TIA1.1.3 **"AUTOMATIC IMPACT 300" PENDULUM MACHINE with 300 J max. capacity.**

- The operation and accuracy features correspond to the UNI EN ISO 148-2 - ISO-R/442 - ASTM E23-00a –JIS B 7722-99 Standards for impact tests on Charpy specimen according to UNI EN 10045-1

• Current supply		230 V/1ph/50 Hz or 110 V/1ph/60 Hz
• Hooking time		< 9 sec.
• Installed electric power	KW	0,6 approx.
• Height	mm	2040
• Width.	mm	2360
• Depth	mm	620 + 120
• Weight	Kg.	650
• Distance from eventual wall	mm	220
• Environment temperature	°C	+ 10 to + 40
• Humidity without condensate	%	10 to 90
• Room lighting	lux	300

- The instrument is supplied with an integral barrier of transparent lexan panels and an electrically interlocked door for specimen loading that can be opened only when the pendulum is stopped in rest position.
- The sloped planes of the barrier convey broken specimens in the same place.
- When the door is open, in addition to the activation of the electric interlock, the operation of the instrument is prevented by a mechanical device activated for further operator safety.
- The instrument has been designed ensuring maximum safety of the operator by permitting the setting of all the test operations and the loading of the specimens from outside the guard.
- The instrument is suitable to perform resilience tests and resulting analysis of the energy absorbed by a metallic specimen subject to rupture by impact.
- An impact hammer of either 300 J. or 150 J. must be added (see accessories).
  The impact hammers can be easily replaced by the operator as well as the strikers for Charpy hammer that can be according to UNI-EN or ASTM standards
- On the basis of the supplied tooling (excluded) Charpy, Izod, traction by impact, Brugger tests are possible.
- The control system includes:
  - LCD graphic display, back lighted, with 240x128 pixels resolution
  - colour membrane keyboard, with 12 keys
  - 32 bit RISC microprocessor system
- At the moment of “power on” Galdabini logo appears for 5 sec. abt.
- The main page displays the actual energy or resilience value in large characters for a better reading of the value.
  Furthermore, always in this page, the main performed settings are displayed.
- The system can store up to 99 tests.
- For each test, the following values are stored:
  - the absorbed energy value in Joule
  - the resilience value in Joule/cm2 (referred to specimens unified with section 0,8 cm2)
  - a specimen code of 12 characters
  - the date and the time of the test
- The tests are stored in a permanent memory of the system so they are not lost after the instrument is switched off.
- A SET-UP menu allows to configure the parameters by which the test is performed.
- It is possible to define:
  - the type of the standard: ASTM, UNI-EN or ISO
  - the type of the hammer: CHARPY or IZOD
  - the potential initial energy available (according to the used hammer)
  - if the absorbed Energy or resilience value has to be displayed

- the temperature of the specimen
- the specimen section
- actual date and hour

- The tests results can be printed at any moment on any commercially available parallel printer. The test conditions set in the SET-UP menu are printed in the test certificate.
- It is also possible to introduce an operator's name which will be printed at the footer together with the date and the hour.
- The operator has the possibility to exclude to print on the certificate the tests considered not valid or not significant.
- The test data can be transferred to a PC by a standard RS232 serial line for a further processing.
- The angular displacement of the hammer is measured by a high resolution encoder mounted on the pendulum rotation axis.
- By a pushbutton placed on the console, the operator activates a motorized hammer lift system which is an electromechanical system with front coupled teeth. This solution assures no friction during the semi-oscillating movement which is advantageous with respect to traditional clutch systems.
- A very important and appreciated feature, above all for cooling tests, is the automatic latching of the hammer after each test. In this way the time between one test and another is considerably reduced. Hammer unloading (taking the striker to the rest position), is performed automatically by pressing a pushbutton placed on the console.
- Should you be interested in performing NIST test, it is necessary to foresee a pendulum IMPACT 450 set also for 300 joule force

TIA1.1.4 **"AUTOMATIC IMPACT 450" PENDULUM MACHINE with 450 J. max. capacity**

- The operation and accuracy features correspond to the UNI EN ISO 148-2- ISO-R/442 - ASTM E23-00a –JIS B 7722-99 Standards, for impact tests on Charpy specimen according to UNI EN 10045-1.

