





## ...BECAUSE WE NEVER STOP GROWING FOUR BUSINESS UNITS



### GLOBAL. INNOVATIVE. MANUFACTURER.

Matest is an Italian company founded in 1986 by the family that still runs and manages operations. Thanks to its strong capital, the company is a forerunner in technological innovation and in continuous expansion.

With an increasingly wide and comprehensive range of products, Matest is both a global player and a leading manufacturer of material testing equipment for the building industry.



### WHERE TECHNOLOGY MEETS THE PAVEMENT.

Pavetest is the division of Matest committed to developing innovative dynamic testing systems for asphalt. It offers the most complete and dependable range of pavement materials testing equipment; a position confirmed by the vast majority of the market, especially customers involved in R&D, with whom we continue to develop innovative solutions.



### MATERIAL TESTING EQUIPMENT.

In early 2017 Matest has acquired Tecnotest. The famous elephant has always been appreciated from the construction material industry for the quality and the stiffness of its products, with a special focus on the geotechnical range.

Being part of Matest group guarantees continuity for its customers.



### UNIVERSAL TESTING SYSTEMS.

Matest awareness of having become a global player with a strong brand identity has also allowed for greater product specialization. Steeltest is in fact the brand that fully represents the quality and functionality inherent in our complete range of equipment for steel testing.

Our universal testing machines are designed to meet requirements of works, laboratories and universities for quality control and research purposes.

## UNIVERSAL AUTOMATIC TENSILE TESTING MACHINES

These machines are designed to meet requirements of works, laboratories and universities for quality control and research purposes. The system is suitable to test **metallic round and flat rebars**, to determine **tension, compression, bending shear strength on steel** and **compression and flexure strength on concrete**.





## TENSION TESTING CHAMBER

- Tensile tests on steel flat and round rebars
- Tensile tests on wire strands
- Wire rope tensile tests
- Nut bolt tests
- Tensile tests on headed and shouldered specimens

## COMPRESSION TESTING CHAMBER

- Bending tests on steel specimens
- Shear tests on round bars
- Compression tests on concrete cubes and cylinders
- Flexural tests on concrete beams
- Indirect tensile on cylinders, cubes and paving blocks
- Modulus of elasticity

## UNIVERSAL AUTOMATIC TENSILE TESTING MACHINES: 600 kN, 1000 kN, 1500 kN, 2000 kN CAPACITY

STANDARDS: EN ISO 6892-1, EN 7500-1 | EN 10002, EN 10080, EN 50081-1, EN 15630-1, EN 15630-2, EN 15630-3 | ASTM A370, ASTM E8  
 UNI 7676 (Wire Strands) | ISO 5173

These machines are designed to meet requirements of works, laboratories and universities for quality control and research purposes. The system is suitable to test metallic round and flat rebars, to determine tension, compression, bending shear strength and to determine compression and flexure strength on concrete.



### LOAD FRAME FEATURES

- Models: 600 kN, 1000 kN, 1500 kN, 2000 kN Capacity. Other load capacities (700 kN and 1200 kN) available on request. (see next pages)
- Hydraulic servo-controlled system regulating the load rate
- Four thick columns and two lead screws grant high structural stiffness
- Two different work spaces, the upper one for tension and the lower one for compression, bending and shearing, for a comfortable test execution
- High precision load cell, class 1 according to ISO 376 standard, grants accurate force measurement
- Hydraulic jaws, for stronger clamping of specimens
- Possibility to fit accessories for tensile tests on nut bolts, headed and shouldered specimens, wire ropes
- Integrated displacement photoelectric encoder
- Movable lower crosshead with button panel for an easy machine operation and specimens positioning
- Compression platens included for an easy machine calibration
- Machine CLASS: 1

Load frame H001BS (1000 kN) is specially designed (improved tension space and power pack) to perform also tensile tests on wire strands (UNI 7676).

A **second frame** (accessory) can be easily connected to perform compression tests on concrete specimens, including configurations for Elastic Modulus and Poisson ratio determination.

The most common combination is with C092-09, 2000 kN compression frame useful for testing cubes up to 150 mm side and cylinders up to 160x320 mm also with **capping retainers** (ASTM C1231).

### HYDRAULIC JAWS CLOSURE NEEDED FOR SAFETY REASONS



H001BS with accessories

## FIRMWARE

- Fully automatic test cycle with closed-loop digital feedback
- Electronic control unit "Servo-plus Progress" with Touch-Screen colour display, that runs like a standard PC based on Windows operating system for management and analysis of data, test results, graphs.
- The Touch-Screen icon interface allows an easy set-up of parameters and an immediate test execution.
- The machine can also be connected to a PC for a remote test execution through suitable Software.
- Direct connection to Intranet (connection to a LAN network) and Internet to establish a remote communication and receive an immediate diagnostic analysis from Matest technicians, or for any software updates.
- Unlimited memory storage with: 2 USB ports, 1 SD card slot, 1 RS232/485 serial port.
- Possibility to select different languages.
- Hardware technical details: see p. 18 of the general catalogue.

Each machine is supplied complete with loading frame, control unit, compression platens and hydraulic power pack for jaws closing, while PC, software, grips, printer and extensometers (see next pages) **are optional and must be ordered separately** according to the user needs.

## DIFFERENT FRAMES, DIFFERENT NEEDS



**CONTROL SYSTEM**


Button panel, to control the lower crosshead movement for specimen positioning before testing.

**HYDRAULIC JAWS POWER PACKS**


Standard model, low clamping pressure only (3 buttons)

Strands model, possibility to switch between high (strands) and low (round and flat rebars) clamping pressure (4 buttons)

**TECHNICAL SPECIFICATIONS**

MODEL	H001A	H001B	H001BS*	H001C	H001D
<b>Load capacity (kN)</b> both tension and compression	<b>600</b>	<b>1000</b>	<b>1000</b>	<b>1500</b>	<b>2000</b>
Load accuracy (%)	± 1	± 1	± 1	± 1	± 1
Test speed (mm/min):					
Max	85	35	35	17	17
Min	0.5	0.5	0.5	0.5	0.5
Deformation accuracy (%)	± 1	± 1	± 1	± 1	± 1
Max crosshead moving speed (mm/min)	200	200	200	200	200
Piston stroke (mm)	250	250	250	250	250
Horizontal columns distance	480	580	590	700	840
Max tension space (mm)	750	750	1000	1000	1000
Columns diameter	75	80	100	110	110
Length of the grips for standard samples	90	110	110	160	160
Length of the insert for strands and special samples			225		250
Max compression space (mm)	590	570	680	750	780
Dimension of platens** (mm)	Ø128x30	Ø148x40	Ø148x40	Ø200x60	Ø200x60
Span of bending attachment (mm)	30-500	50-500	50-500	50-500	50-720
Roller length (mm)	120	160	160	160	160
Roller diameter (mm)	30	50	50	50	50
Bending depth (mm)	100	180	180	180	180
Load frame dimensions (mm)	2450	2665	3115	3500	3500
Height (including piston stroke)					
Width	770	900	980	1120	1340
Depth	600	650	670	850	1000
Frame weight (kg)	2700	3100	3900	5000	9000
Power supply	380V, 3ph, 50Hz (60Hz on request)				
Absorbed power (kW)	3.5	3.5	3.5	3.5	6.2

\* Wire Strands can be tested with this model only. Other models for wire strands testing are available on request.

