SECTION HR

CONCRETE

The analysis and study of the properties of concrete is a fundamental part of our sector.
The final quality of the concrete depends on many variables such as: workability, consistency, determination of setting time, bulk density, air content, temperature, compressive strength, etc...

Proeti offers a wide line of equipment to carry out the necessary tests for the aforementioned variables with strict compliance with all the requirements of the EN, ASTM and other international standards.

COMPRESSION TESTING MACHINES TESTED FOR HIGH STABILITY TO TEST CUBES UP TO 200 MM AND CYLINDERS UP TO Ø160X320 MM

EN 12390-4 | UNE 83304 | ASTM C39 | AASHTO T22 | NF P18-411 | BS 1881:115 | DIN 51220

Manufactured with four columns frame is prestressed on 8 ring nuts and the clamping is obtained and checked by a dynamometric spanner, the compression platens are hardened over 55 HRC and rectified. The spherical seat, in oil bath with null end float, is manufactured to grant an accurate self-alignment without frictions of the upper compression platen to the specimen.

The most important feature of the high stability frames is their uniform distribution of the applied load on all the specimen surface under test. The sample breakage is satisfactory and the strength results are correct, high and true.

Our complete range of compression testing machines available are employed to control and manage all sorts of automatic and semi-automatic testing machines in order to satisfy and to personalize any specific requirement by the enduser.

Two options for the digital control unit:
-2 channels and interface with 5 multi-functions pushbuttons
-8 channels and touch-screen user-friendly interface

All the compression machines are supplied with a traceable ENAC calibration certificate (Class I).

COMPRESSION TESTING MACHINES 2000 KN

HR013

Maximum vertical daylight: 336 mm
Horizontal daylight between columns: 260 mm
Compression platens: Ø287X60 mm
Calibration accuracy: Class 1
Maximum ram travel: 60 mm
Power supply: 230 V | 50 Hz | 750 W
Dimensions: 690x400x1400 mm
Weight: 850...920 Kg

COMPRESSION TESTING MACHINES 3000 KN

HR027

Maximum vertical daylight: 336 mm
Horizontal daylight between columns: 272 mm
Compression platens: Ø287x60 mm
Calibration accuracy: Class 1
Maximum ram travel: 60 mm
Power supply: 230 V | 50 Hz | 750 W
Dimensions: 750x450x1500 mm
Weight: 1200...1250 Kg

CODE	CAPACITY	CONTROL SYSTEM	HYDRAULIC PUMP
HR011	2000 KN	2 channels	Motorized
HR013	2000 KN	8 channels	Motorized
HR015	2000 KN	2 channels	Servo controlled
HR017	2000 KN	8 channels	Servo controlled
HR021	3000 KN	2 channels	Motorized
HR023	3000 KN	8 channels	Motorized
HR025	3000 KN	2 channels	Servo controlled
HR027	3000 KN	8 channels	Servo controlled

COMPRESSION TESTING MACHINES TESTED FOR HIGH STABILITY FOR RESEARCH LABORATORIES 5000 KN HIGH STRENGTH SPECIMENS, EXPLOSIVE SAMPLES, ROCK AND CERAMIC

EN 12390-4 | BS 1881:115 | DIN 51220 | NF P18-411 | GOST 10180-2012

Specifically designed to cope with the explosive energy release resulting from high strength concrete specimen failure. These high stiffness frames are particularly suitable for research purposes.

The structure is four pre-tensioned columns with only 0,3 mm strain at maximum load. EN heavy duty spherical seat allows free alignment at the initial contact with the specimen. The compression platens are hardened over 55 HRC and rectified. Includes a front rigid door and rear fragment guard.

All the compression machines are supplied with a traceable ENAC calibration certificate (Class I).

Maximum vertical daylight: 411 mm
Horizontal daylight between columns: 345 mm
Compression platens: Ø316X60 mm
Calibration accuracy: Class 1
Maximum ram travel: 100 mm
Power supply: 230 V | 50 Hz | 750 W
Dimensions: 750x750x1700 mm
Weight: 4000 Kg

HR033

CODE	CONTROL SYSTEM	HYDRAULIC PUMP
HR031	8 channels	Motorized
HR033	8 channels	Servo controlled

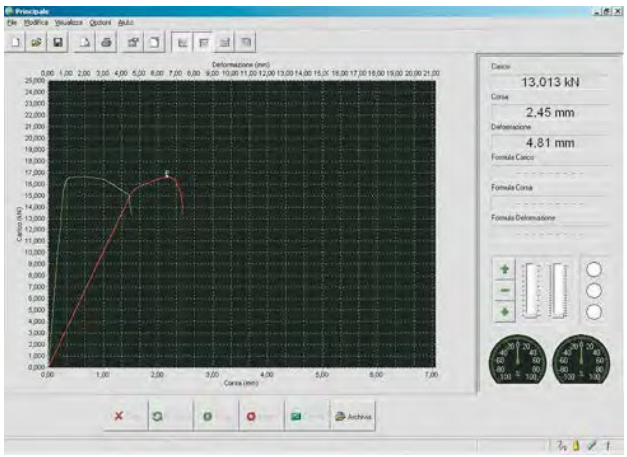
ACCESSORIES

DISTANCE PIECES
Used to reduce the vertical clearance between the compression platens, according to the height of the specimen to be tested, so to avoid the ram to make its max. excursion without having compressed the specimen. The distance pieces are placed between the ram and the lower compression platen.

CODE	HIGH
HR030-01	25 mm
HR030-02	50 mm
HR030-03	100 mm

MG035
Thermal paper graphic printer
MG035-01
Thermal paper (10 rolls)
MG031
Custom computer
MG010-01
Software for remote control through PC

MG031



COMPRESSION TESTING MACHINE FOR PRODUCTION ROUTINE TESTS TO TEST CUBES UP TO 150 MM AND CYLINDERS UP TO Ø160X320 MM

ASTM C39 | AASHTO T22 | NF P18-411 | BS 1610 | GOST 10180-2012

These machines have a four column rigid frame steel construction. Spherical seat allows free alignment at the initial contact with the specimen.

The columns are prestressed to provide a very high rigidity and compression platens are surface hardened over 55 HRC and rectified.

Two options for the digital control unit:
-2 channels and interface with 5 multi-functions pushbuttons
-8 channels and touch-screen user-friendly interface
For more details see page 132

All the compression machines are supplied with a traceable ENAC calibration certificate (Class I).

COMPRESSION TESTING MACHINES 1500 KN

HR053

Maximum vertical daylight: 336 mm
Horizontal daylight between columns: 270 mm
Compression platens: Ø216 mm
Calibration accuracy: Class 1
Maximum ram travel: 55 mm
Power supply: 230 V | 50 Hz | 750 W
Dimensions: 730x280x900 mm
Weight: 580...620 Kg

COMPRESSION TESTING MACHINES 2000 KN

HR061

Maximum vertical daylight: 336 mm
Horizontal daylight between columns: 270 mm
Compression platens: Ø216 mm
Calibration accuracy: Class 1
Maximum ram travel: 55 mm
Power supply: 230 V | 50 Hz | 750 W
Dimensions: 780x300x1000 mm
Weight: 670...720 Kg

CODE	CAPACITY	CONTROL SYSTEM	HYDRAULIC PUMP
HR051	1500 KN	2 channels	Motorized
HR053	1500 KN	8 channels	Motorized
HR055	1500 KN	2 channels	Servo controlled
HR057	1500 KN	8 channels	Servo controlled
HR061	2000 KN	2 channels	Motorized
HR063	2000 KN	8 channels	Motorized
HR065	2000 KN	2 channels	Servo controlled
HR067	2000 KN	8 channels	Servo controlled

COMPRESSION TESTING MACHINE FOR TESTING CONCRETE SPECIMENS

ASTM C39 | AASHTO T22 | NF P18-411 | BS 1610 | GOST 10180-2012

These machines have a four column rigid frame steel construction. Spherical seat allows free alignment at the initial contact with the specimen.

The columns are prestressed to provide a very high rigidity and compression platens are surface hardened over 55 HRC and rectified.

The ball seating and the cylinder are coupled with high quality packing set.
Two options for the digital control unit:
-2 channels and interface with 5 multi-functions pushbuttons
-8 channels and touch-screen user-friendly interface
All the compression machines are supplied with a traceable ENAC calibration certificate (Class I).

COMPRESSION TESTING MACHINES 2000 KN CUBES SIZE 200MM - CYLINDERS HIGH 280MM

HR075

Maximum vertical daylight: 282 mm
Horizontal daylight between columns: 270 mm
Compression platens: Ø287 mm
Calibration accuracy: Class 1
Maximum ram travel: 55 mm
Power supply: 230 V | 50 Hz | 750 W
Dimensions: 690x400x1320 mm
Weight: 670...720 Kg

COMPRESSION TESTING MACHINES 3000 KN CUBES SIZE 200 MM - CYLINDERS Ø160X320 MM

HR085

Maximum vertical daylight: 336 mm
Horizontal daylight between columns: 272 mm
Compression platens: Ø287 mm
Calibration accuracy: Class 1
Maximum ram travel: 55 mm
Power supply: 230 V | 50 Hz | 750 W
Dimensions: 860x470x1450 mm
Weight: 1050...1120 Kg

CODE	CAPACITY	CONTROL SYSTEM	HYDRAULIC PUMP
HR071	2000 KN	2 channels	Motorized
HR073	2000 KN	8 channels	Motorized
HR075	2000 KN	2 channels	Servo controlled
HR077	2000 KN	8 channels	Servo controlled
HR081	3000 KN	2 channels	Motorized
HR083	3000 KN	8 channels	Motorized
HR085	3000 KN	2 channels	Servo controlled
HR087	3000 KN	8 channels	Servo controlled

ACCESSORIES TO COMPRESSION TESTING MACHINES

SAFETY GUARDS
Compliant with CE Safety Directive, manufactured of highly resistant transparent polycarbonate material and complete with hinges and lock. The guards are both on front and back sides.

CAPACITY	FRAME MACHINE	CODE
1500 kN (ASTM)	HR051....HR057	HR100-01
2000 kN (ASTM)	HR061....HR067	HR100-02
2000 kN de cubos	HR071....HR077	HR100-02
3000 kN (ASTM)	HR081....HR087	HR100-04
2000 kN (EN)	HR011....HR017	HR100-03
3000 kN (EN)	HR021....HR027	HR100-04

MG010-03
Stop switch on safety guard

HR100-01

HR100-02

DISTANCE PIECES
Used to reduce the vertical clearance between the compression platens, according to the height of the specimen to be tested, so to avoid the ram to make its max. excursion without having compressed the specimen. The distance pieces are placed between the ram and the lower compression platen.

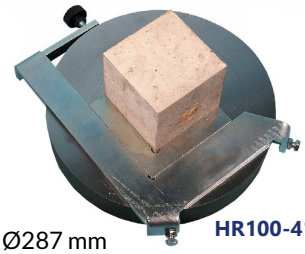
FRAME	20 mm	50 mm	100 mm
HR011....HR017 HR021....HR027	HR100-11	HR100-21	HR100-31
HR051....HR057 HR061....HR067	HR100-12	HR100-22	HR100-32
HR071....HR077 HR081....HR087	HR100-13	HR100-23	HR100-33


HR100-33


HR100-11


HR100-21

AUTO-CENTERING DEVICES
To grant a rapid and accurate centering for cubes 100 and 150 mm side and cylinders Ø100 and 150 mm.


HR100-41

HR100-41
Auto-centering device on platens Ø287 mm
-For machines HR011...HR033
-For machines HR071...HR087

HR100-42
Auto-centering device on platens Ø216 mm
-For machines HR051...HR067

CAPPING PADS AND RETAINERS
Used for compression tests on cylinder specimens, as an alternative method to the sulphur capping and grinding machine.

Two steel capping retainers are applied on the two flat surfaces of the cylinder and two neoprene pads are put between them, for a better load distribution.

HR459-02


HR459-12

SAMPLES	RETAINERS	SHORE 60	SHORE 70
Ø100x200 mm y 4”x8”	HR459-01	HR459-11	HR459-21
Ø150x300 mm y 6”x12”	HR459-02	HR459-12	HR459-22
Ø160x320 mm	HR459-03	HR459-13	HR459-33

60 shore hardness for strength from 10 to 48 MPa
70 shore hardness for strength over 48 MPa


HR459-13
HR459-12
HR459-11

The system is not applicable to 2000 kN machines for cubes (HR071....HR077).
For ASTM 1500 kN machines (HR051....HR057) and ASTM 2000 kN machines (HR061....HR067) is required to increase vertical clearance of the testing chamber.

HR050-01
Extension of testing chamber for 1500 KN machines HR051, HR053, HR055 and HR057
Vertical clearance of 376 mm.

HR060-01
Extension of testing chamber for 2000 KN machines HR061, HR063, HR065 and HR067
Vertical clearance of 376 mm.

HR100-40
Bench for concrete testing machines
Used to hold the compression or flexural testing frame, to set the machine at a proper height for its utilization.
Made from heavy welded steel, it can be moved in the laboratory both from front or lateral side by a forklift.

Weight:
55 Kg

HR100-40

MG010-01
Console Housing pump unit
Lined with sound-proofing material for noise reduction.

MG010-01

MG010-02
Two way hydraulic valve
Installed on the pumping unit to activate a second testing frame.

MG010-02

MG035
Thermal paper graphic printer
MG035-01
Thermal paper (10 rolls)

MG035

MG031
Custom computer
Includes keyboard, mouse and connection cables.

MG031

MG010-01
Software for remote control through PC

MG010-02

ACCESORIES FOR LOW CAPACITY MEASURING RANGE
A concrete compression machine equipped with a low capacity measuring range allows measurements of low strength for compression tests on mortar specimens, flexural tests on concrete beams, split cylinder test on cylinder and cube specimens, tests on kerbs, slabs etc...

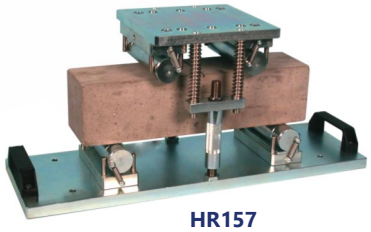
MG010-10
Dual low capacity digital range
Supplied with appropriate pressure transducer, hydraulic installation and cock, fitted on testing machines equipped with digital display measuring unit.

MG010-10

HR157
Flexural device for two points and centre point tests on concrete beams

Dimensions:
610x200x320 mm

HR161



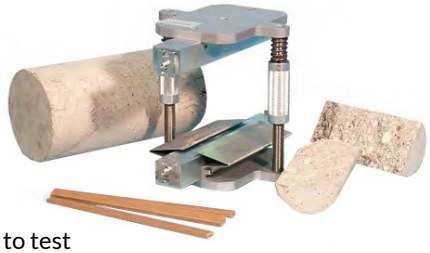
HR157

HR161
Splitting tensile test device (brazilian method) for cylinders Ø150x300 and Ø160x320 mm

Height: 280 mm

HR167
Splitting tensile test device for cylinders Ø150x300 and Ø160x320 mm

Dimensions:
350x250x264 mm



HR167

CE301
Compression device to test mortar prisms 40x40x160 mm
EN 196-1 | ASTM C349 | ISO 679

Dimensions:
153x153x185 mm

CE301

HR100
ADVANCED TESTING SYSTEM TO PERFORM COMPRESSION ELASTIC MODULUS ON CONCRETE

EN 12390-13, 13412, 13286-43 | ASTM C469 | ISO 6784 | DIN 1048 | BS 1888:121

This advanced control system is concerned essentially with the automatic compression, flexural and splitting tests on concrete and determinations of Elastic Modulus and Poisson's ratio.

Essentially the system consists of an ergonomic console which houses the power unit and the digital control unit. The system must be connected to suitable testing frames (2000 or 3000 kN).

For the determination of the Modulus of Elasticity the specimen has to be submitted to a sequence of loading and unloading cycles under controlled load rate.