• Current supply		230 V/1ph/50 Hz or 110V/1ph/60 Hz
• Hooking time		< 9 sec.
• Installed electric power	KW	0,6 approx.
• Height	mm	2040
• Width	mm	2360
• Depth	mm	620 + 120
• Weight	Kg.	650
• Distance from eventual rear wall	mm	220
• Environment temperature	°C	+ 10 to + 40
• Humidity without condensate	%	10 to 90
• Room lighting	lux	300

- The instrument is supplied with an integral barrier of transparent lexan panels and an electrically interlocked door for specimen loading that can be opened only when the pendulum is stopped in rest position. The sloped planes of the barrier convey broken specimens in the same place.
- When the door is open, in addition to the activation of the electric interlock, the operation of the instrument is prevented by a mechanical device activated for further operator safety.
- The instrument has been designed ensuring maximum safety of the operator by permitting the setting of all the test operations and the loading of the specimens from outside the guard.
- The instrument is suitable to perform resilience tests and resulting analysis of the energy absorbed by a metallic specimen subject to rupture by impact.
- The control system includes:
  - LCD graphic display, back lighted, with 240x128 pixels resolution
  - colour membrane keyboard, with 12 keys
  - 32 bit RISC microprocessor system
- At the moment of “power on” Galdabini logo appears for 5 sec. approx.
- The main page displays the actual energy or resilience value in large characters for a better reading of the value. Furthermore, always in this page, the main performed settings are displayed.
- The system can store up to 99 tests.
- For each test, the following values are stored:
  - the absorbed energy value in Joule
  - the resilience value in Joule/cm2 (referred to specimens unified with section 0,8 cm2)
  - a specimen code of 12 characters
  - the date and the time of the test
- The tests are stored in a permanent memory of the system so they are not lost after the instrument is switched off.
- A SET-UP menu allows to configure the parameters by which the test is performed.
- It is possible to define:
  - the type of the standard: ASTM, UNI-EN or ISO
  - the type of the hammer: CHARPY or IZOD
  - the potential initial energy available (according to the used hammer)
  - if the absorbed Energy or resilience value has to be displayed
  - the temperature of the specimen
  - the specimen section

- actual date and hour

- The tests results can be printed at any moment on any commercially available parallel printer. The test conditions set in the SET-UP menu are printed in the test certificate.
- It is also possible to introduce an operator's name which will be printed at the footer together with the date and the hour.
- The operator has the possibility to exclude to print on the certificate the tests considered not valid or not significant.
- The test data can be transferred to a PC by a standard RS232 serial line for a further processing.
- The angular displacement of the hammer is measured by a high resolution encoder mounted on the pendulum rotation axis.
- By a pushbutton placed on the console, the operator activates a motorized hammer lift system which is an electromechanical system with front coupled teeth. This solution assures no friction during the semi-oscillating movement which is advantageous with respect to traditional clutch systems.
- A very important and appreciated feature, above all for cooling tests, is the automatic latching of the hammer after each test. In this way the time between one test and another is considerably reduced. Hammer unloading (taking the striker to the rest position), is performed automatically by pressing a pushbutton placed on the console.

TIA1.1.5 **"AUTOMATIC IMPACT 750" PENDULUM MACHINE with 750 J max. capacity**

- The operation and accuracy features correspond to the UNI EN ISO 148-2 - ISO-R/442 - ASTM E23-00a –JIS B 7722-99 Standards, for impact tests on Charpy specimen according to UNI EN 10045-1.

• Current supply	230 V/1ph/50 Hz	
Or	110 V/1ph/60 Hz	
• Hooking time	< 9 sec.	
• Installed electric power	KW	0,6 approx.
• Weight	Kg.	1340
• Environment temperature	°C	+ 10 to + 40
• Humidity without condensate	%	10 to 90
• Room lighting	lux	300

- The instrument is supplied with an integral barrier of transparent lexan panels and an electrically interlocked door for specimen loading that can be opened only when the pendulum is stopped in rest position. The sloped planes of the barrier allow to convey broken specimens in the same place.
- When the door is open, in addition to the activation of the electric interlock, the operation of the instrument is prevented by a mechanical device activated for further operator safety.
- The instrument has been designed ensuring the maximum safety of the operator by permitting the setting of all the test operations and the loading of the specimens from outside the guard.
- The instrument is suitable to perform resilience tests and resulting analysis of the energy absorbed by a metallic specimen subject to rupture by impact.
- The instrument must be complete with 600 J hammer (see accessories).
- On the basis of the supplied tooling (excluded) Charpy, Izod, traction by impact, Brugger tests are possible.
- The control system includes:
  - LCD graphic display, back lighted, with 240x128 pixels resolution
  - colour membrane keyboard, with 12 keys
  - 32 bit RISC microprocessor system
- At the moment of “power on” Galdabini logo appears for 5 sec. approx.
- The main page displays the actual energy or resilience value in large characters for a better reading of the value. Furthermore, always in this page, the main performed settings are displayed.
- The system can store up to 99 tests.
  For each test, the following values are stored:
  - the absorbed energy value in Joule
  - the resilience value in Joule/cm2 (referred to specimens unified with section 0,8 cm2)
  - a specimen code of 12 characters
  - the date and the time of the test
- The tests are stored in a permanent memory of the system so they are not lost after the instrument is switched off.
- A SET-UP menu allows to configure the parameters by which the test is performed.
- It is possible to define:
  - the type of the standard: ASTM, UNI-EN or ISO
  - the type of the hammer: CHARPY or IZOD
  - the potential initial energy available (according to the used hammer)
  - if the absorbed Energy or resilience value has to be displayed
  - the temperature of the specimen
  - the specimen section
  - actual date and hour
- The tests results can be printed at any moment on any commercially available

parallel printer. The test conditions set in the SET-UP menu are printed in the test certificate.

