AUTOMATIC CONCRETE COMPRESSION TESTING MACHINES, FOUR COLUMN

STANDARDS: EN 12390-3, 12390-4; BS 1881, ASTM C39

The HİRA Automatic range of 2000 kN, 3000 kN and 4000 kN, 5000 kN capacity four column compression testing machines have been designed for reliable and consistent testing of a wide range of specimens. 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.

Testing machines are supplied with EN compression platens as standard. Machines also comply with the ASTM C39 standard when used together with suitable platens.

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

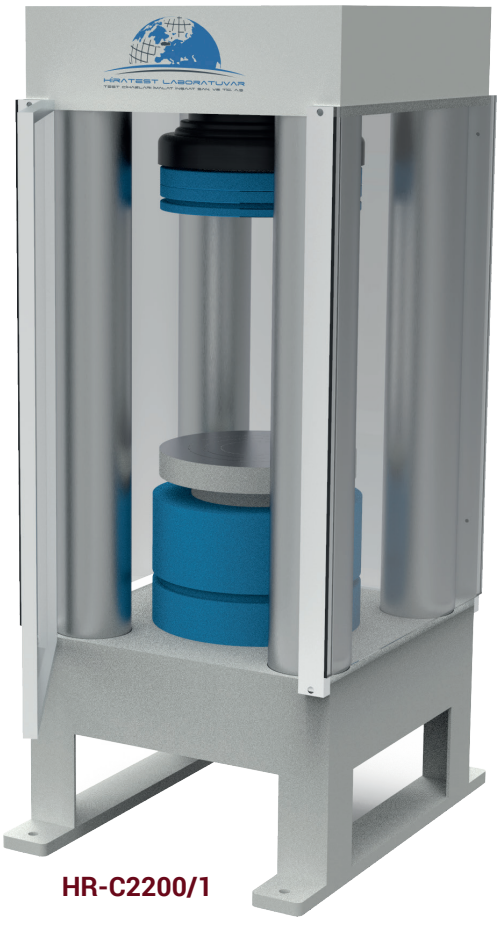
The Automatic Compression Testing Machines allow inexperienced operators to perform the tests. Once the machine has been switched on and the specimen is positioned and centered by the help of centering apparatus. The only required operations are;

- 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, when the specimen touches the upper platen the rapid approach is ended and starts loading at the pace rate that selected by user and stops once the specimen fails.

HR-C2200

The Four Column Automatic Concrete Compression Testing Machines consist of;

- Heavy duty Four Column Load Frame,
- Automatic Hydraulic Power Pack,
- Digital data acquisition & control system,
- Distance Pieces, Ø 200x30 mm, Ø 200x50 mm and Ø 200x80 mm,
- Upper Platen (with ball seating assembly) Ø300 mm,
- Lower Platen Ø300 mm,
- Loading Cylinder Assembly & Limit Switch for safety,
- Front and Rear Protective Doors for safety.



HR-C2200/1

Concrete Compression Load Frame

Capacities of 2000 kN, 3000 kN, 4000 kN and 5000 kN Four Column Load Frames are available models for column type frames.

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

Upper Platens / Lower Platens

Upper Platen (with ball seating assembly) Ø 300 mm, Lower Platen Ø 300 mm.

The platens enable the testing of a wide variety of cylinder, cube blocks or similar samples.

- Manufactured from high quality steel, which is then hardened, smoothed and finished.
- The roughness value for the surface texture of the auxiliary platens is ≤ 3.2 µm.
- Ø 300 mm Upper Platen (with ball seating assembly) and Lower Platen have centering rings on the lower platens for proper centering of samples

HR-C1270

Technical Specifications:

Product Code	HR-C1270
Product Name	Upper Loading Platen (with ball seating assembly) and Lower Loading Platen
Standard	EN 12390-4
Dimensions (mm)	Ø 300
Samples	Ø 100, 150, 160 mm cylinders & 100, 150, 200 mm cubes
Hardness (not less than)	≥ 55 HRC

Distance Pieces

Distance pieces are used to reduce the amount of vertical clearance between the upper platen and the lower platen. Supplied with Ø200 mm distance pieces.