A high performance valve included in the hydraulic system shall control the oil flow with precise increments and decrements and measure longitudinal and transverse deformation. A laser position detector allows a rapid positioning of the piston and a very accurate touch point. This grants a touching sensitivity of test starting of about 0,1 per thousand of the maximum capacity.

The high performance control and data processing unit controlled by a 32 bit microprocessor can manage up to 8 high resolution channels for the control of load cells or transducers with strain gages bridge.

The software has been developed on the working line of the Windows menú. This software provides a complete control of the system for automatic test execution: rapid platen approach, zeroing, application of user-defined cycles of load/unload ramps, identification of the failure load, verification of conformity to the selected Standard, calculation of results, graphical and numerical management of results.

HR100 HR027

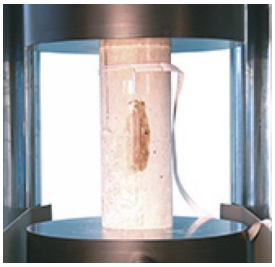
For determination of young Modulus and Poisson's ratio the software allows user-defined test cycles and step-programmable sequences. Also software gives the possibility to print on a standard printer a test certificate reporting all the data concerning the test and the specimen and the graph of the test.

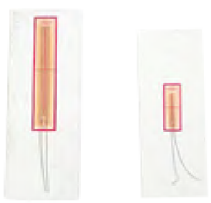
Compression machine, strain gauges or compressometer are not included and must be ordered separately.

ACCESORIES FOR ELASTIC MODULUS:

<u>STRAIN GAUGES</u>
Strain gauges provide a very accurate electrical signal, directly proportional to the strain of a loaded specimen. Supplied in packs of 10 pieces.

AR300-11
Strain gauge, 10 mm
AR300-12
Strain gauge, 20 mm
AR300-13
Strain gauge, 30 mm
AR300-14
Strain gauge, 60 mm
AR300-15
Strain gauge, 120 mm





AR300-14 AR300-11

AR300-10
Interface module to connect up to 4 strain gauges
This module allows also the automatic calibration of the zero and of the measuring range after a special thermal compensation.

AR300-10

AR300-20
Strain gauge application kit
Composed of: glue, soldering iron, solder, cleaning liquid, accessories and carrying case.

AR300-20

ACCESORIES FOR ELASTIC MODULUS:

COMPRESSOMETERS

HR101
Electronic universal compressometer
EN 12390-14, 13412, 13286-43 | ASTM C469
ISO 6784 | BS 1881:121 | DIN 1048

Made of two anodized aluminium pieces, one fixed and the other sliding and housing a displacement transducer that measures with high accuracy the movement of two conical points made of hardened steel and attached at the two ends of the electronic sensor.

The test is usually performed by using 3 compressometers on cylinders and 2 or 4 instruments.on cubes or beams.
The extensometer is suitable to test cubes, cylinders and beam having minimum height 130 mm.

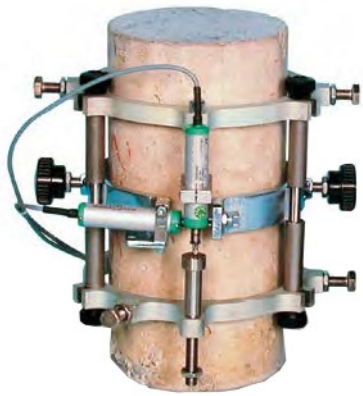
Supplied with reducing block for mortar prisms, elastic straps and carrying case.

HR103
Axial-Circumferential Compressometer for Ø100x200 and Ø110x220 mm cylinders
ASTM C469
Used for determining the axial deformation and diametrical extension of concrete cylinder specimens. It comprises two steel rings for clamping to the specimen, two gauge length bars, spherically-seated lever unit and a central ring for the diametrical extension measure.

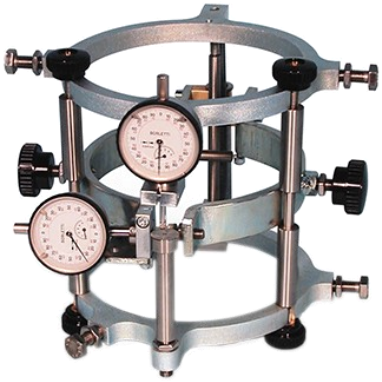
HR105
Axial-Circumferential Compressometer for Ø150x300 and Ø160x320 mm cylinders
Same as HR103 compressometer but for Ø150x300 and Ø160x320 mm cylinders.

Compressometers HR103 and HR105 require two dial gauges or two linear strain transducers that must be ordered separately.

HR101 + HR101-01



HR105 + MG010-30



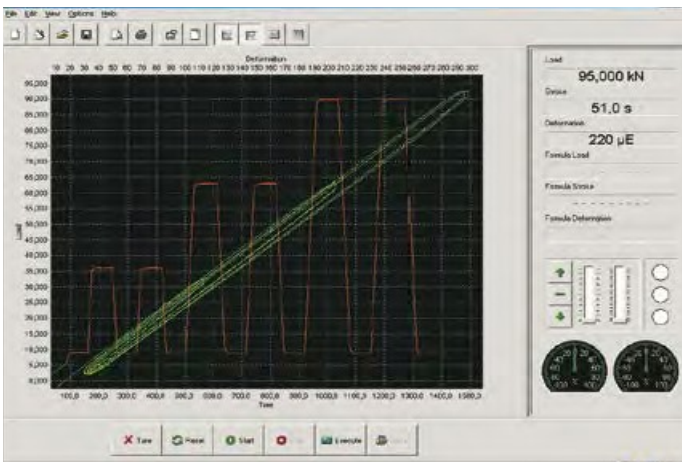
HR105 + MG010-51

ACCESSORIES

HR101-01
Aluminium template to regulate and to calibrate the base length
MG020-50
Calibration process for one compressometer
MG030-75
Software for Elastic Modulus test on concrete, mortar and rock specimens

ACCESSORIES

MG010-51
Dial gauge 5x0,001 mm
MG010-30
Linear strain transducers 10 mm
MG020-50
Calibration process for linear transducer



MG030-75

FLEXURAL FRAMES 150 KN CAPACITY

EN 12390-5 | ASTM C78, C293
AASHTO T97 | BS 1881:118

These frames have been designed to testing standard concrete beams in flexure. All our frames are fitted or can be fitted with accessories to perform either the two-point or the centre-point loading by simply removing one upper roller and placing the other in the centre.

Supplied with four rollers hardened and rectified. Also the rollers are adjustable and articulated to satisfy the requirements for either the two-point or the centre-point methods on concrete beams up to 150x150x600 and up to 150x150x750 mm.

Our range of compression testing machines available are employed to control and manage all sorts of automatic and semi-automatic testing machines in order to satisfy any specific requirement by the enduser. Supplied with a traceable ENAC calibration certificate (Class I).

Maximum vertical daylight between rollers: 160 mm
Adjustable top rollers: from 40 to 155 mm
Adjustable bottom rollers: from 100 to 455 mm
Roller dimensions: Ø40x160 mm
Calibration accuracy: Class 1
Maximum ram travel: 50 mm
Power supply: 230 V | 50 Hz | 750 W
Dimensions: 540x460x960 mm
Weight: 180...240 Kg

ACCESSORY

HR110-50
Distance piece 50 mm for frames HR111...HR117
To test 100x100x400 mm and 100x100x500 mm beams

HR117 + MG010-01

FLEXURAL OPEN STRUCTURE FRAMES 150 KN

EN 12390-5 | EN 1340:4 | ASTM C78 | ASTM C293
AASHTO T97 | BS1881:118 | BS 6073-1 | BS 7263

These frames features a “C”-shaped open structure which facilitates the positioning of large and bulky specimens.

Includes four adjustable and articulated rollers to perform flexural tests on concrete beam specimens with máximum dimensions 200x200x800 mm, flat blocks, flagstones, kerbs, tiles, slabs, masonry piecesand any type of material having máximum size 600x250 mm.

Our range of compression testing machines available are employed to control and manage all sorts of automatic and semi-automatic testing machines in order to satisfy any specific requirement by the enduser. Supplied with a traceable ENAC calibration certificate (Class I).

Maximum vertical daylight between rollers: 260 mm
Roller dimensions: Ø40x613 mm
Calibration accuracy: Class 1
Maximum piston stroke: 110 mm
Power supply: 230 V | 50 Hz | 750 W
Dimensions: 1400x1200x1430 mm
Weight: 350 Kg

HR127

CODE	CONTROL SYSTEM	HYDRAULIC PUMP
HR111	2 channels	Motorized
HR113	8 channels	Motorized
HR115	2 channels	Servo controlled
HR117	8 channels	Servo controlled

CODE	CONTROL SYSTEM	HYDRAULIC PUMP
HR121	2 channels	Motorized
HR123	8 channels	Motorized
HR125	2 channels	Servo controlled
HR127	8 channels	Servo controlled

FLEXURAL FRAMES 200 KN CAPACITY

EN 12390-5 | ASTM C78 | ASTM C293
AASHTO T97 | BS 1881:118

These frames have been designed to perform different kind of tests, from the simple third/centre point flexural test on beams to the advanced FRC displacement controlled tests and energy absorption tests on sprayed concrete.

High stiffness frame with minimum deflection at maximum load (0.9 mm). Simple action piston with counterweights to maximize frictions.

These machines allow to perform flexural test on concrete beams maximum dimensions 150x150x600 mm and 150x150x750 mm, flat blocks, flagstones, kerbs, tiles, slabs, masonry units and any type of material having máximum width 600 mm and máximum height 150 mm.

Our range of compression testing machines available are employed to control and manage all sorts of automatic and semi-automatic testing machines in order to satisfy any specific requirement by the enduser.

Supplied with ENAC calibration certificate (Class I) but without upper and lower rollers group, tamper, base support, etc to be ordered by separately.

Max. vertical daylight between upper/lower rollers: 160 mm
Horizontal daylight of the testing chamber: 720 mm
Calibration accuracy: Class 1
Ram travel: 110 mm
Power supply: 230 V | 50 Hz | 750 W
Dimensions: 990x970x1105 mm
Weight: 190...250 Kg

HR137

CODE	CONTROL SYSTEM	HYDRAULIC PUMP
HR131	2 channels	Motorized
HR133	8 channels	Motorized
HR135	2 channels	Servo controlled
HR137	8 channels	Servo controlled

ROLLERS GROUPS FOR 150 kN OPEN SIDED FRAMES:

HR120-01
Rollers group: lower adjustable from 75 to 525 mm,
and only one upper central roller for single point method

HR120-02
Rollers group: lower adjustable from 75 to 1325 mm,
and only one upper central roller for single point method

HR120-03
Rollers group: lower adjustable from 75 to 525 mm,and
upper adjustable from 75 to 180 mm for two points method

HR120-04
Rollers group: lower adjustable from 75 to 1325 mm, and
upper adjustable from 75 to 575 mm for two points method

HR120-02

ROLLERS GROUPS FOR 200 kN FLEXURAL FRAMES:

HR130-01
Rollers group upper and lower Ø40x160 mm
Lower rollers have adjustable distance from 75 to 900 mm
Upper rollers have adjustable distance from 75 to 180 mm

HR130-02
Rollers group upper and lower Ø40x613 mm
Lower rollers have adjustable distance from 75 to 900 mm
Upper rollers have adjustable distance from 75 to 180 mm

HR130-03
Rollers-holders (lowers only) 613 mm long
To be installed on the HR130-02 group in order
to modify the maximum vertical daylight at 60 mm
and minimum at -50 mm to test tiles, slabs etc. with
maximum thickness of 50 mm and flexibility up to -45 mm.

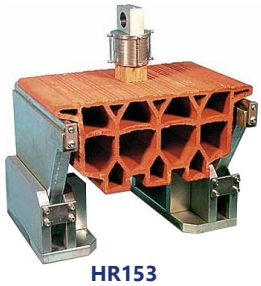
HR130-03

ACCESSORIES FOR FLEXURE FRAMES 150 AND 200 KN

HR151
Upper tamper for flexural strength measurements EN1340
The equipment consists of a steel tamper mounted on a rotating coupling which is fixed to the upper part of the flexural testing machine to apply a flexural strength on three points on the concrete kerb, without any torsional stress.

HR151

HR153
Upper tamper device for flexural tests on clay blocks for flooring
EN 15037-2 | EN 15037-3



HR153

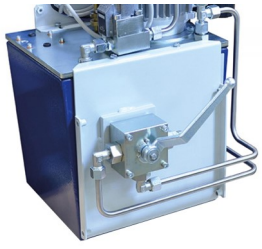
HR155
Deflection measurement device on the fiber reinforced concrete beam 100x100x400 (500) mm and 150x150x500 (600) mm
EN 14488-3 | ASTM C1609 | ASTM C1018

HR155

HR100-26
Distance piece 40 mm for frames HR131...HR137
Needed to perform the deflection test to EN 14488-3

MG010-01
Console Housing pump unit
Lined with sound-proofing material for noise reduction.

MG010-02
Two way hydraulic valve
Installed on the pumping unit to activate a second testing frame.



MG010-02

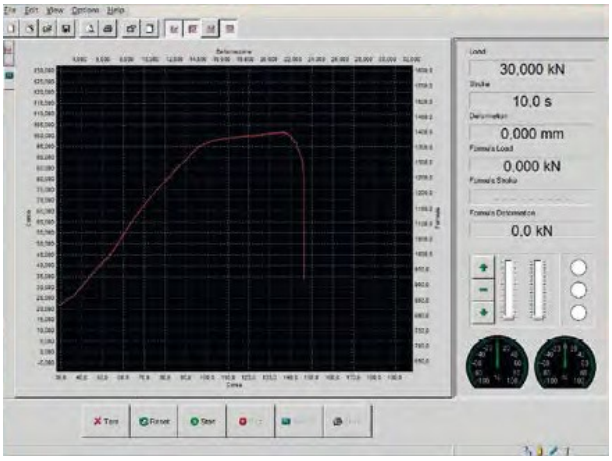
MG010-01

MG031
Custom computer
Includes keyboard, mouse and connection cables.

MG030-01
Software for remote control through PC

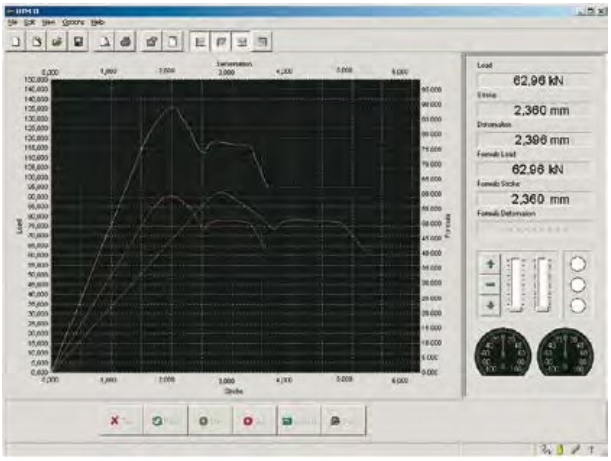
MG031

MG030-16
Software for punching test on clay blocks



MG030-16

MG030-14
Software for measurement of deflection test on fibre reinforced concrete beams



MG030-14

MG035
Thermal paper graphic printer

MG035-01
Thermal paper (10 rolls)

MG035

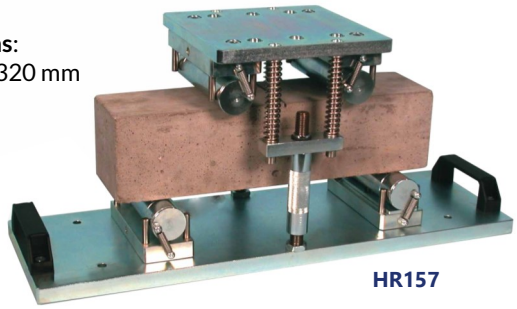
LOW CAPACITY DEVICES FOR COMPRESSION AND FLEXURAL TESTING MACHINES:

HR157
Flexural device for two points and centre point test on concrete beams 100x100x400-500 mm and 150x150x600-750 mm
EN 12390-5 | ASTM C78, C293 | AASHTO T97| BS 1881:118

Equipped with two lower rollers, one of them articulated, and two upper rollers for third point tests.
-Two fix distances between lower rollers: 300 and 450 mm
-Two fix distances between upper rollers: 100 and 150 mm

It is possible to place in the centre only one upper roller for centre point tests. To perform the flexural test, this device has to be used with a concrete compression machine foreseen of low capacity measuring range.

