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M A T E R I A L T E S T I N G I N S T R U M E N T S





Determining the mechanical properties of materials is a science over a century old, i.e. from the development of the first universal testing machine able to measure characteristics of materials under stress.

Cesare Galdabini, established in 1890 as a precision machinery Company, created the culture of "Materials Testing". As a result, people in Italy, usually identify this type of control as the "Galdabini Universal Test".

In the following decades the Company, thanks to its strong technical and design knowledge, developed instruments and machines in step with new technologies, meeting the increasingly demanding needs of the market.

The Core Business of the Company has developed along three product lines:

- Instruments for materials testing
- Automatic straightening machines for shafts and profiles
- Hydraulic presses for metal sheet drawing

In 1986 the Company was accredited as an Official SIT Calibration Centre (in Europe according to EA) for Force measurement, Dynamometers, Pendulum Impact Testers and Extensometers and has been accredited in January 2006 also for Brinell, Vickers, and Rockwell hardness calibration for both direct and indirect methods.

In the course of the '90s, the desire of Management for a much more complete and adaptable development led to the decision to acquire Jenny Precision AG, a world leading Company in the field of profile straightening and precision machines, located in Switzerland.

In the same period, Galdabini extended the field of material testing instrumentation by developing many precision machines for Low Loads and Micro Forces, with the precise purpose of entering the growing market of Plastic materials and Textiles.

This constant attention to all aspects of product and process quality improvement allowed Galdabini to be certified EN ISO 9000 compliant in 1992.



In the 1990s, the Galdabini group, with its considerable experience in robotics for automatic straightening machines, developed the first six-axis robotic installation for materials testing. This was the beginning of a long series of developments in Automatic Systems used in the metals and plastics industry.

Today, in its offices or through official distributors, Galdabini periodically organizes training seminars on the use of its instruments, tooling, and software.

Technical after sales service department provides a telephone "Hot Line" allowing direct and immediate communication with technical support personnel.

A "WEB ASSISTANCE" Service is also provided. Customers, using a personal password, can enter the relevant Company Data Base.

As primary suppliers in the automotive field, we have a large stock of spare parts to meet "Just In Time" requests world-wide.



Universal Testing Machine QUASAR 50: 50 kN with mechanical wedge grips and clip on type extensometer.

The QUASAR line of testing instruments includes a wide range of load frames with high mechanical, electronic and software performance and uses the proven, powerful and flexible "Graphwork" control program.

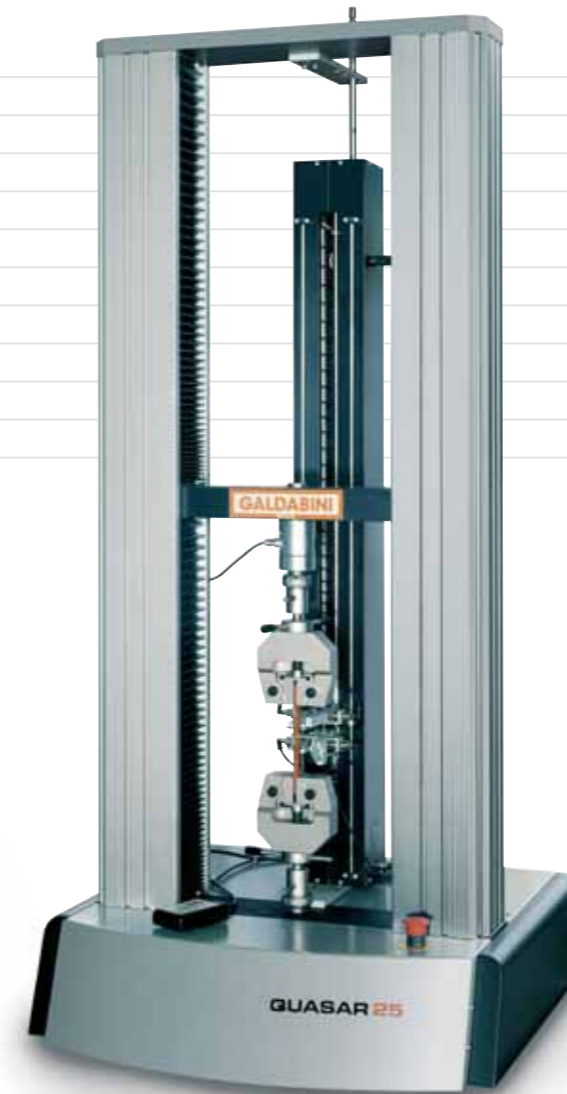
Additionally, a complete range of tooling, extensometers and other accessories allows the selection of equipment to meet the most demanding applications for tensile, compression, flexure, cyclic, constant load, and many more besides.

