

HİRA TESTING EQUIPMENT

CEMENT COMPRESSION / FLEXURAL TEST MACHINE

STANDARDS: EN 196-1, 459-2, 1015-11, 13454-2, EN ISO 679, ASTM C109, C348, C349, BS 3892-1, 4551-1

The Automatic Cement Compression and Flexure Machine have been designed for testing the flexure of the mortar prisms 40x40x160 mm and the compression on the 40x40mm pieces of prisms after the flexure test or 50x50 mm and 70,7 mm mortar cubes.

These machines also meet the requirements of CE norms for safety and health of the operator.

Compression and flexure jigs, distance pieces, and also removable transparent front-rear safety doors (should be factory installed) should be ordered separately.

The Automatic Cement Compression and Flexure Testing Machines allow less experienced operators to perform the tests.

The only required operations are;

- Setting test parameters, including pace rate (only required when the specimen type is changed).
- Choosing the compression or flexure frame by using valve.
- Choosing Capacity of the frame (to call calibration values of the required load cell)
- Use load cell switch frame or compression side (up/down)
- 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.
- Automatically saves the test parameters and test results.

The Automatic Cement Compression and Flexural Testing Machines consist of;

- Very rigid two column single or double chamber Load Frames,
- Automatic Hydraulic Power Pack,
- Digital data acquisition & control system,
- Upper Platen (with ball seating assembly),
- Lower Platen,
- Loading Cylinder Assembly & Limit Switch for safety,
- Software and Ethernet Cable.

Cement Compression & Flexural Load Frames

15 kN and 250 kN high quality load cells are used on frames to provide high accuracy in load measuring. Both frames are fitted with round platens with Ø165 mm and these should be used together with suitable flexure and compression jigs.

Upper Platens

Manufactured from high quality steel which is hardened (more than HRC 53), smoothed and finished.

The roughness value for the surface texture of machine and auxiliary platens are 3,2 µm. the movable design.

Distance Pieces

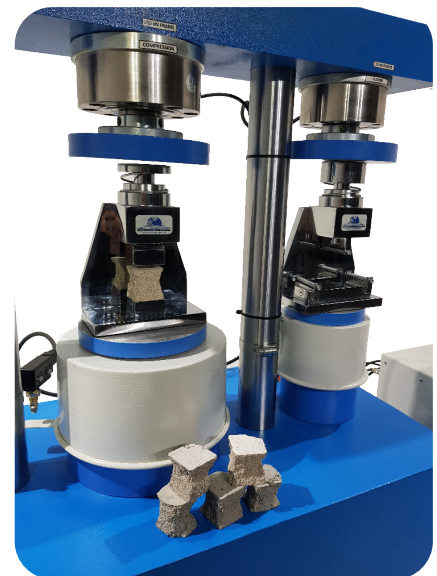
Due to the modular design of the frames any sample with suitable size, load and pace rate can be test on both chambers by decreasing the distance between platens.

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.

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 and control unit is designed to supply the required oil to the load frames for loading.

Controller unit has a simple and compact configuration.

Very silent power pack can load the specimen between 0,05 to 2.4 kN/sec with an accuracy of $\pm 5\%$. A Rapid approach pump is supplied as standard. Safety valve (maximum pressure valve) is used to avoid machine overloading.

HR-CE4000



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.

Maximum capacity is 400 bar.



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.

Load Cell

15 kN and 250 kN high quality load cells are used on frames to provide high accuracy in load measuring.

This property allows high accuracy at very low sample failures. (Class 1 at 2,5 kN to 250 kN)

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 Readout and Control Unit

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", or "Stress vs. Time" graphics.