\*\* Compression platens are already included in the supplied machine

## ACCESSORIES FOR

MACHINE MODEL (load capacity*)	H001A 600 kN	H001B 1000 kN	H001BS 1000 kN	H001C 1500 kN	H001D 2000 kN
Grips for round specimens $\varnothing$ 6...14 mm	H001A-11	H001B-11	H001B-11		
Grips for round specimens $\varnothing$ 13...27 mm	H001A-12				
Grips for round specimens $\varnothing$ 28...40 mm	H001A-13				
Grips for round specimens $\varnothing$ 9...21 mm		H001B-12	H001B-12		
Grips for round specimens $\varnothing$ 22...41 mm		H001B-13	H001B-13		
Grips for round specimens $\varnothing$ 42...60 mm		H001B-14	H001B-14		
Grips for round specimens $\varnothing$ 8...20 mm					H001D-11
Grips for round specimens $\varnothing$ 16...32 mm					H001D-12
Grips for round specimens $\varnothing$ 33...47 mm					H001D-13
Grips for round specimens $\varnothing$ 48...61 mm					H001D-14
Grips for round specimens $\varnothing$ 62...80 mm					H001D-15
Grips for round specimens $\varnothing$ 13...31 mm				H001C-11	
Grips for round specimens $\varnothing$ 32...60 mm				H001C-12	
Grips for flat specimens 0...16 mm	H001A-21				
Grips for flat specimens 17...30 mm	H001A-22				
Grips for flat specimens 0...30 mm		H001B-21	H001B-21		
Grips for flat specimens 10...41 mm		H001B-22	H001B-22	H001C-21	H001D-21
Grips for flat specimens 42...70 mm				H001C-22	H001D-22
Grips for strands $\varnothing$ 9.5 mm			H001BS-31		
Grips for strands $\varnothing$ 12.7 mm			H001BS-32		
Grips for strands $\varnothing$ 15.2 mm			H001BS-33		
Aluminium and carborundum insert, 4 pieces			H001-30		
Bending accessory (ISO 5173)	H001A-40	H001B-40	H001B-40	H001C-40	H001D-40
Bend-Rebend device (ISO 15630-1 and ISO 15630-3) Mandrels (Needed Accessories) When ordering specify diameter and strength.	H001B-41 H001B-42	H001B-41 H001B-42	H001B-41 H001B-42	H001D-41 H001D-42	H001D-41 H001D-42
Shearing accessory for specimens $\varnothing$ 10 mm	H001-45	H001-45	H001-45	H001-45	H001-45
Accessories for threaded and shouldered head samples from M3 to M39 (or more on request), composed by: 					
Grips	H001B-43	H001B-43	H001B-43	H001D-43	H001D-43
Tensile bowl and ring. When ordering specify diameter and thread type.	H001B-44	H001B-44	H001B-44	H001D-44	H001D-44
OR tensile bowl and ring with self-alignment. When ordering specify diameter and thread type.	H001B-45	H001B-45	H001B-45	H001D-45	H001D-45

\* Models with 700 kN and 1200 kN capacities available on request.

4 Columns for a high stiffness

Easy grips replacement and maintenance

Two testing chambers

Fast accessory positioning

Hydraulic jaws closure

Upper head for moving during test performance

2 lead screws for lower head positioning before the test

Test control unit

Second frame For other tests



**H001BS** with accessories

**C092-09**

## ADDITIONAL ACCESSORIES

### C092-09

COMPRESSION FRAME, 2000 kN capacity, connected to the same control unit. Vertical daylight: 376 mm with a distance piece of 40 mm high. Useful to test concrete cubes up to 150 mm side and cylinders up to 160x320 mm also with capping retainers. Technical details: see p. 238 of the general catalogue.

#### Note:

It is possible to connect different types of compression frames and other frames (up to 2) for many other tests: flexure, splitting, cement, etc. Ask our technicians for more details.

#### Note:

Electronic extensometers and software are listed at p. 439, 449.

### H009-01

PERSONAL COMPUTER for remote test execution with a pre-installed software. Complete with LCD, monitor 22", keyboard, mouse, connection cable.

#### Note:

The PC is recommended, but not necessary: the machine can in any case perform tests without any external PC.

### H009N

SOFTWARE for tensile tests on steel (Load/Deformation, graphic, test certificate etc.)



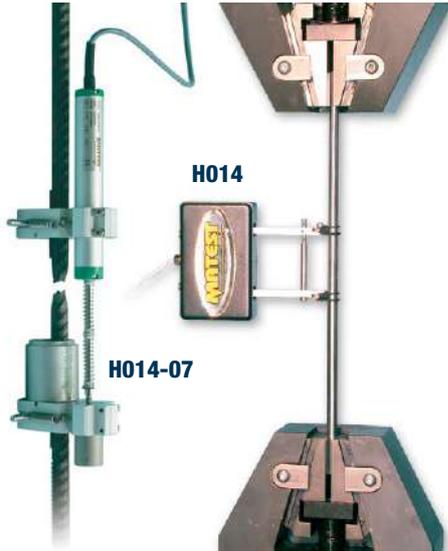
Grips for flat specimens



Grips for round specimens

**H014  
ELECTRONIC EXTENSOMETER**

Measuring base 50 mm, Deformation range +1 mm / -0.2 mm  
 Maximum percent measurable deformation: +2%  
 It gives the possibility to take the longitudinal deformations of the specimen during the tensile test. A graph load/deformation is obtained and from this graph the coefficient of elasticity together with the loads RP0.1 - RP0.2 - Rt1 can be identified even on materials that are not presenting a yield point that can be clearly identified. The appliance is delivered complete with connection cables.



**H003-18  
WIRE STRANDS EXTENSOMETER**

STANDARD: UNI 7676

The instrument is directly applied on the sample through two coaxial telescopic hardened tubes by measuring the deformation/elongation of the strand up to failure.

Supplied complete with electronic precision transducer 50 mm stroke by 0.005 mm sensitivity.

Measuring base: 600 mm

The H003-18 extensometer can be utilized only with the machine mod. H001BS

Dimensions: 105 x 630 mm

Weight: 1000 g



**ELECTRONIC EXTENSOMETER FOR TENSILE DEFORMATION STRENGTH TESTS UNTIL BREAKAGE**

**MODELS**

- H014-06** Extensometer for round specimens from 4.5 to 11 mm diameter. Transducer stroke: 25 mm
- H014-07** Extensometer for round specimens from 10 to 19 mm diameter. Transducer stroke: 50 mm
- H014-08** Extensometer for round specimens from 18 to 25 mm diameter. Transducer stroke: 50 mm
- H014-09** Extensometer for round specimens from 26 to 36 mm diameter. Transducer stroke: 50 mm
- H014-10** Extensometer for flat specimens, width max. 25 mm; thickness max. 10 mm. Transducer stroke: 50 mm  
Measuring base: 25 – 50 – 60 – 70 mm
- H014-11** Extensometer for round specimens from 35 to 49 mm diameter. Transducer stroke: 50 mm
- H014-12** Extensometer for round specimens from 48 to 61 mm diameter. Transducer stroke: 50 mm

**H003-18** Detail of the wire strands extensometer

Alternative compression platens, complete with upper seat ball.



**H001C-50** Detail of the standard compression platens

MACHINE MODEL	Model	Ø mm	Max specimen dimensions
H001A	H001A-50	165X30	Cubes up to 100 mm side and cylinders up to Ø 110x220 mm
H001B and H001BS	H001B-50	216X30	Cubes up to 150 mm side and cylinders up to Ø 160x320 mm
H001C and H001D	H001C-50	287x51	Cubes up to 200 mm side and cylinders up to Ø 160x320 mm

## H003N UNIVERSAL HYDRAULIC SERVO-CONTROLLED MACHINE 600 KN CAPACITY TO PERFORM STATIC TENSILE TESTS ON METALLIC MATERIALS.

STANDARDS: EN 10002, EN 10080, EN 15630-1, EN 15630-3 | EN ISO 6892-1, 7500-1 | ASTM A370, ASTM E8

It basically consists of:

- Strong loading frame with a reading cell built into the piston
- Hydraulic Servo-Plus Progress Touch-Screen system (technical details: see p. 224 of the general catalogue), for the data acquisition, control and processing. The whole is built in a console.

The frame is designed to carry out tensile tests using the grips placed in the clamping heads. In the upper part, between the head and traverse, it is possible to carry out flexion, compression, bending, hardness, dishing tests, according to the International Standards by using the suitable (see accessories) devices. An emergency device stops the machine in any moment as per the International Safety Standards.

A control pedal situated on the frame governs the movement of the lower tensile head (excursion 0 to 580 mm with electric end of stroke switches) for an easier positioning of the specimen according to its length. The machine is supplied complete with loading frame, control console, while the software (mod. H009), extensometers (mod. H014 to H014-10) grips and the printer **are options and must be ordered separately** according to the needs of the user.



### TECHNICAL SPECIFICATIONS

Capacity	600 kN
Max. crosshead stroke	200 mm
Max. distance between the jaws	465 mm
Width flexion joke	190 mm
Max. flexion knives distance	1000 mm
Compression plates light	235 mm
Load reading	Sensing by loading cell. Resolution 0.01% U.V.
Accuracy	Class 1 EN 10002-2 Only reading scale 1:1-1:20 U.V.
Stroke reading	Sensing by linear transducer Resolution 0,01 mm
Deformation reading	Sensing by electronic extensometer (accessory) Resolution 0.001 mm
Accuracy	Class B 2 (B 1 for base up to 50 mm) ASTM E83
Needed height	4050 mm
Frame weight	2600 kg approx.
Rack dimensions	610x630x1600 mm
Power supply	230V 1ph 50Hz 2kW



H003N with accessories

### H003-99 KIT FOR MACHINE DELIVERY

The kit is composed by different mechanical devices to flatwise the machine allowing its transport.