Galdabini's reputation, established over more than a century of experience, ensures a professional and high quality response when presented with meeting the everyday technical needs and problems presented by the market.



Universal Testing Machine QUASAR 2,5: 2,5 kN with tooling for compression tests on plastic bottles.

Meeting our Customer's needs begins with our qualified sales staff and is developed through detailed technical analysis and testing.



Universal Testing Machine QUASAR 25: 25 kN with wedge grips and PLAST extensometer for high elongation materials.

The QUASAR series is available in bench and floor standing load frame configurations. Load frames are designed according to the most recent ergonomic studies and assure the highest international safety standards. Mechanically very sturdy, columns have the best lateral stiffness in their category and frames use pre-loaded ball screws to assure the absence of slack and high rigidity.



Universal Testing Machine QUASAR 25: 25 kN with pneumatic grips for tests on zips.

Galdabini has been designing and building automated installations for more than 30 years in the automotive industry, where they have hundreds of stations operating 24 hours per day, 365 days per year. This experience leads to installations with the highest reliability using leading-edge technology and has led to the development of two different types of robotized test systems, the COMPACT and MULTI product lines.

COMPACT

The COMPACT product line has been designed for those users who need a flexible and versatile system within a small physical space which is able to test automatically without the presence of an operator. When needed the system can be used as a "stand alone" unit for manual tests, all changed quickly and easily within seconds, using only a mouse click. The physical layout saves laboratory space and the efficient system engineering makes this solution extremely easy to use and maintain.

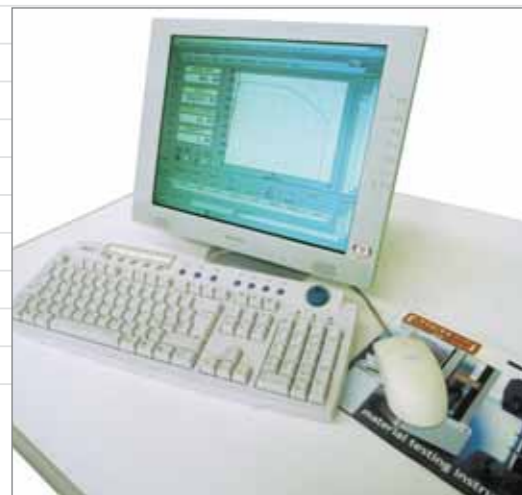


ROBOTIZED AUTOMATIC TESTING SYSTEMS "COMPACT" AND "MULTI"

MULTI

The MULTI product line has been designed for the most demanding automated testing applications and is able to operate completely independently for continuous shifts without operator intervention. A series of different testing instruments can be served by the same robot and in this way intermediate stations can be added for specimen recognition, dimensional measurement, hardness, chemical analysis and other tests. These systems are typically custom designed according to specific customer requirements. Full communication with users host computers via customers network for data transfer and storage, is dealt with by our specialized staff.





Graphwork is the powerful and comprehensive control software for QUASAR testing machines, offering extremely advanced solutions for laboratory managers and operators.

The program has been designed precisely to be user-friendly and quick. Moreover, it has an open and powerful structure, able to meet the different needs of industry and research centres.

