DATA SHEET

1000, 2000 kN UTM - HPT Series with HPU 200 Control Unit

2000 kN UTM - HPT Series (70-T20H02)

General description

Powerful hydraulic system which offers high test throughput improving efficiency of the laboratory.

High flexibility covering the following applications:

- **Steel**
  - Tensile tests on steel rebars and rounds up to 78 mm dia.
  - Tensile test on steel flats up to 72 x 100 mm
  - Tensile tests on wire strands and electro-welded steel screen
  - Transverse tests on steel specimens
  - Bend and re-bend tests on steel specimens
  - Brinell with 10mm ball
  - Shear tests on rounds
- **Concrete**
  - Compression tests on cubes and cylinders
  - Flexural tests on concrete beams
  - Indirect tensile on cylinders, cubes and paving blocks
  - Determination of the Modulus of elasticity (in a second dedicated compression frame)
  - Pull out test
- **Various**
  - Compression tests on rock, masonry units, refractories etc.
  - Wire rope tensile tests
  - Nut and bolt testing
  - Tensile test on headed and shouldered specimens

The range includes four models of 1000 kN and 2000 kN cap. All models are controlled by the new and sophisticated HPU 200 control unit and are complete with PC, upper and lower hydraulically operated jaws, complete set of grips for rounds and flats, transverse test attachment and high precision load cell providing high accuracy from the very beginning of the load scale.

Loading frame
The frame consists essentially of a robust four columns frame with three sturdy crossheads: upper is directly connected to the lower one by two main columns; the middle one, moving on two screw columns, can be adjusted through an electric motor by using the dedicated push button panel, in order to set the required vertical daylight both for compression and tensile tests; the lower is controlled by a simple effect piston centrally positioned. Jaws and wedge grips are included . The tensile jaws are directly operated by the Power control console with a push-button panel. The compression tests are performed between the lower and the mobile middle crossheads, using the suitable accessories.

Power and control console - HPU 200
Control console HPU 200 features space-saving ergonomic design with small footprint and houses the hydraulic power unit, the electronic system and the PC to manage all the control functions.
Automatically performs steel tensile testing, compression, splitting tests, Elastic Modulus and Poisson's ratio determination on concrete specimens. See **Accessories**.
PC and software enable remote control of the complete system.

The system can be upgraded for a second frame connection and control by a special hydraulic valve system (**70-T10/2F**). Normally adopted to connect a concrete compression frame up to 5000 kN capacity, to perform not only compression, but other important tests as for example the Modulus of Elasticity, with the related software (model **82-SW/EM**). Selection of the test frame via software.

For more info see **Technical Specifications**.

Safety features

- Pressure valve that automatically stops the machine when the oil pressure approaches the limit
- Maximum travel limit switches to control the position of the mobile crosshead

DATA SHEET

- Software stops the machine when the maximum load is reached
- Emergency stop button

Main features

- **IDEAL FOR THE CONSTRUCTION INDUSTRY**
  Particularly suitable, but not only, for the construction industry, to perform both tension tests on steel rounds and flats, and compression/transverse/splitting tests on concrete
- **COMPLETE RANGE**
  From 1000kN up to 2000kN capacity
- **RUGGED FOUR COLUMN FRAME**
  Extremely rigid four column frame with large vertical clearance suitable for tension and compression tests
- **FRONT OPEN CROSSHEAD**
  For easy insertion of tensile specimens. The jaws and grips can be easily removed by just pulling from the front. Hydraulic gripping system operated by push button panel
- **HIGH ACCURACY WITH LOAD CELL**
  Load measurement by high precision load cell providing high accuracy from the very beginning of load scale.
- **FULL RANGE OF ACCESSORIES**
  available to perform various tests, including Extensometers, Transverse and Bending test apparatus for steel, Compression-Flexural and Indirect tensile test on concrete, etc.
- **PC CONTROLLED**
  Completely automatic test execution
- **SOFTWARE PACKAGES INCLUDED**
  Supplied complete with management software and software packages concerning wide range of tests on steel, concrete and other construction material.
- **SECOND FRAME CONTROL**
  Normally adopted to connect concrete compression up to 5000kN capacity or flexural frame

Standards

- EN ISO 6892
- EN ISO 7500-1
- ASTM A370
- EN ISO 15630-1

Specifications

TECHNICAL SPECIFICATIONS TABLE

Model	HPT-1000	HPT-2000
Code	**70-T10H02²**	**70-T20H02**
Capacity	1000 kN	2000 kN
Set of grips for rounds up to 50 mm dia., mm	8 to 18 12 to 30 25 to 38 38 to 50	8 to 18 12 to 30 30 to 42 42 to 54 54 to 66
	0 to 20 x 90	0 to 18 x 10

DATA SHEET

For flats, mm	20 to 40 x 90 40 to 60 x 90	18 to 36 x 1 36 to 54 x 1 54 to 72 x 1
Piston travel, mm	250	300
Max adjustable tensile daylight, mm	50-850	50-850
Max daylight between jaws, mm[1]	600	550
Max compression daylight (without accessories), mm	0-850	0-850
Horizontal daylight, mm	750	850
Maximum piston speed (no load condition), mm/min	190	100
Crosshead adjustable speed, mm/min	360 @ 50 Hz 430 @ 60 Hz	270 @ 50 H 325 @ 60 H
Load resolution, kN	0,01	0,02
Crosshead displacement resolution, mm	0,01	0,01
Machine class 1 range (EN ISO 7500-1)	10-1000 kN	20-2000 kN
Overall dimensions: Frame, l x d x h, m Console, l x d x h, m	 1,3 x 1,2 x 3,0/3,25 0,8 x 0,9 x 1,55	 1,8 x 1,7 x 3 0,8 x 0,9 x 1
Weight approx.: Frame, kg Console, kg	 3700 180	 8000 180
Power supply[2]	380 V, 50 Hz, 3 Ph	380 V, 50 H

[1] Max distance between grips to exploit the full piston travel
[2] Other voltages: For 380 V, 60 Hz, 3 ph, change the last number of the code from 2 to 3. For 220 V, 60 Hz, 3 ph, from 2 to 4

DATA SHEET

HPU POWER AND CONTROL CONSOLE
Hardware

131.000 points effective resolution
Control frequency 250 Hz
Sampling rate 250 Hz
Closed-loop P.I.D.control
6 channels (one dedicated to crosshead displacement) to measure elongation/displacement/strain with potentiometric, conditioned LVDT and magnetostrictive transducers
4 channels for strain measurements with strain gauges
2 channels for load sensors: load cell and load cell/pressure transducer of possible second frame
simple multi-sensors connection and calibration file selection
digital linearization of the calibration curve. (multi-coefficient)

