

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.
- Automatically saves the test parameters and test results.



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.

Heavy duty Four Column 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.



HR-C2200/1

HİRA TESTING EQUIPMENT



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 $\leq 3.2 \mu\text{m}$.
- Ø 300 mm Upper Platen (with ball seating assembly) and Lower Platen have centering rings on the lower platens for proper centering of samples

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



HR-C1270

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 $\pm 5\%$. 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



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



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.

HİRA TESTING EQUIPMENT

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.

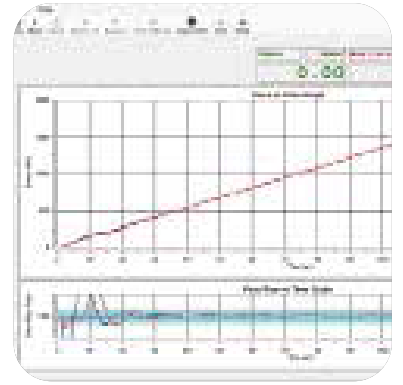
Software can be performed in Turkish and English.

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.



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	---	---	---
HR-G0979/1	Thermal Printer roll for printer (pack of 10 rolls)	---	---	---

AUTOMATIC CONCRETE COMPRESSION TESTING MACHINES, FOUR COLUMN WITH H-TOUCH PRO MAX CONTROL UNIT (TOUCH SCREEN)

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.

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

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.
- Automatically saves the test parameters and test results.



HR-C2200/TS

The Four Column Automatic Concrete Compression Testing Machines consist of;

- Heavy duty Four Column Load Frame,
- Automatic Hydraulic Power Pack,
- H-Touch Pro Max Control Unit,
- 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.
- H-GUI Software and Ethernet Cable.

Heavy duty Four Column 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.

The frames are supplied with factory calibration certificate for force transfer stability and the self-alignment of the upper loading platen conforming to EN 12390-4.



HR-C2200/1

Upper Platens / Lower Platens

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 $\leq 3.2 \mu\text{m}$.
- $\varnothing 300$ mm Upper Platen (with ball seating assembly) and Lower Platen have centering rings on the lower platens for proper centering of 100 mm and 150 mm cube, 100 mm and 150 mm cylinder samples.
- $\varnothing 300$ mm Upper Platen (with ball seating assembly) and Lower Platen has a specimen centering apparatus on lower platen as standard 150 mm cube and 150 mm cylinder.



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)	$\varnothing 300$
Samples	$\varnothing 100, 150, 160$ 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 $\varnothing 200$ 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 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.

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



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/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

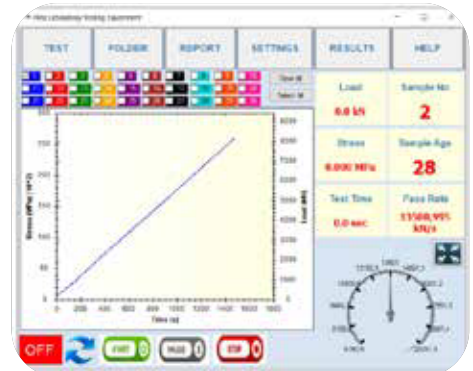
Software

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.



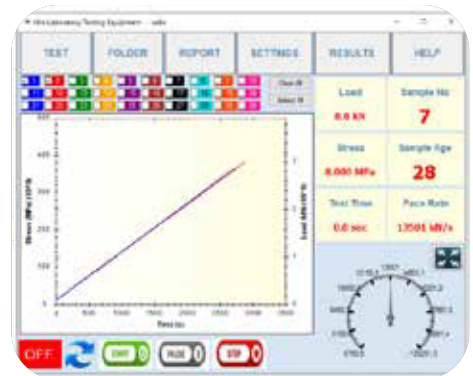
This informations and “Load vs. Time” or “Stress vs. Time” graphics can be seen and printed out on the Test Report.

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 the device

- Pace rate control from 1 kN/sec to 20 kN/sec depending on piston size.
- Accuracy Class 1 acc. to EN 12390-4 starting from with the 5% of the machine capacity (Special calibration option Class 1 starting from 1% of the full range with HR-C8003)
- Supplied with factory calibration certificate for force transfer stability and the self-alignment of the upper loading platen conforming to EN 12390-4
- 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 HİRATEST 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 HİRATEST Software for the test control and printout the test report.

Technical Specifications:

Product Name	Automatic Compression Testing Machines, Four Column			
Product Code	HR-C2200/TS	HR-C3200/TS	HR-C4200/TS	HR-C5200/TS
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/TS	2000 kN Automatic Compression Testing Machine, Four Column	91x56x107	1130	220 V, 50-60 Hz, 1 ph
HR-C3200/TS	3000 kN Automatic Compression Testing Machine, Four Column	102x57x112	1900	220 V, 50-60 Hz, 1 ph
HR-C4200/TS	4000 kN Automatic Compression Testing Machine, Four Column	109x61x135	2450	220 V, 50-60 Hz, 1 ph
HR-C5200/TS	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/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	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	---	---	---
HR-G0979/1	Thermal Printer roll for printer (pack of 10 rolls)	---	---	---