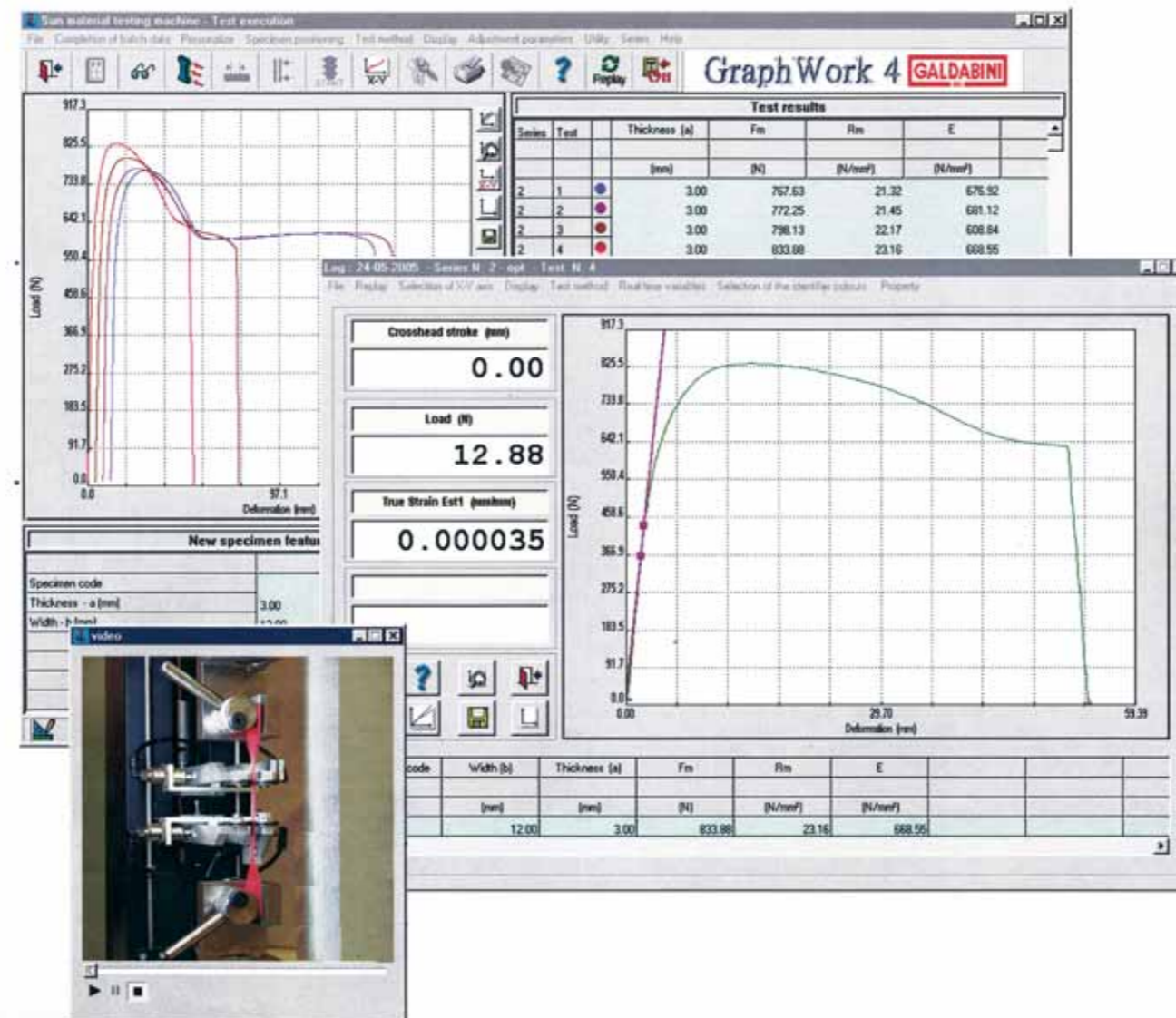
Testing methods library

The operator can select the test methods according to international standards and perform the chosen test with a few, simple operations, i.e.:

- selection of testing method/ standard/ type
- entry of specimen sizes
- start the test (test duration)
- save test data, print the certificate, and/or export the results.

Setting of customized methods

To set a "custom" test, the operator is supported by a "Wizard" interactive guide that leads him step by step until the end of the programming. The help movie provides many video clips showing how to perform the set-up of extensometers, tooling, and the connection of peripheral units.



The selections for a "custom" method can be summarized as:

- Setting of the tensile or compression testing process, with the division of the test into "steps". For each step it is possible to check the instrument for speed, deformation, load increment, cycles, etc.
- Test results can be selected from a list that includes more than 600 entries. The operator can create his own result by setting a mathematical algorithm.
- Setting of X and Y axis on the basis of typical criteria (load, deformation, elongation etc.) or customized with a special algorithm.
- Setting of results and data to be displayed on the screen and on the test certificate.
- Possible selection for use of extensometers, auxiliary load cells and peripheral instruments, such as using a caliper to measure a dimension, and a scale to measure weight.