The amount of this kit is fully reimbursed to the customer if the kit is returned to Matest after the delivery.

## ACCESSORIES FOR H003N

ROUND AND FLAT GRIPS. One set consists of two double pairs that must be placed into the upper and lower tensile heads.

**H003-03** Set of Grips for Flat specimens from 2 to 18 mm and Round specimens  $\varnothing$  5...12 mm

**H003-04** Set of Grips for Flat specimens 18...36 mm

**H003-07** Set of Grips for Round specimens from  $\varnothing$  12...24 mm

**H003-08** Set of Grips for Round specimens from  $\varnothing$  25...40 mm



**Note:** The software (H009N) is listed at p. 449  
The extensometers (H014 to H014-10) are listed at p. 445

## ACCESSORIES FOR TESTS ON METALS

### H003-11 FLEXURE TEST

STANDARD: UNI 559

The equipment is composed by a couple of lower bearers with adjustable supports and an upper blade.

Maximum load: 200 kN

Maximum distance between the lower bearers: 1000 mm

Width of the bearers: 120 mm

Diameter of the bearers: 50 mm

**Weight:** 70 kg approx.



### H003-12 BENDING TEST

STANDARDS: UNI 564 | ASTM E290

The equipment is composed by a couple of lower bearers with adjustable supports and an upper blade.

Maximum load: 200 kN

Maximum distance between the lower bearers: 1000 mm

Width of the bearers: 120 mm

Diameter of the bearers: 50 mm

**Weight:** 70 kg approx.

**Note:** bearers with different diameters are available on request.

### H003-13 COMPRESSION TEST

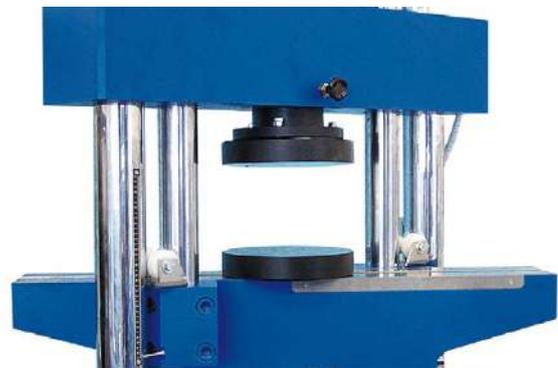
STANDARD: UNI 558

The equipment is composed by an upper plate with seat ball assembly and by a lower plate.

Maximum load: 600 kN

Diameter of the compression plates: 90 mm

**Weight:** 25 kg approx.



### H003-14 TEST ON ELECTRO WELDED WIRE NETS

Device for the seizing of electro welded wire nets; this equipment must be used with the grips for flat specimens.

**Weight:** 5 kg approx.

## ACCESSORIES FOR TESTS ON CONCRETE

**H003-21  
COMPRESSION TEST** on concrete cube specimens, max 150 mm side.

The appliance is composed of:

An upper compression plate 287 mm diameter complete with seat ball assembly. A lower compression plate 287 mm diameter  
Maximum distance between the compression plates: 185 mm.

**Weight:** 60 kg approx.

**H003-22  
FLEXURE TEST** on concrete beams with dimensions 100x100x400/500 mm and 150x150x600/750 mm  
STANDARDS: EN 12390-5 / ASTM C78, C293  
Composed by two lower and one upper bearers  
Maximum load: 200 kN  
Maximum distance between the lower bearers: 1000 mm.  
Width of the bearers: 160 mm.

**Weight:** 40 kg approx.

## SERVO-CONTROLLED ELECTROMECHANICAL UNIVERSAL TESTING MACHINES

STANDARDS: EN 12390-4 | EN ISO 6892, 7500-1 | ASTM E4

These machines are suitable to make tensile and elongation tests in Laboratories for Quality Control and research on different materials, such as Metals, Plastics, Composed Materials, Wires, Ropes, Paper, Textiles etc.

For each testing purpose, suitable machine range, seizing grips and accessories must be selected.



### MAIN FEATURES

- Strong base containing the transmission components and the Hardware control instruments.
- Two big diameter and high resistance steel columns with ground hard chrome surfacing granting a high lateral rigidity.
- Possibility to execute tests in both directions.
- Two re-circulating spheres screws with pre-loaded female screws that grant no clearance to the cross-bar movement.
- Big section cross-bar granting high stiffness (see UNI ISO 5893 Standards).
- Sintered bushes with low friction coefficient cross-bar movement.

The Load Cell is made in stainless steel and reads both tensile and compression loads with a very high precision.

Accuracy class	1
Repeatability error	$\leq \pm 0.145\%$
Interpolation error	$\leq \pm 0.090\%$
Error on zero	$\leq \pm 0.03\%$ F.S.
Reversibility error	$\leq \pm 0.240\%$
Linearity error	$\leq \pm 0.005\%$ F.S.
Hysteresis	$\leq \pm 0.05\%$ F.S.
Maximum overload capacity	150%

In order to follow the specific needs of each single application, different load cells with different capacities within the nominal capacity of the machine can be installed on the frame.

Different connections for the installation of the seizing devices are on the mobile cross-bar and on the base (see accessories at following pages).

The machine is delivered with different safety devices limiting the maximum travel of the cross-bar. There is also an adjustable device that allows setting a personalized upper and lower travel limit following the used appliances.



**H007N + H014-07 + H009N + H007-11 + H007-21 + H009-01**

**Firmware:**

- Electronic control unit “Cyber-plus Progress” **with Touch-Screen colour display**, that runs like a standard PC based on Windows operating system for the management and analysis of the data, test results, graphs.
- The Touch-Screen icon interface allows an easy set up of the parameters and immediate execution of the test.
- The machine can be connected to a PC for remote test execution through suitable Software; the machine can in any case perform the tests without any external PC, because of the “Cyber-Plus” grants performances like a PC.
- Direct connection to Intranet (connection to a LAN network) and Internet to establish a remote communication and receive an immediate diagnostic analysis from Matest technicians, or for updates of the software.
- Unlimited memory storage with: 2 USB ports, 1 SD card slot, RS232/485 serial port.
- Possibility to select different languages.

**H005N**

The frames protecting the columns and the screws are made of painted steel sheets, the internal sides are closed with anti-dust bellows and all the outside and internal parts are properly treated against the corrosion.

Following equipments are not delivered with the machine and have consequently to be ordered separately (see following pages):

- Personal computer model H009-01
  - Standard UTM 2 software model H009N
  - Special personalised programs (following the customer demand).
  - Accessories for the seizing of the specimens.
  - Printer model C128
  - Extensometers model H014 to H014-10 (p. 445) of the general catalogue.
  - Other accessories
- The voltage must not have peaks of tension, over-tensions and transitory over-currents or drops of voltage higher than 10% of the nominal voltage.
- Working temperature from +5 °C up to +45 °C.
- Humidity range from +10% up to +90%, without condensation.

**AVAILABLE MODELS**

MODEL	H004N	H005N	H006N	H007N	H008N
LOAD					
CAPACITY kN	10	50	100	200	600
TEST SPEED mm/min					
Minimum	0.01	0.01	0.01	0.01	0.01
Maximum	500	500	500	480	300
POSITIONING SPEED mm/min.	500	500	500	480	250
CROSS BAR TRAVEL (*) mm	1130	1130	1180	1150	1500
OPENING OF THE TESTING CHAMBER					
Vertical mm (**)	1253	1251	1310	1280	1510
Horizontal mm	421	421	600	600	713
MAXIMUM DISTANCE BETWEEN THE TENSILE HEADS mm (***)	630	612	510	480	550
DIMENSIONS mm					
height	1708	1845	2340	2340	3000
width	550	810	1370	1370	1465
depth	683	670	700	700	930
WEIGHT kg	250	370	1000	1150	2600
POWER SUPPLY	230V 1ph 50Hz	230V 1ph 50Hz	400V 3ph 50Hz	400V 3ph 50Hz	400V 3ph 50Hz
ABSORBED POWER W	1000	1200	2000	3000	3000

(\*) The cross bar travel is referred to the distance between the upper surface of the base and the lower surface of the cross bar and it doesn't include the load cell, the seizing devices, the different equipments etc.

(\*\*) The vertical opening of the testing chamber is the distance between the upper surface of the base and the lower surface of the crossbar, without load cells, seizing devices and other devices.