Loading Cylinder Assembly & Limit Switch

All frames have a single acting up stroking ram. The diameter of piston changes with regard to the capacity.

The maximum ram stroke is 50 mm, a limit switch is fitted to prevent over travel of the ram which cuts the power to the pump for safety.

At the end of the test process to start a new test the piston returns to default position.

The pressure transducer is used for load measurements.

There is a low friction coaxial PTFE seal between the cylinder and the piston fitted to the cylinder.

HYDRAULIC POWER PACK AND DIGITAL DATA ACQUISITION & CONTROL SYSTEM

Hydraulic Power Pack

Automatic Hydraulic Power Pack, dual stage, 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 ±5%. A Rapid approach pump is supplied as standard. Safety valve (maximum pressure valve) is used to avoid machine overloading.

Maximum working pressure of the system is 400 bar.

HR-C8000

HİRA TESTING EQUIPMENT

Dual Stage Pump

The dual stage pump is formed by two groups;

1. Low pressure gear pump
2. High pressure radial piston pump

On the dual stage pump, a high delivery, low pressure gear pump is used for rapid approach, while a low delivery, high pressure radial piston pump is used for test execution. The rapid approach facility shortens the time interval from piston start until the upper platen touches to the specimen. This excellent feature helps to save a lot of time when a large number of specimens are going to be tested.

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 dual stage pump, the following parts are fitted to the distribution block; Solenoid valve, Safety valve (max. pressure valve), Transducer, Low pressure gear pump and High pressure radial piston pump.

High Precision Pressure Transducer

All models are supplied in Class 1 starting from 50 kN as standard EN 12390-3, 12390-4, BS 1881 and ASTM C39. The HİRA range of Automatic Machines can be upgraded with option High Precision Pressure Transducer special calibration Class 1 starting from 1% of the full range.

This unique performance enables the machines to be used for a considerable number of applications including:

- Early age (2 or 3 days) compression strength tests
- Flexural and splitting tests by using proper accessories
- Mortar (Cement) compression tests by using proper accessories
- Core Testing

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”.

HR-C8002

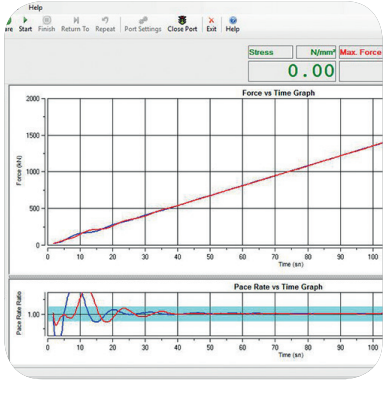
Software

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 Compression 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, tensile 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.



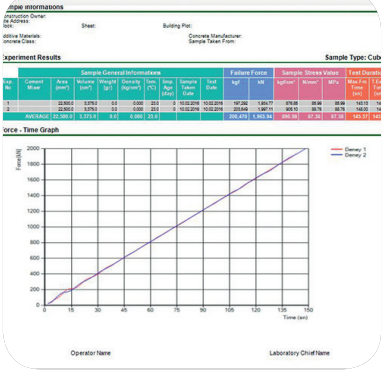
Software can be performed in Turkish and English.

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.