Hydraulics

Dual stage pump: centrifugal low pressure for fast approach (max. flow rate 9 l/min) automatically switching to radial multi- piston high pressure (max. flow rate 3.2 l/min) for loading
Oil flow control by servo-controlled proportional valve
AC motor 3000 W
Maximum working pressure 700 bar
Oil temperature controlled by air cooling system
Console cabinet lined with soundproofing material for operator's comfort.
Tank capacity: 30 liters

MANAGEMENT SOFTWARE AND SOFTWARE PACKAGES
HPT Universal testers are supplied complete with RTM (Real Time Management) user interface environment allowing:

Remote control of the complete system for automatic test execution: quick platen approach, zeroing, test execution according to the selected test type, calculation of results, graphical and numerical management of results
Storage of single and multiple tests
Printing of customized test reports for both single and multiple tests
Real time and deferred management of tests data and results, either in numeric or in graphic format
Language selection (Latin characters only)
Units selection
Remote technical assistance/diagnostic via internet

The following Software packages are also included in the system:

UTS Software Specifically designed for tensile testing under load/stress control and crosshead separation control (by using the displacement transducer supplied with the machine), allowing:
Simultaneous display of stress/time, stress/elongation %, elongation/time and stress/elongation;
Possibility to overlap two elongation/stress graphs: one obtained with the included displacement transducer measuring crosshead separation travel and the other obtained w ith an optional extensometer (coaxial or universal);
Elaboration of tension test results: ReH, ReL or Rp (calculated at three different elongation percentages selectable by the user), A, Ag, At, Agt, Ae, Rt, Z, elastic modulus E, etc, conforming to EN ISO 6892-1 and EN 15630-1 for steel rebars.

DATAMANAGER Software For compression, flexure and indirect tensile test on concrete, cement specimens and other construction materials allowing:
Real time monitoring of test data and stress/time graph
Automatic load detection failure and storage
Cement testing to EN 196-1 guided test procedure
Saving of batch file with automatic calculation of average and standard deviation

The following software package is available as option when upgrading the machine with the hydraulic system for a second frame connection (see **70-T10/2F**).

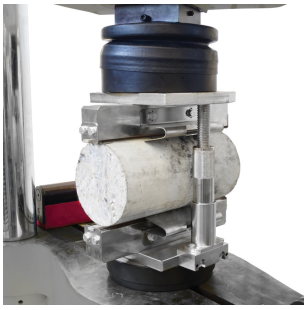
E-MODULE software For Poisson ratio and Elastic Modulus determination on concrete specimens allowing:
Free unlimited programmable load/stress cycles to fulfill any kind of test procedure
Real time monitoring of test data, stress/time, stress/axial strain, stress/lateral strain graphs
Automatic verification of sample centering and sensors functionality, as per Standard requirements
Automatic calculation of Initial and Final secant Elastic Modulus values

DATA SHEET

1000 kN UTM - HPT Series (70-T10H02)

Wire rope test accessory

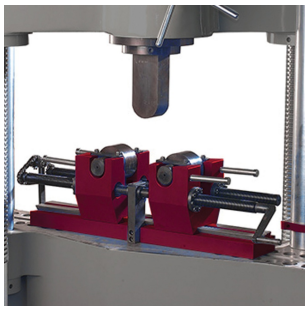
Double shear accessory



Splitting test on concrete

Tensile test on steel rebar

DATA SHEET



Bend and re-bend test accessory

Nut and bolt test accessory

Products

70-T10H02

HPT-1000, Automatic Computerized Universal TestingMachine, 1000 kN capacity, HPU 200 power unit, fortensile/transverse/bend and re-bend tests on steeland compression/flexural/indirect tensile tests onconcrete and other materials. 380V/50Hz/3ph. The machine is conforming to the following Standards: EN ISO 6892, EN 15630, ASTM A370, EN ISO 7500-1 (class 1 from 10 kN to 1000 kN). System includes: -Upper and lower hydraulically operated jaws -High precision load cell for load measurement -PC and complete software package for different test types; -Four set of grippers for rounds from 8 mm to 50 mm diameter; -Three set of grippers for flats up to 60 x 90 mm (thickness x width); -Transverse test attachment with roller supports dia.50 x 160 mm (max span 800 mm) and 2 loading rollers dia. 44 mm and 32 mm. Applications The machine can perform (with the suitable accessories): Tensile tests on steel rounds up to 60 mm dia., flats up to 60 x 90 mm, wire strands up to 15.2 mm dia. and electro welded steel grid; Transverse and Bend and re-bend tests on steel specimens; Shear test on rounds; Compression testson concrete cubes and cylinders; Flexural test on concrete beams; Indirect tensile test on cylinders, cubes and paving blocks; Determination of the Modulus of Elasticity of concrete; many others tests on Rock, Masonry units, Refractories,etc. with the suitable accessories available on request. Main features -Sturdy four-columns test frame with 850 mm vertical daylight (for compression and tensile tests) and 750 mm horizontal clearance; -Piston travel: 250 mm; -Max distance between tensile grips: 600mm (+ 250mm piston travel); -Motorized crosshead for easy and fast (360 mm/min) adjustment of the vertical daylight by push button panel; -Load measurement by high precision load cell providing high accuracy from 1% of f.s.; -Hydraulic gripping system operated by push button panel; -Front open crosshead for easy insertion of tensile specimens; -PC controlled. Completely automatic test execution with closed-loop P.I.D. control; -Compact ergonomic design (with small footprint) advanced control console housing hydraulic pack, electronic and PC; -Optional control of a second frame. Hydraulic group -Dual stage pump: centrifugal low pressure for fast approach (max. flow rate 9 l/min) automatically switching to radial multi- piston high pressure (max. flow rate 3.2 l/min) for loading; -Max speed (no load condition): 190 mm/min; -Oil flow control by servo-controlled proportional valve; -AC motor 3000 W; -Maximum working pressure 650 bar; -Oil temperature controlled by air cooling system;-Console cabinet lined with soundproofing material for operator's comfort. Hardware and firmware -Effective resolution 131.000 points; -Load resolution [kN]: 0.01 kN -Crosshead displacement resolution[mm]: 0.01 mm; -Control frequency 250 Hz; -Sampling rate 500 Hz; -6 channels (one dedicated to crosshead displacement) to measure elongation /displacement/strain with potentiometric, conditioned LVDT and magnetostrictive transducers; -4 channels for strain measurements with strain gauges; -2 channels for load sensors: load cell and load cell/pressure transducer of possible second frame; -simple multi-sensors connection and calibration file selection; -digital linearization of the calibration curve. Software package The machine is supplied complete with MULTITEST user interface environment allowing remote controlof the complete system for automatic test execution according to the selected test type, calculation of results, graphical and numerical management of data. The following software modules are available: *UTS Software (included) for steel tensile testing under load/stress control and crosshead