- It is also possible to introduce an operator's name which will be printed at the footer together with the date and the hour.
- The operator has the possibility to exclude to print on the certificate the tests considered not valid or not significant.
- The test data can be transferred to a PC by a standard RS232 serial line for a further processing.
- The angular displacement of the hammer is measured by a high resolution encoder mounted on the pendulum rotation axis.
- By a pushbutton placed on the console, the operator activates a motorized hammer lift system which is an electromechanical system with front coupled teeth. This solution assures no friction during the semi-oscillating movement which is advantageous with respect to traditional clutch systems.
- A very important and appreciated feature, above all for cooling tests, is the automatic latching of the hammer after each test. In this way the time between one test and another is considerably reduced. Hammer unloading (taking the striker to the rest position), is performed automatically by pressing a pushbutton placed on the console.

TIA1.2.1.1 **Complete direct calibration according to UNI EN ISO 148-2 and ASTM E 23-00a Standards, and issue of 2 "E.A." (European Accreditation) certificates**

NOTE: If, according to the Standards, you require calibration to be done in your plant, we specify that the quoted price are covering the calibration only. Travelling and living expenses of our technician and of the eventual despatch of the necessary tooling are excluded.

TIA1.2.1.2 **Direct complete calibration according UNI EN ISO 148-2 Standards, and issue of a "E.A." (European Accreditation) certificate**

NOTE: If, according to the Standards, you require calibration to be done in your plant, we specify that the quoted price are covering the calibration only. Travelling and living expenses of our technician and of the eventual despatch of the necessary tooling are excluded.

TIA1.2.1.3 **Calibration direct complete according ASTM E 23-00a, and issue of a "E.A. " (European Accreditation) certificate**

NOTE: If, according to the Standards, you require calibration to be done in your plant, we specify that the quoted price are covering the calibration only. Travelling and living expenses of our technician and of the eventual despatch of the necessary tooling are excluded.

TIA1.2.1.4 **Simplified direct alibration according to UNI EN ISO 148-2 , and issue of a "E.A." (European Accreditation) certificate**

NOTE: If, according to the Standards, you require calibration to be done in your plant, we specify that the quoted price are covering the calibration only. Travelling and living expenses of our technician and of the eventual despatch of the necessary tooling are excluded.

TIA1.2.1.5 **Indirect calibration, according to UNI EN ISO 148-2 with rupture of 2 sets of sample specimens (excluded) together with direct verification and issue of a "E.A." (European Accreditation) certificate**

NOTE 1: If, according to the Standards, you require calibration to be done in your plant, we specify that the quoted price are covering the calibration only. Travelling and living expenses of our technician and of the eventual despatch of the necessary tooling are excluded.

NOTE 2 BCR or NIST test pieces are excluded from this item.

TIA1.2.2.1 **Set of 5 BCR sample specimens of 30 Joule**

TIA1.2.2.2 **Set of 5 BCR sample specimens of 60 Joule**

TIA1.2.2.3 **Set of 5 BCR sample specimens of 80 Joule**

TIA1.2.2.4 **Set of 5 BCR sample specimens of 120 Joule**

TIA1.2.3 **Set of NIST sample specimens including 5+5 specimens, available for low and high energy according to the instrument**

- Available sets:
  - Nº 5 SRMS 2092 low energy specimens
  - Nº 5 SRMS 2096 high energy specimens

TIA2.1.0 **150 J Charpy hammer**

-	Impact capacity	Joule	150
-	Hammer speed at impact	m/sec	5,5
-	Distance between supports adjustable from	mm.	30 to 40
-	Specimen height	mm.	10
-	It is necessary to add a striker according to EN / ASTM /JIS.		

TIA2.1.1 **300 J Charpy hammer**

-	Impact capacity	Joule	300
-	Hammer speed at impact	m/s	5,5
-	Distance between supports adjustable from	mm.	30 to 40
-	Specimen height	mm.	10
-	It is necessary to add a striker according to EN / ASTM / JIS Standards		

TIA2.1.2 **450 J Charpy hammer**

-	Impact capacity	Joule	450
-	Hammer speed at impact	m/sec	5,5
-	Distance between supports adjustable from	mm.	30 to 40
-	Specimen height	mm.	10
-	It is necessary to add a striker according to EN / ASTM / JIS Standards.		