Graphwork software supports the use of tensile, compression, flexure, cyclic, constant load, creep and relaxation, friction, and shearing tests. It is complete with all the parameters complying with International Standards for tests on metals, alloys, composite materials, plastics, rubbers, wood, ceramic, textiles and with many methods for tests on manufactured products.

The option WEB CAM allows the operator to film via a web camera, the behaviour of a test sample during the test, and in this way associate the test curve with the video obtained. Moreover, it is possible to see a photo relative to a specific point on the curve such as maximum force or another point of interest.

The intelligent Replay function enables the operator to calculate new results again when the test has already been performed. In fact, the sizes are sampled as points,



therefore the software recalculates elongations, deformations, yields and other values along the test curve. Furthermore, it is possible to change the X and Y axis after the test. This capability is valuable, for example, when one wishes to compare tests performed at different times and with different settings.

After running a group of tests, it is possible to display statistical calculations. Graphwork also allows the display of statistical curves with immediate indication of changes in size over time.

All the test data, and graphic files, can be exported to Excel, Word, or TXT format.



Extensometer PLAST used for high elongation measurements up to specimen failure.



Extensometer STRAIN-BIAXIAL for composite materials is used to measure longitudinal deformation and to determine Poisson's ratio.



Universal Optical Extensometer with camera for tensile, compression, and flexure tests on specimens and manufactured products which can also be used in an environmental chamber.

Extensometers are used to measure the longitudinal and/or transverse deformation with high accuracy and precision over a defined area of the test piece, using a gage length (fixed or variable) defined by international standards. With respect to these standards, such as ASTM UNI ISI and JIS, extensometers with different performances and technologies are available including manual, automatic and motorized and optical units.

N.B. Other extensometers are available, with documentation upon request.



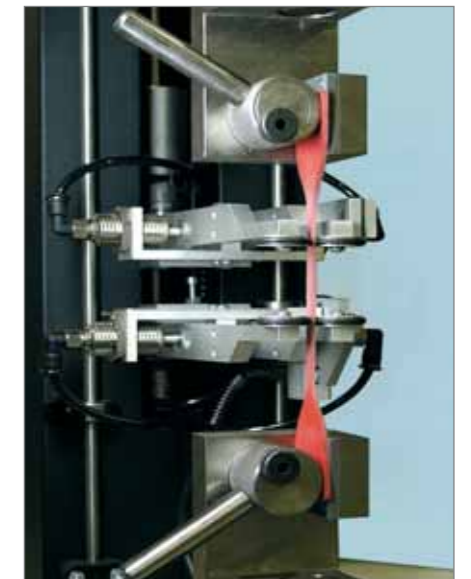
Pneumatic grips used for tensile tests on wide textile or non-textile samples. Shown with a 100mm wide sample.



Self tightening scissor grip for polyethylene, rigid and semi-rigid materials.



Pneumatic grips testing a 30mm wide film sample.



Self tightening eccentric roller grip for rubber and elastomers



Manual wedge grips of 5kN capacity for sheet materials and other rigid samples.



Tensile test on toys to verify product safety.



180° peel test typically used for testing adhesives.



Dilation test on plastic tubes.

Galdabini, thanks to many years of experience and constant interaction with laboratories all over the world, can offer testing tools which meet International Standards and designed for specific requirements.

Cyclic compression tests on a cell phone keyboard.

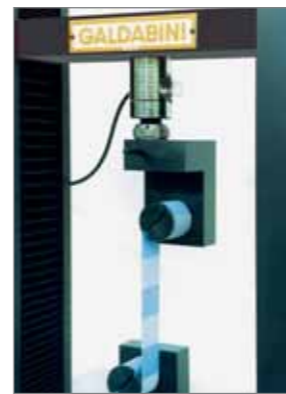




Tensile tests on fine wires can be done with this auto centering bollard grip.



A cyclic test on a plastic spring used with our specific software application.



Tensile testing of a tape



Perforation test on a geo-textile material



Penetration test on plastic film.



Three point bending test on a small sample. Specific fixtures for composite and ceramic materials are available.



Screw extraction from a wood block.



A 3 point bend fixture suitable for use in an environmental chamber. Many versions are available with variable span, and interchangeable supports. These meet international standards such as ASTM and ISO and can be used in an environmental chamber and fitted with precision transducers to measure flexural modulus.