70-T10H03

HPT-1000, Automatic Computerized Universal TestingMachine, 1000 kN capacity, HPU 200 power unit, fortensile/transverse/bend and re-bend tests on steeland compression/flexural/indirect tensile tests onconcrete and other materials. 380V/60Hz/3ph. The machine is conforming to the following Standards: EN ISO 6892, EN 15630, ASTM A370, EN ISO 7500-1 (class 1 from 10 kN to 1000 kN). System includes: -Upper and lower hydraulically operated jaws -High precision load cell for load measurement -PC and complete software package for different test types; -Four set of grippers for rounds from 8 mm to 50 mm diameter; -Three set of grippers for flats up to 60 x 90 mm (thickness x width); -Transverse test attachment with roller supports dia.50 x 160 mm (max span 800 mm) and 2 loading rollers dia. 44 mm and 32 mm. Applications The machine can perform (with the suitable accessories): Tensile tests on steel rounds up to 60 mm dia., flats up to 60 x 90 mm, wire strands up to 15.2 mm dia. and electro welded steel grid; Transverse and Bend and re-bend tests on steel specimens; Shear test on rounds; Compression testson concrete cubes and cylinders; Flexural test on concrete beams; Indirect tensile test on cylinders, cubes and paving blocks; Determination of the Modulus of Elasticity of concrete; many others tests on Rock, Masonry units, Refractories,etc. with the suitable accessories available on request. Main features -Sturdy four-columns test frame with 850 mm vertical daylight (for compression and tensile tests) and 750 mm horizontal clearance; -Piston travel: 250 mm; -Max distance between tensile grips: 600mm (+ 250mm piston travel); -Motorized crosshead for easy and fast (430 mm/min) adjustment of the vertical daylight by push button panel; -Load measurement by high precision load cell providing high accuracy from 1% of f.s.; -Hydraulic gripping system operated by push button panel; -Front open crosshead for easy insertion of tensile specimens; -PC controlled. Completely automatic test execution

with closed-loop P.I.D. control; -Compact ergonomic design (with small footprint) advanced control console housing hydraulic pack, electronic and PC; -Optional control of a second frame. Hydraulic group -Dual stage pump: centrifugal low pressure for fast approach (max. flow rate 9 l/min) automatically switching to radial multi- piston high pressure (max. flow rate 3.2 l/min) for loading; -Max speed (no load condition): 190 mm/min; -Oil flow control by servo-controlled proportional valve; -AC motor 3000 W; -Maximum working pressure 650 bar; -Oil temperature controlled by air cooling system;-Console cabinet lined with soundproofing material for operator's comfort. Hardware and firmware -Effective resolution 131.000 points; -Load resolution [kN]: 0.01 kN -Crosshead displacement resolution[mm]: 0.01 mm; -Control frequency 250 Hz; -Sampling rate 500 Hz; -6 channels (one dedicated to crosshead displacement) to measure elongation /displacement/strain with potentiometric, conditioned LVDT and magnetostrictive transducers; -4 channels for strain measurements with strain gauges; -2 channels for load sensors: load cell and load cell/pressure transducer of possible second frame; -simple multi-sensors connection and calibration file selection; -digital linearization of the calibration curve. Software package The machine is supplied complete with RTM (Real Time Management) user interface environment allowing remote control of the complete system forautomatic test execution according to the selectedtest type, calculation of results, graphical and numerical management of data. The following software modules are available: *UTS Software (included) for steel tensile testing under load/stress control and crosshead

70-T10H04

HPT-1000, Automatic Computerized Universal TestingMachine, 1000 kN capacity, HPU 200 power unit, fortensile/transverse/bend and re-bend tests on steeland compression/flexural/indirect tensile tests onconcrete and other materials. 220V/60Hz/3ph. The machine is conforming to the following Standards: EN ISO 6892, EN 15630, ASTM A370, EN ISO 7500-1 (class 1 from 10 kN to 1000 kN). System includes: -Upper and lower hydraulically operated jaws -High precision load cell for load measurement -PC and complete software package for different test types; -Four set of grippers for rounds from 8 mm to 50 mm diameter; -Three set of grippers for flats up to 60 x 90 mm (thickness x width); -Transverse test attachment with roller supports dia.50 x 160 mm (max span 800 mm) and 2 loading rollers dia. 44 mm and 32 mm. Applications The machine can perform (with the suitable accessories): Tensile tests on steel rounds up to 60 mm dia., flats up to 60 x 90 mm, wire strands up to 15.2 mm dia. and electro welded steel grid; Transverse and Bend and re-bend tests on steel specimens; Shear test on rounds; Compression testson concrete cubes and cylinders; Flexural test on concrete beams; Indirect tensile test on cylinders, cubes and paving blocks; Determination of the Modulus of Elasticity of concrete; many others tests on Rock, Masonry units, Refractories,etc. with the suitable accessories available on request. Main features -Sturdy four-columns test frame with 850 mm vertical daylight (for compression and tensile tests) and 750 mm horizontal clearance; -Piston travel: 250 mm; -Max distance between tensile grips: 600mm (+ 250mm piston travel); -Motorized crosshead for easy and fast (430 mm/min) adjustment of the vertical daylight by push button panel; -Load measurement by high precision load cell providing high accuracy from 1% of f.s.; -Hydraulic gripping system operated by push button panel; -Front open crosshead for easy insertion of tensile specimens; -PC controlled. Completely automatic test execution with closed-loop P.I.D. control; -Compact ergonomic design (with small footprint) advanced control console housing hydraulic pack, electronic and PC; -Optional control of a second frame. Hydraulic group -Dual stage pump: centrifugal low pressure for fast approach (max. flow rate 9 l/min) automatically switching to radial multi- piston high pressure (max. flow rate 3.2 l/min) for loading; -Max speed (no load condition): 190 mm/min; -Oil flow control by servo-controlled proportional valve; -AC motor 3000 W; -Maximum working pressure 650 bar; -Oil temperature controlled by air cooling system;-Console cabinet lined with soundproofing material for operator's comfort. Hardware and firmware -Effective resolution 131.000 points; -Load resolution [kN]: 0.01 kN -Crosshead displacement resolution[mm]: 0.01 mm; -Control frequency 250 Hz; -Sampling rate 500 Hz; -6 channels (one dedicated to crosshead displacement) to measure elongation /displacement/strain with potentiometric, conditioned LVDT and magnetostrictive transducers; -4 channels for strain measurements with strain gauges; -2 channels for load sensors: load cell and load cell/pressure transducer of possible second frame; -simple multi-sensors connection and calibration file selection; -digital linearization of the calibration curve. Software package The machine is supplied complete with MULTITEST user interface environment allowing remote controlof the complete system for automatic test execution according to the selected test type, calculation of results, graphical and numerical management of data. The following software modules are available: *UTS Software (included) for steel tensile testing under load/stress control and crosshead