TIA2.1.3 **750 J Charpy hammer**

-	Impact capacity	Joule	750
-	Hammer speed at impact	m/sec	5,5
-	Distance between supports adjustable from	mm.	30 to 40
-	Specimen height	mm.	10

- It is necessary to foresee a striker according to EN / ASTM /JIS Standards.

TIA2.2.0.1 **Striker for tests according to UNI EN ISO 148-2 for hammer of 150 J**

- The construction features of the striker and of the anvils are realized to meet the requirements of the different international standards.

TIA2.2.0.2 **Striker for tests according ASTM-E-23 for hammer of 150 J**

- The construction features of the striker and of the anvils are realized to meet the requirements of the ASTM standards.

TIA2.2.0.3 **Striker for tests according to JIS B 7722-99 for hammer of 150 J**

- The construction features of the striker and of the anvils are realized to meet the requirements of the JIS Standards.

TIA2.2.1.1 **Striker for tests according to UNI EN ISO 148-2 for hammer of 300 J**

- The construction features of the striker and of the anvils are realized to meet the requirements of the different international standards.

TIA2.2.1.2 **Striker for tests according to ASTM -E 23-00a for hammer of 300 J**

- The construction features of the striker and of the anvils are realized to meet the requirements of ASTM Standards.

TIA2.2.1.3 **Striker for tests according to JIS B 7722-99 for hammer of 300 J**

- The construction features of the striker and of the anvils are realized to meet the requirements of the JIS Standards.

TIA2.2.2.1 **Striker for tests according to UNI EN ISO 148-2 for hammer of 450 J**

- The construction features of the striker and of the anvils are realized to meet the requirements of the different international standards.

TIA2.2.2.2 **Striker for tests according to ASTM-E-23-00a for hammer of 450 J.**

- The construction features of the striker and of the anvils are realized to meet the requirements of ASTM Standards.

TIA2.2.2.3 **Striker for tests according to JIS B 7722-99 for hammer of 450 J**

- The construction features of the striker and of the anvils are realized to meet the requirements of the JIS Standards.

TIA2.2.3.1 **Striker for tests according to UNI EN ISO 148-2 for striker of 750 J**

- The construction features of the striker and of the anvils are realized to meet the requirements of the different International Standards.

TIA2.2.3.2 **Striker for tests according to ASTM E-23-00a for hammer of 750 J**

- The construction features of the striker and of the anvils are realized to meet the requirements of ASTM Standards.

TIA2.2.3.3 **Striker for tests according to JIS B 7722-99 for hammer of 750 J**

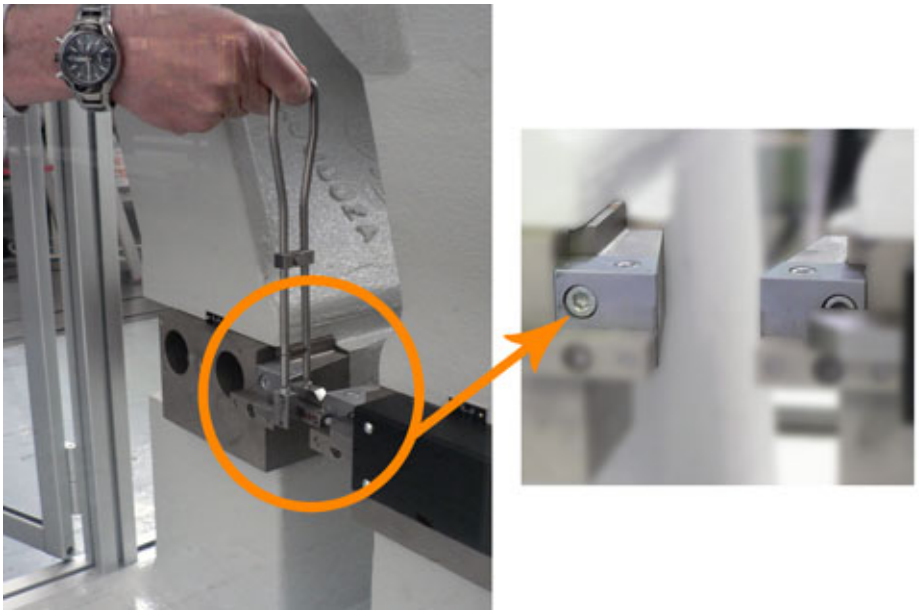
- The construction features of the striker and of the anvils are realized to meet the requirements of the JIS Standards.

