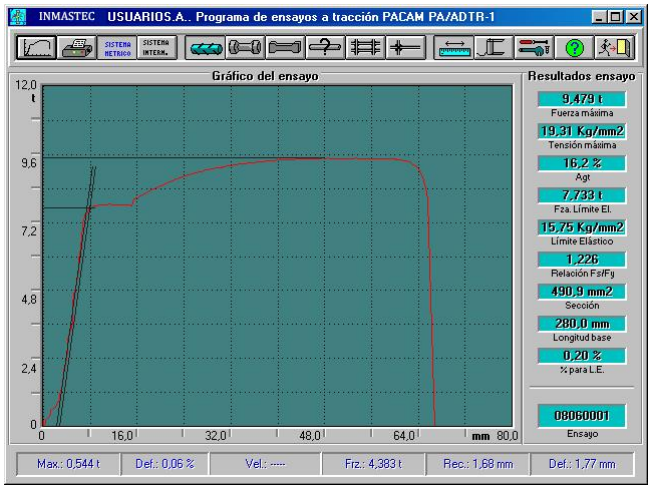
Steels

GROUP I&S

GRUPO I&S

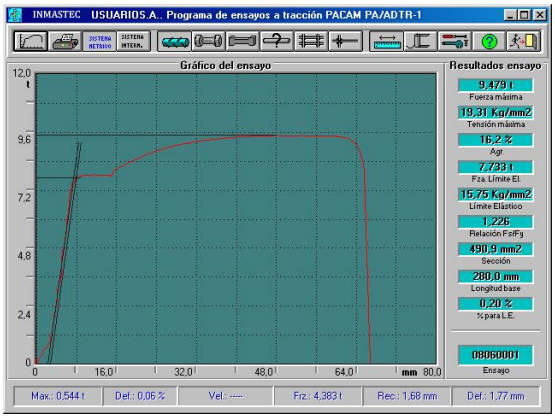
UNIVERSAL HIDRAULIC SERVO-CONTROLLED MACHINE AUTOMATIC TENSILE, COMPUTERIZED CONTROL SYSTEM DRIVEN
EN 10002/ UNE 36-068/96/ EN-ISO 6892, 7500-1 / ASTM A370/ DIN 50.125



TENSILE STRENGTH, YIELD STRENGTH, ELONGATION AT BREAK AND FOLDING / UNFOLDING, EN-10002, UNE 36-068/96 UNIVERSAL TESTING MACHINE DRIVE, HYDRAULIC, PNEUMATIC CHUCK JAWS FOR STEEL BAR TEST RUN BY ART MICROPROCESSOR AND GOVERNED BY COMPUTER

E001 The test frame comprises two bridges firmly chrome armed by two columns. The lower deck is equipped with hydraulic screw approximation of jaw with a vertical movement. The second jaw joint load cell is attached to piston top bridge that allows its displacement exert traction force on the steel specimen. To measure the traction force, a load cell by an electronic signal determines the force exerted. The regulation of the force exerted by the piston performs a proportional servo valve to the pressure delivery piston proportionally. Once broken probe detects the machine stops automatically.

The longitudinal strain of the specimen can be determined by two methods (optional):
-By extensométicas bands (not included)
-By clamping extensometer (not included)
The control of the machine operates in closed loop so getting a highly accurate increase.



The team consists of the following elements:

• Test Framework, consisting of frame, columns, piston and jaws.
• Hydraulic
• Load cell
• Air Compressor
• Wire transducer for measuring deformation
• Proportional servo valve
• Pneumatic jaws composed for 3 set different diameters of bars
• 2 channel control module + additional channel extensometer
• Complete package software tensile steels.
• Control Desk for the placement of the computer and which is housed inside the control module and hydraulic.