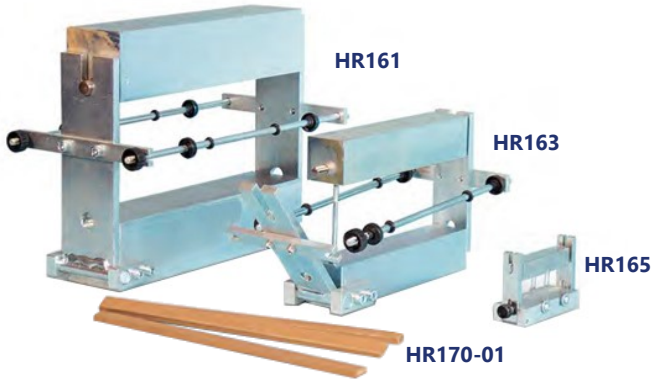
Dimensions:
610x200x320 mm
Weight:
27 Kg


HR157

SPLITTING TENSILE DEVICES ON CYLINDERS SPECIMENS
EN 12390-6 | ASTM C496 | NF P18-408

Splitting tensile device (Brazilian method)

CODE	SPECIMENS(mm)	HEIGHT (mm)
HR161	Ø150x300 y Ø160x320	280
HR163	Ø100x200 y Ø110x220	220
HR165	Ø40x80	90


HR161
HR163
HR165
HR170-01

HR167
Splitting tensile test device for cylindrical specimens from Ø100x200 mm to Ø160x320 mm
The base is equipped with flat springs centering and keeping in position the specimen.
Two columns with adjustable height sustain the upper plate by two springs.

Dimensions:
350x250x264 mm
Weight:
17 Kg


HR167
HR170-01

DEVICES FOR TESTING ON MORTARS SAMPLES

CE301
Compression device to test mortar prims 40x40x160 mm
EN196-1 | ASTM C349 | ISO679

Dimensions: 153x153x185mm
Weight: 12 Kg


CE301

CE307
Compression device to test mortar cubes specimens 70,7 mm
BS4550

Dimensions: 150x130x185
Weight: 9 Kg


CE307

CE311
Flexure device to test mortar prims 40x40x160 mm
EN196-1 | EN1015-11
DIN 1164 | ISO679


CE311

MG030-21
Software for cement compression test

MG030-22
Software for cement flexural test

SPLITTING TENSILE DEVICES
EN 12390-6 | EN1338

HR171
Splitting tensile test devices for cube specimens 100 and 150 mm and on concrete block pavers

Dimensions:
350x250x264mm
Weight:
17 Kg


HR171
HR170-02

HR 173
Splitting tensile test devices to be fixed to the flexural frames
To perform tests on cube specimens 100,150 and 200 mm and block pavers block pavers having max. dimensions 300x500 mm.


HR173

HR170-01
Packing strips 4x10x350 mm (EN 12390-6)
To be used with devices HR161, HR163, HR167 y HR171.
Pack of 100 units.

HR170-02
Packing strips 4x15x350 mm (EN 12390-6 | EN1338)
To be used with device HR171.

HR129
FLEXURAL OPEN-STRUCTURE FRAME 320 KN

EN 12390-5, 12390-6, 14488-5, 1338, 1339, 1340, 196
ASTM C78, C293, C1550, C496, C349

This universal flexural frame has been designed to satisfy the stringent requirements prescribed by the standards relating to determination of deformability and ductility index of sprayed concrete and fibrereinforced concrete.

The 'C-shaped' open structure of the frame allows easy and practical front-loading but, once the specimen is in position, the structure is closed with hydraulically-clamped rod assuring high rigidity.

Load is measured by a high accuracy electric strain cell, eliminating the piston's weight and friction. The control system is an 8 channel servo controlled system for a fully automatic execution of the test.

Rollers are optional and must be ordered separately according to user needs.

Max. vertical daylight between upper/lower rollers: 263 mm
Horizontal clearance (between uprights): 1040 mm
Calibration accuracy: Class 1
Ram travel: 110 mm
Power supply: 230 V | 50 Hz | 750 W
Dimensions: 1700x1470x1560 mm
Weight: 800 Kg

HR139
FLEXURAL HIGH STIFFNESS FRAME 360 KN

EN 12390-5, 1339, 1340, 14488-5 | ASTM C78, C293, C1550

The frame has been designed to perform the advanced FRC displacement controlled tests and energy absorption tests on sprayed concrete.

Accurate results are granted by the high stiffness of the frame according to the international Standards requirement (more than 200 kN/mm) and by a high precision load cell measurement system fitted into the frame.

The high horizontal daylight of the testing chamber allows to test big dimension specimens.

Rollers are optional and must be ordered separately according to user needs.

Horizontal distance test area: 980 mm
Upper rollers adjustable distance: from 75 to 210 mm
Lower rollers adjustable distance: from 75 to 850 mm
Ram travel: 140 mm
Power supply: 230 V | 50 Hz | 750 W
Dimensions: 600x1240x1400 mm
Weight: 900 Kg

HR129

HR139

OPTIONAL ROLLERS FOR HR129 AND HR139 FRAMES:

HR181-01
Upper and lower assembly for centre and two-point loading tests on concrete beams up to 200x200x800 mm
EN 12390-5 | ASTM C78, C293

Rollers size: Ø30x312 mm
Weight: 65 Kg

HR181-03
Set of one upper and two lower roller assembly for testing paving flags having maximum width 600 mm
EN 1339

Rollers size: Ø40x620 mm
Weight: 76 Kg

HR181-05
Upper roller for centre and two-point loading tests on concrete beams up to 200x200x800 mm
EN 12390-5
To be used with the rollers assembly HR181-03.

Rollers size: Ø40x320 mm
Weight: 65 Kg

HR181-07
Upper tamper for testing kerbs
EN 1340
To be used with the rollers assembly HR181-03.

Weight: 6 Kg

HR181-11
Set of spherically seated upper platen and lower platen to perform compression tests on small/ low strength specimens

Platens dimensions: Ø165x30 mm
Weight: 20 Kg

HR181-15
Lower support frame and upper loading element for slabs of FRC concrete having 800 mm diameter by 75 mm thick
ASTM C1550
Weight: 60 Kg

MG010-33
Linear transducer 100 mm travel
For measuring the piston displacement.

MG010-32
Displacement transducer 50 mm travel
For measuring the deformation of the slab centre under concentrated load.

MG030-14
Software for
-Measurement of deflection on fibre reinforced concrete
-Determination of toughness and first crack strength
-Energy absorption test on sprayed concrete specimens

HR180-10
Set of four distance pieces for adjusting the vertical clearance
Needed accesories to be used with previous devices:
HR181-01, HR181-03, HR181-05, HR181-07,
HR181-11 and HR181-15.

TESTING ON FIBER-REINFORCED CONCRETE (FRC)

For many years, one of the materials that has revolutionized the market has been fiber-reinforced concrete, since in addition to reducing operating costs they act as structural reinforcement. FRC is utilized both in construction and experimental work to study the mechanical resistance and ductility of concrete.

Using systems with displacement and deformation control, the principal tests associated with fiber-reinforced concrete can be performed.

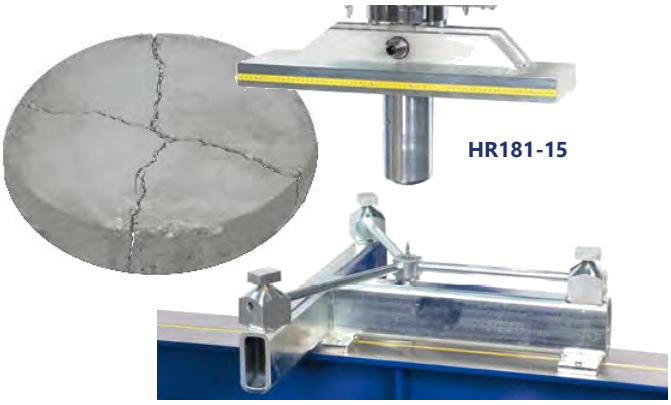
It is advisable to contact the Proeti technical department for advice regarding the selection of an adequate system for the desired FRC application.

FLEXURAL TOUGHNESS FOR ROUND SLABS

ASTM C1550

One of the most valued parameters in fiber-reinforced concrete is its tenacity. The tenacity test is used to determine the fracture properties of fragile materials.

The equipment required for this test is:
HR129
Flexural open-structure frame 320 kN
HR181-15
Lower support frame and upper loading element
Accepts slabs up to Ø800 mm and 75 mm in thickness.
HR190-05
50 mm displacement transducer with flat probe tip
MG020-50
Displacement transducer calibration
MG030-14
Software for energy absorption test



HR181-15

Note:
Tests on fiber-reinforced concrete can be performed on machines different from this recommendation. For further information please contact a sales agent.

ENERGY ABSORPTION IN SQUARE SLABS

EN 14488-5

One of the main properties that must be analyzed in reinforced concrete is impact resistance through energy absorption. In this case, a very fine control has to be applied after breaking the concrete matrix to detect resistance while avoiding fiber beakage.

The equipment required for this test is:
HR137
Flexure frame 200 kN servocontrolled
HR190-01
Base support for energy absorption in FRC 600x600
HR190-02
Upper piston for energy absorption tests
HR190-03
Displacement transducer support
HR190-05
50 mm displacement transducer with flat probe tip
MG020-50
Displacement transducer calibration
MG030-14
Software for energy absorption test

HR137+HR109-01+HR190-02+HR190-03+HR190-05

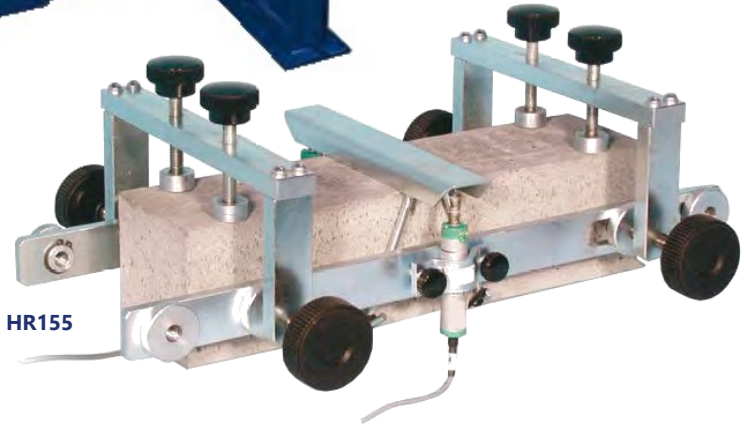
BEAM DEFLECTION

EN 14488-3 | ASTM C1609 | ASTM C1018

The increase in flexotraction resistance when fibers are added to the concrete is considerably larger than the increase in compression and traction resistance. This is due to the ductile behaviour of FRC.

The equipment required for this test is:
HR137
Flexure frame 200 kN servocontrolled
HR159
Set of rollers Ø30x160 mm
HR130-40
Distance piece 40 mm
HR155
Deflection device
Made in chrome steel, to be attached directly to the beam. Includes two supports for the transducers. Accepts beams with máx dim 100x100x400-500 and 150x150x500-600 mm.
MG010-30
10 mm displacement transducer
Two displacement transducers are required to measure deflection.
MG020-50
Displacement transducer calibration
Two calibrations are required.
MG030-14
Software for deflection test

HR137+HR159



HR155

FIRST FRACTURE-CRACK IN BEAMS

EN 14651

The most important effect in the mechanical behaviour of concrete due to the addition of fibers, is shown by the traction resistance after the first fracture or crack.
This post-cracking resistance affects other mechanical properties like rebar adhesion, shear resistance, fatigue, etc. which provide information on concrete ductility.

This test determines the resistance to first fracture and residual resistance (fibers) once the concrete matrix has been fractured.

The equipment required for this test is:
HR130
Frame200 kN with load cell
HR159
Set of rollers Ø30x160 mm
HR130-40
Distance piece 40 mm
HR195-01
High precision 5 mm transducer with forked probe tip
HR195-02
CTOD reference blocks (set of 24)
For the crack tip opening displacement
HR195-03
CMOD reference blocks (set of 24)
For the crack mouth opening displacement
MG015
Advanced research system for FRC tests

HR195-01

MG015

SU351
DIGITAL MULTIPURPOSE TESTER 50 KN

This frame represents the ideal solution for major laboratories performing tests requiring displacement control. The multipurpose tester features a rigid two-column structure with an upper cross beam which can be set at various heights and an automatic load or displacement/deformation control, for testing:

The versatility of the machine allows to carry out the tests:
CONCRETE:
Flexural on beams and tiles
CLAY BLOCKS:
Punching
CEMENT:
Flexural test on mortar prisms 40x40x160 mm
Compression test on mortar prisms 40x40x160 mm
ASPHALT:
Marshall
Splitting tensile
Direct shear Leutner
SOIL:
CBR (California Bearing Ratio)
Unconfined compression
Quick triaxial
ROCKS AND STONES:
Uniaxial splitting tensile

The load is applied by a mechanical jack that is driven by a motor brushless with closed loop through optic encoder and controlled by a microprocessor. Limit switches are installed at the end of the stroke to prevent accidental damage.

The electronic control unit with touch-screen colour display, runs like a standard PC based on Windows. The machine has unlimited memory storage with: 2 USB ports, 1 SD card slot.

Supplied without accessories and software to perform the specific tests which must be ordered separetely.

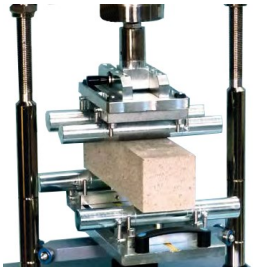
SU351

Power supply: 230 V | 50-60 Hz |150 W
Adjustable testing speed: from 0,01 to 51 mm/min
Load gradient: from 1 to 15000 N/seg
Maximum ram travel: 100 mm
Daylight between columns: 380 mm
Maximum vertical daylight: 850 mm
Dimensions: 500x450x1450 mm
Weight: 130 Kg

ACCESORIES MULTIPURPOSE 50 KN FOR CONCRETE:

FLEXURAL ON GLASS-FIBRE REINFORCED CONCRETE
EN 12390-5 | EN 1170-4 | ASTM C78 | ASTM C293

MG020-06
Load cell 50 kN
SU350-07
Two-point bending device
Rollers dimensions:Ø40x310 mm
Lower rollers adjustable from 110 to 310 mm
Upper rollers adjustable from 45 to 120 mm
MG030-12
Software for flexural tests on concrete beams


SU350-07

PUNCHING TEST ON CLAY BLOCKS
EN 15037-2 | EN 15037-3

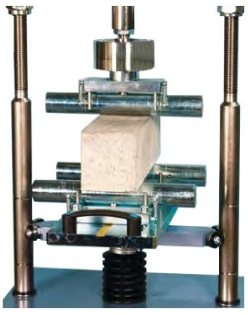
MG020-03
Load cell 10 kN
HR153
Device for flexural tests on clay blocks
SU350-08
Holding beam for punching test
MG030-16
Software for punching test on clay blocks

HR153


SU350-08

FLEXURAL TEST ON CONCRETE BEAMS AND CLAY TILES
EN 12390-5, 491, 538 | ASTM C78, C293 | BS 1881:118

MG020-06
Load cell 50 kN
SU350-09
Flexure device with centre point loading
To test clay tiles and concrete beams with dimensions 100x100x400/500 mm.
Consisting of lower beam with two bearers (one articulated) adjustable from 100 to 315 mm and upper central articulated bearer fixed to the load cell.
Weight: 20 Kg
MG030-12
Software for flexural tests on concrete beams


SU350-09

SU355
DIGITAL MULTIPURPOSE TESTER 200 KN

By using suitable devices, our multipurpose tester performs compression, flexural, splitting tensile and direct tensile tests with automatic load or displacement/deformation control, up to 200 kN for compression/flexural and 50 kN for tensile tests.