HİRA TESTING EQUIPMENT

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 Compression Testing Machines, Four Column			
Product Code	HR-C2200	HR-C3200	HR-C4200	HR-C5200
Capacity (kN)	2000	3000	4000	5000
Roughness (µm)	≤ 3.2	≤ 3.2	≤ 3.2	≤ 3.2
Ø Lower Platen (cm)	300	300	300	300
Ø Upper Platen (cm)	300	300	300	300
Max. Vertical clearance (cm)	33	33	52	52
Piston diameter (cm)	25	32	37	41
Piston Stroke(cm)	5	5	5	5
Horizontal clearance (cm)	35	44	49	53
Thickness of platens (cm)	5	5	5	5
Hardness of Platens (HRC)	55-60	55-60	55-60	55-60
Oil Capacity (lt)	25	25	25	25
Max. Working Pressure (bar)	400	400	400	400
Power (W)	750	750	750	750

Safety Features

- Maximum pressure valves to avoid machine overloading
- Piston travel limit switch
- Emergency stop button
- Software controlled maximum load value
- Front and rear transparent durable Plexiglas guards

Technical Specifications:

Product Code	Product Name	Dimensions (cm)	Weight (kg)	Power Supply
HR-C2200	2000 kN Automatic Compression Testing Machine, Four Column	91x56x107	1130	220 V, 50-60 Hz, 1 ph
HR-C3200	3000 kN Automatic Compression Testing Machine, Four Column	102x57x112	1900	220 V, 50-60 Hz, 1 ph
HR-C4200	4000 kN Automatic Compression Testing Machine, Four Column	109x61x135	2450	220 V, 50-60 Hz, 1 ph
HR-C5200	5000 kN Automatic Compression Testing Machine, Four Column	115x64x154	3250	220 V, 50-60 Hz, 1 ph

Spare Parts & Accessories:

Product Code	Product Name	Dimensions (cm)	Weight (kg)	Power Supply
HR-C2200/1	2000 kN Load Frame, Four Column	53x56x107	1030	---
HR-C3200/1	3000 kN Load Frame, Four Column	64x57x112	1800	---
HR-C4200/1	4000 kN Load Frame, Four Column	71x61x135	2350	---
HR-C5200/1	5000 kN Load Frame, Four Column	77x64x154	3150	---
HR-C8000	Hydraulic Power Pack and Digital Data Acquisition & Control System	36x38x91	100	220 V, 50-60 Hz, 1 ph
HR-C8001	Hydraulic Power Pack	36x38x91	98	220 V, 50-60 Hz, 1 ph
HR-C8002	Digital Data Acquisition & Control System	---	---	220 V, 50-60 Hz, 1 ph
HR-C8003	High Precision Pressure Transducer	---	---	---
HR-C8004	Software	---	---	---
HR-C8200	Distance Pieces	Ø 20 x 2,5	---	---
HR-C8201	Distance Pieces	Ø 20 x 3	---	---
HR-C8202	Distance Pieces	Ø 20 x 5	---	---
HR-C8203	Distance Pieces	Ø 20 x 8	---	---
HR-C1280	Ball Seating Assembly	---	---	---
HR-G0975	Computer & Printer	---	---	220 V, 50-60 Hz, 1 ph
HR-G0975/1	Usb to com port Converter	---	---	---
HR-G0979	Thermal Printer	---	---	---

SEMI-AUTOMATIC CONCRETE COMPRESSION TESTING MACHINES

STANDARDS: ASTM C39, ISO EN 7500, 12390-4

The HİRA Semi-Automatic (Motorized) range of 600 kN, 1500 kN, 2000 kN and 3000 kN capacity compression testing machines have been designed for reliable and consistent testing of a wide range of specimens. 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.

The Semi-Automatic Concrete Compression Testing Machines consist of;

- Load Frame,
- Semi-Automatic Hydraulic Power Pack,
- Digital Readout Unit
- Distance Pieces, 30 mm, 50 mm and 80 mm,
- Upper Platen (with ball seating assembly),
- Lower Platen,
- Loading Cylinder Assembly & Limit Switch for safety,
- Front and Rear Protective Doors for safety.

HR-C2450

Concrete Compression Load Frame

Capacities of 600 kN, 1500 kN, 2000 kN and 3000 kN Load Frames are most popular and available models for welded type frames.

The load frame provides the stability needed for accurate and repeatable test results over the years of operation. The machine's hydraulic power pack, control and read out units are positioned on the right hand side of the load frame for easier accessibility, increased productivity and for safer operations.