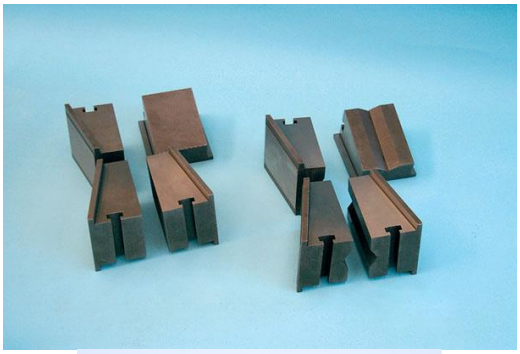
TECHNICAL FEATURES

• Capacity: 700 KN.
• Piston Stroke: 600 mm. (300 mm above and 300 mm bottom)
• Accuracy of force: <1% of applied load between 2 and 100% of nominal.
• Speed Accuracy: Better than 1%
• the spindle Displacement: Automatic by computer control or manual operation
• Working speed: Kg / mm. / S. (Depends on the section of the specimen, as the calculation is done by the software automatically)
• Diameter of columns: 110 mm. ↗
• Ideal distance between jaws for test: 600 mm.
• Sidelight between columns useful: 430-440 mm.
• test frame Dimension: 950 x 500 x 3150 mm. (Width x depth x height) + computer table
• Power supply: 230V or three-phase 380 V, 50 Hz ± 10%

The machine is supplied complete with the following components also as accessories including:
• Program Package tensile steel
• art computer keyboard
• Manual in English, software manual and certificate of conformity

E002 Universal tensile machine similar to E001 model, but of 1000 KN capacity.
E003 Software elastic modulus
E004 Universal machine twin screw

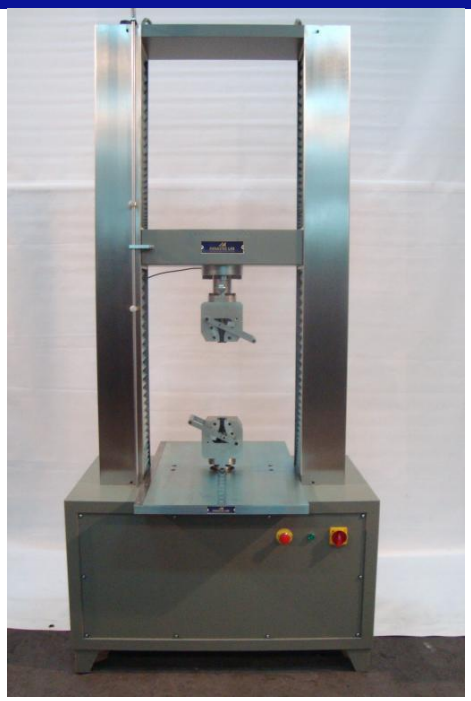
E001.01 Set of jaws, upper and lower for flat specimens dia 0 to 15 mm. (4 pcs.).
E001.02 Set of jaws, upper and lower for round specimens dia 12 to Ø25 mm. (4 pcs.).
E001.03 Set of jaws, upper and lower for round specimens dia 22 to Ø32 mm. (4 pcs.).
E001.05 Calibration certificate issuance ENAC Traction Machine performed
E005 Extensometer pinch of Class 1 ± 2.5 mm.
E006 Device for welded steel mesh
E007 Strain gage Kit with accessories for your stuck.
E008 Extensometric bands (5 units).
E005.01 Length basis Adapters of 100 mm



This machine has the possibility of coupling a variety of devices for both compression tests, flexural tests as for traction. (See accessories).

S162 Electromechanical machine double piston model similar to S160, but capacity of 200 KN

UNIVERSAL TESTING MACHINE
S160 Electromechanical machine double piston
Automatic testing machine and servo twin screw latter governed by computer generation, comprising a rigid structure with loading bridge motherboard movable bridge guided by two columns of chrome steel. Serv-electromechanical drive engine by two ball screws and re-circulating provide outstanding smoothness of operation and a constant speed during the test.
Rigid inner bridge high resistance load houses the assembly formed by the screw, the electromechanical group and press control module.
Load cell (tension-compression) mounted on the upper bridge, which the control module transmits the force exerted at each test point. The regulation of the travel speed and the loading speed of the spindle is processed by the electronic module.
The compression plates are hardened and ground, the bottom of Ø 220 mm. is marked concentric, very helpful for correct positioning of the jaw Marshall, among other applications. The system includes an upper ball joint that allows perfect fitting.
TECHNICAL FEATURES:
Capacity: 300 KN.
Resolution of force: 1 N
Displacement resolution: 0.01 mm.
Useful light horizontal: 620 mm
Sandy Bridge mobile standard: ± 1500mm.
Stiffness test frame (combined) exceeding 1 mm. / 300KN.
Power supply: 220V AC, single phase more grounded.
Power: 1500 W
Weight: 700 kg approx.
The machine is supplied complete with load cell of 300 kN.
General Testing Software, last generation computer flat screen and user manual in inglish.