TIA2.3.1 **150/300/450 J. Test supports Charpy according to UNI EN ISO 148-2 and ASTM-E23 Standards**

- For IMPACT of 150, 300, 450 J.
- To be completed with inserts Item 2.3.1.1

TIA2.3.1.1 **High Strength Charpy Inserts**

- The very good mechanical characteristics allow to obtain high resistance in time in order to avoid wearing and damages of the supports of the specimen which discharges its energy on the supports when subject to the mechanical shock of resistance.

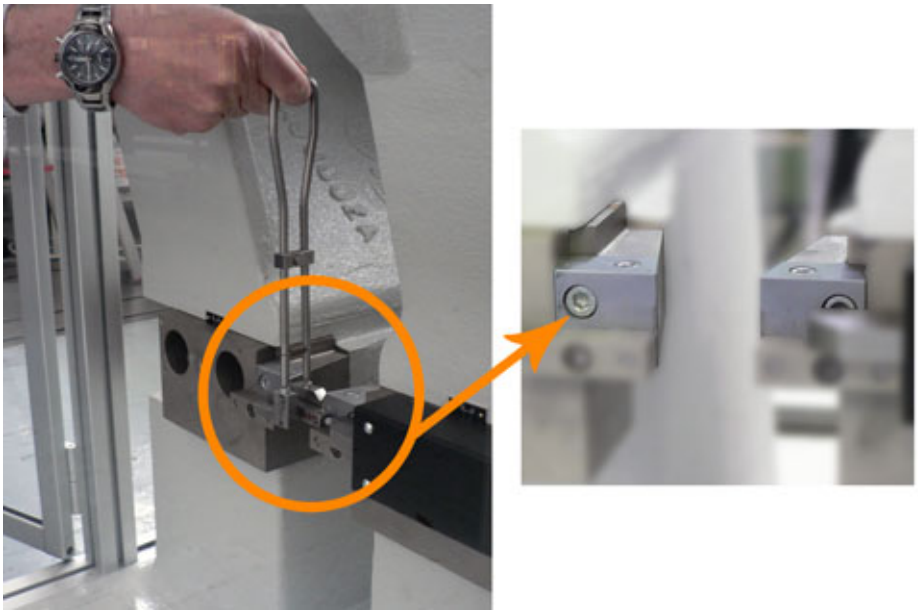


TIA2.3.2 **750 J Test supports Charpy according to UNI EN ISO 148-2 and ASTM-E-23 Standard**

- For IMPACT of 600 and 750 J.
- To be completed with inserts Item 2.3.2.1

TIA2.3.2.1 **High Strenght Charpy Inserts**

- The very good mechanical characteristics allow to obtain high resistance in time in order to avoid wearing and damages of the supports of the specimen which discharges its energy on the supports when subject to the mechanical shock of resistance.



TIA2.3.3 **Spacers for Charpy samples 7,5x10x55 mm. or 5x10x55 mm - Each sample size**

- Dimensions mm 7,5 x 10 x 55
  mm 5 x 10 x 55

TIA2.4 **IZOD set of 300 J, consisting of hammer and ASTM specimens support**

- Interchangeable with other hammers, equipped with the relevant specimen holder.(For specimens with square section 10x10 mm, type "D" and "X" - ASTM E23-00a Standard).

TIA2.4.1 **Support for IZOD round specimens type Y and Z Ø 11,43 mm**

- Suitable for round specimens IZOD type "Y" and "Z" Ø 11,43 mm
- According to ASTM E23-00a Standard.

TIA2.5.2 **Attachment for indirect tensile tests**

TIA2.7 **Pliers acc. to ASTM-E 23 for specimen aut. positioning and centering on supports (suitable for tests on room temperature, high and low temperature)**

- Suitable also for the picking up of the specimens from cryostats and/or a hot/cold box.

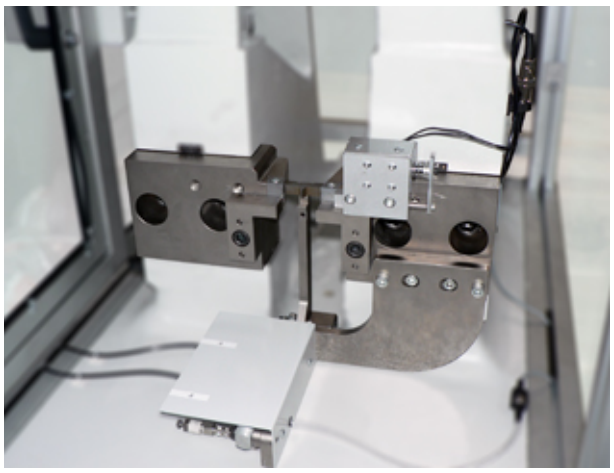
TIA2.8 **Pliers for the positioning of the specimens on the supports - The centering device is recommended with this option 2.8.1**

- Suitable also for the picking up of the specimens from cryostats and/or a hot/cold box
- We advise the use of the automatic centering device (Item 2.8.1) with this option.