(\*\*\*) The maximum distance between the tensile heads is the distance between the grips when the crossbar is at its upper dead point (load cell is installed). Practically it is the free length of the specimen between the tensile heads.

**ACCESSORIES FOR:**

MACHINE CODE	H004N	H005N	H006N	H007N	H008N
CAPACITY	10 kN	50 kN	100 kN	200 kN	600 kN
Couplings for installation of tensile heads or the devices	<b>H005-40</b>	<b>H005-40</b>	<b>H007-40</b>	<b>H007-40</b>	
Tensile heads	<b>H005-11</b>	<b>H005-11</b>	<b>H007-11</b>	<b>H007-11</b>	<b>H008-11</b>
Flat seizing grips for specimens as follows:					
Flat spec. thickness 0...10 mm					
Width max 25 mm					
Round specimens Ø 3...5 mm	<b>H005-21</b>	<b>H005-21</b>			
Flat spec. thickness 0...10 mm					
Width max 50 mm					
Round specimens Ø 3...10 mm			<b>H007-21</b>	<b>H007-21</b>	
Flat spec. thickness 11...22 mm					
Width max 50 mm			<b>H007-22</b>	<b>H007-22</b>	
Flat spec. thickness 0...12 mm					
Width max 70 mm					
Round specimens Ø 3...10 mm					<b>H008-21</b>
Flat spec. thickness 12...24 mm					
Width max 70 mm					<b>H008-22</b>
Flat spec. thickness 24...36 mm					
Width max 70 mm					<b>H008-23</b>
"V" shape seizing grips for round specimens:					
Ø 5...12 mm	<b>H005-31</b>	<b>H005-31</b>			
Ø 11...18 mm			<b>H007-31</b>	<b>H007-31</b>	
Ø 18...25 mm			<b>H007-32</b>	<b>H007-32</b>	
Ø 25...32 mm			<b>H007-33</b>	<b>H007-33</b>	
Ø 11...22 mm					<b>H008-31</b>
Ø 23...34 mm					<b>H008-32</b>
Ø 35...45 mm					<b>H008-33</b>
Ø 45...55 mm					<b>H008-34</b>
Compression device	<b>H005-41</b>	<b>H005-41</b>	<b>H007-41</b>	<b>H007-41</b>	<b>H008-41</b>
Knurled roller clamping device	<b>H005-42</b>	<b>H005-42</b>			
Device for test on wire and ropes	<b>H005-43</b>	<b>H005-43</b>			
Flexural and bending device in three spots	<b>H005-44</b>	<b>H005-44</b>	<b>H007-44</b>	<b>H007-44</b>	<b>H008-44</b>
Device to centre the specimens		<b>H005-51</b>	<b>H005-51</b>	<b>H005-51</b>	
Kit for machine delivery			<b>H007-99</b>	<b>H007-99</b>	

**H005-11 - H007-11 - H008-11**

COUPLE OF TENSILE HEADS with different capacities. They are made of treated steel carefully worked and have a shape, which is granting an auto-tightening of the seizing grips on the specimen.

A screw device allows the right operation of the seizing grips and grants a right blocking of the specimen starting from the lowest loads and reducing at the top the moving of the crossbar during the penetration of the knurling on the specimens.

Each couple of tensile Heads is delivered complete with:

- Spanner for the assembling and the disassembling of the seizing Grips.
- Pack of special grease for lubrication.


**H005-21**

FLAT GRIPS - Thickness 0...10 mm  
Width max 25 mm and Round Grips Ø 3...5 mm  
One set consist of a double pair of grips.

**H005-31**

ROUND GRIPS with Section "V"  
Ø 5...12 mm  
One set consists of a double pair of grips.


**H005-41**

COMPRESSION DEVICE  
Consisting of an articulated upper plate and a lower fixed one.


**H005-42**

KNURLED ROLLER CLAMPING DEVICE  
Consisting of a pair of grips with max. capacity 20kN suitable for test on plastic films with a considerable thickness and hardness and similar materials.


**H005-43**

DEVICE FOR TESTS ON WIRES AND ROPES  
Consisting of a pair of self-aligned rollers for tensile tests on wires and ropes of thin section with max. load capacity of 20 kN.


**H005-44**

FLEXURAL AND BENDING TEST DEVICE IN THREE SPOTS  
Suitable for flexural and bending tests on round and flat specimens.


**H005-51**

DEVICE TO CENTRE THE SPECIMENS  
This device is composed by a pair of rollers installed on settable supports screwed on the tensile heads.

By setting the supports in relation with the dimensions of the specimen, the user will obtain a stop that allows a rapid and right positioning of the specimen in the flat grips.

This accessory can be used only on machine with 50 kN, 100 kN and 200 kN capacity (models H005N, H006N, H007N).

**H005-44**

## ACCESSORIES FOR MOD. H001A TO H001D, H003N AND MOD. H004N TO H008N

### H014 ELECTRONIC EXTENSOMETER

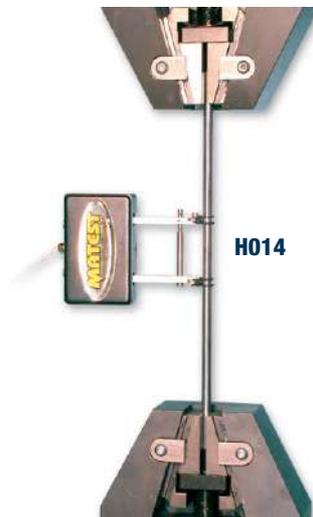
Measuring base 50 mm, Deformation range +1 mm / -0.2 mm

Maximum percent measurable deformation: +2%

It gives the possibility to take the longitudinal specimen deformation during the tensile test.

A load/deformation graph is obtained and the coefficient of elasticity together with the loads RPO.1 - RPO.2 - Rt1 can be identified even on materials that are not presenting a yield point that can be clearly identified.

The appliance is delivered complete with connection cables.



H014

### H003-18 WIRE STRANDS EXTENSOMETER

STANDARD: UNI 7676

The instrument is directly applied on the sample through two coaxial telescopic hardened tubes and measures the deformation/elongation of the strand up to failure.

Supplied complete with electronic precision transducer, 50 mm stroke by 0.005 mm sensitivity.

Measuring base: 600 mm

The H003-18 extensometer can be used **only** with model mod. H001BS and H003N

**Dimensions:** 105x630 mm

**Weight:** 1000 g



H003-18



## ELECTRONIC EXTENSOMETERS FOR TENSILE DEFORMATION STRENGTH TESTS UNTIL BREAKAGE

This electronic coaxial extensometer is used to measure the specimen deformation during tensile test until breakage.

The extensometer is directly fixed to the test specimen and it remains connected until breakage, by measuring the deformation both in the elastic and in the plastic phases.

Measuring base for round specimens: 5 x specimen diameter.

Supplied complete with 4 spacers for the intermediate sample diameters of the specific measuring range, connection cable, accessories, carrying case.



H014-07



### MODELS

**H014-06** Extensometer for round specimens from 4.5 to 11 mm diameter. Transducer stroke: 25 mm

**H014-07** Extensometer for round specimens from 10 to 19 mm diameter. Transducer stroke: 50 mm

**H014-08** Extensometer for round specimens from 18 to 27 mm diameter. Transducer stroke: 50 mm

**H014-09** Extensometer for round specimens from 26 to 36 mm diameter. Transducer stroke: 50 mm

**H014-11** Extensometer for round specimens from 35 to 49 mm diameter. Transducer stroke: 50 mm

**H014-12** Extensometer for round specimens from 48 to 61 mm diameter. Transducer stroke: 50 mm

**H014-10** Extensometer for flat specimens, width max. 25 mm; thickness max. 10 mm  
Measuring base: 25 – 50 – 60 – 70 mm. Transducer stroke: 50 mm

H014-06  
with accessories

## UNIVERSAL TENSILE/COMPRESSION MACHINE

■ TENSILE TESTS ON STEEL REINFORCED BARS, UP TO 500 KN MAX. CAPACITY LOAD.

■ COMPRESSION TESTS ON CONCRETE CUBES / CYLINDERS 1500 KN MAX. CAPACITY LOAD.

