

## **AUTOMATIC PUMICE CONCRETE-BRICK-CONCRETE BLOCK COMPRESSION TESTING MACHINE WITH H-TOUCH PRO MAX CONTROL UNIT (TOUCH SCREEN)**

STANDARDS: EN 772-1

The HİRA Automatic range of 1200 kN capacity compression testing machine has been designed for reliable and consistent testing of a Pumice Concrete, Brick and Concrete Blocks of specimens.

The dimensions of the upper and lower plates allow the testing of sample on 510x310x50 mm compression plates, concrete blocks and building materials.

Tests can be performed by controlling the machine either H-Touch Pro Max Control Unit or on a computer with using free HİRATEST Software which is provided free of charge with the machines. There are several advantages of performing tests on computer with using HİRATEST Software, such as reporting and graphical output.

The Automatic Pumice Concrete-Brick-Concrete Block 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.
- Automatically saves the test parameters and test results.



**HR-C1200/TS**

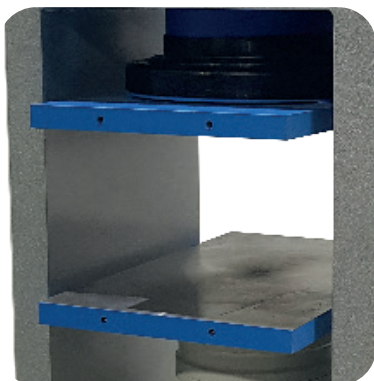
### ***The Automatic Pumice Concrete-Brick-Concrete Block Compression Testing Machine consist of;***

- Load Frame,
- Automatic Hydraulic Power Pack,
- H-Touch Pro Max Control Unit,
- Distance Pieces, 30 mm and 50 mm,
- Upper Platen (with ball seating assembly) 510x310x50 mm,
- Lower Platen 510x310x50 mm,
- Loading Cylinder Assembly & Limit Switch for safety,
- H-GUI Software and Ethernet Cable.

### ***Pumice Concrete-Brick-Concrete Block Compression Load Frame***

The Load Frame is made of welded steel walls the piston is placed in the center of frame.

The 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) 510x310x50 mm and Lower Platen 510x310x50 mm.

- Manufactured from high quality steel, which is then hardened, smoothed and finished.
- The roughness value for the surface texture of the auxiliary platens is  $\leq 3.2 \mu\text{m}$ .

## Distance Pieces

Distance pieces are used to reduce the amount of vertical clearance between the upper platen and the lower platen. Supplied with 30 mm and 50 mm distance pieces.

**HR-C8201**  
**HR-C8202**



## 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 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. The 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.

Very silent power pack can load the specimen between 1 kN/sec. to 20 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.

Maximum working pressure of the system is 400 bar.



**HR-C8000/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.

# HİRA TESTING EQUIPMENT



## 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

The HiRA 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



**HR-C8003**



## 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

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.

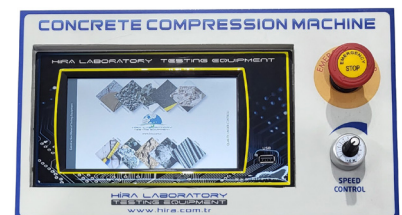
All the operations of H-Touch Pro Max Control Unit are controlled from the front panel color resistive of TFT-LCD Touchscreen display and function keys.

The unit has easy to use menu options.

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.



**HR-C8002/TS**



## Main Features 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/cm<sup>2</sup>- 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

HİRATEST 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 HİRATEST H-GUI Software free of charge.

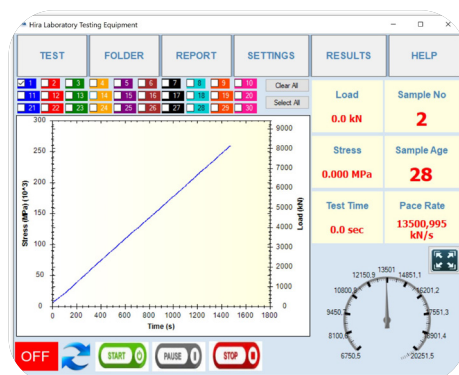
The advanced functions for database management provide an easy navigation of all saved data.

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.

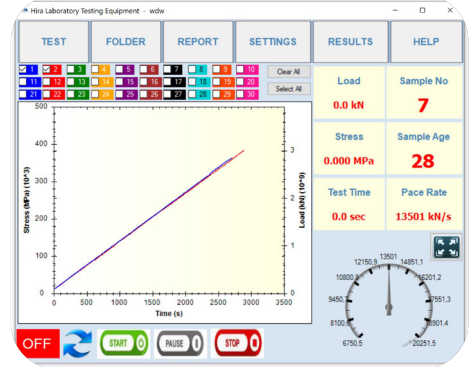
## Following tests can be done with the HİRATEST H-GUI Software;

- 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
- Help and user manual display



## Main Features of H-GUI Software

- Pace rate control from 1 kN/sec to 20 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 pressure transducer
- Hydraulic pump with dual stage for rapid approach
- Welded steel walled frame with a single acting piston
- 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.

### Technical Specifications:

Product Name	Automatic Pumice Concrete-Brick-Concrete Block Compression Testing Machine
Product Code	HR-C1200/TS
Capacity (kN)	1200
Roughness (µm)	≤ 3.2
Ø Lower Platen (mm)	510x300x50
Ø Upper Platen (mm)	510x300x50
Max. Vertical clearance (cm)	25
Piston diameter (cm)	20
Piston Stroke(cm)	5
Horizontal clearance (cm)	31
Thickness of platens (cm)	5
Hardness of Platens (HRC)	55-60
Oil Capacity (lt)	25
Max. Working Pressure (bar)	400
Power (W)	750

## 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-C1200/TS	Automatic Pumice Concrete-Brick-Concrete Block Compression Testing Machine	75x60x100	600	220 V, 50-60 Hz, 1 ph

## Spare Parts & Accessories:

Product Code	Product Name	Dimensions (cm)	Weight (kg)	Power Supply
HR-C1200/1	1200 kN Pumice Concrete-Brick-Concrete Block Compression Testing Frame	37x60x100	500	---
HR-C8000/TS	Hydraulic Power Pack and H-Touch Pro Max Control Unit	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/TS	H-Touch Pro Max Control Unit	---	---	220 V, 50-60 Hz, 1 ph
HR-C8003	High Precision Pressure Transducer	---	---	---
HR-C8004/TS	H-GUI Software	---	---	---
HR-C8200	Distance Pieces	2,5	---	---
HR-C8201	Distance Pieces	3	---	---
HR-C8202	Distance Pieces	5	---	---
HR-C8203	Distance Pieces	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	---	---	---
HR-G0979/1	Thermal Printer roll for printer (pack of 10 rolls)	---	---	---