TIA2.8.1 **Automatic specimen centering device, centering on specimen-end, automatically activated at door closing**

- This comprises a retractable arm which is active on door opening and de-activated when door is closed.
- This allows the operator to position the test sample with considerable speed and so reach the 5 second complete loading cycle.

TIA2.8.2 **Automatic specimen centering device, on sample V notch, automatically activated at door opening/closing**



- This comprises a V notch centering which is active on door opening and de-activated when door is closed.
- This allows the operator to position the test sample with considerable speed and so reach the 5 second complete loading cycle.

TIA2.9 **Protection guard rear door with folding opening, complete with safety electric interlock**

- The rear door with electrically interlocked opening helps the operator in the operations required for hammer and/or striker replacement. The standard pendulum machine is equipped with rear shell screwed to the main guard.

TIA3.1.2 **Software to acquire, store and display the data transmitted from IMPACT 300 - 450 - 750 to a PC**

- Program to receive the data transmitted from IMPACT, allowing to:
  - Display and print the results of the performed tests.
  - Store, for each test, up to 10 specimen data
  - Statistic control permitting the graphic display of the test results

- Store batches of tests in file log. Inside a log, it is possible to store data of batch description (up to 10 lines)

- Min. requirements of the PC (not included):
  - Operation system WINDOWS NT, WINDOWS XP
  - HD 1 GB
  - RAM 8 Mb
  - CD Rom
  - Video board SVGA
  - Free serial door COM1 (9 pin) for the connection with the IMPACT pendulum hammer
  - Installed mouse

TIA3.1.3 **Instrumentation Package for dynamic analysisi of absorbed energy**

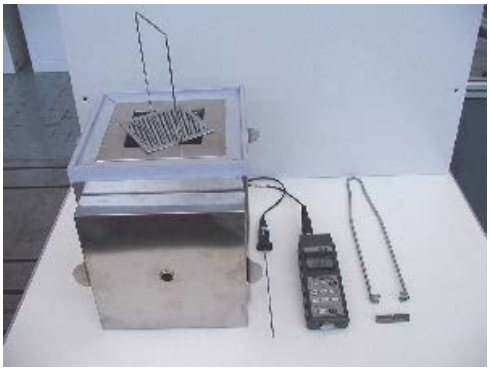
The package comprises:

- Instrumented package for Charpy tests.
- Striker fitted with strain guage transducer to acquire data relative to the impact on a test piece transmitted to an external software package which calculates results.
- Sample holders and supports
- Electronics for signal conditioning
- Test management software to:
  - Collect and display test data
  - Print test certificate
  - Create, store and recall a test archive
  - Statistical analysis of tests
  - Export data in Excel format
  - Verification of the strain gauge used

- This package of hardware and software used with the IMPACT 300 or 450 allows instrumented impact tests to be performed and to see the curve of the force of impact in relation to the displacement with flexion of the test piece.
- The instrumented test gives a graph of Load/time which can be viewed in a X/Y diagram expressed in kN/time
- A strain gauge signal conditioning card with 16 bit resolution and acquisition rate of 250 kHz is located inside a PC free slot.
- The card also functions as a source for trigger, pre-trigger and post-trigger signals, provides filtering and memory of points of the curve, meeting needs of Charpy test according to UNI EN ISO 14556:2003.

TIA4.1 **Cooling chamber for low temperature testing up to -80°C**

- Internal dimensions mm. 125 x 125 x 180 h. (Other on request)
- Cooling chamber allows to bring impact specimens to a low temperature. It includes a container and a thermo-insulated lid with a hole for the insertion of the digital thermometer.
- Built in stainless steel with polyurethane thermal insulator allowing a very good thermal insulation.
- It allows cooling of many specimens in its body.



TIA4.2 **Dry ice generator**

- Produces dry ice (solid carbon dioxide), starting from a liquid CO_2 bottle.
- Produces dry ice (solid carbon dioxide), starting from a liquid CO_2 bottle.
- The dry ice tablets weigh about 100 g each.