STANDARDS: EN 10002 | EN ISO 6892-1, 7500-1, 15630-1 | ASTM C39, E4 | BS 1610 | NF P18-411 | DIN 51220 | AASHTO T22



This machine of compact design, is utilized to carry out tensile tests on steel reinforced bars from diameter 4 to 26 mm and flat max. 25x15 mm. Horizontal and vertical daylight is now increased for easier specimen handling. It can also carry out compression tests on concrete cube specimens max. side 150 mm and cylinders max. diameter 160x320 mm. The new and sturdier four columns loading frame is overdimensioned to assure high rigidity and stability. The loading piston, double action, is rectified and lapped. The piston is foreseen of an hydraulic maximum and minimum piston stroke's security device, by avoiding any damage risk due to wrong manipulations of the unit. An hydraulic selector allows to select the tensile or the compression test. The heads holding the jaws are obtained from only one block of high resistance steel. The "V" autoclamping form allows a quick and practical churking of the specimen and the grips locking system ensures safe bar handling after failure. The machine is supplied complete with pair of jaw-holders, but **without** hardened jaws and accessories for tensile and compression tests, which must be ordered separately (see accessories).

📄 **\*Note:** Ø 25 mm (and flat 25x15 mm) suitable only for traditional rebars (with max. resistance around 540 Mpa), in case of testing high resistance rebars (with max. resistance 800/850 Mpa), max. diameter is 20 mm (and flat 25x12 mm).

### TECHNICAL SPECIFICATIONS

- Maximum tensile load: 500 kN
- Maximum compression load: 1500 kN
- Distance between the jaws:  
min. 345 mm - max. 445 mm
- Distance between the compression platens: 337 mm
- Distance between the columns: 310 mm
- Piston's stroke: 120 mm
- Precision and repeatability: ± 1% of read value
- Power supply: 230V 1ph 50Hz 750W
- Dimensions: 830x530x2000 mm
- Weight: 1150...1200 kg



H010-01N with accessories



H010-02N with accessories

MODEL	Motorized	Gauge	Cyber-Plus Progress mod. C109M	Servo-Plus Progress mod. C104N
H010N	▼	▼		
H010-01N	▼		▼	
H010-02N	▼			▼



**H010-02N** with accessories and **C092-09**

### **C092-09**

COMPRESSION FRAME, 2000 kN capacity, connected to the same control unit.

Vertical daylight: 376 mm with a distance piece of 40 mm high, useful to test concrete cubes up to 150 mm side and cylinders up to 160x320 mm with capping retainers.

Technical details: see p. 239

### **Note:**

It is possible to connect different types of compression frames and other frames (up to 2) for many other tests: flexure, splitting, cement, etc.

Ask our technicians for more details.

### **SERVO STRAIN FOR PISTON CONTROL**

#### **C104-10N**

SERVO-STRAIN allowing piston travel control.

#### **H010-31SP**

SUPPORTING DEVICE with displacement transducer, able to grant precise piston travel control.

#### **H009-01**

PERSONAL COMPUTER for remote test execution with a pre-installed software. Complete with LCD, monitor 22", keyboard, mouse, connection cable.

### **Note:**

The PC is recommended, but not necessary: the machine can in any case perform tests without any external PC.



**H010-31SP**

**ACCESSORIES FOR TENSILE TESTS ON ROUND AND FLAT STEEL SPECIMENS**

**H010-10N** SET OF 4 JAWS, upper and lower, for round steel specimens from  $\varnothing$  4 to 15 mm, and flat specimens from 6 to 15 mm thickness (max. width 25 mm).

**H010-11N** SET OF 4 JAWS upper and lower for round specimens from  $\varnothing$  15 to 26 mm


**FOR COMPRESSION TESTS ON CONCRETE CUBE AND CYLINDER SPECIMENS**

**H010-13N** UPPER COMPRESSION PLATEN foreseen of seat ball, fixing device, lower compression platen and distance pieces test cylinders max diameter 160x320 mm and cubes 150 mm max side.

The platens have  $\varnothing$  216 mm and are hardened and rectified as requested by Standards.

**H010-15N** SAFETY GUARDS to CE Directive, polycarbonate made, complete with hinges and lock.


**ACCESSORIES (only for mod. H011N and H011-01N)**

**C127N** GRAPHIC PRINTER on thermal paper

**H009N** SOFTWARE for tensile tests on steel (Load/Deformation, graphics, test certificate etc.) for Cyber-Plus Progress model H010-01N

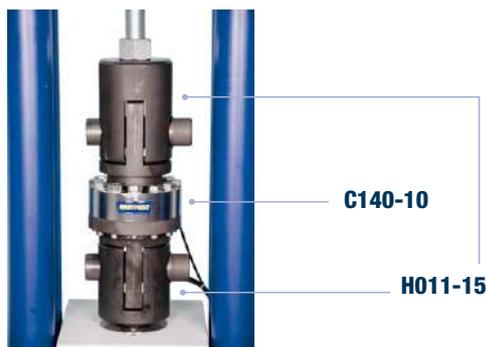
**C109-10N** SOFTWARE for compression tests on concrete for Cyber-Plus Progress model H010-01N

**C123-01N** SOFTWARE "Servonet" for tensile test on steel and compression tests on concrete for Servo-Plus Progress model H010-02N

**CALIBRATION EQUIPMENT**

**C140-10** LOAD CELL, 500kN Capacity, for tensile calibration test on the Universal Machines H010 to H011-01N  
The load cell has to be connected to the digital tester mod. C138N.  
Technical details: see p. 326

**H011-15** DEVICE to be connected to the Load Cell for Tensile Calibration test.


**H014 ELECTRONIC EXTENSOMETER**

Measuring base 50 mm, Deformation range +1 mm / -0.2 mm  
Maximum percent measurable deformation: +2%

It gives the possibility to take the longitudinal deformations of the specimen during the tensile test. A graph load/deformation is obtained and from this graph the coefficient of elasticity together with the loads RPO.1 - RPO.2 - Rt1 can be identified even on materials that are not presenting a yield point that can be clearly identified. The appliance is delivered complete with connection cables.


**ELECTRONIC EXTENSOMETER FOR TENSILE DEFORMATION STRENGTH TESTS UNTIL BREAKAGE**

This electronic coaxial extensometer is used to measure the deformation of a specimen under tensile test until breakage.

The extensometer is directly fixed to the test specimen and it remains connected until breakage, by measuring the deformation both in the elastic and in the plastic phases. Measuring base for round specimens: 5 x specimen diameter. Supplied complete with 4 spacers for the intermediate sample diameters of the specific measuring range, connection cable, accessories, carrying case.

**MODELS**

**H014-06** Extensometer for round specimens from 4 to 11 mm diameter.  
Transducer stroke: 25 mm

**H014-07** Extensometer for round specimens from 10 to 19 mm diameter.  
Transducer stroke: 50 mm

**H014-08** Extensometer for round specimens from 18 to 27 mm diameter.  
Transducer stroke: 50 mm

**H014-10** Extensometer for flat specimens, width max. 25 mm; thickness max. 10 mm.  
Transducer stroke: 50 mm  
Measuring base: 25 – 50 – 60 – 70 mm



**ACCESSORIES FOR MOD. H001A TO H001D, H003N, MOD. H004N TO H008N, MOD. H011N AND MOD. H011-01N**

**H009N UTM2 SOFTWARE**

STANDARDS: EN 10002-1 | ISO 527, 178, 604, 898-1, 3506-1, 10113, 12275 | ASTM A370

This Software has been developed on the base of Microsoft Windows operating system.

This interactive software is the ideal solution for an **effective and complete management of the material testing**.

It is composed by many test procedures in conformity with the International Standards for metal, plastic, cement, wood and composed materials.

This software supports a wide range of calculation and profiles for tensile, compression and flexural tests.

The user can create new personalised test profiles: definition of the test data such as test date, certificate number, lot of material delivered, specimen origin, test temperature, etc. and definition of the specific dates of the specimen as type, dimensions measuring unit, etc.

The user can select and set the calculation corresponding to the activated standard. As an example for the Standard EN 10002-1 he can select the initial length, the initial section of the specimen, the calculation of the maximum load, the unit load, the elastic limits (ReH, ReL, Rp%), the restriction, the Young's Modulus, etc.

For some calculations the end user may set test execution parameters for the corresponding calculation algorithms, for example the percentage (%) for the standard deviation of the Rp proportionality.

The software allows a **speedy and easy management of all the machine parameters** such as the management of the load acquisition by means of a load cell, the specimen deformations by means of an extensometer and the crossbar displacement. For each one of the analogical channels, the user can set the calibration and visualisation measuring unit, the limits of use: alarm, start limit of the test calculation, etc.

