

WIDE CLEARANCE AUTOMATIC FLEXURAL TESTING MACHINES

STANDARDS: EN 1338, 1339, 1340, 12390-5, 12390-6, BS 1881, ASTM C78, C293, C496

The HİRA Automatic range of U Type 200 kN and 500 kN capacity, C Type 300 kN and 500 kN capacity Wide Clearance Flexural Testing Machines have been designed for reliable and consistent testing of flexural test on standard concrete beams, concrete or natural stone kerbs, concrete paving flags, and natural stone slabs and tensile splitting test of concrete paving blocks with suitable apparatus.

Machines confirm all EN, ASTM and BS standards written above. These also meet the requirements of CE norms for the safety and health of the operator.

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

The Automatic Flexural Testing Machines allow inexperienced operators to perform the tests. Once the machine is switched on and the specimen is placed. 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, 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 HİRA ranges of Flexural Machines have the accuracy of Class 1 starting from 2% of the full capacity.

The Wide Clearance Automatic Flexural Testing Machines consist of;

- Heavy Duty Welded Wide Clearance Load Frame,
- Automatic Hydraulic Power Pack,
- Digital data acquisition & control system,
- Software and Ethernet Cable.

Flexural test assemblies should be ordered separately.

Wide Clearance Flexural Load Frame

The multipurpose HİRA Flexural Testing Frames are designed for minimum deflection at maximum load resulting in very high accuracy. The load frame is a welded steel fabrication carrying the ram fitted to the steel base. All Frames have a single acting up stroking ram with over travel switch protection to stop the machine when maximum ram travel is reached. A load cell is used for load measurements on all frames.

The distance between the columns can be adjusted up to 1 meter.

Wide clearance Flexural Frames are designed to accept all accessories required for flexural or compression tests.

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

All frames can be connected to HİRA compression machine as a second frame or can be used with any HİRA power pack as an independent Flexural Machine.

The main characteristics are:

- High stability welded assembly
- High accuracy load measurement with load cells
- Can accept wide range of accessories for mentioned standards
- Can be connected to HİRA Compression Machine or Hydraulic Power Pack



HR-C5150

HİRA TESTING EQUIPMENT

FLEXURAL TESTING ACCESSORIES

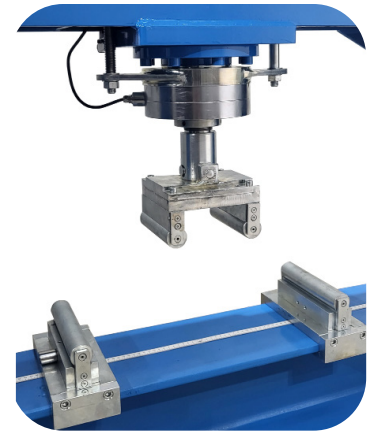
Flexural Testing Assembly for Concrete Beams

The test assembly is used for 3 or 4 point flexural tests on 100 or 150 mm Concrete Beams.

The set consist of 2 upper and 2 lower rollers of Ø38 x 160 mm.

The distance of lower bearers can be adjusted between 100 mm and 800 mm. The distance between upper bearers can be set to 100 mm or 150 mm.

For 3 point testing one of the bearers can be removed and the other placed in the center.



HR-C6050



HR-C6051

Flexural Testing Assembly for Concrete Kerbs

The test assembly is used for flexural tests on Concrete Kerbs.

The set consists of 2 lower rollers of Ø 20 x 620 mm and Ø 40 mm upper loading piston with ball seating assembly.

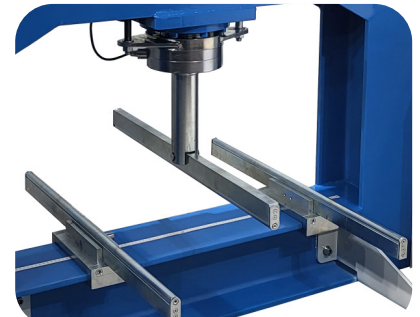
The distance of lower rollers can be adjusted between 100 mm to 800 mm.

