requirements of the related standards.

Splitting Tensile Test Device for Concrete Cubes

Splitting Tensile Test Device for Concrete Cubes is accessory for compression machines for measuring the splitting tensile strengths of 150 mm cube concrete specimens according to the requirements of the related standards.



Splitting Tensile Test Device for Cylinders

Splitting Tensile Test Device for Cylinders is accessory for compression machines for measuring the splitting tensile strengths of Ø150x300 mm and Ø160x320 mm cylindrical specimens according to the requirements of the related standards.

Technical Specifications

Product Code	Product Name	Standards	Dimensions (cm)	Weight (kg)
LT-C0650	Flexural Testing Assembly for Concrete Beams	ASTM C 293, ASTM C 78, EN 12390-5 BS 1881:118	20x20x20	16
LT-C0651	Flexural Testing Assembly for Concrete Kerbs	EN 1340	62x25x10	17
LT-C0652	Flexural Testing Assembly for Concrete Paving Flags and Concrete Terrazzo Tiles, Natural Stone Kerbs and Slabs	EN 1339, EN 1343, EN 12372	62x26x15	25
LT-C0653	Splitting Tensile Test Device for Concrete Cube Specimens; 150x150 mm	EN 12390-6	18x15x32	15
LT-C0654	Splitting Tensile Test Device for Concrete Block Pavers Specimens; 60-150 mm height, 220 mm length	EN 12390-6, EN 1338, ASTM C 496	24x16x32	17,5
LT-C0655	Splitting Tensile Test Device for Cylindrical Specimens; Ø100x200 mm, 150x300 mm, 160x320 mm	EN 12390-6, ASTM C 496	34x15x33	25

HYDRAULIC POWER PACK AND DIGITAL DATA ACQUISITION & CONTROL SYSTEM

Hydraulic Power Pack

Automatic Hydraulic Power Pack, controlled by digital readout unit is designed to supply the required oil to the load frames for loading.

Controller unit has a simple and compact configuration. The Hydraulic Power Pack is equipped with 4 wheels for easy carriage and flexible installation.

Very silent power pack can load the specimen between 1 kN/sec. to 20 kN/sec, with an accuracy of $\pm 5\%$. Safety valve (maximum pressure valve) is used to avoid machine overloading.

Maximum working pressure of the system is 410 bar.

Single Stage Pump

The single stage pump is formed by;

High pressure radial piston pump

On the single stage pump, high pressure radial piston pump is used for test execution.

Motor

The motor which drives the dual pumps in an AC motor and it is controlled by motor inverter. The variation in the oil flow is executed with the variation of the rotation speed of the motor.



Distribution Block

A distribution block is used to control the oil flow direction supplied by the single stage pump, the following parts are fitted to the distribution block; Solenoid valve, Safety valve (max. pressure valve) and Load Cell.



Oil Tank

The tank includes enough oil to fill the mechanism which pushes the ram during the test. The level and oil temperature can be seen on the indicator fitted to the tank. It has 25 L capacity. Hydraulic motor oil, number 46, must be used.



Digital Data Acquisition & Control System

The unit is designed to control the machine and processing of data from load-cells and pressure transducers which are fitted to the machine.

All the operations of the unit is controlled from the front panel consisting of a LCD display and function keys.

The unit has easy to use menu options.

Digital graphic display unit loading rate of the time of Testing and load values can be monitored.

Digital graphic display is able to draw real-time "Load vs. Time".

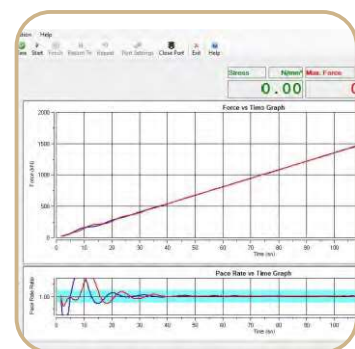
Software

Sample, company, laboratory and test values can be entered in the programme.

Load-time graphic, test reports and sample reports can be taken.

Software provides test data, results, and the load-time graphs can be seen at LCD screen.

The Automatic Flexural Testing Machine can be controlled (Start, Stop commands) by a computer with the software free of charge. This software provides data acquisition and management for compression, flexure and splitting tensile test throughout the test execution. The advanced functions for data base management provide an easy navigation of all saved data. The test results certificate includes all descriptive information. Therefore, test parameters can be set and details about the test carried out such as client details, test type, specimen type, user info and other information required can be entered and printed out as well as test report and graph.



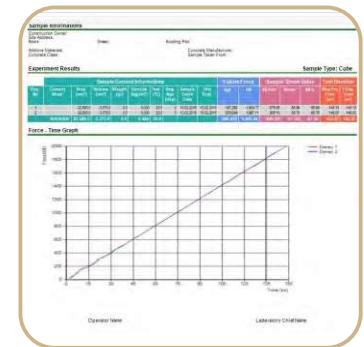
Software can be performed in Turkish and English.

Test results, graphics and properties of 24 different specimens can be saved in one folder. Old test folders can be reviewed.