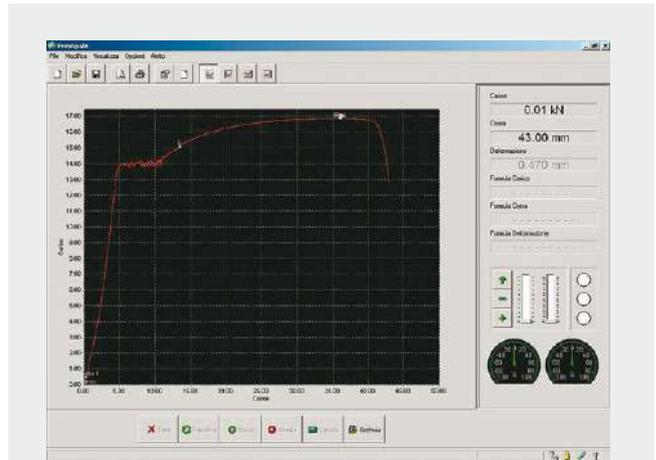
The test process is divided in different phases or speed charts, where the user can set the required type of control (pace rate, load/time, deformation/time), the tare and the zero option, the limits and the phase or speed changes.

The end of the test mode or the breaking limit can also be selected.

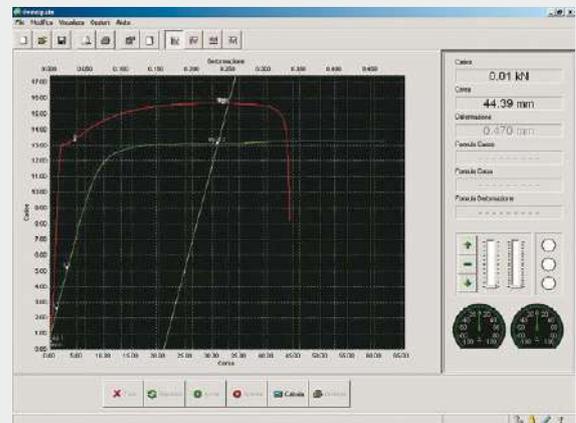
The software allows user to **personalise and set the displayed parameters of the test graph** as the colour, the title of the Cartesian axis, the colours of the load/deformation limits and the certificate parameters such as titles, margins etc.

At the end of the test, the user can decide if the selected calculations must be performed or filed. **In any moment all the tests made are available to make an analysis of the results or to print their certificate.**

Graphic analysis of the test can be made by means of the zoom function.



Tensile test on a steel specimen without extensometer; it displays the yield point with the possibility of increasing the dimensions of the graph area by means of the zoom function.



Tensile test on a steel specimen using an extensometer; showing the symbols of the considered dimensions and the relative tracing in different colours selected by the user.

22/03/2011 **TENSILE TEST** UNI EN 10002-1

Data		Specimen	
Date:	10/11/2008	Type:	Round
Test n°:	10352163	Diameter:	12 mm
Laboratory:	ANAC	Section:	113,997 mm²
Temperature:	20 °C		

Speed	Test	g	(kN/mm²)
	Tau20	g	(kN/mm²)
Results:			
Initial length:	La	500	mm
Final length:	Ld	545	mm
Measuring base length:	Lc	68	mm
Initial section:	S0	113,997	mm²
elongation at breakage:	A	9,2	%
Maximum load:	Fm	12,529	kN
Tensile strength:	Rm	641,278	N/mm²
Unit load at elastic limit:	Rp 0.1	542,772	N/mm²
Unit load at elastic limit:	Rp 0.2	642,754	N/mm²
Young's modulus:	E	200,834	kN/mm²

Example of the certificate



**C128**  
LASER PRINTER, bench model,  
for graphics and certificates with  
direct connection via USB.

## H017 UNIVERSAL EDUCATIONAL TESTING MACHINE CAPACITY 20 KN

The machine has been designed to measure strength of metallic materials and study the various reactions they undergo when subject to different stresses, verifying the same with the following tests:

- Tensile test
- Shear test
- Compression test
- Flexural test
- Brinell hardness

This machine is primarily for educational purposes and intended for the use in higher educational institutes or universities and allows students of material science to have a hands-on approach to applications so far studied at a theoretic level only.

Components of the machine:

- 30 kN (160 bar) manometer
- 50 mm full scale analog dial indicator
- 250 bar pressure transducer
- 50 mm travel displacement transducer
- 8-channel digital indicator

**Power supply:** 230V 1ph 50-60Hz 70W

**Dimensions:** 600x600x850 mm

**Weight:** 60 kg



H017

### ACCESSORIES THAT CAN BE USED IN THE UPPER CHAMBER OF THE MACHINE

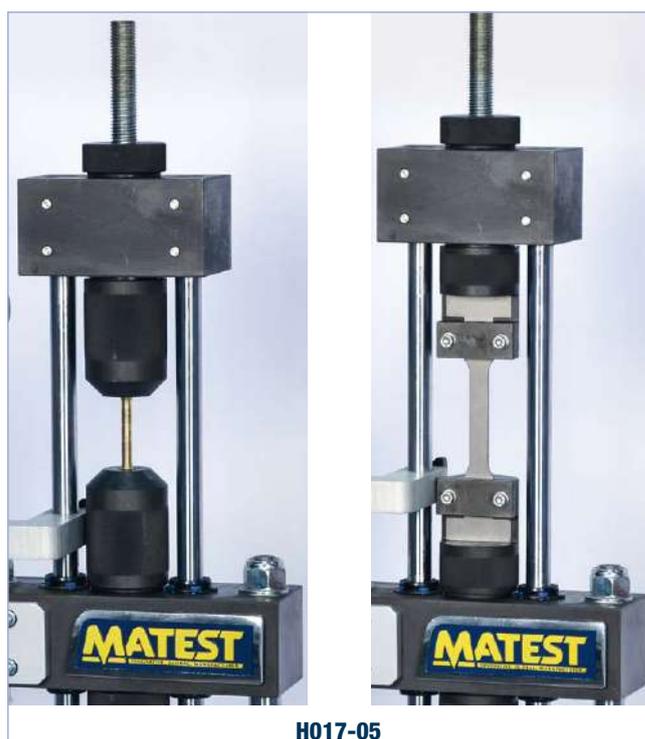
#### H017-05

##### TENSILE TEST

The equipment allows to perform tensile tests on steel samples up to failure and serves to evaluate stress-strain diagrams of the material comprising the sample and mainly to evaluate the following parameters:

- Yield strength
- Proportionality limit
- Failure strength
- Elastic modulus
- Ultimate strength

The accessory includes: tensile heads for round samples and tensile heads for flat samples.



H017-05

**H017-10**

**SHEAR TEST**

The equipment allows to perform shear tests on 6 mm diameter samples so as to determine strength:

$$T = F/S$$

F = value of measured force

S = value of sectional area

The shear strength of the sample may be compared to its tensile strength.

The accessory includes: shear heads and connecting rod.



**H017-10**

**H017-20**

**FLEXURE TEST**

The equipment is used to determine material strength and maximum deflection.

- F = applied force
- L = the distance between supporting bearers

The accessory includes: two lower rollers, one upper loading roller and lower transverse.



**H017-20**

**ACCESSORIES THAT CAN BE USED IN THE LOWER CHAMBER OF THE MACHINE**

**H017-15**

**COMPRESSION TEST**

The equipment allows to determine the mechanical properties of various materials, using a spring as sample with the constant factor K, given by the ratio between the force applied and measured via the manometer and the displacement measured on the dial gauge, or using anisotropic material to define the compressive strength.

The accessory includes: two compression platens and a distance piece.

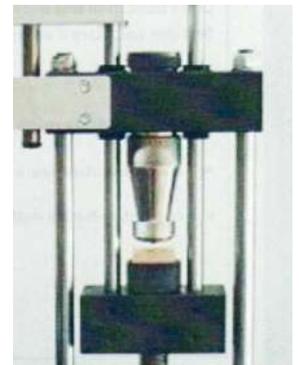


**H017-15**

**H017-25**

**HARDNESS TEST**

The equipment is used to determine the capacity of a material to resist when engraved, indented or impressed and is useful for studying materials subject to wear. It is performed following the Brinell method: the diameter of the sphere used may be 10, 5, 2 or 1 mm. The accessory includes: upper hardness head and lower compression platen.



