

CEMENT COMPRESSION / FLEXURAL TEST MACHINE WITH H-TOUCH PRO MAX CONTROL UNIT (TOUCH SCREEN)

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,
- H-Touch Pro Max Control Unit,
- Upper Platen (with ball seating assembly),
- Lower Platen,
- Loading Cylinder Assembly & Limit Switch for safety,
- H-GUI 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

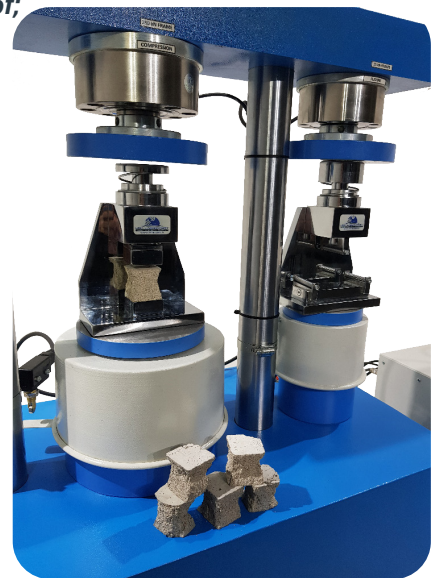
Due to the modular design of the frames any sample with suitable size, load and pace rate can be test on both chambers by decreasing the distance between platens.

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 H-TOUCH PRO MAX CONTROL UNIT

Hydraulic Power Pack

Automatic Hydraulic Power Pack, dual stage, controlled by H-Touch Pro Max 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/TS



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

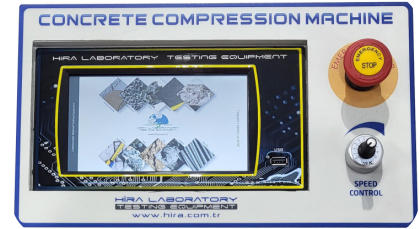
The tank includes enough oil to fill the mechanism which pushes the ram during the test. The level and oil temperature can be seen on the indicator fitted to the tank. It has 25 L capacity. Hydraulic motor oil, number 46, must be used.



Digital Readout and Control Unit

HİRATEST H-Touch Pro Max Control Unit is designed to control the automatic compressive, flexural and splitting tensile strength tests of construction materials such as concrete, cement mortar, masonry units, paving blocks, roofing tiles by processing of data from load-cells, pressure transducers or displacement transducers which are fitted to the machine.

All the operations of H-Touch Pro Max Control Unit are controlled from the front panel color resistive of TFT-LCD Touchscreen display and function keys.



HR-CE4002/TS

It displays all menu option listings simultaneously, allowing the operator to access the required option in a seamless manner to activate the option or enter a numeric value to set the test parameters.

H-Touch PRO Max Control Unit enable simultaneously display machine status, test values, warnings during operation and test graphs such as load-time or load-displacement curves in real time.

Digital graphic display of the unit is able to draw real-time "Load vs. Time" or "Stress vs. Time" graphics.

Main Features of H-Touch Pro Max Control Unit of H-Touch Pro Max Control Unit

- 2 analog channels for load cell or pressure sensors or displacement sensors.
- Can control 2 frames
- Provides load control of two separate testing frames with Closed-loop PID.
- Optionally supplied-integrated thermal printer (If requested, must be specified in the order)
- Real-time numeric display of load, loading rate and load/ time curves with automatic resolution adjustment on the touchscreen
- Up to 8-point calibration support and adjustable digital gains for every channel
- User-customizable load, position limits and test termination conditions
- Backup and recall option for device settings
- Recalling to factory default settings option.
- Easy recall of embedded test parameters for different types of tests and sample sizes
- Storage capacity up to 10.000 test result or 80 hours real time data recording with 1 sample per second recording interval (recording interval is variable).
- Graph axes on touchscreen can be configured for different tests and configurations
- The axes of the graph drawn on the device can be set to constant maximum values or axes can be automatically scaled according to the data
- Three different unit system selection; kN- Mpa -mm or lbf- psi- in or kgf- kgf/cm²- cm
- Real time and adjustable date/time.
- Multi-language support (English, French, Spanish, Turkish, Russian...)
- LAN connection for instantaneous transfer of test data to PC.
- USB port support for transfer of test data to a flash drive.
- Password Protection for machine settings, calibration and channel menus
- Record of test results in txt and MS excel format on pre-defined intervals
- 5 different visual themes
- Customizable IP

Hardware

- 2 fully customizable analog channels with 24-bit ADC and PGA-FPGA circuit
- 800x480 pixel and 65535 color resolution TFT-LCD touchscreen
- 33 Hz control loop
- 32 Bit, 120 MHz ARM CORTEX M3 micro-PROcessor (CPU) for data acquisition
- 32 Bit, 400 MHz ARM CORTEX M3 micro-PROcessor (CPU) for data display
- Additional memory support up to 32 GB via external USB flash drive
- Support for -optionally supplied- integrated thermal printer
- Real time display of test graph
- LAN connection for instantaneous transfer of test data to PC.
- USB port support for transfer of test data to a flash drive

Software

HIRATEST H-GUI Software has been designed for data acquisition, processing controlling, presentation and reporting compressive, flexural and splitting tensile strength tests of construction materials such as concrete, cement mortar, masonry units, paving blocks, roofing tiles with appropriate Automatic Compression/Flexure Testing Machines and also with a computer.