User can highlight all 12 different specimen curves in different colors on the graphics.

Frequently used information like name and location of the laboratory, type and dimensions of mostly used specimens are held in memory and can be written automatically by right clicking on information boxes and selecting frequently used text in menu.

User can access any data of previously completed tests and use in his/ her new report since most of the tests have same structure and properties.



Main Features

- Pace rate control from 1 kN/sec to 20 kN/sec depending on piston size.
- Can control 2 frames (optional)
- Can make test with load control.
- Real time display of test graph.
- Analog channels for different frame load cells
- RS-232 serial port connecting for computer interface
- LCD display
- 2 different unit system selection; kN and kgf
- Multi-language support (English and Turkish)
- 2 different unit system selection; SI and Metric
- Real-time clock and date
- Free of charge PC software for the test control and printout the test report.



Technical Specifications:

Product Name	Automatic Flexural Testing Machines							
Product Code	LT-C0600	LT-C0601	LT-C0602	LT-C0610	LT-C0611	LT-C0620	LT-C0621	LT-C0622
Type	U Type	U Type	U Type	C Type	C Type	Two Column	Two Column	Two Column
Capacity (kN)	100	200	300	300	400	200	300	400
Ram Travel (cm)	7	7	7	12	12	7	7	7
Max. Vertical clearance (cm)	42,5 (without accessories)	42,5 (without accessories)	42,5 (without accessories)	42,5 (without accessories)	42,5 (without accessories)	42,5 (without accessories)	42,5 (without accessories)	42,5 (without accessories)
Max. Horizontal clearance (cm)	65	65	65	64	64	90	90	90
Max. Clearance Between Lower Rollers (cm)	90	90	90	90	90	90	90	90
Class 1 range	1-100 kN	3-200 kN	3-300 kN	3-300 kN	6-400 kN	3-200 kN	3-300 kN	6-400 kN

Safety Features

- Maximum pressure valves to avoid machine overloading
- Piston travel limit switch
- Emergency stop button
- Software controlled maximum load value

Technical Specifications

Product Code	Product Name	Dimensions (cm)	Weight (kg)	Power Supply
LT-C0600	100 kN Automatic Flexural Testing Machine, U Type	119x100x100	300	220 V, 50-60 Hz, 1 ph
LT-C0601	200 kN Automatic Flexural Testing Machine, U Type	119x100x100	325	220 V, 50-60 Hz, 1 ph
LT-C0602	300 kN Automatic Flexural Testing Machine, U Type	119x100x100	400	220 V, 50-60 Hz, 1 ph
LT-C0610	300 kN Automatic Flexural Testing Machine, C Type	128x110x125	655	220 V, 50-60 Hz, 1 ph
LT-C0611	400 kN Automatic Flexural Testing Machine, C Type	128x110x125	700	220 V, 50-60 Hz, 1 ph
LT-C0620	200 kN Automatic Flexural Testing Machine, Two Column	152x60x109	600	220 V, 50-60 Hz, 1 ph
LT-C0621	300 kN Automatic Flexural Testing Machine, Two Column	152x60x109	600	220 V, 50-60 Hz, 1 ph
LT-C0622	400 kN Automatic Flexural Testing Machine, Two Column	152x60x109	600	220 V, 50-60 Hz, 1 ph
LT-C0600/1	100 kN Flexural Testing Frame, U Type	81x100x100	200	---
LT-C0601/1	200 kN Flexural Testing Frame, U Type	81x100x100	225	---
LT-C0602/1	300 kN Flexural Testing Frame, U Type	81x100x100	300	---
LT-C0610/1	300 kN Flexural Testing Frame, C Type	90x110x125	555	---
LT-C0611/1	400 kN Flexural Testing Frame, C Type	90x110x125	600	---
LT-C0620/1	200 kN Flexural Testing Frame, Two Column	114x60x109	500	---
LT-C0621/1	300 kN Flexural Testing Frame, Two Column	114x60x109	500	---
LT-C0622/1	400 kN Flexural Testing Frame, Two Column	114x60x109	500	---
LT-C0225	Hydraulic Power Pack and Digital Data Acquisition & Control System	38x36x92	100	220 V, 50-60 Hz, 1 ph
LT-C0226	Hydraulic Power Pack	38x36x92	100	220 V, 50-60 Hz, 1 ph
LT-C0227	Digital Data Acquisition & Control System	---	---	220 V, 50-60 Hz, 1 ph
LT-G8031	Load Cell, 10 kN capacity	---	---	---
LT-G8032	Load Cell, 20 kN capacity	---	---	---
LT-G8033	Load Cell, 30 kN capacity	---	---	---
LT-G8034	Load Cell, 40 kN capacity	---	---	---
LT-C0228	High Precision Pressure Transducer (optional)	---	---	---
LT-C0229	Software	---	---	---
LT-G0800	Computer & Printer	---	---	220 V, 50-60 Hz, 1 ph

FLEXURAL TESTING FRAMES

STANDARDS: EN 1338, 1340, 12390-5, 12390-6, BS 1881, ASTM C78, C293, C496

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