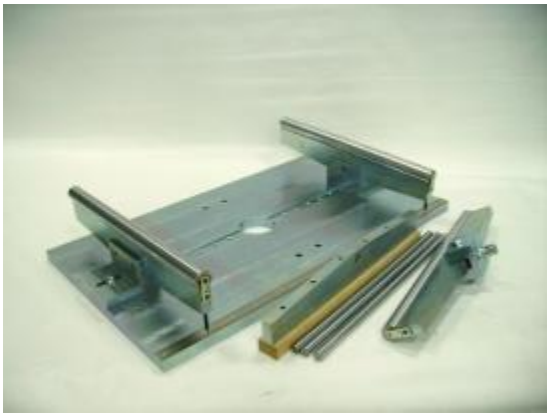


UNIVERSAL TESTING MACHINE
S164 Electromechanical machine double piston Automatic testing machine and servo twin screw governed by computer model last generation similar to S160, but with carrier jaws for testing tensile steel bars.

E015 Set manuals holder jaws. This equipment is designed to be used with the multiensayos presses depending on the capacity of each machine.
Supplied with two sets of pliers, one flat and one round for V.
Forceps flat: for flat specimens of 0 to 10 mm thick
Round tongs: 0 to 7 mm in diameter.
Tweezers in V: for round specimens from dia 8 to 14 mm.

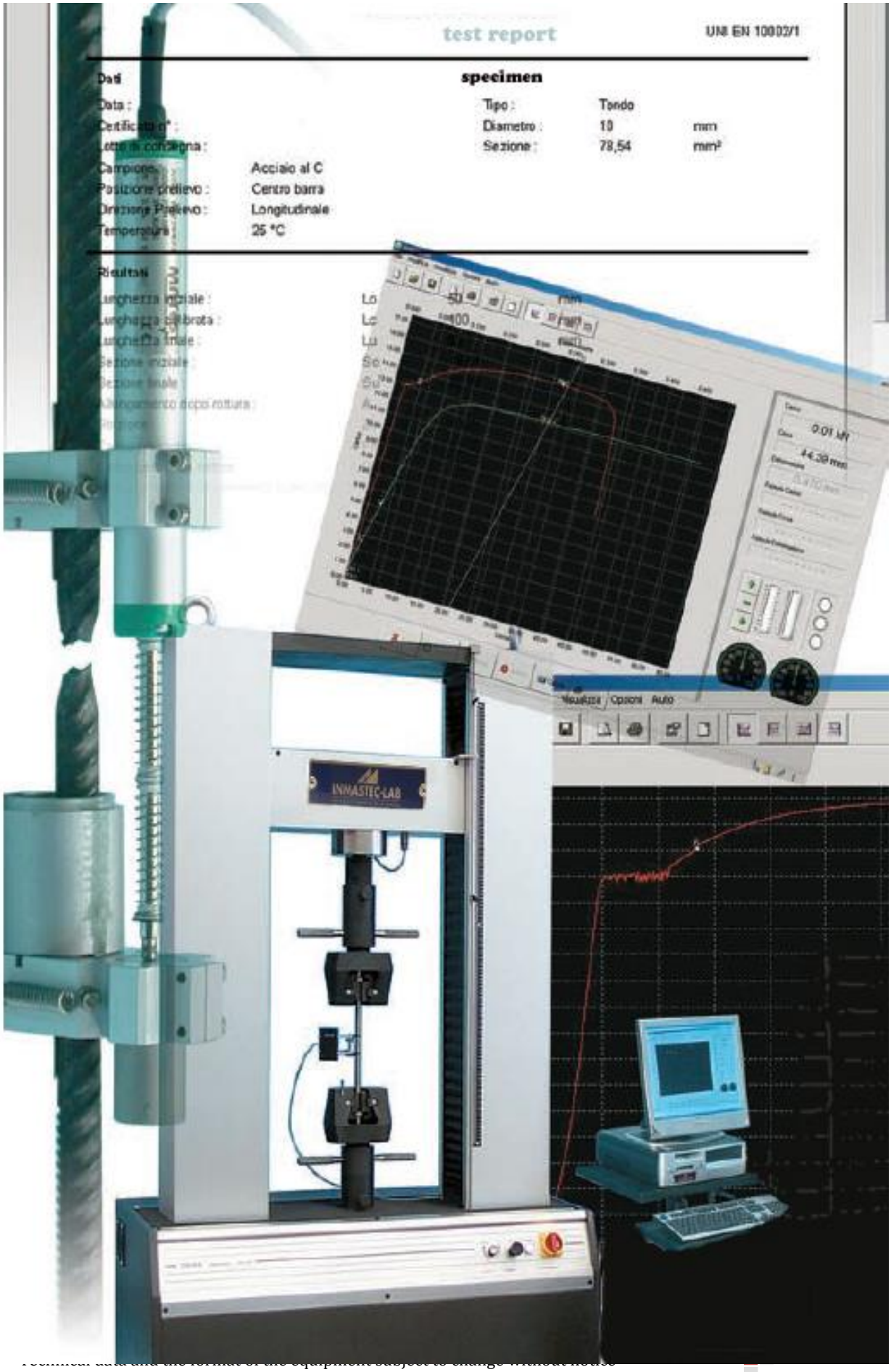
E016 Round grips V from dia 15 to 22 mm.