The Automatic Compression Machine can be controlled (Start, Stop commands) by a computer with the HIRATEST H-GUI Software free of charge.

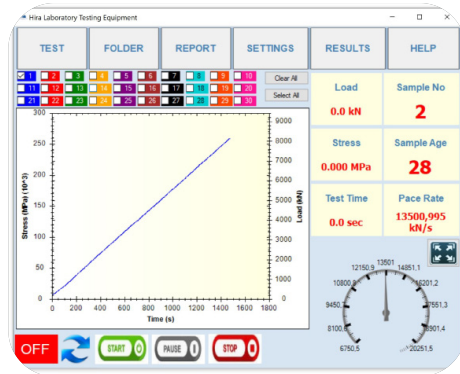
The advanced functions for database management provide an easy navigation of all saved data.

Test parameters can be set and details about the test carried out such as Test Type, Sample Type, Report details, Customer details, Sample details and other information required can be entered in the software.

This informations and "Load vs. Time" or "Stress vs. Time" graphics can be seen and printed out on the Test Report.

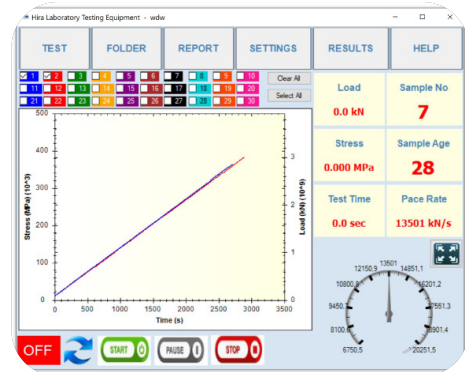
Following tests can be done with the HIRATEST H-GUI Software;

- Compressive Strength of Concrete Cylinders / Cubes
- Flexural Strength of Concrete Beams
- Compressive Strength of Cement Mortars
- Flexural Strength of Cement Mortars
- Tensile Splitting Strength of Concrete Paving Blocks
- Tensile Splitting Strength of Concrete Cylinders / Cubes
- Flexural Strength of Roofing Tiles
- Flexural Strength of Concrete Kerbs
- Compressive Strength of Masonry Units.



Main Features of H-GUI Software;

- Multi-language support and customizable user interface
- 30 Tests Results, Graphics and Properties Storage Capacity in One Test File
- Exporting test results to database
- Advanced test graphical interface
- Option to store and recall test information
- Modification of test machine parameters using the software
- Able to save frequently used texts in memory and recall them when necessary
- Exporting reports and graphs
- Flexible report and graph formats

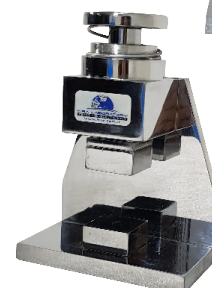


Main Features of the device

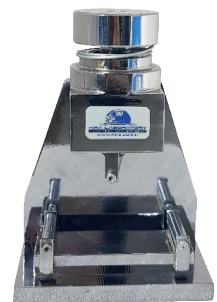
- Pace rate control from 0,05 kN/sec to 2,4 kN/sec depending on piston size.
- Tests automatically with closed loop control
- Tests can be performed by controlling the machine either H-Touch Screen Digital Readout Unit or on a computer with using free HIRATEST Software which is provided free of charge with the machines.
- Load measurement with a load cell
- Hydraulic pump with dual stage for rapid approach
- Piston return at the end of test automatically
- Multi-Point calibration function for the channels
- Optionally supplied-integrated thermal printer (If requested, must be specified in the order)
- Ethernet port connecting for computer interface
- H-Touch Screen Digital Readout Unit
- Free of charge HIRATEST Software for the test control and printout the test report



HR-CE1528



HR-CE1527



HR-CE1525

Technical Specifications:

CEMENT COMPRESSION / FLEXURAL TEST MACHINE			
Model	HR-CE2500/TS	HR-CE1500/TS	
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/TS	15/250 kN Automatic Cement Flexure/Compression Testing Machine	100x50x150	350	220 V, 50-60 Hz, 1 ph
HR-CE2500/TS	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/TS	Hydraulic Power Pack and H-Touch Pro Max Control Unit	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/TS	H-Touch Pro Max Control Unit	---	---	220 V, 50-60 Hz, 1 ph
HR-CE4003/TS	H-GUI Software	---	---	---
HR-CE4200	Distance Piece	$\emptyset 15 \times 1,5$	---	---
HR-CE4201	Distance Piece	$\emptyset 15 \times 3$	---	---
HR-CE4202	Distance Piece	$\emptyset 15 \times 5$	---	---
HR-CE4203	Distance Piece	$\emptyset 15 \times 9$	---	---
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)	---	---	---