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Physical Testing Machines



Physical Testing Machines



echoLAB Material Testing products are developed, produced, tested and guaranteed by the Italian manufacturer DEVCO srl, to assure quality, functionality, innovation and customization. The echoLAB brand is a reliable and qualified partner in the **metallurgical** and **physical testing** laboratories field worldwide, offering expertise, know-how and best value for money



echoLAB EXPERIENCE



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Dedicated training and availability of spare parts and consumables contribute to ensure the long-term performance of the echoLAB equipment.







echoLAB Physical Testing Machines include a large quantity of machines for **destructive mechanical tests**, such as Electromechanical and Servo-Hydraulic Universal Testing Machines, Fatigue Testing Machines, Impact Testing Machines and Bending Machines.

Our echoLAB Fatigue Testing Machines and Torsion Testing are fully **tailored to the customers' needs**, providing them the best solutions.

Our echoLAB Physical Testing Machines are equipped with accessories and analyzing software and are ideal to perform complex tasks in the different fields of materials and components testing, in accordance with the major international standards.

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ON-SITE ACTIVITIES

Installation, Start up and Training

- In major cases, Physical Testing Machines require pre-usage activities, such as site preparation, installation and training for the operators.
- > Our sales engineers are available to guide the customers towards the proper configuration of the machine, according to their specific needs.
- All necessary information related to site preparation (foundations, electrical/pneumatic supply requirements, positioning, connections) will be provided before the installation and commissioning.
- > All above on-site activities will be managed locally by our technical team of qualified engineers, who are able to supply also an **accurate training.**
- >Thanks to our theoretical and operative training, the operator will acquire all the necessary skills to perform tests on the machine and to master the software's use according to the normes.







Summary







TENSILE TEST

Tensile testing is one of the simplest and most widely used destructive mechanical testing method that subjects a material sample to uniaxial tension until failure.

A machined specimen is placed in the testing machine and load is applied. An extensioneter is used to measure elongation.

The stress obtained at the highest applied force is the Tensile Strength. The Yield Strength is the stress at which a prescribed amount of plastic deformation is produced. Elongation describes the extent to which the specimen stretched before fracture.

Information concerning the strength, stiffness, and ductility of a material can be obtained from a tensile test. Variations of the tensile testing include : room temperature, low and high temperature, shear tests, etc.

Many performance parameters can be measured by tensile testing. The resulting data, a curve of force vs extension, shows the tensile profile of the test up to the point where the specimen breaks. Along this tensile profile there are many points of interest, chief among them the elastic limit and force to break or failure point.

CUTTING BENDING COMPRESSION TENSILE DUMBBELL SPECIMEN CUT

TEST

3 MARKING



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Servo-Hydraulic Universal Testing Machines

- > HTM series includes a complete range of servo-hydraulic Universal Testing Machines. All models are equipped with lead screw driven crosshead to adjust the test space, quick return hydraulic valve for higher throughput, high quality encoder for high crosshead position measurement accuracy. Furthermore the automatic limit system checking crosshead position, overload, over temperature and other parameters.
- Equipped with load cells from 200 to 2000kN, HTM series allow to perform wide range of test on different kind of materials such as: metals, composites, fasteners, rebars, chains, welds, pipes etc.
- > Designed to minimize load frame stored energy, while producing reliable, stable and accurate load, strain and modulus values, thanks to high-stiffness six column load frame design, precision guide columns and base beam. All models are dual zone test space to reduce set-up time.

Select the correct servo-hydraulic universal testing machine by choosing:

- > Frame type according to the load cell capacity
- > Tensile jaws according to the specimen material and dimensions
- > Compression fixture (if needed) in according to specimen dimensions
- > Bending fixture (if needed) in according to needed bend type (three or four points)
- > Shearing fixture (if needed) in according to specimen dimension
- > Extensometer according to standards indications

- > The system can return automatically to the starting position after test ends.
- American bi-directional load cells allows tension and compression tests with high accuracy, precision and repeatability.
- > High speed and closed loop controller of load displacement and elongation, with over-load, over-current, over- voltage, over-speed, and over-travel protection.
- Built-in port for PC communication, by RS232 or USB.
- Remote control keypad, with functions of Up, Down, Stop, Jog up, Jog down and Test start simplify operations
- > All models supported by test software to show and analyse graphs and all tests parameters.