The versatility of the machine allows to carry out the tests:
CONCRETE:
Flexural on beams and tiles
CLAY BLOCKS:
Punching
CEMENT:
Flexural test on mortar prisms 40x40x160 mm
Compression test on mortar prisms 40x40x160 mm
Tensile on mortar briquettes
ASPHALT:
Marshall
Splitting tensile
Direct shear Leutner
Duriez
SOIL:
CBR (California Bearing Ratio)
Unconfined compression
Quick triaxial
ROCKS AND STONES:
Uniaxial splitting tensile
METAL, PLASTIC, WIRES, ROPES, TEXTILES, PAPERS,...
Tensile test 50 kN max capacity load

The machine consists essentially of a robust two-column frame with an upper crosshead which can be adjusted in height and a lower mobile crosshead moved by an electromechanical system with a single recirculating ball screw powered by a brushless servomotor which assures smooth application of load at constant speed.

The electronic control unit with touch-screen colour display, runs like a standard PC based on Windows. The machine has unlimited memory storage with: 2 USB ports, 1 SD card slot.

SU355

Supplied with an electric load cell 200 kN and lower compression platens. Accessories and software for specific tests are not included which must be ordered separately.

Power supply: 230 V | 50-60 Hz | 850 W
Maximum vertical distance: 900 mm
Daylight between columns: 650 mm
Adjustable testing speed: from 0,01 to 100 mm/min
Load gradient: from 1 N/s to 5 kN/s
Dimensions: 950x560x2400 mm
Weight: 820 Kg

ACCESORIES MULTIPURPOSE 200 KN FOR CONCRETE:

FLEXURAL ON GLASS-FIBRE REINFORCED
EN 12390-5 | EN 1170-4 | ASTM C78, C293
MG020-06
Load cell 50 kN
MG020-16
Connector for 50 kN load cell
SU350-07
Two-point bending device
MG030-12
Software for flexural tests on concrete beams

SU350-07

PUNCHING TEST ON CLAY BLOCKS
EN 15037-2 | EN 15037-3
MG020-03
Load cell 10 kN
MG020-13
Connector for 10 kN load cell
HR153
Device for flexural tests on clay blocks
SU350-08
Holding beam for punching test
MG030-16
Software for punching test on clay blocks

HR153

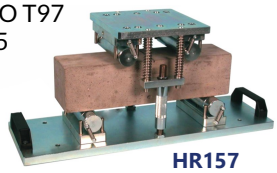
SU350-08

HR167

FLEXURAL TEST ON CONCRETE BEAMS AND CLAY TILES
EN 12390-5, 491, 538 | ASTM C78, C293
MG020-06
Load cell 50 kN
MG020-16
Connector for 50 kN load cell
SU350-09
Flexure device with centre point loading
MG030-12
Software for flexural tests on concrete beams

SU350-09

FLEXURAL TEST ON CONCRETE BEAMS
EN 12390-5|ASTM C78, C293 | AASHTO T97
NF P18-407 | BS 1881:118 | UNE 83305
HR157
Flexure device
MG030-12
Software for flexure tests on concrete


HR157

SPLITTING TENSILE TEST ON CONCRETE CYLINDERS
EN 12390-6 | ASTM C496 | NF P18-408 | BS 1881:117
Splitting tensile test device
HR170-01
Packing strips 4x10x350 mm (100 pcs)
MG030-13
Software for splitting tensile

CONTROL SYSTEMS

MG001
DIGITAL CONTROL UNIT 2 CHANNELS

System designed for the management and control of testing machines. This equipment is a two-channels computerised graphic display system to control and manage all sorts of automatic and semiautomatic compression and flexure testing machines.

The control unit has been designed for acquisition, display, processing, printing and saving test data and certificates. There is a software available for remote control from PC.

This display has 2 analogue-digital channels accepting sensors, transducers or load cells at 2 mV/V.

In conjunction with a pumping unit this unit allows an automatic control of the pace rate, rapid approaching, touching on and breaking of the specimen. Automatic breaking load detection and elaboration of the specific resistance value.

Permanent file up to 1000 tests and file of 100 different types of specimens. Selectable measuring force: kN, lb Different Languages: English, French, German, Spanish... RS232 interface: it allows the data transfer during the test or the test results directly to PC.

Operator interface composed by 5 multi-functions pushbuttons and a graphic screen where function icons are shown.

Different programmable safety devices for the machine or the specimen as the possibility to introduce a percentage of the máximum value reached during the text execution, thermal protection of the motor and different other settable alarms.

The firmware contains a memory of the most used specimens: area, weight, specific weight. Also the possibility of personalization for special sized samples.

MG001

MG005
TOUCH DIGITAL CONTROL UNIT 8 CHANNELS

System designed for the management and control of testing machines. This unit is designed with the latest technology, an innovative PC-like Touch Screen system, employed to control and manage all sorts of automatic and semiautomatic compression and flexure testing machines.

This system with 8 analog inputs is a PC-based and touch screen system which is modular, flexible and multifunctions. The touch-screen graphical user-friendly interface allows an easy set up of the parameters and an immediate execution of the test. Large directional arrow-keys for gloved use.

Greater calculation ability and data display (on board charts and graphic print-outs). Due to its multilingual framework and international settings the display has a high management capacity of parameters as date and time, decimal units, unit of measure,...

The equipment includes licenses for the execution of compression, flexural and splitting test on concrete and compression and flexural on mortar in accordance to the following standards: EN, ASTM, BS, NF, DIN, etc...
Also it has functions for the software updates and licenses.

The device has unlimited memory storage with 2 USB ports and 1 SD card slot. Different Languages: English, French, German, Spanish... RS232 interface: it allows the data transfer during the test or the test results directly to PC.

MG005

POWER SYSTEMS

MG011
MOTORIZED PUMPIMG UNIT

The power system consists of a dual-stage pump: low pressure/high delivery for fast piston approach and high pressure/low volume for loading.

The pump is fitted with a special manually-controlled proportional valve to maintain the preset load rate during the test, requiring only occasional adjustments by the operator.

The power pump with proportional valve can be used to fit existing frames, including other brands.

Includes tank, speed selector, hydraulic cock, accessories and connectors.

Hydraulic pressure:
0...700 bar
Oil supply:
from 0,05 to 0,7 liters/min

MG011

MG013
SERVO-CONTROLLED PUMPIMG UNIT

Same technical features in common with MG011 pump except for the enhanced hydraulic control and precise oil flow control automatically operated.

Dual stage pump: centrifugal low pressure for fast approach and automatic switching to radial multi-piston high pressure for loading.

Hydraulic pressure:
0...700 bar
Oil supply:
0,05 to 0,7 liters/min

MG013

MG010-01
Console Housing pump unit
Lined with sound-proofing material for noise reduction.

MG010-02
Two way hydraulic valve
Installed on the pumping unit
to activate a second testing frame.

MG010-02

MG010-01

MG010-03
Stop switch on safety guard

PRESSURE TRANSDUCERS
These transducers provide a very accurate electrical signal that is strictly proportional to the pressure of the hydraulic circuit of the testing machine or apparatus. Supplied with cable and calibration certificate.

Input voltage: 10 V DC
Sensitivity range: 2 - 4 mV/V
Accuracy: 0.15 fs.
Pressure connection: 0,25 BSP

MG010-23

CODE	PRESSURE
MG010-11	0 – 10 bar
MG010-12	0 – 20 bar
MG010-13	0 – 35 bar
MG010-14	0 – 50 bar
MG010-15	0 – 60 bar
MG010-16	0 – 100 bar
MG010-17	0 – 160 bar
MG010-18	0 – 200 bar
MG010-19	0 – 350 bar
MG010-20	0 – 400 bar
MG010-21	0 – 500 bar
MG010-22	0 – 600 bar
MG010-23	0 – 700 bar

SOFTWARE

Software developed for allowing operators the management and an user friendly control of digital testing machines.

The ideal Software for the management of an extensive production.The optimal solution of laboratories for its characteristics of versatility with a wide range of customizations, for testing and research.

Flexibility, operating speed, precision and automatic storage are the fundamental characteristics of the Software conceived to facilitate the operator with few computer skills, for the management of the tests and the testing machines too.

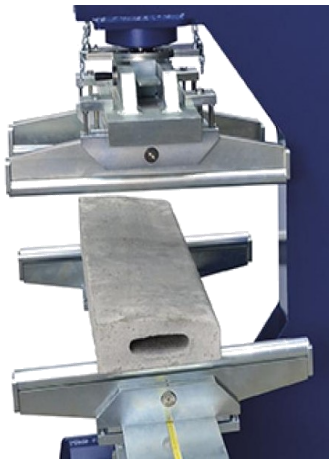
The software is developed on Windows platform and can be installed on old operative systems. Software available in different languages: Spanish, English, French, Italian, German, Polish, Turkish,...

It facilitates the printing of certificates suggesting a preset layout but changeable and customizable by the user with its own logo or others.

MG030-01
Software for remote control through PC

MG030-02
Software to download to PC the results with possibility of certificate printout

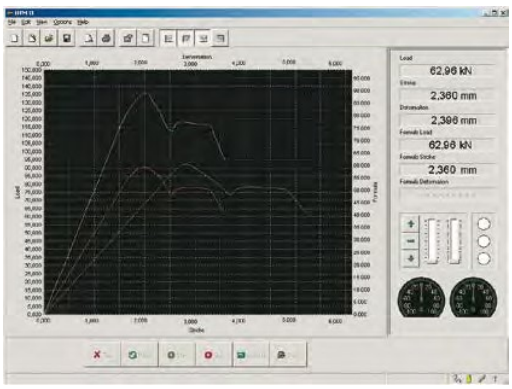
MG030-03
Software for test data processing



<u>CONCRETE TESTS</u>
MG030-11
Software for compression test on concrete
EN 12390-3 | ASTM C39 | UNE 83304 |
NF P18-411 | BS 1881 | DIN 51220

MG030-12
Software for flexural test on concrete
EN 12390-5 | ASTM C78, C293
NF P18-407 | BS 1881:118

MG030-13
Software for splitting tensile test on cylinders, cubes and concrete blocks
EN 12390-6 | ASTM C496



MG030-14

MG030-14
Software for
-Measurement of deflection on fibre reinforced concrete
-Determination of toughness and first crack strength
-Energy absorption test on sprayed concrete specimens

MG030-15
Software for secant compression elastic modulus tests on concrete
ASTM C469 | ISO 6784 | DIN 1048

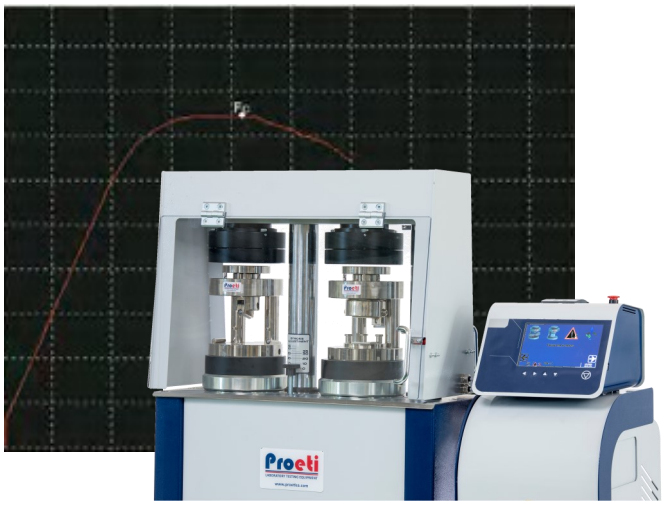
MG030-16
Software for punching test on clay blocks
EN 15037-2 | EN 15037-3

MG030-17
Software for flexural strengths
First cracking, ultimate and residual
EN 14488-3

CEMENT AND MORTAR TESTS
MG030-21
Software for compression test on mortars
EN 196-1 | ASTM C109

MG030-22
Software for flexural test on mortars
EN 196-1 | ASTM C348

MG030-24
Software for tensile test on mortar briquettes
ASTM C190, C307 | AASHTO T132

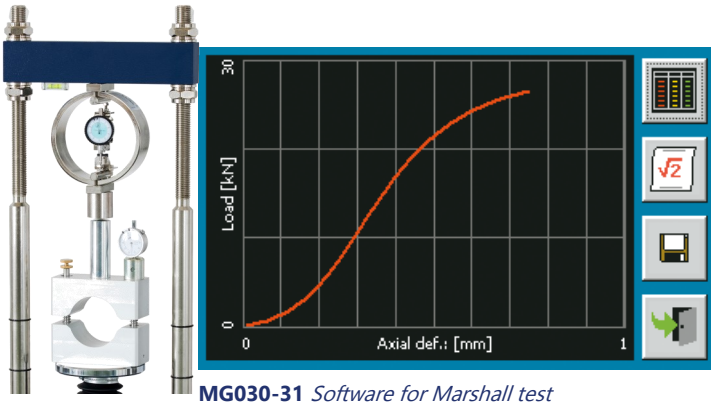


BITUMEN AND ASPHALT TESTS
MG030-31
Software for Marshall compression test
EN 12697-34 | ASTM D1559 | CNR N. 30
NF P98-251-2 | BS 598 :107

MG030-33
Software for splitting tensile test
EN 12697-23 | ASTM D4123 | CNR N. 134

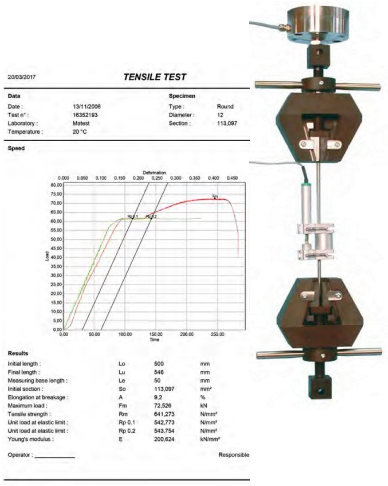
MG030-36
Software for Leutner and Marshall tests
EN 12697-34 | ASTM D1559 | CNR N. 30
NF P98-251-2 | BS 598 :107 | ALP A StB T.4

MG030-37
Software for Duriez test
NF P98-251/1 | NF P98-251/4



MG030-31 *Software for Marshall test*

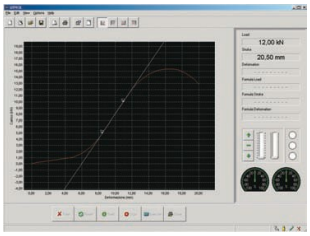
STEEL TESTS
MG030-54
Software for tensile tests on steel
EN 10002 | ASTM A370
ISO 527, 178, 604, 10113, 12275
Allows to see graphs created in real time during the test, and to elaborate a test report.