70-T12H02

HPT-1200, Automatic Computerized Universal TestingMachine, 1200 kN capacity, HPU 200 power unit, fortensile/transverse/bend and re-bend tests on steeland compression/flexural/indirect tensile tests onconcrete and other materials. 380V/50Hz/3ph. The machine is conforming to the following Standards: EN ISO 6892, EN 15630, ASTM A370, EN ISO 7500-1 (class 1 from 12 kN to 1200 kN). System includes: -Upper and lower hydraulically operated jaws -High precision load cell for load measurement -PC and complete software package for different test types; -Four set of grippers for rounds from 8 mm to 50 mm diameter; -Four set of grippers for flats up to 60 x 100 mm (thickness x width); -Transverse test attachment with roller supports dia.50 x 160 mm (max span 800 mm) and 2 loading rollers dia. 44 mm and 32 mm. Applications The machine can perform (with the suitable accessories): Tensile tests on steel rounds up to 60 mm dia., flats up to 60 x 100 mm, wire strands up to 15.2 mm dia. and electro welded steel grid; Transverse and Bend and re-bend tests on steel specimens; Shear test on rounds; Compression testson concrete cubes and cylinders; Flexural test on concrete beams; Indirect tensile test on cylinders, cubes and paving blocks; Determination of the Modulus of Elasticity of concrete; many others tests on Rock, Masonry units, Refractories,etc. with the suitable accessories available on request. Main features -Sturdy four-columns test frame with 850 mm vertical daylight (for compression and tensile tests) and 750 mm horizontal clearance; -Piston travel: 250 mm; -Max distance between tensile grips: 600mm (+ 250mm piston travel); -Motorized crosshead for easy and fast (275 mm/min) adjustment of the vertical daylight by push button panel; -Load measurement by high precision load cell providing high accuracy from 1% of f.s.; -Hydraulic gripping system operated by push button panel; -Front open crosshead for easy insertion of tensile specimens; -PC controlled. Completely automatic test execution with closed-loop P.I.D. control; -Compact ergonomic design (with small footprint) advanced control console housing hydraulic pack, electronic and PC; -Optional control of a second frame. Hydraulic group -Dual stage pump: centrifugal low pressure for fast approach (max. flow rate 9 l/min) automatically switching to radial multi- piston high pressure (max. flow rate 3.2 l/min) for loading; -Max piston speed (no load condition): 100mm/min; -Oil flow control by servo-controlled proportional valve; -AC motor 3000 W; -Maximum working pressure 650 bar; -Oil temperature controlled by air cooling system;-Console cabinet lined with soundproofing material for operator's comfort. Hardware and firmware -Effective resolution 131.000 points; -Load resolution [kN]: 0.02 kN -Crosshead displacement resolution[mm]: 0.01 mm; -Control frequency 250 Hz; -Sampling rate 500 Hz; -6 channels (one dedicated to crosshead displacement) to measure elongation /displacement/strain with potentiometric, conditioned LVDT and magnetostrictive transducers; -4 channels for strain measurements with strain gauges; -2 channels for load sensors: load cell and load cell/pressure transducer of possible second frame; -simple multi-sensors connection and calibration file selection; -digital linearization of the calibration curve. Software package The machine is supplied complete with RTM (Real Time Management) user interface environment allowing remote control of the complete system forautomatic test execution according to the selectedtest type, calculation of results, graphical and numerical management of data. The following software modules are available: *UTS Software (included) for steel tensile testing under load/stress control and crosshead

70-T12H03

HPT-1200, Automatic Computerized Universal TestingMachine, 1200 kN capacity, HPU 200 power unit, fortensile/transverse/bend and re-bend tests on steeland compression/flexural/indirect tensile tests onconcrete and other materials. 380V/60Hz/3ph. The machine is conforming to the following Standards: EN ISO 6892, EN 15630, ASTM A370, EN ISO 7500-1 (class 1 from 12 kN to 1200 kN). System includes: -Upper and lower hydraulically operated jaws -High precision load cell for load measurement -PC and complete software package for different test types; -Four set of grippers for rounds from 8 mm to 50 mm diameter; -Four set of grippers for flats up to 60 x 100 mm

(thickness x width); -Transverse test attachment with roller supports dia.50 x 160 mm (max span 800 mm) and 2 loading rollers dia. 44 mm and 32 mm. Applications The machine can perform (with the suitable accessories): Tensile tests on steel rounds up to 60 mm dia., flats up to 60 x 100 mm, wire strands up to 15.2 mm dia. and electro welded steel grid; Transverse and Bend and re-bend tests on steel specimens; Shear test on rounds; Compression testson concrete cubes and cylinders; Flexural test on concrete beams; Indirect tensile test on cylinders, cubes and paving blocks; Determination of the Modulus of Elasticity of concrete; many others tests on Rock, Masonry units, Refractories,etc. with the suitable accessories available on request. Main features -Sturdy four-columns test frame with 850 mm vertical daylight (for compression and tensile tests) and 750 mm horizontal clearance; -Piston travel: 250 mm; -Max distance between tensile grips: 600mm (+ 250mm piston travel); -Motorized crosshead for easy and fast (330 mm/min) adjustment of the vertical daylight by push button panel; -Load measurement by high precision load cell providing high accuracy from 1% of f.s.; -Hydraulic gripping system operated by push button panel; -Front open crosshead for easy insertion of tensile specimens; -PC controlled. Completely automatic test execution with closed-loop P.I.D. control; -Compact ergonomic design (with small footprint) advanced control console housing hydraulic pack, electronic and PC; -Optional control of a second frame. Hydraulic group -Dual stage pump: centrifugal low pressure for fast approach (max. flow rate 9 l/min) automatically switching to radial multi- piston high pressure (max. flow rate 3.2 l/min) for loading; -Max piston speed (no load condition): 100mm/min; -Oil flow control by servo-controlled proportional valve; -AC motor 3000 W; -Maximum working pressure 650 bar; -Oil temperature controlled by air cooling system;-Console cabinet lined with soundproofing material for operator's comfort. Hardware and firmware -Effective resolution 131.000 points; -Load resolution [kN]: 0.02 kN -Crosshead displacement resolution[mm]: 0.01 mm; -Control frequency 250 Hz; -Sampling rate 500 Hz; -6 channels (one dedicated to crosshead displacement) to measure elongation /displacement/strain with potentiometric, conditioned LVDT and magnetostrictive transducers; -4 channels for strain measurements with strain gauges; -2 channels for load sensors: load cell and load cell/pressure transducer of possible second frame; -simple multi-sensors connection and calibration file selection; -digital linearization of the calibration curve. Software package The machine is supplied complete with RTM (Real Time Management) user interface environment allowing remote control of the complete system forautomatic test execution according to the selectedtest type, calculation of results, graphical and numerical management of data. The following software modules are available: *UTS Software (included) for steel tensile testing under load/stress control and crosshead