**H017-25**

**SAMPLE SPECIMENS FOR THE DIFFERENT TESTS**

CODE	DESCRIPTION
<b>TENSILE TEST</b>	
<b>H017-30</b>	Round bar test specimens $\varnothing$ 6 mm made in stainless steel AISI 303, set of 14 pieces.
<b>H017-31</b>	Round bar test specimens $\varnothing$ 6 mm made in brass, set of 14 pieces.
<b>H017-32</b>	Round bar test specimens $\varnothing$ 6 mm made in bronze, set of 14 pieces.
<b>H017-33</b>	Round bar test specimens $\varnothing$ 6 mm made in copper, set of 14 pieces.
<b>H017-34</b>	Round bar test specimens $\varnothing$ 6 mm made in aluminium, set of 14 pieces.
<b>H017-40</b>	Flat bar test specimens, different materials, set of 14 pieces.
<b>SHEAR TEST</b>	
<b>H017-50</b>	Round copper bar specimens $\varnothing$ 6 mm, set of 14 pieces.
<b>FLEXURAL TEST</b>	
<b>H017-60</b>	Flat bar specimen, set of 14 pieces.



The machine is manually controlled, while readings are both analog, through the manometer and the dial indicator, and digital, through the pressure transducer and the displacement transducer connected to the digital indicator.

**H009N**

**UTM2 SOFTWARE**

The software allows to see graphs created in real time during the test, and to elaborate a test report.

For further details refer to p. 449

## S205-05N UNITRONIC 50 KN

UNIVERSAL MULTIPURPOSE TOUCH-SCREEN FRAME FOR:

- TENSILE TESTS, 25 kN MAX. CAPACITY LOAD
- COMPRESSION/FLEXURAL TESTS, 50 kN MAX. CAPACITY LOAD

WITH AUTOMATIC LOAD OR DISPLACEMENT/DEFORMATION CONTROL.

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. Stroke electric end switches are applied to the load piston to save the machine from accidental handlings. The control panel is placed frontally and it is provided with a membrane having 6 multifunctional interactive pushbuttons driven by menu, a large graphic display and RS232 port for connection to PC.

### TENSILE TESTS ON METALS, PLASTICS, WIRES, TEXTILES ETC.

Test development with load control

#### NEEDED ACCESSORIES for metal flat and round specimens

- S337-36** TENSILE STRAIN load cell 25kN capacity
- H005-11** TENSILE HEADS (upper and lower)
- S205-09** DEVICES to fix the tensile heads to the frame
- H005-21** FLAT SEIZING GRIPS for flat specimens 1 - 10 mm thickness by 25 mm max. width and round specimens  $\varnothing$  1 - 5 mm
- H005-31** "V" SHAPE SEIZING GRIPS for round specimens  $\varnothing$  5 - 12 mm

#### OPTIONAL ACCESSORIES

- H014-06 - H014-10** EXTENSOMETER, electronic, for tensile deformation strength tests.
- H009N** SOFTWARE for visualisation in real time of load/deformation, graphic, test certificate etc.

#### Various materials:

By using suitable devices, Unitronic tester, within the limits of its max. 50 kN capacity for compression/flexural performs compression, flexural, splitting tensile and direct tensile tests on: Concrete, Cement, Rocks, Bituminous Materials, Soil etc., with automatic load or displacement/deformation control.

Unitronic technical details and additional specific tests: see p. 500 of the general catalogue.

## S206N UNITRONIC 200 KN

UNIVERSAL MULTIPURPOSE TOUCH-SCREEN FRAME FOR:

- TENSILE TESTS, 50 kN MAX. CAPACITY LOAD
- COMPRESSION/FLEXURAL TESTS, 200 kN MAX. CAPACITY LOAD

WITH AUTOMATIC LOAD OR DISPLACEMENT/DEFORMATION CONTROL.

Unitronic technical details and additional specific tests: see p. 508 of the general catalogue.



S205-05N with load cell



S205-05N + accessories for tensile test



S206N

## H020 MARKING-OFF MACHINE

### AUTOMATIC MOTORISED

STANDARD: UNI 556

Used to mark off specimens with round, square shape and with improved bond for the measurement of the percentage elongation after their breaking, in accordance with the Standards.

The machine can mark specimens as follows:

- Round from 4 mm up to 50 mm diameter.
- Flat from 4 mm up to 50 mm thickness.
- Square from 4 mm to 45 mm side.

Useful marking length 500 mm

Max. specimen length 900 mm

Marking steps: 5 or 10 mm selectable with lateral graduation.

Marking speed: 60 marks per minute.

**Power supply:** 400V 3ph 50Hz

**Dimensions:** 530x480x445 mm

**Weight:** 58 kg approx.



H020

## H021 MARKING-OFF MACHINE

Same as mod. H020, but hand operated by rotating the handle.

Max. specimen length 1200 mm



H021

## H050 DRY-ICE MAKER

This device instantaneously produces the quantity of dry ice (solid CO<sub>2</sub>) required to reach temperatures down to -80 °C.

The dry-ice maker must be connected to a liquid CO<sub>2</sub> bottle with connecting pipe and it produces 100 g dry-ice tablets, having mm 75 diameter and mm 25 thickness.

**Weight:** 3 kg



H050

## H052 COOLING BATH FOR RESILIENCE TESTS

This apparatus is meant for Charpy tests to be carried out at low temperatures.

It is made from double chambered stainless steel with isolating cavity wall from foamed polyurethan, 65 mm thick.

Complete with double chambered cover and specimen rack.

**Internal dimensions:** 125x125x180 mm

**Weight:** 12 kg



H052

H054

## H054 PLIERS

Special-shaped, to take cooled specimens from the bath and place them directly into the Charpy Pendulum.

## H057N BROACHING MACHINE, MOTORIZED

STANDARDS: ASTM A370 | ISO 148

Used to make notchings on impact test bars for resilience tests.

The notch on the specimen is obtained by only one tooling with very high dimensional accuracy.

Broach length: 350 mm

Speed notch: adjustable from 0.5 to 4 mm/sec

Drive: hydraulic, semi-automatic.

Suitable for KV, KU, KCU, DVM broach

**Power supply:** 400V 3ph 50-60Hz 400W

**Dimensions:** 460x610x1600 mm

**Weight:** 100 kg approx.



H057N

## ACCESSORIES

**H057-10N** BROACH for "V" notchings on specimens with square section 10x10 mm

**H057-11N** BROACH for "U" notchings on specimens with square section 10x10 mm

## C351 SPECIMEN CUTTING MACHINE

It accepts blades up to Ø 350 mm

Shear capacity: 120 mm

Complete with cutting blade for metals Ø 350 mm

**Power supply:** 230V 1F 50 Hz 2000W

**Dimensions:** 560x460x390 mm

**Weight:** 20 kg



C351

## H065N COLD BEND TESTING MACHINE

STANDARDS: EN ISO 7438, EN ISO 15630-1 | ASTM A615, ASTM A615M | D.M. 14/1/1988

This equipment has been studied and designed to perform bending tests on steel bars for reinforced concrete.



### SPECIFICATIONS:

- Max. piston load: 160 kN
- Max. piston stroke: 550 mm
- Piston speed adjustable from 0 to 6 mm/s
- Power supply: 230V 1ph 50 Hz 1500W
- Dimensions: 1540x800x1300 mm
- Weight: 350 kg approx.

The machine can perform two types of test:

- bending the specimen through 180° only with mandrels up to max. 96 mm included.
- bending the specimen through 90° and then straightening it again up to a minimum of 20° only with mandrels over 96 mm diameter.

This bending machine is composed of a rugged frame supporting a beam having a cylinder with relevant load piston fixed on it, being activated by an hydraulic cell complete with speed adjuster for the piston, direction control valve, max. pressure valve, control gauge. The whole is cased to protect every single component from the dust, and the operator from any possible danger. A small bowl has been fitted under the beam, where the steel bar is bent.

Two contrasting rollers are fitted on the beam. They may easily be adjusted in distance to be in accordance with the Standards concerning bars having diameter between 5 and 40 mm.

Fixing and changing the mandrels on top of the thrust cylinder is easy and practical and grants the operator a perfect interchangeability of the same. A device prevents the unlocking of the bar under test from the relevant rollers and the contrasting mandrel both during the bending and the straightening operation.

The machine accepts bars up to Ø 40 mm and is supplied complete with two series of rollers, having respectively Ø mm 50 and 100.

The mandrels, the mandrel-holders and the brackets are not included in the standard supply and have to be ordered separately. (see table).

### ACCESSORY

**H065-01** SAFETY GUARDS to CE Safety Directives.



TABLE OF THE AVAILABLE MANDRELS AND BRACKETS FROM Ø 5 TO Ø 40 ACCORDING TO: EN, ASTM, D.M.