UNIVERSAL TESTING MACHINE
S164 Electromechanical machine servo automatic double piston, ruled last generation computer model similar to S160, but with flexural device for curbs and tiles, flat blocks, roof tiles bending, etc..



S166 Flexural testing device. Equipment that can be attached to a multitester machine That allows testing transverse curbs and tiles, flat blocks, tiles flexural, etc.
Weight: 210kg.

S160.04 Safety guards CE for area and perimeter security test support multitester machine.


test report
UNI EN 10002/1
specimen
Tipo : Tondo
Diametro : 10 mm
Sezione : 78,54 mm²
Dati
Data :
Acciaio al C
Centro barra
Longitudinale
25 °C
Risultati
INVASTEC-LAB

SERVO-CONTROLLED ELECTROMECHANICAL "TOUCH-SCREEN" UNIVERSAL TESTING MACHINE, 200 KN.

MAIN FEATURES

Standards: EN 10002 / EN ISO 6892, 7500-1 / ASTM A370

The machine is composed by a strong base containing the transmission components and the Hardware control instruments.
The base carries two colums that guide the cross-bar; they are made of high resistance steel with ground hard chrome surfacing. The big diameter and the position where the columns are fitted grant a high lateral rigidity.
The system is suitable to realise both tets with single direction or dual direction.
In order to grant no clearance, the transmission of the movement to the modile cross-bar takes place through two re-circulating spheres screws with with pre-loaded female screws.
High attention is given to the assembling system of the screws and their groups-bearings put in the base and in the upper head.
The mobile cross-bar with big section together with all other elements of the machine being properly dimensioned grant a very good “Rigidity of the machine” (see UNE ISO 5893 Standard).
The moving up and down of the cross-bar on the columns happens through sintered bushes with low friction coefficient.
On the mobile cross-bar there are some holes for the mounting of the load cells.
The load cell is made in stainless steel and reads both tensile and compression loads with a very high precision.
It is conformity with the EN 10002-2 / EN ISO 6892, 7500-1 Standards.

E017+E019+E019.01

Features of the load cell referred to ISO 376 Standard

- Load capacity: 200 kN
- Test speed: Minimum 0.01mm/min - Maximum 480 mm/min
- Positioning speed: 480 mm/min
- Cross bar travel (*): 1150 mm/min
- Opening of the testing chamber: Vertical (**) 1280 mm
- Horizontal 600 mm
- Maximum distance between the tensile heads (***): 480 mm
- Dimensions in mm: 2340 (height) - 1370 (width) - 700 (depth)
- Weight: 1150 kg
- Power supply: 400V 3ph 50Hz
- Absorbed power: 3000 W

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The control section is made by a deries of cards inside the base of the machine that are managing the control units and the reading units positioned on the machine.
The adquisition card, with a powerful microprocessor and converter AD 24 bits, takes all the working dates and through a RS232 connection it sends all these to the Personal Computer, wich controls all the functions of the machine and makes the elaboration of all the calculations through the program UTM2

On the base there are:
A deice which allows an easy and speedy positioning of the mobile cross-bar A push button to interrupt the test execution at any time. A series of connectors for the connection to the control PC and to the auxiliaries appliances (extensometer, load cells etc.)
General switch/Safety awitch
For further information, please consult the category **electromechanical servo-controlled universal machines for tensile tests on steel**.