TIA4.3.1 **Portable indicator of temperature - 60°C**

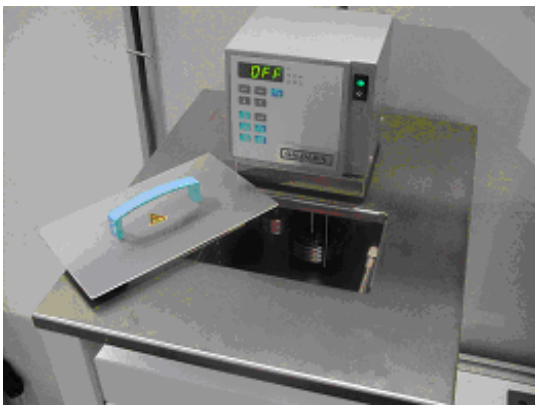
- Temperature range: -60 °C +400 °C

TIA4.3.2 **Portable indicator of temperature - 200°C**

- Temperature range: -200 °C +200 °C

TIA4.3.3 **Automatic refrigerated circulator system for Charpy/Izod specimen cooling, up to - 50°/+200 °C**

- Features:
  - Working temperature range °C -50 / +200
  - Temperature stability °C ±0,02
  - Interface RS 232 / 485
  - Security class 3
- Dimensions:
  - Height mm 180
  - Width mm 120
  - Depth mm 150
  - Weight ~ kg 58
- The system can cool or heat specimens using an automatic conditioning system
- Large basin depth to store many samples
- Proportional control of the cooling capability
- Display resolution 0,01°C
- Display LED+LCD back lighted with automatic controlled instructions
- Integrated programmer for 6 profiles / 60 sections each



TIA4.3.3.1 Automatic refrigerated circulator system for Charpy/Izod specimen cooling, up to -90°/+100 °C

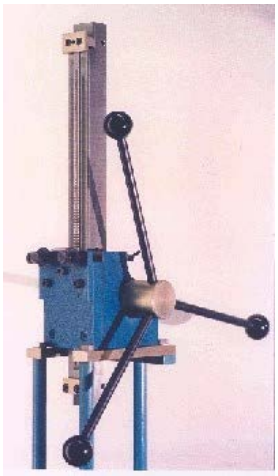
Automatic refrigerated circulator system for Charpy/Izod specimen cooling, up to -90°/+100 °C

- The system can cool or heat specimens using an automatic conditioning system
- Large basin depth to store many samples
- Proportional control of the cooling capability
- Display resolution 0,01°C
- Display LED+LCD back lighted with automatic controlled instructions
- Integrated programmer for 6 profiles / 60 sections each

- Features:
  - Working temperature range °C -90 / +100
  - Temperature stability °C ±0,02
  - Interface RS 232 / 485
  - Security class 3
- Dimensions:
  - Height mm 550
  - Width mm 610
  - Depth mm 900
  - Weight ~ kg 120

TIA5.1.1 **Manual broaching press, intended for bench mounting to perform notches on Charpy and Izod specimens**

- Machine dimensions
  - (height- width - depth): mm 635-432-178
  - Weight ~ kg 20
- Robust construction and intended for bench mounting.
- A rack with guide enables an alignment of the broach with respect to the specimen and the axial load application.
- An hand vice for fixing the specimen is built onto the machine body.



TIA5.1.2.1 **Broach for "V" notch - 2 mm depth**

- depth mm 2
- suitable for specimens with 10x10 mm square section, according to EN 10045/1 and ASTM-E 23-00a Standards.

- The tool is suitable to perform notches on materials with max. 42 Rockwell “C”

TIA5.1.2.2 **Broach for "V" notch - 3,3 mm depth - IZOD type Z**

- depth 3,3 mm
- for IZOD round specimens diam. 11,43 mm, "Z" type, according to ASTM-E 23-00a Standard.
- The tool is suitable to perform notches on materials with max. 42 Rockwell”C”

TIA5.1.2.3 **Broach for "U" notch - 5 mm depth**

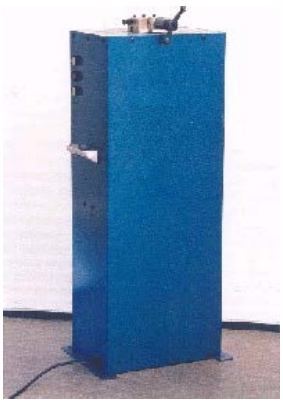
- depth mm 5
- for Charpy specimens with 10x10 mm square section, according to EN 10045/1 and ASTM-E 23-00a Standards.
- for Charpy specimens with 10x10 mm square section, according to EN 10045/1 and ASTM-E 23-00a Standards.
- The tool is suitable to perform notches on materials with max. 42 Rockwell “C”
- This broach notches in 2 operations to minimise the required effort and it is supplied with the necessary spacers for the second cutting.

TIA5.1.3.1 **Tooling for more V" notches - 2 mm depth - IZOD type X**

- Depth mm 2
- Suitable for IZOD specimens with 10x10 mm. square section, "X" type - Standard ASTM E23-00a
- The tool is suitable to perform notches on materials with max. 42 Rockwell “C”
- Constituted by a special positioning plate, provided with three holes and a reference pin, at regular intervals.