Main frame

Applicable standards:

> EN 10002-2	> ASTM E8
> EN 10002-4	> ASTM E83
> ISO 6892	> DIN 51221
> ISO 6935	> BS 4449
> ISO 9513	> BS 4482
> ASTM A370	> BS 4483
> ASTM A1034	> BS 8110
> ASTM E4	



HTM series

HTM double column series, from 200kN to 2000kN. Designed with strong structure to ensure the linear crosshead travel.

High accuracy crosshead alignment reducing variability in measurement .

> HTMs from 200kN to 2000kN are dual space type.

- > Wide range of test accessories allows to meets test requirements of different standards and for different materials.
- > HTM series is suitable to test: metals, reinforced plastics, wires, composite materials, etc.



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Included accessories

Compression fixtures Hydraulic wedge action grips Anchor bolts

Model		HTM 200	HTM 300	HTM 500	HTM 600	HTM 1000	HTM 1200	HTM 2000
Load cell								
Lood consolity	kN	200	300	500	600	1000	1200	2000
	kgf	20000	30000	50000	60000	100000	120000	200000
Calibration standard	-		ISO 7500					
Calibration class	-				0.5			
Accuracy grade	%							
Testing load accuracy	%				0.5.5			
Deformation accuracy	%				0.5 of reading			
Displacement accuracy	%							
Force range	FS		1%-100%					
Force resolution	FS				1/500000			
Force accuracy	%				0.5 of reading			
Force loading speed	FS/s				0.02%-2%			
Extension range	%				1%-100%			
Extension accuracy	%		±0.5					
Extension resolution	-			1/50	00000 of max exter	nsion		
Controller								
Sampling frequency	Hz		Up to 1000					
Closed loop control frequency	Hz				Up to 1000			
Resolution	bit	20						
Software								
Software	-	echoTestPilot						
Main frame								
Frame type	-	Floor type	4 columns		F	Floor type 6 columr	IS	
Piston speed	mm/min	0-	180	0-	140	0-	.90	0-70
Piston travel	mm	1	50			250		
Tensile space	mm	5	20	7	10	7	60	920
Compression space	mm	5	20	7	00	6	30	750
Distance between columns	mm	4	05		4	30		640
Tensile grip jaws	mm		One pai	r is included with m	achine and choose	able in the accesso	ries table	
Compression fixture	mm	Ø	120	Ø	150	200	x200	ø240
Power consumption	kW		5			6		8
Power supply	V-Hz-ph	oh 400-50/60-3						
Hydraulic unit dimensions	mm	1150x600x900						
Hydraulic unit flow rate	l/min	3	5.5			5		7.5
Dimensions	mm	820x57	70x1955	940x65	50x2400	1020x6	70x2600	1370x820x3300
Weight	kg	1:	500	25	500	35	500	8000