A compression tests on rigid plastic pipe section to determine radial loads.



A bollard type grip used for tensile testing cord.



Compression test on expanded foam according to ASTM with holes for air exhaust.



Special grip used for a tensile test on conveyor belt material



This grip is used for measuring the pull apart forces on a glued wood block.



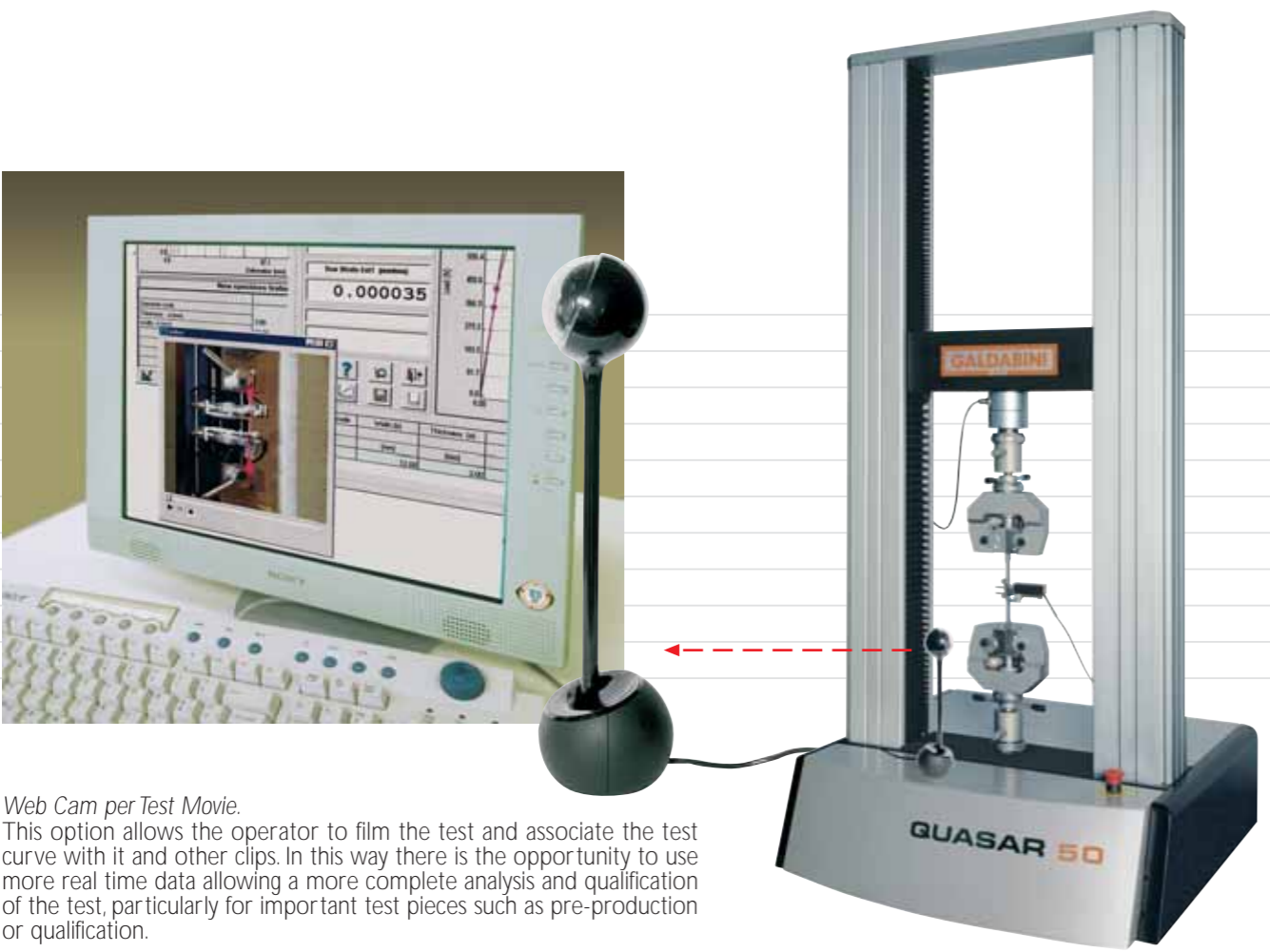
Standard 3 point bend fixture used on a single column machine.