Mandrel Model	Mandrel Ø mm	Rebar Ø mm EN ISO 15630-1	Rebar Ø mm ASTM A615-A615M	Rebar Ø mm D.M. 17-01-18	Mandrel-Holder Model	Bracket Model	Bracket Distances mm
H066-07	24	4 e 6	-	6	H067-03	H068-12	80, 170, 226
H066-10	32	7	9,5	8	H067-03	H068-17	98, 196
H066-12	40	8	-	10	H067-03	H068-17	98, 196
H066-14	44	-	12.7	-	H067-03	H068-13	85, 172, 298
H066-15	48	-	-	12	H067-03	H068-11	75, 160, 262
H066-18	56	10	15.9	-	H067-04	H068-20	110, 244
H066-19	60	-	-	12	H067-04	H068-13	85, 172, 298
H066-20	64	12	-	-	H067-04	H068-13	85, 172, 298
H066-61	70	-	-	14	H067-04	H068-19	106, 226
H066-62	80	-	-	16	H067-04	H068-20	110, 224
H066-24	96	14	19	-	H067-04	H068-12	80, 170, 226
H066-28	112	16	22.2	-	* No	H068-21	120, 254
H066-30	128	18	25.4	-	* No	H068-13	85, 172, 298
H066-31	132	20	-	-	* No	H068-01	200, 260, 412
H066-32	140	22	-	-	* No	H068-05	232, 342, 516
H066-33	144	-	-	18	* No	H068-13	85, 172, 298
H066-35	160	-	-	20	* No	H068-09	230, 320, 490
H066-36	176	-	-	22	* No	H068-05	232, 342, 516
H066-37	180	24 e 26	-	-	* No	H068-07	244, 364, 550
H066-49	192	-	-	24	* No	H068-07	244, 364, 550
H066-38	200	28	28.7	25	* No	H068-08	250, 375, 580
H066-40	224	30 e 32	32.2	-	* No	H068-05	232, 342, 516
H066-41	250	-	35.8	-	* No	H068-05	232, 342, 516
H066-53	260	-	-	26	* No	H068-03	220, 280, 438
H066-43	280	-	-	28	* No	H068-04	225, 292, 464
H066-45	320	34 e 38	-	32	* No	H068-22	122, 542, 594
H066-46	336	40	-	-	* No	H068-23	134, 568, 620
H066-58	340	-	-	34	* No	H068-22	122, 542, 594
H066-60	400	-	-	40	* No	H068-23	134, 568, 620

TABLE OF OTHER AVAILABLE MANDRELS AND BRACKETS

Mandrel Mod.	Ø mm Mandrel	Mandrel-Holder Mod.
H066-01	10	H067-01
H066-02	12	H067-01
H066-03	15	H067-02
H066-04	16	H067-02
H066-05	18	H067-02
H066-06	20	H067-02
H066-08	28	H067-03
H066-09	30	H067-03
H066-11	36	H067-03
H066-13	42	H067-03
H066-16	50	H067-03
H066-51	52	H067-04
H066-17	54	H067-04
H066-21	66	H067-04

Mandrel Mod.	Ø mm Mandrel	Mandrel-Holder Mod.
H066-48	72	H067-04
H066-22	75	H067-04
H066-52	78	H067-04
H066-23	84	H067-04
H066-55	90	H067-04
H066-26	108	* No
H066-63	114	* No
H066-39	220	* No
H066-50	240	* No
H066-56	300	* No
H066-54	312	* No
H066-57	360	* No
H066-59	380	* No
H066-47	384	* No

Bracket Model	Bracket Distances mm
H068-02	210, 268, 425
H068-06	240, 360, 520
H068-10	256, 386
H068-14	86, 180

Bracket Model	Bracket Distances mm
H068-15	90, 184
H068-16	92, 190
H068-18	100, 208

 **\*Note:** From Ø 100 to 400 mm the mandrel is directly fitted to the piston without using a mandrel-holder.

All mandrels have been produced from quality steel and cadmium plated for rust protection, and from Ø 10 mm up to Ø 96 mm included have been hardened to make them wearproof.

## PENDULUM IMPACT CHARPY TESTERS FOR RESILIENCE TESTS

STANDARDS: EN 10045-1 | EN ISO 148-1 | ASTM E23 | BS 131

### AVAILABLE MODELS

#### H060N PENDULUM IMPACT CHARPY TESTER HAND OPERATED

The tester is equipped with a falling pendulum hammer, able to break, with a single blow, a sample carved in the middle and positioned on two supports.

The test is carried out on a CHARPY sample in order to check the energy absorbed during the impact, which is measured in JOULE. The value stands for the impact strength of the material (resilience).

- Cast iron frame
- Pendulum with hardened knife
- Brake device to stop the pendulum
- Impact energy 300J with 2J graduation
- Falling angle: 140°, Pendulum mass kg. 21.300
- Impact speed: 5.187 m/s

Supplied complete with knife-edge to perform the test as per ASTM Standard

It cannot be sold in CE markets

**Dimensions:** 500x1000x1820 mm **Weight:** 400 kg approx.

#### H062 PENDULUM IMPACT CHARPY TESTER, MOTORIZED

Semi-automatic working and high energy capacity.

Motorized pendulum with immediate arm repositioning.

Mechanical safety with automatic insertion to the arm hooking.

Simple and fast utilization, ideal for routine tests.

Supplied complete with protection cage to CE Safety Directive.

Impact energy: 300J with 0.25J resolution.

Supplied complete with knife-edge to perform the test as per ASTM Standard.

**Power supply:** 230V 1ph 50Hz 180W

**Dimensions:** 800x578x1400 mm **Weight:** 450 kg approx.



**H062**

### ACCESSORY

KNIFE-EDGE to perform resilience tests according to EN 10045-1, EN ISO 148-1 and BS 131 Standards

**H060-03** KNIFE-EDGE for H060N tester.

**H062-03** KNIFE-EDGE for H062 and H062-01 testers.



**H060N**

#### H062-01 PENDULUM IMPACT CHARPY TESTER, MOTORIZED, DIGITAL, HIGH PERFORMANCE

Fully automatic working with immediate arm repositioning.

Machine for resilience tests with high impact energy.

Suitable for steels and alloys with high resilience values.

Data acquisition to PC through Software.

Safety cage aluminium and plexiglass made, with mechanical safety and microswitch blocking the door when the arm is inserted.

Impact energy: 500J with 0.1J resolution.

Supplied complete with knife-edge to perform the test as per ASTM Standard.

**Power supply:** 220V 3ph 50Hz 750W

**Dimensions:** 2200x800x2300 mm

**Weight:** 750 kg approx.



**H062-01**

TEST ACCESSORIES



Extensometer for strands



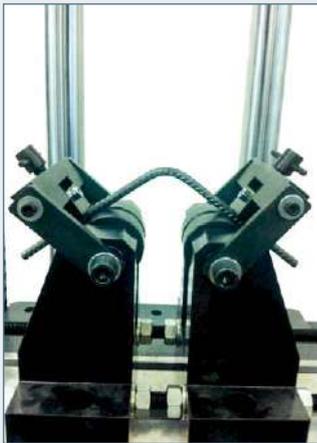
Electronic extensometer



Coaxial extensometer



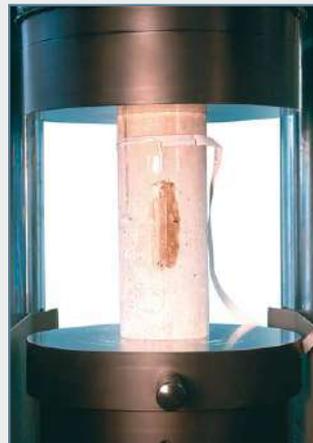
Tension on threaded and shouldered head samples



Bend and rebend on steel



Shear test



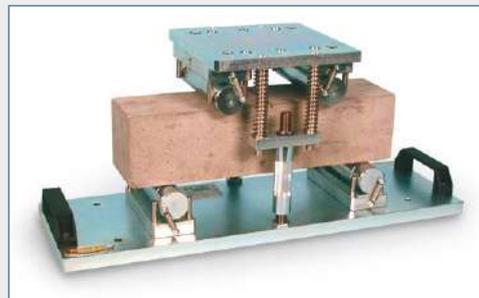
Elastic modulus on concrete



Compression



Splitting on concrete



Flexure on concrete



Test on plastic films



Test on wires and ropes

**STEELTEST, A NEW BRAND OF MATEST**  
DEDICATED TO ITS WIDE RANGE  
OF UNIVERSAL TESTING MACHINES.