TIA5.2.1.1 **Standard motorized machine to perform notches on Charpy and Izod specimens**

- Notching time: ~ sec. 17
- Machine dimensions (height-width-depth)
- (without broach): mm 1037-457-333
- Weight: ~ kg 105
- Robust construction
- Hand vice for specimen fixing is built onto the machine.
- Controls by pushbuttons
- Operating with a single phase electric motor, 220 V./50 Hz. –
- It is suitable for Charpy and IZOD specimens.



TIA5.2.1.2 **Motorized machine with adjustable notching speed to make notches on Charpy and Izod specimens**

- Notching time: ~ sec. 17
- Machine dimensions: (height-width-depth)(without broach): mm 1037-457-333
- Weight: ~ kg 140
- Robust construction
- Hand vice for specimen fixing is built onto the machine.
- Controls by pushbuttons
- Operating with a single phase electric motor, 220 V./50 Hz. –
- It is suitable for Charpy and IZOD specimens.
- It allows to extend the broach life in case of very hard specimens (up to 42 HRC)

TIA5.2.2.1 **Broach for "V" notch - 2 mm depth**

- depth mm 2
- Suitable for specimens with 10x10 mm square section, according to EN 10045/1 and ASTM-E 23-00a Standards.
- Suitable for specimens with 10x10 mm square section, according to EN 10045/1 and ASTM-E 23-00a Standards.
- The tool is suitable to perform notches on materials with max. 42 Rockwell”C”

TIA5.2.2.2 **Broach for "V" notch - 3,3 mm depth - IZOD type Z**

- Depth mm 3,3
- Suitable for IZOD round specimens diam. 11,43 mm, "Z" type, according to ASTM-E 23-00a Standards.
- The tool is suitable to perform notches on materials with max. 42 Rockwell “C”

TIA5.2.2.3 **Broach for "U" notch - 5 mm depth**

- Depth mm 5
- for Charpy specimens with 10x10 mm square section, according to EN 10045/1 and ASTM-E 23-00a Standards.
- for Charpy specimens with 10x10 mm square section, according to EN 10045/1 and ASTM-E 23-00a Standards.
- The tool is suitable to perform notches on materials with max. 42 Rockwell “C”
- This broach notches in 2 operations to minimise the required effort and it is supplied with the spacers necessary for the second cut.

TIA5.2.3.1 **Tooling for more "V" notches - 2 mm depth - IZOD type X**

- depth mm 2
- Suitable for IZOD specimens with 10x10 mm square section, "X" type - ASTM E23-00a Standard,
- The tool is suitable to perform notches on materials with max. 42 Rockwell “C”
- Constituted by a special positioning plate, with 3 holes and reference pin, at regular intervals.

TIA5.2.3.2 **Toolig for single "V" notch - 3,3 mm depth**

- Depth 3,3 mm.
- for IZOD round specimens diam.11,43 mm., "Z" type - ASTM E23-00a Standard
- The tool is suitable to perform notches on materials with max. 42 Rockwell “C”
- Constituted by a special vice with oriented jaws.

TIA5.2.3.3 **Tooling for more "V" notches - 3,3 mm depth**

- depth mm 3,3
- Suitable for IZOD round specimens Ø 11,43 mm, type "Z" - ASTM E23-00a Standards.
- Suitable for IZOD round specimens Ø 11,43 mm, type "Z" - ASTM E23-00a Standards.
- The tool is suitable to perform notches on materials with max. 42 Rockwell “C”

TIA5.3.1 **Calibration device**

- Useful in case of frequent broach changes to accelerate tool setting time.

TIA6.1 **Machine with rotating device to prepare Charpy specimens**

- It enables to prepare Charpy square steel specimens with 10 mm. side complying with all International Standards, starting from rough samples with square section side up to 15 mm. or bars up to diam. 18 mm.
- It is suitable for bench mounting and requires electric connection only.
- The adopted technical solution, by an extremely rigid rotating fixture and the repetition of shearing head positioning, assures a remarkable accuracy with respect of the building tolerance. A second rotating fixture can be supplied (see pos. 6.2.1)
- Together with the machine the following items are supplied:
    - a positioning tooling of the rotating fixture to make the assembly easier.
    - one head with a set of 5 inserts of 4 SECO blade cutters
- Further sets can be supplied (see pos. 6.2.2)
- The available inserts allow to work specimens with a hardness up to 35 HRC

TIA6.2.1 **Additional rotating tooling with one set of accessories**

- including a set of accessories.
- This enables to increase the productivity, by assembling a set of specimens during the operation with another tooling and consequently reducing the machine stop time.

TIA6.2.2 **Additional set of 5 SECO inserts**

TIA7.1.1 **Foundation plinth for instruments up to 450 J**

TIA7.1.2 **Foundation plinth for instruments above 450 J**