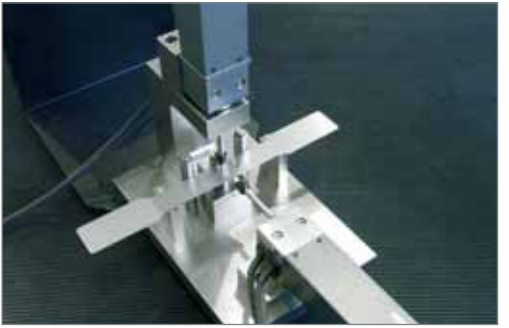
Compression test on a manufactured product.



Friction test at 90° using masses of 2N or 4N on the sled.



Web Cam per Test Movie.
This option allows the operator to film the test and associate the test curve with it and other clips. In this way there is the opportunity to use more real time data allowing a more complete analysis and qualification of the test, particularly for important test pieces such as pre-production or qualification.



Dimensional measurement stations are available with 2 or 4 transducers to read the thickness and width or diameter of samples over 1, 2 or 3 points of the calibrated length so allowing a median value to be used.



Detail of a 4 channel measuring station.



Bar code reader
This table version is available in either single or double matrix versions. Laser printers and code scribes can also be supplied on request.



Software managed bar code label printer.

Environmental Chamber with range from -70°C to +300°C

Units are available to use either direct injection of liquid nitrogen or mechanical refrigeration and can be supplied for tests over a wide range of temperatures with temperature control tightly controlled either by a dedicated controller or under software supervision.

A glass window allows for visual inspection of the test piece and the addition of an optical extensometer.

Please note that other chamber sizes with special dimensions and other performance ranges are available on request.



Chamber being used with optical extensometer.



Removable panels allow the chamber to be moved without having to take off the test fixtures.

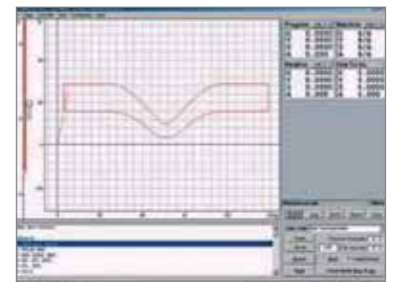
SPECIMEN PREPARATION



Manual specimen press and cutting die.



A pneumatic press is available for harder plastics and polymers.

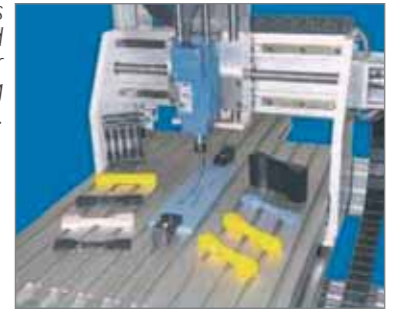


Software allows specimen selection according to international standards.



Various cutters can be supplied to international standards.

A CNC milling machine makes specimen preparation easy and quick and can be programmed for specimen geometries following norms such as ASTM EN and JIS.





Material test machines have become an essential tool to quality control and research departments. Many multinational and brand leading companies have chosen Galdabini as a partner and this is testimony to the quality construction, precision, repeatability and accuracy that our products bring to test results.

QUASAR frame with extended vertical test space. Many models have an option for 1250 mm 1500 mm or 1750 mm of vertical travel.

Series	QUASAR												
Model	BENCH						FLOOR-STANDING						
	2,5	5	10	25	50	100	250	400	500	600	1000	1200	2000
Load capacity kN	2,5	5	10	25	50	100	250	400	500	600	1000	1200	2000
min. speed mm/min.	0,01						0,0005						
max. speed mm/min.	1000	500			400	500	200		200				
Load reading resolution	1/200.000												
Stroke resolution	1 micron	0,1 micron											
Height mm	1140	1542		1635	1680	2200	2840		3055		4130		
Width mm	550	730		790	820	1000	1330		1700		1500		
Depth mm	460	700		780	785	850	860		1200		1200		
Power supply	220V/1 ph/50 Hz (110V/1 ph/60 Hz)										400V /3ph / 50Hz 440V /3ph / 60Hz		
Power consumption	350 W	450 W		650 W	1 KW	2,1 KW	2,7 KW		7 KW		10 KW		
Accuracy:	ASTM E4 – EN 10002/2 – DIN 51221												
Environment features:	- Temperature °C 5 ÷ 40 - Humidity % 20 ÷ 80												
Extensometers:	Compliant with ASTM E83/94 – EN 10002/4												
NOTE:	Frames with non-standard sizes and features are available upon request.												