SOIL TESTS
MG030-41
Software for CBR test
EN 13286-47 | ASTM D1883
NF P94-078 | BS 1377:4

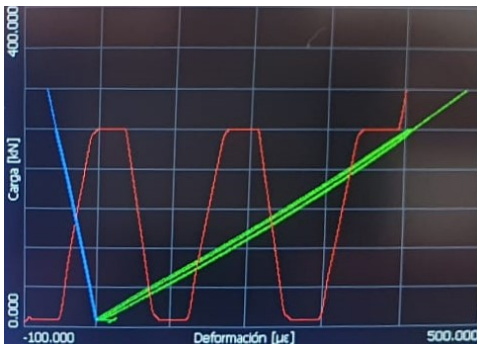
MG030-42
Software for unconfined compression test
ASTM D2166

MG030-47
Software for quick triaxial test
ASTM D2850 | BS 1377



MG030-41 *Software para CBR*

ROCKS TEST
MG030-65
Software for elastic modulus tests on rocks
EN 9724-8 | ASTM D3148, D2938, D5407, D2664 | ISRM



MG030-65 *Software for Elastic Modulus tests on rocks*

COMBINED SOFTWARES
MG030-74
Software for tensile test on steel and compression tests on concrete

MG030-75
Software for elastic modulus test on concrete, mortar and rock specimens

MG023
DIGITAL TESTER FOR FORCE TRANSFER VERIFICATION

EN 12390-4 | BS 1881:115 | DIN 51302

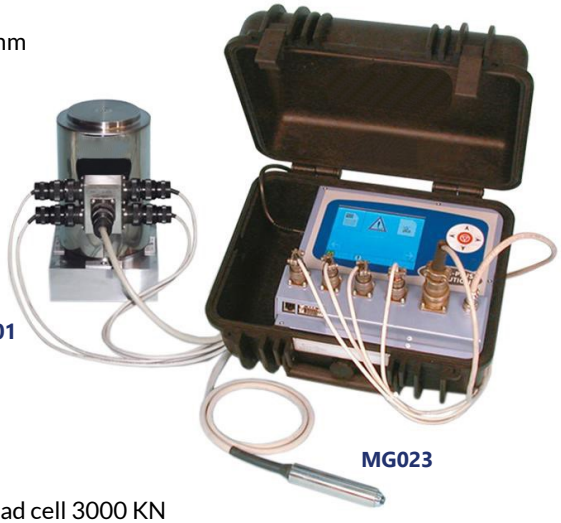
The specifications for compression testing machines, describes procedures for verification of force transfer, including:

-Accuracy of force indication
-Self-alignment of upper machine plate
-Restraint of movement of the upper plate

This digital measuring tester reads simultaneously the four values supplied by the electric strain load cell. The digital readout unit is also foreseen of a fifth digital reading channel allowing to perform load calibration tests on compression machines up to 3000 kN capacity.

Supplied with kit of 5 cables and connectors for load cell coupling, accessories and carrying case.

Power supply:
230 V | 50 Hz
Dimensions:
450x350x160 mm
Weight:
8 Kg



MG023-01

MG023

ACCESSORIES

MG023-01
Electric strain load cell 3000 KN
Consisting of a strain steel cylinder where four balanced strain gauge bridges are centered to measure the deformation on 4 generatrix in relation with two diameters, orthogonal between them, so that both axial and circumferential deformations can be measured. The cell incorporates a fifth strain gauge utilized for load measurement calibration tests. Supplied with connectors, cables and calibration certificate.

Dimensions: Ø130x200 mm
Weight: 18 Kg

MG020-50
Calibration process of the load cell to the digital tester

MG023-02
Positioning device
Manufactured with special steel, hardened and rectified, it allows to correclty position the load cell on the lower platen of the compression frame, to carry out the footemeter test as described by the Standards.
Dimensions: 150x150x50mm

MG030-02
Software to download the results to PC

MG021
FORCE VERIFICATION AND CALIBRATION APPARATUS

EN 12390-4 | EN ISO 376 | ASTM C39 | ASTM E4

This user friendly digital display, connected to any load cells allows to perform an accurate verification of the loads measured from machines under control and it allows to produce the corresponding certificate. The instrument foresees three memorized cycle verification program composed of ten measurements each. At the end of the test the unit automatically elaborates the stored value and displays:

-Effective applied load
-Measured load (over three verification cycles)
-Average measured load
-Accuracy in %
-Repeatability
-Relative readability
-Max error

The tester's accuracy is ± 0.5% of the indicated load.

Power supply:
230 V | 50-60 Hz
Dimensions:
360x300x200 mm
Weight:
5 Kg

MG021-09

MG021

ACCESSORIES

MG030-02
Software to download the results to PC

LOAD CELLS

These high performance cells have been specially designed to meet the stringent requirements of EN, ISO and ASTM standards for calibration of compression testing machines.

Accuracy:
Class 1 EN ISO 376
Linearity:
≤ ± 0,05 %
Hysteresis:
≤ ± 0,05 %
Repeatability:
0°,120°,240°:≤±0,145%

MG021-04

CODE	CAPACITY kN
MG021-01	5
MG021-02	25
MG021-03	30
MG021-04	50
MG021-05	100
MG021-06	300
MG021-07	500
MG021-08	1000
MG021-09	2000
MG021-10	3000
MG021-11	5000

LABORATORY MIXERS

These mixers have been designed and built for specific use in official laboratories, institutions and universities. They are indispensable for obtaining a perfect mix of concrete and guaranteeing a high degree of homogeneity. Due to the considerable size of the vessel, models with capacity over 50 L are supplied with a cart for transportation and safety protection.

Power supply: 220-380 V | 50-60 Hz

CODE	CAPACITY	DIMENSIONS	WEIGHT
MG801	14 L	700x600x650 mm	80 Kg
MG803	50 L	780x700x800 mm	160 Kg
MG805	100 L	830x800x900 mm	200 Kg
MG807	150 L	1700x950x1180 mm	290 Kg

MG801

MG810
HIGH PERFORMANCE MIXER 50 L

Planetary gearing converts power into high torque and high speed, ensuring optimum mixing in the shortest time possible. Built-in timer lets you control mixing cycles. The rim scraper and height adjustable mixing tools remove all material deposits on the bottom and sides of bucket, enabling less clean-up which means more productivity. Bucket dolly allows for quick transport and easy pouring.

Forced-action mixing tackles the most challenging materials. Interchangeable tools and speeds enable you to mix a variety of material from liquid to plastic media and multi-component systems like quartz sand mortar all in one machine.

Power supply:
230 V | 1100 W
Dimensions:
1075x758x845 mm
Weight:
112 Kg

MG810

PAN TYPE MIXERS

Mixers with solid and robust construction designeed for preparing concrete specimens and samples in the laboratory and on site. This high quality mixer guarantees excellent mixing results particularly using the smallest quantities of material.

Discharge is manually controlled for easy unloading of the mixer into a suitable container or wheelbarrow.

Power supply: 230-400 V | 50 Hz

CODE	CAPACITY	POWER	WEIGHT
MG821	60 L	2 kW	170 Kg
MG822	100 L	2 kW	200 Kg
MG823	120 L	4 kW	280 Kg
MG824	180 L	7,5 kW	390 Kg
MG825	300 L	9 kW	580 Kg
MG826	500 L	18,5 kW	1000 Kg
MG827	750 L	30 kW	1200 Kg

MG824

MG821

SLUMP CONE TEST APPARATUS

EN 12350-2 | ASTM C143 | AASHTO T119
BS 1881:102 | NF P18-305

Particularly suitable for site inspection, being handy and easily transportable.

We produce various cone sets. All cones are seamless and robust. Cones and components can also be purchased separately.

HR201
SLUMP CONE SET

Galvanized steel made.
It comprises:
HR201-01
Slump cone with handles and legs
HR201-02
Tamping rod, galvanized steel Ø16x600 mm
HR201-03
Hopper for cone filling
HR201-04
Base plate, galvanized steel 600x400 mm

HR201 + HR201-05

HR203
PORTABLE SLUMP CONE SET

Galvanized steel made.
It comprises:
HR201-01
Slump cone with handles and legs
HR201-02
Tamping rod, galvanized steel Ø16x600 mm
HR203-01
Base with clamps and measuring bridge

HR203

ACCESSORIES

HR201-05
Stainless steel engraved scale 300 mm

HR205
SLUMP CONE SET, STAINLESS STEEL

Same as HR201 model but made of stainless steel.

HR207
PORTABLE SLUMP CONE SET, STAINLESS STEEL

Same as HR203 model but made of stainless steel.

HR211
SCOOP SAMPLER

EN 12350-1
Made of stainless steel.

Capacity: 5 Kg

HR211

HR213
FLOW TABLE FOR CONCRETE

EN 12350-5

The apparatus consists of a galvanized steel cone with a lower diameter of 200 mm and an upper diameter of 130 mm with a height of 200 mm, a double steel table with a galvanized upper face, a guide device and a wooden rammer. It is used to determine the workability of concrete. The upper table has a square surface of 700x700 mm, hinged on one side.

Weight: 30 Kg

HR213

HR215
CONCRETE WORKABILITY METER

NF P18-452

This test method has particular application for concretes containing chemical admixtures and is used to verify the homogeneity of concrete in relation to its workability or plasticity.

The unit consists of a prismatic receiver divided into two unequal volumes by a removable partition, and an electric vibrator. The fresh concrete is poured into the large volume space, the separating partition is removed, and the vibrator starts automatically.

The test consists in measuring the time required for the concrete to reach an uniform distribution in the receivers.

Power supply: 230 V | 50 Hz | 300 W
Dimensions: 820x420x410 mm
Weight: 80 Kg

HR215

HR217
VEBE CONSISTOMETER
EN 12350-3

The Vebe test is used to measure the consistency of stiff to extremely dry concrete. Consistency is determined by measuring the time required for a given mass of concrete to consolidate when subjected to vibration in a ylindrical mould. The small vibrating table of the test apparatus operates at a fixed amplitude and frequency.

Power supply: 230 V | 50 Hz | 250 W
Dimensions: 260x380x700 mm
Weight: 90 Kg

HR217

HR219
VEBE CONSISTOMETER
ASTM C1170-14

Similar to mod. HR217, but conforming to ASTM C1170-14 with sliding weight of 50 lbs.

Power supply: 230 V | 50 Hz | 180 W
Dimensions: 280x400x900 mm
Weight: 110 Kg

HR221
COMPACTING FACTOR APPARATUS
BS 1881:103

Designed to undertake a more precise and sensitive test procedure than the simple slump test.
The apparatus consists of two conical hoppers mounted on a cylinder. Each hopper has a hinged flange with quick release mechanism and everything is mounted on a rigid steel stand.

The compacting factor is the ratio between the weight of the partially compacted concrete and the weight of the fully compacted concrete.
Supplied with tamping rod Ø16x600 mm.

Dimensions: 500x400x1510 mm
Weight: 55 Kg


HR221

HR223
WALZ CONSISTOMETER
EN 12350-4 | DIN 1048

To measure the consistency of fresh concrete. It consists of a metal box with handles 200x200 mm by height 400 mm, painted for rust protection.

Weight: 6 Kg

HR223

HR225
K-SLUMP
ASTM C1362

To determine the degree of compaction and the workability of fresh concrete. Used for in-situ measurements or inside test moulds. Test results can be correlated against the slump values.

Weight: 500 g


HR225

HR227
KELLY BALL APPARATUS
ASTM C360

Consisting of a hemispherically ended cylinder with guiding frame and a handle graduated in inch, it is used to determine the workability of fresh concrete.
The ball is lowered into the concrete and the penetration measured.
It can be used on site or in laboratory.
Cadmium plated for rust protection.

Weight: 15 Kg


HR227

HR229
SETTLEMENT EQUIPMENT FOR SELF-COMPACTING CONCRETE
EN 12350-8

To evaluate the deformability of fresh concrete through free flow, and the time needed to spread a 500 mm diameter. Applicable to concrete with aggregates of 25 mm max size.

It consists of a sheet metal slump cone and a 900x900 mm plate with two engraved circles with dia.210 and 500 mm.

HR229

HR231
V-FUNNEL EQUIPMENT
EN 12350-9

To evaluate the segregation resistance of self-compacting freshly mixed concrete using the flowing speed through a funnel. It is not suitable for aggregates with particle sizes exceeding 20 mm.

The apparatus consists of a stainless steel V-shaped funnel fitted with a watertight sliding gate and supported by a frame to ensure that the top funnel is kept horizontal.

Dimensions: 640x340x1050 mm
Weight: 20 Kg


HR231

HR233
L-SHAPED BOX
EN 12350-10

The test is for determining the passing ratio of self-compacting concrete.

The set includes a stainless steel L-shaped structure with a slide gate, an obstacle with three Ø12 mm vertical bars separated 41 mm and an obstacle with two Ø12 mm vertical bars separated 59 mm.

Dimensions: 712x280x682 mm
Weight: 40 Kg


HR233

HR235
U-SHAPED BOX

To determine the self-compactability of concrete by evaluating the filling speed and height of the concrete sample under its own weight in a U-shape filling box. Made of stainless steel with smooth inner walls, equipped with a flow obstacle formed by four Ø10 mm vertical bars separated 35 mm and a slide gate dividing the box vertically.

Dimensions: 480x250x680 mm
Weight: 20 Kg


HR235

HR245
WATER TEST SET FOR CONCRETE MIXING WATER
EN 1008 | EN 206 | DIN 4030

A carrying case containing a reagent kit for performing:

-Carbonate hardness determination
-Ammonium determination
-Total hardness determination
-Colorimetric pH determination
-Sulphate test
-Magnesium test
-Chloride test
-Carbon dioxide test

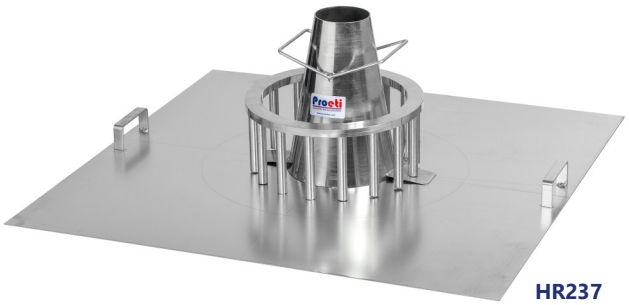

HR248

HR237
J-RING APPARATUS
EN 12350-12

To determine the flow time and the capability of the self compacting concrete to pass through obstacles. Galvanized steel made, having rectangular section 30x15 mm and median Ø300 mm. The median circumference of the ring is drilled, and 16 cylindrical bars Ø18x140 mm are fixed into the holes. The bars have a close distance of 41 mm between them, to simulate a condition of higher density of the reinforced bars.

HR239
J-RING APPARATUS
EN 12350-12

Similar to HR237 but having 12 cylindrical bars and 59 mm distance between them.


HR237

HR241
CONCRETE PENETROMETER
ASTM C403 | AASHTO T197

Used to determine the setting time of the mortar fraction in concrete mixes with slump greater than zero, by testing mortar sieved from mix.

The apparatus consists of a spring penetrometer (capacity 100 Kgf, precision 1 Kgf) and six interchangeable stainless steel needle pointers of 16-32-65-160-325-650 mm^2 area. A sliding ring indicates the load on the handle of the penetrometer. Supplied with carrying case.

Dimensions: 450x160x70 mm
Weight: 5 Kg


HR241

HR243
POCKET CONCRETE PENETROMETER
ASTM C403 | AASHTO T197

Used for the evaluation of the initial set of the concrete mortar. The penetration plunger has a tip area of 32 sq/mm. It is plunged into the mortar to a depth of 25,4 mm. indicated on the plunger.
The resistance expressed in Kpa and Lbf/sq.in. is shown on the marked direct-reading scale.


HR243

HR247
JOISEL APPARATUS
French Method LCPC

This apparatus basically consists of three sieves which are placed one inside the other and it is designed for separating concrete into its various components of cement, sand and aggregates.
The test procedure simply involves the weighing of the sample before and after washing.

HR247

UNIT WEIGHT MEASURES
EN 1097-6 | ASTM C29, C138 | AASHTO T19

Made of painted steel sheet they are used to determine the weight per cubic metre of freshly mixed and compacted concrete.

HR250
Unit weight measures 1 L
HR251
Unit weight measures 2 L
HR252
Unit weight measures 3 L
HR253
Unit weight measures 5 L
HR254
Unit weight measures 10 L
HR255
Unit weight measures 14 L
HR257
Unit weight measures 20 L
HR258
Unit weight measures 28 L

HR258

HR255 HR253 HR251

HR271
CONCRETE FLOW TABLE
ASTM C124

Used to determine the flow of concrete. The apparatus consists of a Ø762 mm flow table, stainless steel flow mould and tamping bar.
Hand-operated by crack handle.

Weight: 100 Kg

HR271

HR273
MOTORIZED CONCRETE FLOW TABLE
ASTM C124

Same as the HR271 but with a motorization kit connected to the flow table. Supplied with separate control panel and automatic digital drops counter.

Power supply: 230 V | 50 Hz 750 W
Weight: 115 Kg

CONCRETE AIR ENTRAINMENT METER

The EN and ASTM standards describe two different devices: the water column type and the manometer type.