Flexural Test Assembly for Concrete Paving Flags and Concrete Terrazzo Tiles, Natural Stone Kerbs and Slabs

The test assembly is used for flexural tests on Concrete Paving Flags and Concrete Terrazzo Tiles, Natural Stone Kerbs and Slabs.

The set consists of 2 lower rollers and upper roller of Ø 20x 620 mm.

The distance of lower rollers can be adjusted between 100 mm to 800 mm.



HR-C6052



HR-C6054

Splitting Tensile Test Device for Block Pavers

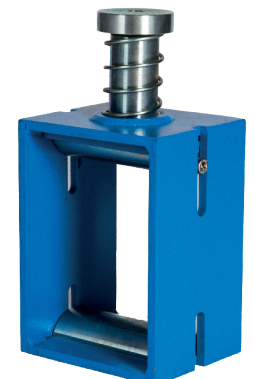
Splitting Tensile Test Device for Block Pavers is accessory for compression machines for measuring the splitting tensile strengths of 60-100 mm height x 220 mm length concrete block pavers according to the requirements of the related standards.

Splitting Tensile Test Device for Concrete Cubes

Splitting Tensile Test Device for Concrete Cubes is accessory for compression machines for measuring the splitting tensile strengths of 150 mm cube concrete specimens according to the requirements of the related standards.

Distance Piece for Splitting Tensile Test Device for Concrete Cubes

Can be used for 100 mm cube concrete specimens by using this Distance pieces with Splitting Tensile Test Device for Concrete Cubes.



HR-C6053



HR-C6055

Splitting Tensile Test Device for Cylinders

Splitting Tensile Test Device for Cylinders is accessory for compression machines for measuring the splitting tensile strengths of Ø150x300 mm and Ø160x320 mm cylindrical specimens according to the requirements of the related standards.

Distance Piece for Splitting Tensile Test Device for Cylinders

Can be used for Ø100x200 mm Cylindrical Specimens by using this Distance pieces with Splitting Tensile Test Device for Concrete Cylinders.



HR-C6057

Technical Specifications:

| Product Code | Product Name | Standards | Dimensions (cm) | Weight (kg) |
|--------------|--|--|-----------------|-------------|
| HR-C6050 | Flexural Testing Assembly for Concrete Beams | ASTM C 293, ASTM C 78, EN 12390-5, BS 1881:118 | 20x20x20 | 16 |
| HR-C6051 | Flexural Testing Assembly for Concrete Kerbs | EN 1340 | 62x25x10 | 17 |
| HR-C6052 | Flexural Testing Assembly for Concrete Paving Flags and Concrete Terrazzo Tiles, Natural Stone Kerbs and Slabs | EN 1339, EN 1343, EN 12372 | 62x26x15 | 25 |
| HR-C6053 | Splitting Tensile Test Device for 150x150 mm Cube Specimens | EN 12390-6 | 18x15x32 | 15 |
| HR-C6053/1 | Distance Piece for HR-C5053 for 100x100 mm Cube Specimens | EN 12390-6 | — | — |
| HR-C6054 | Splitting Tensile Test Device for 60-100 mm height Block Pavers | EN 12390-6, EN 1338, ASTM C 496 | 24x16x32 | 17,5 |
| HR-C6055 | Splitting Tensile Test Device for Ø150x300 mm & Ø160x320 mm Cylindrical Specimens | EN 12390-6, ASTM C 496 | 34x15x33 | 25 |
| HR-C6055/1 | Distance Piece for HR-C5055 for Ø100x200 mm Cylindrical Specimens | EN 12390-6 | — | — |
| HR-C6056 | Apparatus, used for Flexure Test on Rain Gutter | — | — | — |
| HR-C6057 | Wood Fibre Boards, Pack of 50 | — | 0,4x1,5x34,5 | — |

HYDRAULIC POWER PACK AND DIGITAL DATA ACQUISITION & CONTROL SYSTEM

Hydraulic Power Pack

Automatic Hydraulic Power Pack, 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%. Safety valve (maximum pressure valve) is used to avoid machine overloading.

Maximum working pressure of the system is 400 bar.



HR-C8000



Single Stage Pump

The single stage pump is formed by;

High pressure radial piston pump

On the single stage pump, high pressure radial piston pump is used for test execution.