Charpy test and fixtures



Izod test and fixtures

IMPACT TESTS

Instruments from the IMPACT family are used to perform impact tests to evaluate the energy necessary to break a Charpy or Izod plastic specimen.

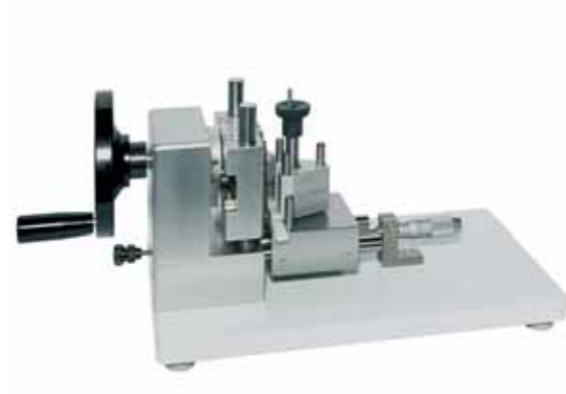
Main features:

- Range of application from 1 to 25 joules
- Microprocessor controlled system with highest accuracy and resolution
- The digital console is complete with back-lit LCD display and a membrane keyboard displaying the obtained results.
- Self calibration system with an automatic function for friction compensation and correction.
- The control unit allows selection of test type, reference standard, and results to be displayed in sequence.
- The results can be printed or handled by dedicated software.
- The rest position of the hammer after impact can be pre-selected by the operator.
- The instrument is provided with an integrated transparent protective door, fitted with an electrical interlock. The door can be opened only when the pendulum hammer is stopped and in its rest position.

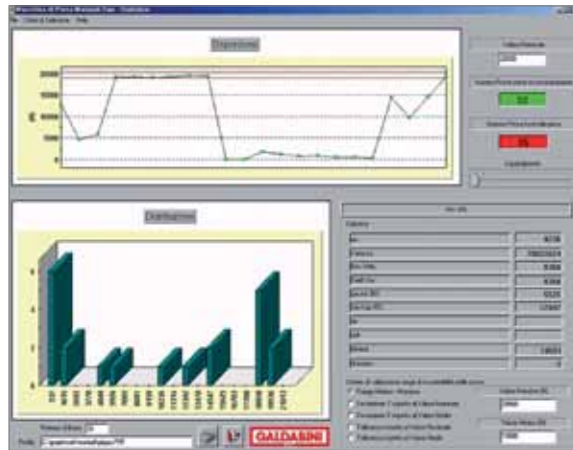
The instrument complies fully with the requirements of ASTM ISO and EN norms.



This automatic test sample notch cutter can be set to precise notch depths for Izod and Charpy samples according to international standards.



Manual notch cutter for Izod and Charpy standards.



A screen shot from the Windows based software available for the impact machine.



Automatic cryogenic system to condition test samples over the range -50°C to +200°C.

Series	IMPACT			
Model	25	150 - 300	450	600
Nominal energy J	25	150 - 300	450	600
Impact speed m/sec.	2,9 3,8	5,5		
Height mm	795	2000	2100	
Width mm	1100	2360	2450	
Depth mm	400	970	1010	1200
Power supply	220 V/1 ph/50 Hz (110 V/1 ph/60 Hz)			
Power consumption	80W	450W	650W	1kW
Accuracy:	EN 10045/1 E /2 – ISO-R/442 – ASTM E23-00a			
Environment features:	- Temperature °C 5 ÷ 40 - Humidity % 20 ÷ 80			



Calibration Centre



Modular test frame for load cell calibration.



Certificate



Dead weight calibration station up to 2.5 kN

Galdabini is accredited as an Official European Calibration Centre in Europe according to EA.

The calibration service can also be effected at Customer's facilities where we are authorised to perform calibrations for Force, Deformation, Impact energy and, Hardness according to Rockwell Brinell and Vickers scales.