HR261
AIR ENTRAINMENT METER 5L
EN 12350-7 | ASTM C231 Tipo A

Made from cast aluminium alloy. It records directly the percentage of air enclosed in freshly mixed concrete by operating according to the air pressure principle.
The instrument is supplied with pressure gauge tamping rod and hand pump.

Air content range: 0-8%
Dimensions: Ø250x700 mm
Weight: 13 Kg

ACCESSORIES
HR261-01
Calibration cylinder

HR261

HR263
AIR ENTRAINMENT METER 7L
EN 12350-7 | ASTM C231 Tipo B | AASHTO T152

Consists of an aluminium cylindrical vessel with airtight cover assembly incorporating an air pump, a precision pressure gauge Ø90 mm and valves. Supplied with calibration kit, accessories, robust plastic carrying case.

Air content range: 0 - 100%
Dimensions: Ø250x500 mm
Weight: 10 Kg

HR263

HR265
AIR ENTRAINMENT METER 8L
EN 12350-7 | DIN 1048 | ASTM C231 tipo B

It consists of an aluminium vessel with built in hand operated pressure pump, connected to the measuring gauge showing directly the air content in percentage.

Air content range: 0...10%
Dimensions: Ø250x450 mm
Weight: 12 Kg

HR267
AIR ENTRAINMENT METER 5L ELECTRIC
EN 12350-7 | DIN 1048 | ASTM C231 tipo B

Identical to model HR265, but with built in automatic electric air compressor giving air pressure, and keeping it constant all along the test.

HR265

Power supply: 230 V | 50-60 Hz
Dimensions: Ø250x450 mm
Weight: 14 Kg

ACCESSORY
HR265-01
Filling hopper for models HR265 and HR267

CUBIC MOULDS FOR CONCRETE

We supply a range of cube moulds, from traditional cast iron versions conforming to EN 12390-1 standards that are ideal for laboratory use, to plastic models that are very practical for field use and ideal for production control.

STEEL CUBIC MOULDS

These models of steel cube and beams moulds are extremely sturdy and the inside surfaces are accurately machined.

CODE	MOULD (mm)
HR301-01	100x100
HR301-03	150x150
HR301-05	200x200
HR301-07	300x300
HR301-09	500x500

HR301-01

CUBIC MOULDS STEEL 2 COMPARTMENTS

CODE	MOULD (mm)
HR311-01	100x100
HR311-03	150x150

CUBIC MOULDS STEEL 3 COMPARTMENTS

CODE	MOULD (mm)
HR311-07	100x100
HR311-09	150x150

PLASTIC CUBIC MOULDS

These one-piece moulds, much appreciated by the user, are made of hard, strong, light, non-deformable plastic; resistant to shock, vibration and wear. They only need a simple cleaning and lubrication on release before they are ready to be reused numerous times. The sample is pushed out of the mould with compressed air or water.

CODE	MOULD (mm)
HR331-01	150x150
HR331-03	200x200

PLASTIC CUBIC MOULD 2 COMPARTMENTS

CODE	MOULD (mm)
HR331-05	100x100

HR331-05

HR331-01


HR300-01

PRISMATIC STEEL MOULDS

Made of undeformable steel and easy to disassemble.

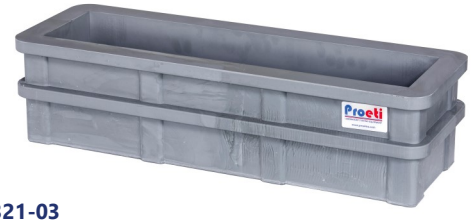
CODE	MOULD (mm)
HR321-01	100x100x400
HR321-03	100x100x500
HR321-05	150x150x600
HR321-07	150x150x750
HR321-09	200x200x800

HR321-03

PLASTIC PRISMATIC MOULDS

Made of a single piece of hard plastic resistant to vibrations shocks and wear.

CODE	MOULD (mm)
HR331-07	100x100x500
HR333-09	150x150x600



HR331-07

ACCESSORIES:

HR201-02
Tamping rod Ø16x600 mm

MG581-08
Stainless steal scoop 860 ml

HR201-03
Hopper for cone filling

MG603
Rubber mallet

HR300-09
Demoulding oil

HR300-01
Gun to connect to a water or air pressure, to eject the specimen from the mould

HR300-03
Stopper plastic made to plug the hole of the moulds HR331-01, HR331-05, HR351-03 y HR351-05 (10 pieces)

HR300-05
Stopper plastic made to plug the hole of the moulds HR331-02, HR331-07, HR331-09 y HR351-01 (10 pieces)

HR300-07
Identification label (Pack of 250 pieces)

CYLINDRICAL STEEL MOULDS

Made of steel with handles and opening hinges, being practical and easier for the user to transport.

CODE	MOULD (MM)
HR341-01	Ø100x200
HR341-03	Ø112,8x220
HR341-05	Ø150x150
HR341-07	Ø150x300
HR341-09	Ø160x320

HR341-09 HR341-07

PLASTIC CYLINDRICAL MOULDS

Made from a single piece of shock-resistant hard plastic.

CODE	MOULD (MM)
HR351-01	Ø100x200
HR351-03	Ø150x300
HR351-05	Ø160x320

HR351-01 HR351-03

VERIFICATION OF SPECIMENS

EN 12390-1

These instruments are used for the assessment of flatness, perpendicularity and straightness of test specimen and moulds as specified by EN 12390-1.

HR361-01
Go-no go gauge for 100 mm cubic moulds
HR361-03
Go-no go gauge for 150 mm cubic moulds
HR361-05
Rule rigth angle, steel made 150x100 mm
HR361-07
Straightedge 300mm
HR361-09
Gauge set 0,05 to 0,50 mm with 100 mm blades
MG620-11
Digital vernier caliper 153x0,01 mm certified
MG620-12
Digital vernier caliper 200x0,01 mm certified
MG620-10
Certificate for calipers

HR361-01...MG620-12

VIBRATING TABLES

EN 12390-2

Used for the compaction of concrete specimens in laboratory, they are manufactured from rugged steel sheet. Equipped with motor-vibrator having 3000 vibrations-minute.

Power supply:
230 V | 50 Hz | 180 W
Height of the table:
410 mm

HR381-01

HR381

CODE	DIMENSIONS	WEIGHT	CLAMPING
HR381	600x400 mm	60 Kg	HR381-01
HR383	800x400 mm	85 Kg	HR383-01
HR385	800x800 mm	115 Kg	HR385-01
HR387	1100x550 mm	145 Kg	HR387-01

HR388
PORTABLE VIBRATING TABLES

Similar to the above vibrating tables, but suitable for site use, where no electric supply is available.
Lightweight and small sized, it can be handled by one person and easily stored in the car trunk.

Supplied with On/Off switch and connector for the vehicle cigar lighter, and elastic bands to fix the mould to the table.

Power supply: 12 V CD
Dimensions: 400x300x200 mm
Weight: 16 Kg

HR388

HR389
PORTABLE LABORATORY VIBRATORY TABLE

Similar to the HR388 table but for laboratory use.

Power supply: 230 V | 50 Hz | 110 W

HR380-01

HR389

ACCESSORIES

MG043
Control panel with timer according to CE
HR380-01
Pedal switch as an alternative to MG043
HR380-02
Clamping device for HR388 and HR389

MG043

HR391
POKER VIBRATOR

EN 12390-2 | ASTM C31, C192 | AASHTO T23, T126

This apparatus is ideal for the internal compaction of concrete specimens both in the laboratory and on site. It makes a good alternative to the traditional tamping bar, especially when there are a large number of specimens to be compacted.

Portable concrete vibrator with reinforced cable against bending. Shock-resistant housing with double insulation and splash-proof protection.

Power supply: 230 V | 50-60 Hz | 2300 W
Dimensions: 354x150x205 mm
Weight: 5 Kg

ACCESSORIES

HR391-01
Vibrating eccentric head Ø25x285 mm. Capacity: 10 m^3/h
HR391-11
Flexible shaft 2 m Weight: 4 Kg
HR391-12
Flexible shaft 4 m Weight: 6 Kg
HR391-13
Flexible shaft 6 m Weight: 8 Kg

HR405
CURING TANK 1000 L

Made of zinc plated steel to prevent corrosion. Includes base rack and stopper for easy draining. The tank can accommodate up to 64 cubes 150mm side, or up to 48 cubes 200mm side.

Inside dimensions: 1500x750x750 mm
Weight: 120 Kg


HR400-01


HR400-02

HR400-05

HR401
CURING TANK 550 L

EN 12390-2 | ASTM C31 | ASTM C192 | AASHTO T23

Made from extremely robust and stable polyethylene, supplied with base rack and draining valve incorporated into the tank.

Inside dimensions: 1110x710x690 mm
Weight: 55 Kg

HR403
CURING TANK 650 L

Similar to model HR401 but without drain valve.

Inside dimensions: 1040x1040x605 mm
Weight: 60 Kg


HR403 + HR400-02


HR401 + HR400-03

ACCESSORIES FOR TANKS

HR400-01
Thermostat analogic system for HR403
Power supply: 230 V | 50-60 Hz | 2 000W
HR400-02
Thermostat analogic system for HR401 and HR405
Power supply: 230 V | 50-60 Hz | 2000 W
HR400-03
Thermostat digital system for HR401, HR403 y HR405
Power supply: 230 V | 50-60 Hz | 2000 W

MG041
Separate control panel with switch according to CE directive
HR401-01
Plastic cover for tank HR401
HR403-01
Plastic cover for tank HR403
HR405-01
Plastic cover for tank HR405


MG041

HR405-02
Additional upper rack for HR405 tank
Maximum of 8 racks per tank.

HR400-05
Sumersible water circulating pump
Power supply: 230 V | 50-60 Hz

CE233-01
Cooling system
It cools the water from room temperature up to +10°C. It is connected to the tank where a lower temperature than the room one is required.


CE233-01

HR407
ACCELERATED CURING TANK
ASTM C684 | BS 1881:112

This tank has been designed for accelerated concrete strength curing. It comprises a fully insulated double wall tank with cover, inside all from stainless steel, outside from steel painted sheet with an intermediate layer of insulating mineral wool.
The tank admits 16 cubic 150 mm side; or 16 Ø150 mm; or 8 cubic 200 mm side. The test consists essentially in curing the concrete specimens with water heated by 3 electric elements of 1500W each.

HR407

Power supply:
230 V | 50-60 Hz | 4500 W
Temperature range:
ambiente a 100°C
Inside dimensions:
910x660x680 mm
Overall dimensions:
970x720x900 mm
Weight:
130 Kg

HR419
MOIST CURING ROOM KIT
A room can be easily converted for curing samples by installing:

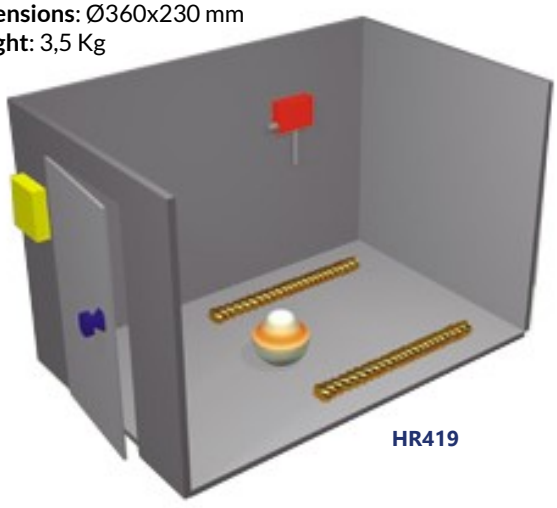
HR419-01
Digital control panel with humidity and temperature display

HR419-02
Humidity and temperature sensor
Temperature range: from -10 to +90°C
Humidity range: up to 100%

HR419-03
Electric resistance heating 750 W
2 heaters are required for a 150 m^3 room.

HR419-04
Curing room humidifier
Capable of humidifying curing rooms up to 150 m^3.
Supplied with automatic level control for mains water connection.

Humidifying capacity: 0 5 L/h
Power supply: 230 V | 50 Hz
Dimensions: Ø360x230 mm
Weight: 3,5 Kg



HR419

A typical layout of a moist curing room

HR411
CLIMATIC CHAMBER TEMPERATURE/HUMIDITY
EN 196-1 | EN 1367-1 | EN 12390-2 | EN 12390-9

This steel made chamber has 530 litres capacity, includes an advanced controller for temperatura from -25 to +70°C and humidity from 10 to 95%.

The cabinet has four shelves supported on stainless steel guides capable of holding heavy specimens, a CFC free cooling system and a door equipped with magnetic gasket and integrated heater against freezing.

Used to cure specimens in according to the Standards:
-Concrete specimens curing (EN 12390-2)
-Cement specimens curing (EN 196-1)
-Analyze the freezing and thawing of aggregates (EN 1367-1)
-Analyze the freezing and thawing on concrete (EN 12390-9)

A multifunction control unit simultaneously displays the set points and absolute output values.

Capacity: 530 L
Temperature range: from -25 to +70°C
Humidity range: from 10 to 95 %
Internal dimensions: 600x670x1340 mm
External dimensions: 750x980x2100 mm
Power supply: 230 V | 50-60 Hz | 2300 W
Weight: 165 Kg

HR411

HR413
CLIMATIC CHAMBER TEMPERATURE/HUMIDITY
Similar to model HR411 but with 1200 litres capacity.

HR451
SPECIMEN GRINDING MACHINE

EN 12390-2 | ASTM D4543

Used to grind and polish concrete specimens, natural stones, ceramic materials, etc...

Both cube and cylinder specimens can be easily locked onto the table and the 330 mm diameter grinding head can be radially moved either manually or automatically in both directions. The only manual operation required is the lowering of the grinding head using the top hand wheel.

Specimens are easily fixed to the table by proper locking stirrups allowing to grind at a time:
-3 cube specimens 100 mm or 150 mm;
-2 cube specimens 200 mm;
-2 cylinder specimens up to Ø160x320 mm;
-1 block with max. dimensions 390x250 mm

Supplied with control panel, coolant/decantation tank, motor pump, set of abrasive sectors, safety chip guard that when removed, stops automatically the machine.

Table dimensions: 775x280 mm
Grinding head stroke: 215 mm
Grinding wheel speed: 1400 r.p.m.
Grinding height range: min. 175 mm - max. 380 mm
Power supply: 400 V | 50 Hz | 2700 W | 3ph
Dimensions: 1220x1080x1730 mm
Weight: 410 Kg

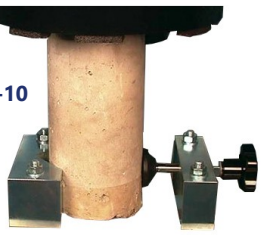
HR451

ACCESSORIES

HR451-01
Locking stirrups for cube specimens side 100, 150, 200 mm
Supplied with distance piece 85 mm.
HR451-02
Locking stirrups for cube specimens side 50 to 70 mm
They must be used only in conjunction with HR451-01.
HR451-03
Locking stirrups to grind blocks with max. dimensions of 390x250 mm
HR451-04
Locking stirrups for cylinder Ø100, 110, 150, 160mm
They must be used only in conjunction with HR451-01.
HR451-05
Locking stirrups for cylinder Ø50 to 100 mm
They must be used only in conjunction with HR451-01.
Minimum height 95 mm

HR451-02 + HR451-01 + HR451-02

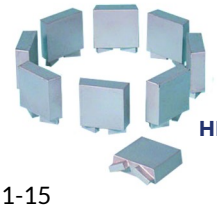
HR451-10



HR451-10
Fast locking device
-Cubes 150 and 200 mm
-Cylinders Ø100 to 160 mm

HR451-11
Standard abrasive grinding sector (set of 8 pieces)

HR451-12
Diamond abrasive grinding sector (set of 8 pieces)
Particularly recommended because of their long duration and good grinding action.



HR451-11

HR451-15

HR451-15
Device to to collect the produced powder
The device must be connected to an aspirator (notincluded). The four collecting pipes have a max. extension of 3 meters (different extensions on request).
The terminal diameter of the device is: 160 mm

Weight: 15Kg

SULPHUR CAPPING SAMPLES

EN 12390-3 | ASTM C31 | ASTM C192 | ASTM C617
AASHTO T23 | AASHTO T126

When testing concrete cylinder specimens it is essential that the two ends are perfectly flat. This range of equipment allows the ends of various sizes of concrete cylinders or cores to be capped using a sulphur capping compound.