HTM series

Accessories

Hydraulic wedge action tensile grips

HTG20201Tensile grip jaws for round specimen 40-a20mmHTM 200For metal and non-metal specimenHTG20203Tensile grip jaws for flat specimen 2-33mmHTM 200For metal and non-metal specimenHTG20204Tensile grip jaws for flat specimen 42-a20mmHTM 300For metal and non-metal specimenHTG303002Tensile grip jaws for round specimen a02-a32mmHTM 300For metal and non-metal specimenHTG303003Tensile grip jaws for round specimen a02-a32mmHTM 300For metal and non-metal specimenHTG303003Tensile grip jaws for round specimen a02-a32mmHTM 300For metal and non-metal specimenHTG303003Tensile grip jaws for round specimen a19-a28mmHTM 300For metal and non-metal specimenHTG305001Tensile grip jaws for round specimen a19-a48mmHTM 500For metal and non-metal specimenHTG405003Tensile grip jaws for round specimen a16-a28mmHTM 500For metal and non-metal specimenHTG405004Tensile grip jaws for round specimen a16-a28mmHTM 500For metal and non-metal specimenHTG405003Tensile grip jaws for round specimen a16-a28mmHTM 500For metal and non-metal specimenHTG405004Tensile grip jaws for flat specimen a16-a30mmHTM 600For metal and non-metal specimenHTG405005Tensile grip jaws for flat specimen a16-a30mmHTM 600For metal and non-metal specimenHTG10002Tensile grip jaws for flat specimen a45-a55mmHTM 1000For metal and non-metal specimenHTG10002Tensile grip jaws for flat specimen a45-a55mmHTM 1000For metal	Model	Description	Suitable for:	Application
HTG20202Tensile grip jaws for round specimen 22-32mmHTM 200For metal and non-metal specimenHTG20204Tensile grip jaws for flat specimen 13-25mmHTM 200For metal and non-metal specimenHTG30301Tensile grip jaws for round specimen 10-020mmHTM 300For metal and non-metal specimenHTG30302Tensile grip jaws for round specimen 13-25mmHTM 300For metal and non-metal specimenHTG30304Tensile grip jaws for flat specimen 21-3mmHTM 300For metal and non-metal specimenHTG50502Tensile grip jaws for round specimen 10-018mmHTM 500For metal and non-metal specimenHTG50503Tensile grip jaws for round specimen 10-018mmHTM 500For metal and non-metal specimenHTG60503Tensile grip jaws for round specimen 10-329mmHTM 500For metal and non-metal specimenHTG60503Tensile grip jaws for round specimen 10-329mmHTM 500For metal and non-metal specimenHTG60503Tensile grip jaws for round specimen 10-329mmHTM 600For metal and non-metal specimenHTG60503Tensile grip jaws for round specimen 10-329mmHTM 600For metal and non-metal specimenHTG60504Tensile grip jaws for round specimen 10-30mmHTM 1000For metal and non-metal specimenHTG10001Tensile grip jaws for flat specimen 15-30mmHTM 1000For metal and non-metal specimenHTG10002Tensile grip jaws for flat specimen 45-655mmHTM 1000For metal and non-metal specimenHTG10004Tensile grip jaws for flat specimen 45-655mmHTM 1000For metal and non-metal specimen<	HTG02001	Tensile grip jaws for round specimen ø10-ø20mm		
HTG2003Tensile grip jaws for flat specimen 13-25mmHTM 200For metal and non-metal specimenHTG3001Tensile grip jaws for round specimen a20-a32mmHTM 300For metal and non-metal specimenHTG3002Tensile grip jaws for round specimen a20-a32mmHTM 300For metal and non-metal specimenHTG3003Tensile grip jaws for round specimen a20-a32mmHTM 300For metal and non-metal specimenHTG3004Tensile grip jaws for round specimen a20-a32mmHTM 300For metal and non-metal specimenHTG3004Tensile grip jaws for round specimen a18-a29mmHTM 500For metal and non-metal specimenHTG605004Tensile grip jaws for round specimen a18-a29mmHTM 500For metal and non-metal specimenHTG606002Tensile grip