70-T12H04

HPT-1200, Automatic Computerized Universal TestingMachine, 1200 kN capacity, HPU 200 power unit, fortensile/transverse/bend and re-bend tests on steeland compression/flexural/indirect tensile tests onconcrete and other materials. 220V/60Hz/3ph. The machine is conforming to the following Standards: EN ISO 6892, EN 15630, ASTM A370, EN ISO 7500-1 (class 1 from 12 kN to 1200 kN). System includes: -Upper and lower hydraulically operated jaws -High precision load cell for load measurement -PC and complete software package for different test types; -Four set of grippers for rounds from 8 mm to 50 mm diameter; -Four set of grippers for flats up to 60 x 100 mm (thickness x width); -Transverse test attachment with roller supports dia.50 x 160 mm (max span 800 mm) and 2 loading rollers dia. 44 mm and 32 mm. Applications The machine can perform (with the suitable accessories): Tensile tests on steel rounds up to 60 mm dia., flats up to 60 x 100 mm, wire strands up to 15.2 mm dia. and electro welded steel grid; Transverse and Bend and re-bend tests on steel specimens; Shear test on rounds; Compression testson concrete cubes and cylinders; Flexural test on concrete beams; Indirect tensile test on cylinders, cubes and paving blocks; Determination of the Modulus of Elasticity of concrete; many others tests on Rock, Masonry units, Refractories,etc. with the suitable accessories available on request. Main features -Sturdy four-columns test frame with 850 mm vertical daylight (for compression and tensile tests) and 750 mm horizontal clearance; -Piston travel: 250 mm; -Max distance between tensile grips: 600mm (+ 250mm piston travel); -Motorized crosshead for easy and fast (330 mm/min) adjustment of the vertical daylight by push button panel; -Load measurement by high precision load cell providing high accuracy from 1% of f.s.; -Hydraulic gripping system operated by push button panel; -Front open crosshead for easy insertion of tensile specimens; -PC controlled. Completely automatic test execution with closed-loop P.I.D. control; -Compact ergonomic design (with small footprint) advanced control console housing hydraulic pack, electronic and PC; -Optional control of a second frame. Hydraulic group -Dual stage pump: centrifugal low pressure for fast approach (max. flow rate 9 l/min) automatically switching to radial multi- piston high pressure (max. flow rate 3.2 l/min) for loading; -Max piston speed (no load condition): 100mm/min; -Oil flow control by servo-controlled proportional valve; -AC motor 3000 W; -Maximum working pressure 650 bar; -Oil temperature controlled by air cooling system;-Console cabinet lined with soundproofing material for operator's comfort. Hardware and firmware -Effective resolution 131.000 points; -Load resolution [kN]: 0.02 kN -Crosshead displacement resolution[mm]: 0.01 mm; -Control frequency 250 Hz; -Sampling rate 500 Hz; -6 channels (one dedicated to crosshead displacement) to measure elongation /displacement/strain with potentiometric, conditioned LVDT and magnetostrictive transducers; -4 channels for strain measurements with strain gauges; -2 channels for load sensors: load cell and load cell/pressure transducer of possible second frame; -simple multi-sensors connection and calibration file selection; -digital linearization of the calibration curve. Software package The machine is supplied complete with RTM (Real Time Management) user interface environment allowing remote control of the complete system forautomatic test execution according to the selectedtest type, calculation of results, graphical and numerical management of data. The following software modules are available: *UTS Software (included) for steel tensile testing under load/stress control and crosshead

70-T15H02

HPT-1500, Automatic Computerized Universal TestingMachine, 1500 kN capacity, HPU 200 power unit, fortensile/transverse/bend and re-bend tests on steeland compression/flexural/indirect tensile tests onconcrete and other materials. 380V/50Hz/3ph. The machine is conforming to the following Standards: EN ISO 6892, EN 15630, ASTM A370, EN ISO 7500-1 (class 1 from 15 kN to 1500 kN). System includes: -Upper and lower hydraulically operated jaws -High precision load cell for load measurement -PC and complete software package for different test types; -Four set of grippers for rounds from 8 mm to 50 mm diameter; -Four set of grippers for flats up to 60 x 100 mm (thickness x width); -Transverse test attachment with roller supports dia.50 x 160 mm (max span 800 mm) and 2 loading rollers dia. 44 mm and 32 mm. Applications The machine can perform (with the suitable accessories): Tensile tests on steel rounds up to 60 mm dia., flats up to 60 x 100 mm, wire strands up to 15.2 mm dia. and electro welded steel grid; Transverse and Bend and re-bend tests on steel specimens; Shear test on rounds; Compression testson concrete cubes and cylinders; Flexural test on concrete beams; Indirect tensile test on cylinders, cubes and paving blocks; Determination of the Modulus of Elasticity of concrete; many others tests on Rock, Masonry units, Refractories,etc. with the suitable accessories available on request. Main features -Sturdy four-columns test frame with 850 mm vertical daylight (for compression and tensile tests) and 750 mm horizontal clearance; -Piston travel: 250 mm; -Max distance between tensile grips: 600mm (+ 250mm piston travel); -Motorized crosshead for easy and fast (275 mm/min) adjustment of the vertical daylight by push button panel; -Load measurement by high precision load cell providing high accuracy from 1% of f.s.; -Hydraulic gripping system operated by push button panel; -Front open crosshead for easy insertion of tensile specimens; -PC controlled. Completely automatic test execution with closed-loop P.I.D. control; -Compact ergonomic design (with small footprint) advanced control console housing hydraulic pack, electronic and PC; -Optional control of a second frame. Hydraulic group -Dual stage pump: centrifugal low pressure for fast approach (max. flow rate 9 l/min) automatically switching to radial multi- piston high pressure (max. flow rate 3.2 l/min) for loading; -Max piston speed (no load condition): 100mm/min; -Oil flow control by servo-controlled proportional valve; -AC motor 3000 W; -Maximum working pressure 650 bar; -Oil temperature controlled by air cooling system;-Console cabinet lined with soundproofing material for operator's comfort. Hardware and firmware -Effective resolution 131.000 points; -Load resolution [kN]: 0.02 kN -Crosshead displacement resolution[mm]: 0.01 mm; -Control frequency 250 Hz; -Sampling rate 500 Hz; -6 channels (one dedicated to crosshead displacement) to measure elongation /displacement/strain with potentiometric, conditioned LVDT and magnetostrictive transducers; -4 channels for strain measurements with strain gauges; -2 channels for load sensors: load cell and load cell/pressure transducer of possible second frame; -simple multi-sensors connection and calibration file selection; -digital linearization of the calibration curve. Software package The machine is supplied