Software

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

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

Main Features

- Pace rate control from 0,05 kN/sec to 2,4 kN/sec depending on piston size.
- Can control 2 frames
- Can make test with load control.
- Real time display of test graph.
- Analog channels for different frame load cells
- 10 data per second sample rate for each channel
- RS-232 serial port connecting for computer interface
- LCD display
- 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:

CEMENT COMPRESSION / FLEXURAL TEST MACHINE			
Model	HR-CE2500	HR-CE1500	
Test Type	Compression	Flexure	Compression
Capacity (kN)	250	15	250
Class 1 Measuring Range (kN)	2.5 to 250	0.5 to 15	2.5 to 250
The roughness value for texture of loading and auxiliary platens (μm)	≤ 3.2	≤ 3.2	≤ 3.2
Lower Platen Dimensions (mm)	165	165	165
Upper Platen Dimensions (mm)	165	165	165
Maximum Vertical Clearance Between Platens (mm)	250	250	250
Piston Diameter (mm)	160	80	160
Maximum Piston Movement (mm)	50	50	50
Horizontal Clearance (mm)	300	200	300
Power (W)	750	750	
Oil Capacity (lt)	25	25	
Maximum Working Pressure (bar)	125 bar	30 bar	125 bar

Safety Features

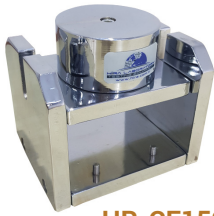
- Maximum pressure valves to avoid machine overloading
- Piston travel limit switch
- Emergency stop button
- Software controlled maximum load value

Technical Specifications:

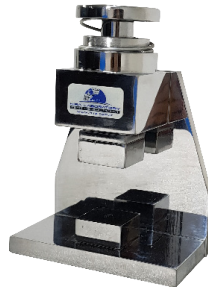
Product Code	Product Name	Dimensions (cm)	Weight (kg)	Power Supply
HR-CE1500	15/250 kN Automatic Cement Flexure/Compression Testing Machine	100x50x150	350	220 V, 50-60 Hz, 1 ph
HR-CE2500	250 kN Automatic Cement Compression Testing Machine	85x50x150	300	220 V, 50-60 Hz, 1 ph

Spare Parts & Accessories:

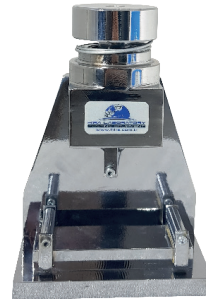
Product Code	Product Name	Dimensions (cm)	Weight (kg)	Power Supply
HR-CE1500/1	15/250 kN Cement Flexure/Compression Testing Frame	64x50x150	250	---
HR-CE2500/1	250 kN Cement Compression Testing Frame	50x50x150	200	---
HR-CE1525	Flexure Jig Assembly to test 40x40x160 mm mortar prisms	15x15x18	11	---
HR-CE1526	Compression Jig Assembly to test 50 mm (2") mortar cubes	15x15x18	12	---
HR-CE1527	Compression Jig Assembly to test 40x40x40 mm mortar prisms	15x15x18	12	---
HR-CE1528	Compression Jig Assembly BS, to test 70,7 mm mortar cubes	15x13x19	9	---
HR-CE4000	Hydraulic Power Pack and Digital Data Acquisition & Control System	36x38x91	100	220 V, 50-60 Hz, 1 ph
HR-CE4001	Hydraulic Power Pack	36x38x91	98	220 V, 50-60 Hz, 1 ph
HR-CE4002	Digital Data Acquisition & Control System	---	---	220 V, 50-60 Hz, 1 ph
HR-CE4003	Software	---	---	---
HR-CE4200	Distance Piece	Ø 15 x 1,5	---	---
HR-CE4201	Distance Piece	Ø 15 x 3	---	---
HR-CE4202	Distance Piece	Ø 15 x 5	---	---
HR-CE4203	Distance Piece	Ø 15 x 9	---	---
HR-G0975	Computer & Printer	---	---	220 V, 50-60 Hz, 1 ph
HR-G0975/1	Usb to com port Converter	---	---	---
HR-G0979	Thermal Printer	---	---	---
HR-G0979/1	Thermal Printer roll for printer (pack of 10 rolls)	---	---	---



HR-CE1528



HR-CE1527



HR-CE1525