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 single stage pump, the following parts are fitted to the distribution block; Solenoid valve, Safety valve (max. pressure valve), Load Cell and High pressure radial piston pump.

High Precision Pressure Transducer (Optional)

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

Load Cell

Load Cell is used according to the device capacity for load measurements.

The user can choose Load Cell or Transducer in the order stage.

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 Flexural Testing 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, flexure 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.

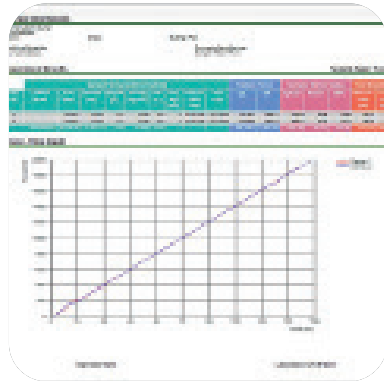
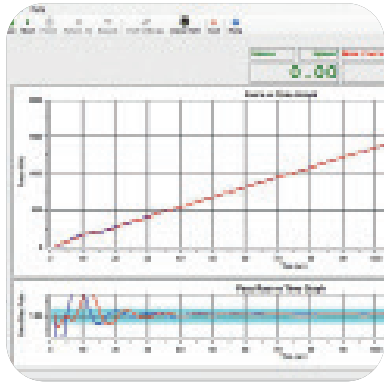
Software can be performed in Turkish and English.

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 | Wide Clearance Automatic Flexural Testing Machines | | | |
|---|--|----------|----------|----------|
| Product Code | HR-C5100 | HR-C5150 | HR-C5125 | HR-C5130 |
| Type | U Type | U Type | C Type | C Type |
| Capacity (kN) | 200 | 500 | 300 | 500 |
| Ram Travel (mm) | 50 | | | |
| Max. Vertical clearance (mm) | 425 (without accessories) | | | |
| Max. Horizontal clearance (mm) | 1000 | | | |
| Max. Clearance Between Lower Rollers (mm) | 900 | | 890 | |

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-C5100 | 200 kN Wide Clearance Automatic Flexural Testing Machine, U Type | 180x60x115 | 600 | 220 V, 50-60 Hz, 1 ph |
| HR-C5150 | 500 kN Wide Clearance Automatic Flexural Testing Machine, U Type | 190x75x115 | 700 | 220 V, 50-60 Hz, 1 ph |
| HR-C5125 | 300 kN Wide Clearance Automatic Flexural Testing Machine, C Type | 140x110x130 | 655 | 220 V, 50-60 Hz, 1 ph |
| HR-C5130 | 500 kN Wide Clearance Automatic Flexural Testing Machine, C Type | 140x110x135 | 700 | 220 V, 50-60 Hz, 1 ph |

Spare Parts & Accessories:

| Product Code | Product Name | Dimensions (cm) | Weight (kg) | Power Supply |
|--------------|--|-----------------|-------------|-----------------------|
| HR-C5100/1 | 200 kN Wide Clearance Flexural Testing Frame, U Type | 140x60x115 | 500 | --- |
| HR-C5150/1 | 500 kN Wide Clearance Flexural Testing Frame, U Type | 150x75x115 | 600 | --- |
| HR-C5125/1 | 300 kN Wide Clearance Flexural Testing Frame, C Type | 100x110x130 | 555 | --- |
| HR-C5130/1 | 500 kN Wide Clearance Flexural Testing Frame, C Type | 100x110x135 | 600 | --- |
| 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 | 100 | 220 V, 50-60 Hz, 1 ph |
| HR-C8002 | Digital Data Acquisition & Control System | --- | --- | 220 V, 50-60 Hz, 1 ph |
| HR-G0983 | Load Cell, 200 kN capacity | --- | --- | --- |
| HR-G0986 | Load Cell, 500 kN capacity | --- | --- | --- |
| HR-G0984 | Load Cell, 300 kN capacity | --- | --- | --- |
| HR-C8003 | High Precision Pressure Transducer (optional) | --- | --- | --- |
| HR-C8004 | Software | --- | --- | --- |
| 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-C5125