jaws for round specimen a18-a29mmHTM 600For metal and non-metal specimenHTG606002Tensile grip jaws for round specimen a18-a29mmHTM 600For metal and non-metal specimenHTG606005Tensile grip jaws for round specimen a18-a29mmHTM 600For metal and non-metal specimenHTG606005Tensile grip jaws for round specimen a18-a29mmHTM 600For metal and non-metal specimenHTG100003Tensile grip jaws for round specimen a21-60mmHTM 1000For metal and non-metal specimenHTG10001Tensile grip jaws for round specimen a18-a29mmHTM 1000For metal and non-metal specimenHTG10001Tensile grip jaws for round specimen a18-a90mmHTM 1000For metal and non-metal specimenHTG10001Tensile grip jaws for round specimen a15-a90mmHTM 1000For metal	HTG02002	Tensile grip jaws for round specimen ø20-ø32mm		For motal and non-motal anasiman
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HTG05004Tensile grip jaws for flat specimen 2-16mmHTG05005Tensile grip jaws for flat specimen 16-30mmHTG06001Tensile grip jaws for round specimen ø10-ø18mmHTG06002Tensile grip jaws for round specimen ø18-ø29mmHTG06003Tensile grip jaws for round specimen ø29-ø40mmHTG06004Tensile grip jaws for round specimen ø29-ø40mmHTG06005Tensile grip jaws for round specimen ø16-30mmHTG06006Tensile grip jaws for round specimen ø16-30mmHTG10001Tensile grip jaws for round specimen ø16-30mmHTG10002Tensile grip jaws for round specimen ø30-ø45mmHTG10003Tensile grip jaws for round specimen ø45-ø30mmHTG10004Tensile grip jaws for round specimen ø45-ø55mmHTG10005Tensile grip jaws for round specimen ø45-ø55mmHTG10005Tensile grip jaws for round specimen ø30-ø45mmHTG12001Tensile grip jaws for round specimen ø30-ø45mmHTG12002Tensile grip jaws for round specimen ø30-ø45mmHTG12003Tensile grip jaws for round specimen ø30-ø45mmHTG12004Tensile grip jaws for round specimen ø30-ø45mmHTG12005Tensile grip jaws for round specimen ø30-ø45mmHTG12004Tensile grip jaws for round specimen ø30-ø45mmHTG12005Tensile grip jaws for round specimen ø20-ø40mmHTG12004Tensile grip jaws for round specimen ø20-ø40mmHTG12005Tensile grip jaws for round specimen ø20-ø40mmHTG20004Tensile grip jaws for round specimen ø20-ø40mmHTG20005Tensile grip jaws for flat specimen 040-ø60mmHTG20006 <td< td=""><td>HTG05003</td><td>Tensile grip jaws for round specimen ø29-ø40mm</td><td>HTM 500</td><td>For metal and non-metal specimen</td></td<>	HTG05003	Tensile grip jaws for round specimen ø29-ø40mm	HTM 500	For metal and non-metal specimen
HTG05005Tensile grip jaws for flat specimen 16-30mmHTG06001Tensile grip jaws for round specimen 010-018mmHTG06002Tensile grip jaws for round specimen 018-029mmHTG06003Tensile grip jaws for round specimen 029-040mmHTG06004Tensile grip jaws for flat specimen 0.216mmHTG06005Tensile grip jaws for flat specimen 16-30mmHTG10001Tensile grip jaws for round specimen 15-030mmHTG10002Tensile grip jaws for round specimen 030-045mmHTG10003Tensile grip jaws for round specimen 030-045mmHTG10004Tensile grip jaws for round specimen 030-045mmHTG10005Tensile grip jaws for round specimen 030-045mmHTG10005Tensile grip jaws for round specimen 030-045mmHTG10005Tensile grip jaws for round specimen 2-20mmHTG10005Tensile grip jaws for round specimen 030-045mmHTG10005Tensile grip jaws for round specimen 030-045mmHTG12006Tensile grip jaws for round specimen 030-045mmHTG12007Tensile grip jaws for round specimen 030-045mmHTG12008Tensile grip jaws for round specimen 030-045mmHTG12004Tensile grip jaws for round specimen 030-045mmHTG12005Tensile grip jaws for round specimen 020-040mmHTG12005Tensile grip jaws for round specimen 020-040mmHTG20001Tensile grip jaws for round specimen 020-040mmHTG20003Tensile grip jaws for round specimen 040-060mmHTG20004Tensile grip jaws for round specimen 040-060mmHTG20005Tensile grip jaws for round specimen 040-060mmHTG20006T	HTG05004	Tensile grip jaws for flat specimen 2-16mm		