complete with RTM (Real Time Management) user interface environment allowing remote control of the complete system forautomatic test execution according to the selectedtest type, calculation of results, graphical and numerical management of data. The following software modules are available: *UTS Software (included) for steel tensile testing under load/stress control and crosshead
70-T15H03

HPT-1500, Automatic Computerized Universal TestingMachine, 1500 kN capacity, HPU 200 power unit, fortensile/transverse/bend and re-bend tests on steeland compression/flexural/indirect tensile tests onconcrete and other materials. 380V/60Hz/3ph. The machine is conforming to the following Standards: EN ISO 6892, EN 15630, ASTM A370, EN ISO 7500-1 (class 1 from 15 kN to 1500 kN). System includes: -Upper and lower hydraulically operated jaws -High precision load cell for load measurement -PC and complete software package for different test types; -Four set of grippers for rounds from 8 mm to 50 mm diameter; -Four set of grippers for flats up to 60 x 100 mm (thickness x width); -Transverse test attachment with roller supports dia.50 x 160 mm (max span 800 mm) and 2 loading rollers dia. 44 mm and 32 mm. Applications The machine can perform (with the suitable accessories): Tensile tests on steel rounds up to 60 mm dia., flats up to 60 x 100 mm, wire strands up to 15.2 mm dia. and electro welded steel grid; Transverse and Bend and re-bend tests on steel specimens; Shear test on rounds; Compression testson concrete cubes and cylinders; Flexural test on concrete beams; Indirect tensile test on cylinders, cubes and paving blocks; Determination of the Modulus of Elasticity of concrete; many others tests on Rock, Masonry units, Refractories,etc. with the suitable accessories available on request. Main features -Sturdy four-columns test frame with 850 mm vertical daylight (for compression and tensile tests) and 750 mm horizontal clearance; -Piston travel: 250 mm; -Max distance between tensile grips: 600mm (+ 250mm piston travel); -Motorized crosshead for easy and fast (330 mm/min) adjustment of the vertical daylight by push button panel; -Load measurement by high precision load cell providing high accuracy from 1% of f.s.; -Hydraulic gripping system operated by push button panel; -Front open crosshead for easy insertion of tensile specimens; -PC controlled. Completely automatic test execution with closed-loop P.I.D. control; -Compact ergonomic design (with small footprint) advanced control console housing hydraulic pack, electronic and PC; -Optional control of a second frame. Hydraulic group -Dual stage pump: centrifugal low pressure for fast approach (max. flow rate 9 l/min) automatically switching to radial multi- piston high pressure (max. flow rate 3.2 l/min) for loading; -Max piston speed (no load condition): 100mm/min; -Oil flow control by servo-controlled proportional valve; -AC motor 3000 W; -Maximum working pressure 650 bar; -Oil temperature controlled by air cooling system;-Console cabinet lined with soundproofing material for operator's comfort. Hardware and firmware -Effective resolution 131.000 points; -Load resolution [kN]: 0.02 kN -Crosshead displacement resolution[mm]: 0.01 mm; -Control frequency 250 Hz; -Sampling rate 500 Hz; -6 channels (one dedicated to crosshead displacement) to measure elongation /displacement/strain with potentiometric, conditioned LVDT and magnetostrictive transducers; -4 channels for strain measurements with strain gauges; -2 channels for load sensors: load cell and load cell/pressure transducer of possible second frame; -simple multi-sensors connection and calibration file selection; -digital linearization of the calibration curve. Software package The machine is supplied complete with RTM (Real Time Management) user interface environment allowing remote control of the complete system forautomatic test execution according to the selectedtest type, calculation of results, graphical and numerical management of data. The following software modules are available: *UTS Software (included) for steel tensile testing under load/stress control and crosshead
70-T15H04

HPT-1500, Automatic Computerized Universal TestingMachine, 1500 kN capacity, HPU 200 power unit, fortensile/transverse/bend and re-bend tests on steeland compression/flexural/indirect tensile tests onconcrete and other materials. 220V/60Hz/3ph. The machine is conforming to the following Standards: EN ISO 6892, EN 15630, ASTM A370, EN ISO 7500-1 (class 1 from 15 kN to 1500 kN). System includes: -Upper and lower hydraulically operated jaws -High precision load cell for load measurement bPC and complete software package for different test types; -Four set of grippers for rounds from 8 mm to 50 mm diameter; -Four set of grippers for flats up to 60 x 100 mm (thickness x width); -Transverse test attachment with roller supports dia.50 x 160 mm (max span 800 mm) and 2 loading rollers dia. 44 mm and 32 mm. Applications The machine can perform (with the suitable accessories): Tensile tests on steel rounds up to 60 mm dia., flats up to 60 x 100 mm, wire strands up to 15.2 mm dia. and electro welded steel grid; Transverse and Bend and re-bend tests on steel specimens; Shear test on rounds; Compression testson concrete cubes and cylinders; Flexural test on concrete beams; Indirect tensile test on cylinders, cubes and paving blocks; Determination of the Modulus of Elasticity of concrete; many others tests on Rock, Masonry units, Refractories,etc. with the suitable accessories available on request. Main features -Sturdy four-columns test frame with 850 mm vertical daylight (for compression and tensile tests) and 750 mm horizontal clearance; -Piston travel: 250 mm; -Max distance between tensile grips: 600mm (+ 250mm piston travel); -Motorized crosshead for easy and fast (330 mm/min) adjustment of the vertical daylight by push button panel; -Load measurement by high precision load cell providing high accuracy from 1% of f.s.; -Hydraulic gripping system operated by push button panel; -Front open crosshead for easy insertion of tensile specimens; -PC controlled. Completely automatic test execution with closed-loop P.I.D. control; -Compact ergonomic design (with small footprint) advanced control console housing hydraulic pack, electronic and PC; -Optional control of a second frame. Hydraulic group -Dual stage pump: centrifugal low pressure for fast approach (max. flow rate 9 l/min) automatically switching to radial multi- piston high pressure (max. flow rate 3.2 l/min) for loading; -Max piston speed (no load condition): 100mm/min; -Oil flow control by servo-controlled proportional valve; -AC motor 3000 W; -Maximum working pressure 650 bar; -Oil temperature controlled by air cooling system;-Console cabinet lined with soundproofing material for operator's comfort. Hardware and firmware -Effective resolution 131.000 points; -Load resolution [kN]: 0.02 kN -Crosshead displacement resolution[mm]: 0.01 mm; -Control frequency 250 Hz; -Sampling rate 500 Hz; -6 channels (one dedicated to crosshead displacement) to measure elongation /displacement/strain with potentiometric, conditioned LVDT and magnetostrictive transducers; -4 channels for strain measurements with strain gauges; -2 channels for load sensors: load cell and load cell/pressure transducer of possible second frame; -simple multi-sensors connection and calibration file selection; -digital linearization of the calibration curve. Software package The machine is supplied complete with RTM (Real Time Management) user interface environment allowing remote control of the complete system forautomatic test execution according to the selectedtest type, calculation of results, graphical and numerical management of data. The following software modules are available: *UTS Software (included) for steel tensile testing under load/stress control and crosshead
70-T20H02