NOTES:

(*) 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.

NOTE: The software and the extensometer are described at pag. 131

Ma

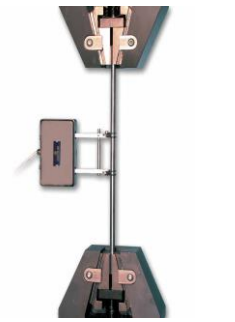
E018

E014

MODEL	E014	E015	E016	E017	E018
Capacity (kN)Load	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) Hight	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 1F 50 Hz	230V 1F 50 Hz	400V 3F 50 Hz	400V 3F 50 Hz	400V 3F 50 Hz
Power (W)	1000	1200	2000	3000	3000

NOTES:
(*****) 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 MOD.
E014 a E018:
E014.05 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 graphs 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.



E014.05

Eelectronic Extensometer for tensile deformation strength tests until breakage
E014.07 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 bae 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, carying case.

E014.06 Extensometer for round specimens from 4,5 to 11 mm diameter. Transducer stroke: 25 mm
E014.07 Extensometer for round specimens from 10 to197 mm diameter. Transducer stroke: 50 mm
E014.08 Extensometer for round specimens from 18 to 27 mm diameter. Transducer stroke: 50 mm
E014.09 Extensometer for round specimens from 26 to 36 mm diameter. Transducer stroke: 50 mm
E014.10 Extensometer for flat specimens' width max. 25 mm; thicknesses max. 10 mm.
Measuring base: 25 – 50 - -60 – 70 mm. transducer stroke: 50 mm.

Cold bend testing mechine
UNE 36068/ ASTM A615/ ISO 7438, 15630-1
E025 This equipment has been studied and designed to carry out bending tests on steel bars for reinforced concrete.
Bending Machine and Bar split corrugated steel and other steel mills to determine the suitability of plastic deformation. Constant speed by the spindle approximation. Drive backward and forward with the accelerator pedal. The unit is supplied with standard mandrels temperate and according to UNE, of Ø 250 - 200-160 - 128 - 96-112 - 84 - 72-60 - 50 - 48-40 - 36 - 30 mm. Hydraulic and protective screen test area. Motor power: 1.5 C.V. 1500 r.p.m. Food 380 V.
Dimensions 1750 x 620 x 900 mmh.
Maximum bending dia: 32 mm.

UNE EN 1289/1M
PENETRATING LIQUID WELDING TEST
he penetrant inspection to detect failures in the welds. After cleaning the surface of the piece to be inspected from any contamination, general dirt and grease. Penetrating the product is applied. If there is a crack or defect whatever their size, the liquid is introduced by it by default. To clean the piece penetrant is applied liquid called another developer that is highly absorbent.

E030 Red Penetrating Aerosol 996p.
E031 Aerosol revelador PD1B
E032 Aerosol Developer 9D1B

Marking-Off machine

E033 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 length 300 mm.
Marking steps: 5 or 10 mm. selectable with lateral graduation.
Marking speed: 60 marks per minute.
Power supply 400 V 3ph 50 Hz
Dimensions: 530x480x445 mm.
Weight: approx. 58 Kg

PENDULUM IMPACT CHARPY TESTERS FOR RESILIENCE TESTS
EN 10045-1/ ASTM E23/ BS 131/ DIN 50115

E035 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 strenght 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: 500x1000xh1820 mm. Weight: 400 kg approx.

E035

E036 Pendulum impact Charpy tester, 300 J capacity, motorized semi-automatic workingand high energy capacity. Supplied complete with protección cage to CE.