HR455
MELTING POT

Used to melt the capping compound, the pot has a pilot lamp and an adjustable electronic thermo-regulator to set and maintain the temperature at the desired value. The unit is fully insulated in compliance with CE requirements.

Dimensions:
400x260x280 mm
Weight:
11 Kg

HR455

ACCESSORIES

HR455-01
Heating oil 10 L
HR455-02
Stainless steel ladle
HR455-03
Capping Compound (22,5 Kg)
ASTM C617
This compound is a mixture of sulphur and mineral filler

CYLINDER CAPPERS

Cappers are used to ensure that the end surfaces of the cylinder are perfectly flat and perpendicular to the axis of the cylinder. The base and capping plates are machined steel, and the guide is made of cast aluminium or steel.

CODE	SPECIMENS DIA.
HR457-11	Ø75 mm
HR457-13	Ø100 mm
HR457-15	Ø150 mm
HR457-17	Ø160 mm

ACCESSORIES

HR457-10
Cylinder carrier for Ø150 - Ø160 mm specimens
Facilitates the handling of the specimens.


HR455-03


HR457-15

CAPPING PADS

ASTM C31 | ASTM C192 | ASTM C617
AASHTO T23 | AASHTO T126

This method is used as an alternative to the hot sulphur capping of concrete cylinder specimens. The system consists of two alloy steel cap retainers and two thick neoprene pads which are in contact with the upper and lower concrete surfaces. The pads even out irregularities, distributing the test load uniformly to ensure reliable strength results. Pads can be re-used for many tests.

SPECIMENS	RETAINERS	SHORE 60	SHORE 70
Ø100x200 mm y 4"x8"	HR459-01	HR459-11	HR459-21
Ø150x300 mm y 6"x12"	HR459-02	HR459-12	HR459-22
Ø160x320 mm	HR459-03	HR459-13	HR459-23


HR459-01...HR459-13

AR165
BÖHME ABRASIMETER

EN 1338, 1339, 1340, 13748, 13892-3, 14157 | DIN 52108

Designed to determine the abrasion resistance of natural stone and concrete products used in internal and external paving.

The machine is fitted with a rotating grinding wheel Ø750 mm and the sample is placed on a suitable support and subjected to a force of 294 ±3 N.
An abrasive material is constantly poured onto the disc and the effect of the abrasion is measured after a series of rotation cycles.

The abrasion tester is made up of a Ø750mm cast iron rotating grinding wheel with a 200mm test track to place the samples, a control panel with a digital revolution counter, a sample holder and an adjustable loader used to produce a clamping force. 294N ± 3N.

Power supply: 230 V | 50 Hz | 800 W
Disc speed: 30 r.p.m.
Dimensions: 1500x1000x850 mm
Weight: 320 Kg


AR165

HR461
CORE DRILLING MACHINE

The guide rail is rectified to assure a very soft and accurate drilling movement. The drilling excursion is 550 mm.
Electric motor at three speeds: 670, 1140, 1580 r.p.m. with gearbox.

Equipped with friction device and switch in compliance with CE Safety Directive.

Power supply:
230 V | 50-60 Hz | 2200 W
Max vertical Height:
1000 mm
Coring angle:
from 0 to 360°
Dimensions:
440x750x1300 mm
Weight:
85 Kg

HR461+ HR460-01

ACCESSORIES

HR461-01
Extension column 1 m long,
HR461-20
Strap wrench useful for unblocking any type of bit.
HR461-21
Strap wrench useful only for the bits with backend connector
HR461-22
Extension rod 300 mm long.

DIAMOND CORE DRILL BITS
Designed for making holes and getting cores from hard materials, like concrete, reinforced concrete, rocks, stones, bituminous materials .

CODE	SAMPLE	EXTRACTOR
HR460-01	Ø50x450 mm	HR460-11
HR460-02	Ø75x450 mm	HR460-12
HR460-03	Ø100x450 mm	HR460-13
HR460-04	Ø152x450 mm	HR460-14
HR460-05	Ø200x500 mm	HR460-15

HR461-20...HR460-16

HR465
PETROL CORE DRILLING MACHINE 5HP

These drilling machines are robust, compact and suitable for heavy work. They feature a mobile system to ensure smooth and precise drilling movements, a robust steel base equipped with wheels for easy transport, along with four legs for levelling and stabilization and heat exchanger coil to cool the diamond bit.

Drilling stroke:
550 mm
Max sample diameter:
200 mm
Dimensions:
850x580x1230 mm
Weight:
125 Kg

HR465

HR467
PETROL CORE DRILLING MACHINE 12,5HP

Same as HR465 but with 12,5 HP engine.

Weight: 150 Kg

HR471
SPECIMEN CUTTING SAW

This universal saw is used to cut concrete, asphalt, rock cores and irregular rock samples in order to obtain geometrically defined specimens.

The motor head is adjustable in height and can also be tilted, permitting cuts at angles up to 45° and 90°. Foldaway legs, for better assembly and transport.

Supplied with Ø300 mm diamond blade.

Power supply: 230 V | 50 Hz | 3000 W
Disc speed: 2800 r.p.m.
Dimensions: 1220x780x12200 mm
Weight: 65 Kg

HR471

HR481
WATER PENETRATION APPARATUS 3 PLACES
EN 12390-8

This apparatus is used to determine the depth that water under pressure penetrates into concrete specimens.
The test is performed by clamping the specimen between two flanges with special circular gaskets. The water, under controlled pressure, is then applied to the surface of the concrete specimen.

The penetration of water is measured, after the testing period, by breaking the specimen. The quantity of penetrated water can also be measured using the graduated burettes of the apparatus.
The apparatus have to be fitted with a suitable air compressor with a maximum working pressure of 10 bar.

Dimensions:
1500x530x1600 mm
Weight:
150 Kg

HR481

HR483
WATER PENETRATION APPARATUS 6 PLACES
EN 12390-8

Same as model HR481 but with 6 test places.

ACCESORY
MG753
Laboratory air compressor 10 bar, capacity 50 L

MG380
SPECIFIC GRAVITY FRAME
EN 12390-7 | EN 1097-6 | BS 812 | BS 1881:14

This apparatus is used, together with a suitable electronic balance, for determining the specific gravity of laboratory fresh and hardened concrete and aggregates.
A purpose built robust frame supports the electronic balance, while the lower part of the frame incorporates a moving platform which holds the water container, allowing test specimens to be weighed in both air and water.
The balance is not included and should be selected according to the weighing range required. Any type of electronic balance fitted with an under-bench weighing facility can be used.

Dimensions: 510x510x1150 mm
Weight: 50 Kg

ACCESORIES
MG380-01
Cradle for holding specimens
MG381-04
Density basket Ø200x200 mm, mesh 3,35 mm
MG220-10
Electronic top loading balance 36 Kg x 0,1 g

MG220-10

MG380

HYDRAULIC SHRINKAGE DETERMINATION
ASTM C426

Determine the hydraulic axial shrinkage of concrete beams during hardening. According to this method, steel pins are glued onto the end surfaces of the specimen in order to measure the dimensional changes of the specimen, which is properly stored underspecified temperature and humidity condition.

HR491
BEAM MOULD 100X100X500 MM
Steel made.
Weight: 23 Kg

HR493
MEASURING APPARATUS
For 100x100x500 specimens, with reference bar.

Weight: 23 Kg

MG010-51
HR491
HR493

ACCESSORIES
HR491-01

HR491-01
Inserts to measure shrinkage in mould HR491
MG010-51
Dial gauge 5x0,001 mm
MG010-52
Dial gauge 10x0,01 mm
MG010-61
Digital gauge indicator 12,7x0,001 mm

CE055
DIGITAL LENGTH COMPARATOR

Length comparator with digital dial to measure linear variations.

CE045
CE055

HR501
COR MAP-HALF CELL METHOD
ASTM C876 | BS 1881:201

Problems related to the durability of concrete are considered increasingly important as they are closely related to the quality of the structure as a whole.

Corrosion is an electrochemical process, which takes place in concrete in the presence of oxygen. The measurements made by the Cor Map device allow the mapping of equipotential contour lines on a grid and the drawing of lines, highlighting areas of possible corrosive activity.

The Cor Map apparatus is a simple and inexpensive method of identifying areas of probable corrosion in reinforcing bars such as bridge decks, covered establishments, concrete piers and decks, substructure, tunnel lining and foundations.

The equipment consists of the following elements:
-High impedance voltmeter
-Electrode extension
-Reference electrode with copper sulfate deposit
-Copper sulfate container (250 ml capacity)
-Wetting agent reservoir (125 ml capacity)
-Dispensing sponge
-Reel with 80 m of cable
-Carrying case

Case dimensions:
50x420x190 mm
Weight:
7,5 Kg

HR501

HR503
DIGITAL RESISTIVITY 2-PROBE ARRAY METER

As carbonation seriously affects surface strength, measurement on the concrete surface should be avoided. The resistivity meter has two probes, which are placed in two holes drilled to a depth of 8mm and filled with conductive gel. The resistivity of the concrete is displayed on an LCD screen by activating the control switch.

It is used in combination with CorMap equipment to produce resistivity plots. The kit is supplied with a drill, gel, template and carrying case.

Dimensions: 400x270x130 mm
Weight: 4 Kg

HR503

HR505
CHLORIDE FIELD TEST SYSTEM
ASTM C114 | AASHTO T260

Determines the chloride ion concentration in concrete to allow identification of the corrosion risk of a reinforcing bar. The method requires an acid extraction of a representative drilled sample of concrete, which is analyzed with an ion-selective electrode, comparing the potential with a calibration obtained using a series of five standard solutions.

The team equipment consists of:
-Electronic meter for direct conversion in % chloride
-Chloride Combination Electrode
-12 bottles of 20 ml of extraction liquid
-5 bottles of colored calibration fluid
-Scale for 3 g samples
-Carrying case

HR505

HR507
CARBONATION TEST
EN 13295

The test allows the measurement of the depth of carbonation through the surface of concrete.

The set consists of :
-Phenolphthalein solution (1000 ml)
-Demineralized water (5000 ml)
-Depth measuring gauge
-Two washing bottles 250 ml capacity

The surface of the concrete sample to be tested is sprayed with a phenolphthalein solution to detect the loss of alkalinity associated with carbonation. The risk of corrosion induced by carbonation can be measured, if it is correlated with the concrete to be reinforced.

HR507

HR511
AIR AND WATER PERMEABILITY OF CONCRETE
FIGG TECHNIQUE

The ingress of air and moisture into the concrete can cause corrosion of the steel reinforcement and lead to a deterioration in concrete strength. The apparatus can be used in the following tests:

-Internal test (deep permeability)
A hole Ø10 mm and 40 mm deep is drilled and connected leaving a cylindrical test hole Ø10 mm, 20 mm high, located 20 mm below the surface of the concrete. The time required for air and water to pass through the test material to the hole is used as an index to determine the quality of the concrete.

-Air permeability tests
Performed before moisture has a significant effect on permeability, based on the vacuum technique, the timer and gauge automatically display the time in seconds it takes for the vacuum to rise from -55 kPa to 5 kPa.

-Water permeability tests
After filling and forcing the water into the test cavity, the air moves out through the overflow tube.
The instrument's flow sensor and timer, after the test procedure, measure the time required in seconds for the water meniscus to travel a distance of 50 mm.

-Surface permeability test
The test is carried out by anchoring a stainless steel chamber in a smooth area of the concrete surface.
A measurement of the time required for corresponding amounts of air and water to pass through the concrete is used as an index of surface conditions.

The device consists of the following elements:
-Digital manometer
-Hand vacuum pump
-Water syringe
-Pack of 25 test caps
-Cup grinding wheel
-Stainless steel surface chamber
-Holding pliers, bits and anchors
-Carrying case

Case dimensions: 430x300x150 mm
Weight: 5,4 Kg

HR511

HR515
SURVEYMASTER MOISTURE METER

Used to measure the damp conditions in concrete structures, masonry, gypsum, both on surface and at depth with non-destructive method.

The equipment consists of probes for isolated deep walls,humidity probe and carrying case.

Humidity scale in wood: from 7 % to 99 %
Moisture depth: from 12,7 to 19 mm
Dimensions: 175x30x48 mm
Weight: 100 g

HR515

HR519
CHLORIDE ION PENETRATION METER
ASTM C1202 | ASTM C1760 | AASHTO T277

The durability of concrete is negatively affected by the penetration of chloride ions. This test method makes it possible to evaluate the chloride permeability characteristics of concrete. In the test, the amount of electrical current that passes through cylinders or concrete cores is monitored. A potential difference is maintained between the ends of the specimen; one of them is the negative pole and is immersed in a sodium chloride solution; the other end (positive pole) is introduced into a solution of sodium hydroxide. The total electrical charge is measured and the value obtained is related to the resistance of the test piece to the penetration of chloride ions.

The device can be used for testing the durability of concrete exposed to chloride-contaminated environment including:
-Concrete ability to resist chloride ion penetration (ASTM C1202, AASHTO T277).
-Bulk electrical conductivity of concrete (ASTM C1760)
-Performance-based quality control of concrete
-Estimation of chloride diffusion coefficient of concrete
-Estimation of chloride migration coefficient of concrete
-Service life design of concrete structures
-Estimation of the remaining life of concrete structures

Supplied with a set of cells, temperature sensors, test leads, power cord, USB cable, communication software, a vacuum pump, a desiccator, accessories to saturate the sample with water per ASTM C1202, and an instruction manual.

HR519

HR521
REBAR DETECTOR
BS 1881:204

This apparatus is used to measure the thickness of concrete cover over steel reinforcement bars and metal pipes and can also identify the location, orientation and diameter of reinforcement bars (rebars). The basic unit can be completed with a number of optional probes for the various different determinations.

The device, which uses the Pulse induction technique, features a rugged waterproof case with probe storage for easy portability.

The gauge is supplied with:
-Control unit
-Standard search head for Ø40 mm bars up to 95 mm depth
-PC cable
-Battery pack and charger
-Shoulder strap and earphone
-Carrying case

Dimensions: 230x130x125 mm
Weight: 1,5 Kg

HR521

ACCESSORIES

HR520-01
Narrow pitch search head
-Bars from Ø40 mm and depth to 80 mm
-Bars from Ø8 mm and depth to 60 mm
Sensing area: 120x60 mm
Dimensions: 155x88x42 mm

HR520-02
Deep cover search head
-Bars from Ø40 mm and depth to 180 mm
-Bars from Ø8 mm and depth to 160 mm
Sensing area: 160x80 mm
Dimensions: 170x94x54 mm

HR520-03
Short borehole probe
Measurement depth: 0-40 cm
Detection ranges tendon ducts: 70 up to 90 mm
Detection ranges reinforcement bars : 60 mm

HR520-04
Long borehole probe
Measurement depth: 0-100 cm
Detection ranges tendon ducts : 70 up to 90 mm
Detection ranges reinforcement bars : 60 mm

HR531
DEEP SCANNING METAL DETECTOR 150 MM

This locator finds and scans, through solid concrete, steel rebars and metallic materials like pipes, electric cables, junction boxes, metal studs and frames up to 150mm deep. It scans and differentiates steel rebars from other metallic materials like copper pipes.
It differentiates magnetic metals from non magnetic ones.

Dimensions: 251x109x63 mm
Weight: 320 g

HR531

HR533
RESONANCE FREQUENCY METER
ASTM C666 | BS 1881:209 | NF P18-414

The team measures the resonance frequencies of three different vibration modes: longitudinal, transverse (bending) and torsion. From these and the characteristics of the material, it can be calculated by non-destructive testing:
Modulus of elasticity or Young's
Modulus of rigidity
Poisson's ratio.

The principle used in this meter is based on the determination of the fundamental resonance frequency of the vibrations of a sample generated by an impact and detected through an accelerometer. The frequency spectrum is computerized and subsequently displayed by the team.