HPT-2000, Automatic Computerized Universal TestingMachine, 2000 kN capacity, HPU 200 power unit, fortensile/transverse/bend and re-bend tests on steeland compression/flexural/indirect tensile tests onconcrete and other materials. 380V/50Hz/3ph. The machine is conforming to the following Standards: EN ISO 6892, EN 15630, ASTM A370, EN ISO 7500-1 (class 1 from 20 kN to 2000 kN). System includes: -Upper and lower hydraulically operated jaws -High precision load cell for load measurement -PC and complete software package for different test types; -Five set of grippers for rounds from 8 mm to 66 mm diameter; -Four set of grippers for flats up to 72 x 100 mm (thickness x width); -Transverse test attachment with roller supports dia.70 x 200 mm (max span 900 mm) and 2 loading rollers dia. 80 mm and 60 mm. Applications The machine can perform (with the suitable accessories): Tensile tests on steel rounds up to 78 mm dia., flats up to 72 x 100 mm, wire strands up to 15.2 mm dia. and electro welded steel grid; Transverse and Bend and re-bend tests on steel specimens; Shear test on rounds; Compression testson concrete cubes and cylinders; Flexural test on concrete beams; Indirect tensile test on cylinders, cubes and paving blocks; Determination of the Modulus of Elasticity of concrete; many others tests on Rock, Masonry units, Refractories,etc. with the suitable accessories available on request. Main features -Sturdy four-columns test frame with 850 mm vertical daylight (for compression and tensile tests) and 850 mm horizontal clearance; -Piston travel: 300 mm; -Max distance between tensile grips: 550mm (+ 300mm piston travel); -Motorized crosshead for easy and fast (225 mm/min) adjustment of the vertical daylight by push button panel; -Load measurement by high precision load cell providing high accuracy from 1% of f.s.; -Hydraulic gripping system operated

by push button panel; -Front open crosshead for easy insertion of tensile specimens; -PC controlled. Completely automatic test execution with closed-loop P.I.D. control; -Compact ergonomic design (with small footprint) advanced control console housing hydraulic pack, electronic and PC; -Optional control of a second frame. Hydraulic group -Dual stage pump: centrifugal low pressure for fast approach (max. flow rate 9 l/min) automatically switching to radial multi- piston high pressure (max. flow rate 3.2 l/min) for loading; -Max piston speed (no load condition): 100mm/min; -Oil flow control by servo-controlled proportional valve; -AC motor 3000 W; -Maximum working pressure 650 bar; -Oil temperature controlled by air cooling system;-Console cabinet lined with soundproofing material for operator's comfort. Hardware and firmware -Effective resolution 131.000 points; -Load resolution [kN]: 0.02 kN -Crosshead displacement resolution[mm]: 0.01 mm; -Control frequency 250 Hz; -Sampling rate 500 Hz; -6 channels (one dedicated to crosshead displacement) to measure elongation /displacement/strain with potentiometric, conditioned LVDT and magnetostrictive transducers; -4 channels for strain measurements with strain gauges; -2 channels for load sensors: load cell and load cell/pressure transducer of possible second frame; -simple multi-sensors connection and calibration file selection; -digital linearization of the calibration curve. Software package The machine is supplied complete with RTM (Real Time Management) user interface environment allowing remote control of the complete system forautomatic test execution according to the selectedtest type, calculation of results, graphical and numerical management of data. The following software modules are available: *UTS Software (included) for steel tensile testing under load/stress control and crosshead