E036.01 Pendulum impact Charpy tester, 300 J capacity resolution 0,1 , 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: 300J with 0,1J resolution.
Supplied complete with knife-edge to perform the test as per ASTM Standard.
Power supply: 380V 3ph 50Hz 400W
Dimensions: 2200 x 800 xh 2300 mm. Weight: 750 kg
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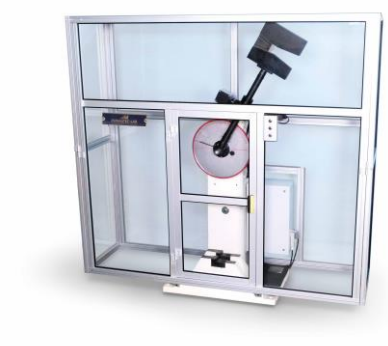

E036

Accessories:

E035.01 Protection recommended to meet the safety requirements as CE. Enclosure protection throughout its length made of steel.
E035.04 Knife-Edge to perform resilence tests according to EN 10045-1, BS 131 standards for E035
E035.04 Knife-Edge for E036 and E036.01

E040 Hardness Rockwell optical universal standard assays (HR), Brinell (HBW) and Vickers (HV) 8 test loads: 10 - 30 to 31.25 - 60 - 100 - 150 mm and 187.5 Kgf
Optical microscope and 75x 37.5 x Measuring
Footprints for HB-HV according to standards: ISO 6508 (HR) + ISO 6506 (HB) + ISO 6507 (HV) ASTM E-18 + (HR) + ASTM E-10 (HB) + ASTM E-92 (HV)
TECHNICAL SPECIFICATIONS:
Kgf test loads: 10 - 30 to 31.25 - 60 - 62.5 to 100 - 150 and 187.5
Test loads in N: 98 - 294-306 - 586 - 588-613 - 980 - 1471 to 1839
Loads Accuracy: ± 1%
Test loads Rockwell Average: 10 - 60 - 100 - 150 Kgf.
Vickers test loads: 10 - 30 - 60 - 100 Kgf.
Brinell test loads: 10 - 30 to 31.25 - 62.5 to 187.5 Kgf.
Microscope Total Magnification: 75x 37.5 x and
Maximum height of test piece: 200 mm.
Cleavage from the penetrator axis: 200 mm.
Dimensions Approx: 546x300x767 mm.
Net Weight: 90 Kg Approx
Red Electrical connection: 220V, 50 Hz single phase

DESCRIPTION:
The universal optical durometer HBRVU Mod., 5 is a test machine with very high precision. Its use is recommended in laboratories Factory and Research Institutions, as well as colleges and universities, for the determination of the hardness Rockwell, Brinell and Vickers all types of ferrous and non ferrous materials, hard alloys, carburadas layers and nitrated, electrolyte layer, etc..

FEATURES:
Body casting. Gray stabilized Robust
Spindle assembly. Precision approach Tureca-Volante.
Infeed axis, linear bearing equipped, very little friction.
Loading mechanism. For weights calibrated, high accuracy guaranteed.
Automatic load selector by turning external control.
Load drive, manual, application and removal of external handle.
Cruise control, hydraulic control equipped with cruise control.
Rockwell display with backlighting and vertically sliding scale.
Microscope HB + HV, incorporated durometer lighting provided.
Ocular micrometer analog 15x
Two optical lenses, interchangeable 2.5x and 5x.
Increases microscope, 75x 37.5 and
On and off: by external switch (OFF-HB-HR-HV-OO).↩

STANDARD ACCESSORY EQUIPMENT (INCLUDED) IN SUITCASE DUROMETER:

5 Weights calibrated 1-2-3-4 + Pesita No. No. 0
1 Rockwell diamond indenter, diamond cone 120
1 Vickers diamond indenter, Pyramid diamte of 136 º
1 steel ball indenter Rockwell 1/16 "Ø + 6 spare ball
1 Brinell Penetrator Tungsten carbide ball 2.5 mmØ
1 Brinell Penetrator Tungsten carbide ball from 5.0 mmØ
3 Patterns of Brinell hardness HBW 2,5 / 187.5
1 Pattern of Vickers hardness HV
1 table smooth flat circular recessed fixture 150 mmØ
One flat circular smooth workpiece table 60 mmØ
1 table fixture Circular prism "V" 40 mmØ
1 Cable Networking
2 Fuses Ø5x20 ª 0.5 mm (Replacement)
Illumination 6V 15W 2 Lamp (Replacement)
1 Instruction Manual + method + tables tables HB and HV
* We have different models durometers, consult