Available for specimen sizes up to 150 mm cross section dimension, and from 45 mm to 700 mm in length.
Automatic identification of the resonance frequency.
Large easy to view display for data analysis of time domain and frequency spectrum signals.

The equipment is supplied with electronic main unit, cable accelerometer, set of 6 hardened steel balls and standard base with accessories.

Power supply: 12 V
Storage: 200 plus readings
Frequency range: from 10 Hz to 20 kHz
Sampling rate: 20 kHz - 40 kHz
Weight: 30 Kg

HR533

HR535
BULK ELECTRICAL RESISTIVITY TESTING

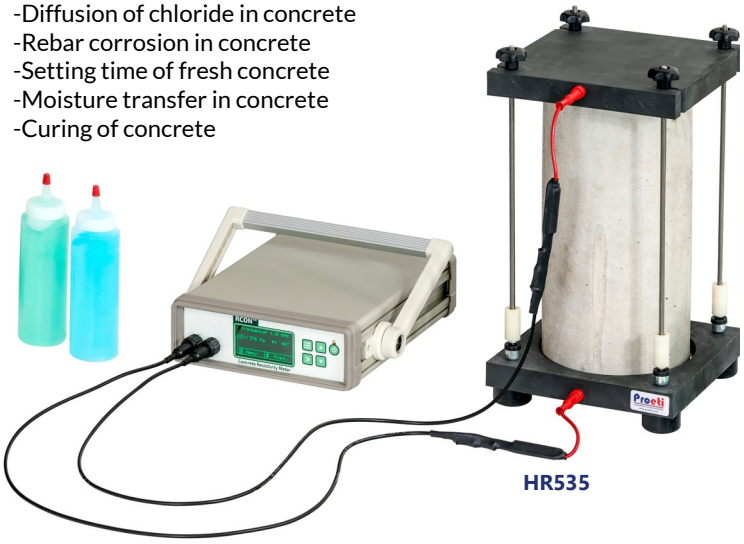
ASTM C1876 | AASHTO TP 119

This device is an advanced non-destructive laboratory tool for measuring the bulk electrical resistivity of concrete at various ages.

The device is fast (measurement time is less than 5 seconds), accurate (utilizing a variable frequency method), and flexible (measurements can be taken with different settings for verification). No additional sample preparations are required before testing.

This equipment allows for continuous measurement of electrical resistivity over time, which can be used to monitor important durability parameters of concrete, such as; cracking, moisture transfer, and setting time in concrete specimens.

The concrete laboratories use this device to perform:
-Diffusion of chloride in concrete
-Rebar corrosion in concrete
-Setting time of fresh concrete
-Moisture transfer in concrete
-Curing of concrete



HR535

HR543
ULTRASONIC TESTER WITH MICROPROCESSOR

EN 12504-4 | BS 1881:203 | ASTM C597 | NF P18-418

Used for measuring the velocity of ultrasonic pulses through a concrete section, providing information on cracks, voids and strength, and giving quick estimates of Dynamic Modulus of Elasticity on site or in the laboratory.It can also be used to estimate times for formwork striking.

The pulse velocity can be combined with the rebound hammer value for the strength evaluation of concrete.

This is an instrument using the most modern technologies; it has a colour touch screen, store by SD card, USB, working system Windows CE with Excel, Word, PPT, etc..

Dimensions: 400x300x180 mm
Weight: 3 Kg

HR543

HR541
ULTRASONIC PULSE VELOCITY TESTER

EN 12504-4 | ASTM C597 | BS 1881:203 | NF P18-418

This handheld battery-powered instrument measures the transit time of sonic/ultrasonic pulses through concrete to estimate homgeneity and structural integrity.

The pulse velocity is dependent upon the density and the elastic properties of the material. By comparing pulse velocities it is possible to evaluate homogeneity and identify the presence of cracks, voids, honeycombing, anomalies and non-homogeneity of elastic properties.

The standard kit includes two 55 kHz probes with connection cables, a rechargeable battery, a battery charger and a carrying case.

Measurement range: 0 to 3000 µs
Ultrasonic pulse width: from 250 to 1000 V
Storage: up to 30,000 samples
Suitcase dimensions: 400x340x110 mm
Weight: 2 Kg

HR541

HR551
CONCRETE TEST HAMMERS

EN 12504-2 | ASTM C805 | BS 1881-202 | NF P18-417

Concrete hammers are used to evaluate the surface hardness of concrete in order to estimate the strength in various parts of the structure.

Spring impact energy 0,225 mKg (2,207 Joule or Nm). Suitable for finished concrete structures and buildings with strength from 10 to 70 N/mm^2.

This concrete test hammer has an aluminium frame and, thanks to its very accurate manufacture and selected components, ensures high precision test results.

Supplied with calibration curve chart in N/mm^2 (MPa) values, abrasive stone and carrying case.

Dimensions with the case:
330x100x100 mm
Weight:
2 Kg

HR559
SPRING PENETROMETER

ASTM C803

It consists of a spring inserting a steel plug through the surface of the material. As the depth of penetration is inversely proportional to the compressive strength, the device offers a quick and safe way to determine the strength of the material on site.

The spring is loaded by tightening the retraction nut ntil the trigger mechanism closes to hold the spring in place. With the spring loaded, it is kept at a distance of 20 mm from the test surface. When the trigger is pulled, there is enough force to test the compressive strength of concrete or mortar up to a maximum of 37 MPa.

Weight: 8 Kg

HR553
DIGITAL CONCRETE TEST HAMMER

EN 12504-2 | ASTM C805 | BS 1881-202 | NF P18-417

This microprocessor-controlled hammer has been designed with advanced technology to perform basic concrete testing with continuous automatic recording of all parameters according to EN 12504-2 .

This unit is equipped with an electronic transducer that measures the rebound values and supplies automatically the results on a graphic display.

During testing the screen shows:
-Index value
-Average index value
-Number of rebounds
-Tested element
-Rebound angle

Supplied with data transfer software, USB cable, battery charger, abrasive stone and carrying case.

Power supply: 6 AA rechargeable batteries
Impact energy: 2,207 Joule (Nm)
Measuring range: 10-120 N/mm2
Battery life: 60 h
Weight: 3 Kg

ACCESSORIES

HR550-01
Calibration anvil
Used for the periodical calibration of the test hammer.
Made from special alloy steel.
Dimensions: Ø150x320 mm
Weight: 16 Kg

HR543
Ultrasonic pulse analyzer
To be connected to the digital test hammer to perform combined ultrasonic and rebound tests with automatic data acquisition, processing and store of the results.

The combined test allow to rectify different inaccuracies that are typical of the simple rebound hammer test, and obtaining estimates on the compressive strength of the concrete, that cannot be obtained with the ultrasonic test, granting high accuracy and reliability of the results.

CE181
DIGITAL PULL-OFF TESTER

EN 1015-12 | EN 1348 | EN 1542 | EN 13963 | EN 14496

This apparatus is mainly used to evaluate the adhesion of two layers of concrete or the bond strength on the basis of surface coatings on cements, limes, plasters and other materials.

It is a portable and light equipment, equipped with a load cell, a digital screen and a crank to manually apply the direct tension force.

The three feet of the unit can be fixed in the large position overall dimensions 176 mm diameter with very stable bearing, or in the compact position overall dimensions 92.5 mm diameter, to perform tests in narrow spaces, or for specimens close one to the other.

It is battery operated, has a PC connection port, a ball joint to ensure the application of axial-central load and a carrying case. To use this equipment a common electric drill is required.

Dimensions:
410x210x270 mm
Load capacity:
16 kN
Working range:
from 0,25 to 16 kN
Resolution:
10 N
Weight:
6 Kg

CE181

ACCESSORIES

CE180-01
Aluminum disc Ø20 mm (10 pieces)
Thickness: 21mm
CE180-02
Aluminum disc Ø50 mm (10 pieces)
Thickness: 21mm
Standard EN 1015-12
CE180-03
Aluminum disc Ø50 mm (10 pieces)
Thickness: 31mm
CE180-04
Aluminum square 50x50 mm (10 pieces)
Thickness: 21mm
Standard: EN 1348
CE180-05
Cylindrical ring Ø50 mm in the shape of a truncated cone
Standard: EN 1015-12
CE180-91
Software to download results to PC
Includes connection cable
CE180-07
Center drill Ø20 mm for surface preparation
CE180-08
Center drill Ø50 mm for surface preparation
CE180-09
Acrylic adhesive glue with application gun and nozzles of different sizes

HR561
PULL-OUT TESTER

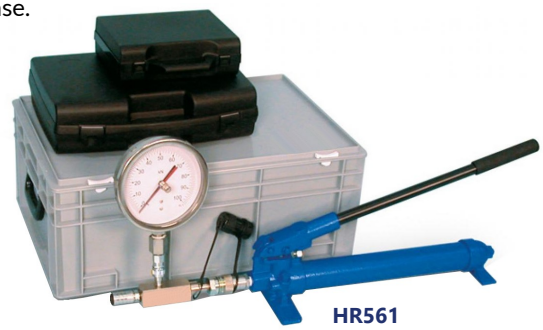
EN 12504-3 | ASTM C900

This apparatus is used to determine the pull-out force of hardened concrete in test specimens or in-situ by measuring the force required for pull-out of a metal insert or disc.

The equipment consists of a 100kN hydraulic extraction unit with a pump, a 0-100kN precision gauge and a support ring.

Supplied with 10 steel discs 25 mm according to EN and carrying case.

Weight:
18 Kg



HR561

HR565
DETECTION MICROSCOPE

Used to measure crack width in concrete structures, by operating via an adjustable light source. High definition unit, provided by power batteries, carrying case.
The eyepiece scale can be turned through 360° to align with the direction of the crack under detection.

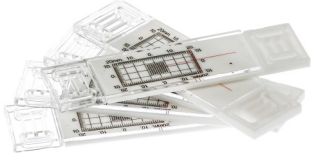
Dimensions:
150x80x45 mm
Weight:
550 g

HR565

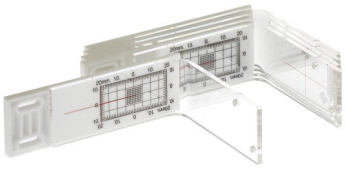
CRACK WIDTH GAUGES

Manufactured with two partially overlapping plates one on top of the other. The upper plate is engraved with a grid, while the lower one is calibrated in millimeters. We offer four different versions to measure the width of cracks in walls, corners, floors and the difference in level between two surfaces. Supplied in sets of 5 units.

HR567-01
Crack width gauges for walls
HR567-02
Crack width gauges for corners
HR567-03
Crack width gauges for floors
HR567-04
Crack width gauges for difference of level



HR567-01



HR567-02

FLAT JACKS

To determine the in-situ stress, deformability and resistance characteristics of masonry.
The flat jacks are rectangular or oval.

STRESS TEST (1 FLAT JACK)
Two datum points are fixed across a mortar joint and the distance between the points is measured.
After that, a horizontal cut is carried out level with the mortar layer, and it is measured the variation of the two datum points.
The flat jack must be introduced, it is pressurized in different growing phases and the variation between the datum points is measured, by determining the static load.

DEFORMABILITY AND RESISTANCE TEST (2 FLAT JACKS)
It must be done a second cut, parallel to the first one, level with the mortar layer, having a distance of 50 cm from the first cut approximately.
When two flat jacks are introduced, it starts to pressurize the two flat jacks at growing phases and measures the variation of distances of the datum points at different pressure steps allows to delineate a strength-deformation curve, obtaining elastic modulus, Poisson and breaking point values.

HR571-01

HR571-03

HR571-05

HR571-01
Rectangular flat jack 400x200x4 mm
Pressure max. 50 bar
HR571-02
Rectangular steel sheets to fill the testing cut (6 pieces)
HR571-03
Semi-oval flat jack 350x260x4 mm
Pressure max. 50 bar
HR571-04
Semi-oval steel sheets to fill the testing cut (6 pieces)
HR571-05
Stopcock high pressure
HR571-06
Hydraulic hand pump
HR571-07
Flexible rubber tuve 3 m
HR571-08
Flexible rubber double tube 2 and 3 m to connect two jacks
HR571-09
Manometer 0-60 bar fixed to the pump

STRAIN MEASUREMENT

ASTM C426 | BS 1881:206

This apparatus used to determine changes in length was originally designed for use with concrete structures, but can also be used with any other type of structure, including steel.

The equipment consists of an analog or digital comparator with a resolution of 0,001, a calibration bar where the reference disc is fixed, adhesive for the discs, 50 reference discs and a case.

HR573-13

LENGTH	ANALOG	DIGITAL
100 mm	HR573-01	HR573-11
200 mm	HR573-02	HR573-12
300 mm	HR573-03	HR573-13
600 mm	HR573-04	HR573-14

HR575
SWING ARM DEFLECTOMETER

Used for determining the deflection of bridges, ceilings or any suspended structure.

Carrying case comprising:
-3 Swing arms with clamps
-3 Wire coil 20 m
-3 Dial gauges 30x0,01 mm
-3 Plumb weights

HR575

CISTERNS FOR LOAD TESTS

Made of flexible polystyrene covered in PVC, they are used to load the structure and measure its deflection.
Includes connector, flexible tube and ball valve.

CODE	CAPACITY	DIMENSIONS	WEIGHT
HR579-01	1000 L	240x145 cm	10 Kg
HR579-02	2500 L	240x280 cm	16 Kg
HR579-03	5000 L	240x400 cm	25 Kg
HR579-04	10000 L	340x490 cm	40 Kg

HR579-05
ELECTRONIC LITRE-COUNTER FOR CISTERNS

It measures and displays the quantity of water.

HR579-05

HR579-02

MG003
DIGITAL SYSTEM FOR TESTING STRUSTURES

The determination of deflection of ceilings, bridges or any suspended structure can be easily performed using this modern digital system.

This independent data acquisition unit, equipped with graphic display, high sensitivity keyboard and removable SD memory, is also ideal for acquisition from different types of sensors. The unit automatically performs test and data processing.

Contained in a practical and sturdy watertight carrying case, can be powered from an electrical network 90-270V or use the internal battery and charger granting one full day on-site use.

Three deflectometers are recomended to correctly perform a test.

HR577
DEFLECTOMETER WITH TELESCOPIC TRANSDUCER

Used to determine the deflection under known loads of bridges, ceilings or any suspended structure.This instrument grants very accurate and reliable test results with data acquisition through digital unit MG003.

One telescopic deflectometer consists of an aluminium telescopic tubular anodized frame having 1700 mm mimimum height and 6000 mm maximum extensión; a linear potentiometric displacement transducer with spring system,fixed on the base of the telescopic tubular frame, with measurements in compression 50 mm stroke and 0,01 mm resolution; a tripod supporting the telescopic tubular displacement transducer and 10 m extension cable.

Weight: 6 Kg

ACCESSORY

MG020-50
Calibration process of one deflectometer

HR591
CROSS HOLE EQUIPMENT

The equipment is aimed to investigate the foundation piles of buildings, which, with the use of cross- hole ultrasonic pulses, allows accurate, high-resolution tests to be carried out. An ultrasonic wave is sent from a transmitter to a receiver and is conveyed automatically by the device along the entire length of the pile via the pipes embedded into it during casting. The speed of the sonic wave and its energy are strongly influenced by the quality of the concrete and it is therefore possible to assess the characteristics and give a tomographic representation in 2D and 3D.

The test can be carried out for any kind of foundation or concrete structure that has two or more access pipes that can hold water. The CSL can also be applied to submerged piles and structures that do not have internal pipes but can be fi tted with external pipes. The computer tomographic imaging tests are carried out when the defects detected are critical and require an in-depth study.

The Crosshole system compounds:
-Portable computerized unit
-Acquisition card high-speed data
-Crosshole software for data acquisition and analysis
-Tripod for hanging the lifting mechanism
-2 interchangeable probes (transmitter and receiver)
-An ultrasound pulse generator to excite the transmitter
-Amplifying systems and cabling for the CSL test
-Two cable coils for 80 metres of usable cable

These components are inter-connected by cables to form a complete system.