70-T20H03

HPT-2000, Automatic Computerized Universal TestingMachine, 2000 kN capacity, HPU 200 power unit, fortensile/transverse/bend and re-bend tests on steeland compression/flexural/indirect tensile tests onconcrete and other materials. 380V/60Hz/3ph. The machine is conforming to the following Standards: EN ISO 6892, EN 15630, ASTM A370, EN ISO 7500-1 (class 1 from 20 kN to 2000 kN). System includes: -Upper and lower hydraulically operated jaws -High precision load cell for load measurement -PC and complete software package for different test types; -Five set of grippers for rounds from 8 mm to 66 mm diameter; -Four set of grippers for flats up to 72 x 100 mm (thickness x width); -Transverse test attachment with roller supports dia.70 x 200 mm (max span 900 mm) and 2 loading rollers dia. 80 mm and 60 mm. Applications The machine can perform (with the suitable accessories): Tensile tests on steel rounds up to 78 mm dia., flats up to 72 x 100 mm, wire strands up to 15.2 mm dia. and electro welded steel grid; Transverse and Bend and re-bend tests on steel specimens; Shear test on rounds; Compression testson concrete cubes and cylinders; Flexural test on concrete beams; Indirect tensile test on cylinders, cubes and paving blocks; Determination of the Modulus of Elasticity of concrete; many others tests on Rock, Masonry units, Refractories,etc. with the suitable accessories available on request. Main features -Sturdy four-columns test frame with 850 mm vertical daylight (for compression and tensile tests) and 850 mm horizontal clearance; -Piston travel: 300 mm; -Max distance between tensile grips: 550mm (+ 300mm piston travel); -Motorized crosshead for easy and fast (275 mm/min) adjustment of the vertical daylight by push button panel; -Load measurement by high precision load cell providing high accuracy from 1% of f.s.; -Hydraulic gripping system operated by push button panel; -Front open crosshead for easy insertion of tensile specimens; -PC controlled. Completely automatic test execution with closed-loop P.I.D. control; -Compact ergonomic design (with small footprint) advanced control console housing hydraulic pack, electronic and PC; -Optional control of a second frame. Hydraulic group -Dual stage pump: centrifugal low pressure for fast approach (max. flow rate 9 l/min) automatically switching to radial multi- piston high pressure (max. flow rate 3.2 l/min) for loading; -Max piston speed (no load condition): 100mm/min; -Oil flow control by servo-controlled proportional valve; -AC motor 3000 W; -Maximum working pressure 650 bar; -Oil temperature controlled by air cooling system;-Console cabinet lined with soundproofing material for operator's comfort. Hardware and firmware -Effective resolution 131.000 points; -Load resolution [kN]: 0.02 kN -Crosshead displacement resolution[mm]: 0.01 mm; -Control frequency 250 Hz; -Sampling rate 500 Hz; -6 channels (one dedicated to crosshead displacement) to measure elongation /displacement/strain with potentiometric, conditioned LVDT and magnetostrictive transducers; -4 channels for strain measurements with strain gauges; -2 channels for load sensors: load cell and load cell/pressure transducer of possible second frame; -simple multi-sensors connection and calibration file selection; -digital linearization of the calibration curve. Software package The machine is supplied complete with RTM (Real Time Management) user interface environment allowing remote control of the complete system forautomatic test execution according to the selectedtest type, calculation of results, graphical and numerical management of data. The following software modules are available: *UTS Software (included) for steel tensile testing under load/stress control and crosshead

70-T20H04

HPT-2000, Automatic Computerized Universal TestingMachine, 2000 kN capacity, HPU 200 power unit, fortensile/transverse/bend and re-bend tests on steeland compression/flexural/indirect tensile tests onconcrete and other materials. 220V/60Hz/3ph. The machine is conforming to the following Standards: EN ISO 6892, EN 15630, ASTM A370, EN ISO 7500-1 (class 1 from 20 kN to 2000 kN). System includes: -Upper and lower hydraulically operated jaws -High precision load cell for load measurement -PC and complete software package for different test types; -Five set of grippers for rounds from 8 mm to 66 mm diameter; -Four set of grippers for flats up to 72 x 100 mm (thickness x width); -Transverse test attachment with roller supports dia.70 x 200 mm (max span 900 mm) and 2 loading rollers dia. 80 mm and 60 mm. Applications The machine can perform (with the suitable accessories): Tensile tests on steel rounds up to 78 mm dia., flats up to 72 x 100 mm, wire strands up to 15.2 mm dia. and electro welded steel grid; Transverse and Bend and re-bend tests on steel specimens; Shear test on rounds; Compression testson concrete cubes and cylinders; Flexural test on concrete beams; Indirect tensile test on cylinders, cubes and paving blocks; Determination of the Modulus of Elasticity of concrete; many others tests on Rock, Masonry units, Refractories,etc. with the suitable accessories available on request. Main features -Sturdy four-columns test frame with 850 mm vertical daylight (for compression and tensile tests) and 850 mm horizontal clearance; -Piston travel: 300 mm; -Max distance between tensile grips: 550mm (+ 300mm piston travel); -Motorized crosshead for easy and fast (275 mm/min) adjustment of the vertical daylight by push button panel; -Load measurement by high precision load cell providing high accuracy from 1% of f.s.; -Hydraulic gripping system operated by push button panel; -Front open crosshead for easy insertion of tensile specimens; -PC controlled. Completely automatic test execution with closed-loop P.I.D. control; -Compact ergonomic design (with small footprint) advanced control console housing hydraulic pack, electronic and PC; -Optional control of a second frame. Hydraulic group -Dual stage pump: centrifugal low pressure for fast approach (max. flow rate 9 l/min) automatically switching to radial multi- piston high pressure (max. flow rate 3.2 l/min) for loading; -Max piston speed (no load condition): 100mm/min; -Oil flow control by servo-controlled proportional valve; -AC motor 3000 W; -Maximum working pressure 650 bar; -Oil temperature controlled by air cooling system;-Console cabinet lined with soundproofing material for operator's comfort. Hardware and firmware -Effective resolution 131.000 points; -Load resolution [kN]: 0.02 kN -Crosshead displacement resolution[mm]: 0.01 mm; -Control frequency 250 Hz; -Sampling rate 500 Hz; -6 channels (one dedicated to crosshead displacement) to measure elongation /displacement/strain with potentiometric, conditioned LVDT and magnetostrictive transducers; -4 channels for strain measurements with strain gauges; -2 channels for load sensors: load cell and load cell/pressure transducer of possible second frame; -simple multi-sensors connection and calibration file selection; -digital linearization of the calibration curve. Software package The machine is supplied complete with RTM (Real Time Management) user interface environment allowing remote control of the complete system forautomatic test execution according to the selectedtest type, calculation of results, graphical and numerical management of data. The following software modules are available: *UTS Software (included) for steel tensile testing under load/stress control and crosshead

Accessories and consumables

55-C0222/H

Electronic universal extensometer/compressometer for cylinders, prisms and cubes. Suppied with short distance piece for use with prisms

DATA SHEET

40x40x160 mm and 2 elastic bands

70-C0954/C1

Electronic universal extensometer to measure the elongation of wires, steel rebars and round steel specimens. To be removed before sample failure. - Measuring base: 50 to 200 mm - Linearity: better than +- 1% - Max. travel: 10 mm
70-T10/2F

Upgrading of HPU 200 power unit for the connectionof a second frame up to 5000 kN capacity. To be factory installed. Not compatible with upgrading option 70-T10/EM forUTM HPT-Series controlled by HPU 200 power unit.
70-T10/CC

Compressione device. Includes: upper and lower platens dia. 216mm and spherical seat.
50-SW/EM

E-MODULE software package for Elastic modulus and Poisson ratio determination.

70-C0961/E

Coaxial electronic extensometer to measure the elongation of wires up to failure. Gauge length: 600mm; Max travel: 50mm
70-C0961/G

Coaxial electronic extensometer for round specimens from 16 to 40 mm dia. Gauge length: 200 mm. Travel: 75 mm.
70-C0961/H
Coaxial electronic extensometer for round specimens from 6 to 26 mm dia. Gauge length: 200 mm. Travel: 50 mm.