HTG06001Tensile grip jaws for round specimen ø10-ø18mmHTG06002Tensile grip jaws for round specimen ø18-ø29mmHTG06003Tensile grip jaws for round specimen ø20-ø40mmHTG06004Tensile grip jaws for flat specimen 2-16mmHTG06005Tensile grip jaws for flat specimen 2-16mmHTG06005Tensile grip jaws for round specimen ø16-ø30mmHTG10001Tensile grip jaws for round specimen ø30-ø45mmHTG10002Tensile grip jaws for round specimen ø30-ø45mmHTG10003Tensile grip jaws for round specimen ø30-ø45mmHTG10004Tensile grip jaws for flat specimen 2-20mmHTG10005Tensile grip jaws for round specimen ø15-ø30mmHTG10004Tensile grip jaws for round specimen ø15-ø30mmHTG10005Tensile grip jaws for round specimen ø30-ø45mmHTG10004Tensile grip jaws for round specimen ø15-ø30mmHTG10005Tensile grip jaws for round specimen ø30-ø45mmHTG12004Tensile grip jaws for round specimen ø30-ø45mmHTG12005Tensile grip jaws for round specimen ø2-ø40mmHTG12004Tensile grip jaws for round specimen ø2-ø40mmHTG12005Tensile grip jaws for round specimen ø2-ø40mmHTG12004Tensile grip jaws for round specimen ø2-ø40mmHTG20005Tensile grip jaws for round specimen ø2-ø40mmHTG20005Tensile grip jaws for round specimen ø40-ø60mmHTG20005Tensile grip jaws for round specimen ø40-ø60mmHTG20004Tensile grip jaws for round specimen ø40-ø60mmHTG20005Tensile grip jaws for round specimen ø40-ø60mmHTG20006Tensi	HTG05005	Tensile grip jaws for flat specimen 16-30mm		
HTG06002Tensile grip jaws for round specimen ø18-ø29mmHTM 600For metal and non-metal specimenHTG06003Tensile grip jaws for flat specimen 2-16mmHTM 600For metal and non-metal specimenHTG06005Tensile grip jaws for flat specimen 16-30mmHTM 600For metal and non-metal specimenHTG10001Tensile grip jaws for round specimen ø15-ø30mmHTM 1000For metal and non-metal specimenHTG10002Tensile grip jaws for round specimen ø15-ø30mmHTM 1000For metal and non-metal specimenHTG10003Tensile grip jaws for round specimen ø30-ø45mmHTM 1000For metal and non-metal specimenHTG10004Tensile grip jaws for flat specimen 2-20mmFor metal and non-metal specimenHTG10005Tensile grip jaws for round specimen ø15-ø30mmFor metal and non-metal specimenHTG10004Tensile grip jaws for round specimen ø15-ø30mmFor metal and non-metal specimenHTG12005Tensile grip jaws for round specimen ø15-ø30mmFor metal and non-metal specimenHTG12004Tensile grip jaws for round specimen ø20-ø40mmFor metal and non-metal specimenHTG12005Tensile grip jaws for round specimen ø20-ø40mmFor metal and non-metal specimenHTG20004Tensile grip jaws for round specimen ø40-ø60mmFor metal and non-metal specimenHTG20005Tensile grip jaws for round specimen ø40-ø60mmFor metal and non-metal specimenHTG20004Tensile grip jaws for round specimen ø40-ø60mmFor metal and non-metal specimenHTG20005Tensile grip jaws for round specimen ø40-ø60mmFor metal and non-metal specimen <td>HTG06001</td> <td>Tensile grip jaws for round specimen ø10-ø18mm</td> <td></td> <td></td>	HTG06001	Tensile grip jaws for round specimen ø10-ø18mm		
HTG06003Tensile grip jaws for round specimen 29-ø40mmHTM 600For metal and non-metal specimenHTG06004Tensile grip jaws for falt specimen 2-16mmHTM 600For metal and non-metal specimenHTG06005Tensile grip jaws for falt specimen 16-30mmHTG06005Tensile grip jaws for round specimen 915-ø30mmHTG10001Tensile grip jaws for round specimen 930-ø45mmHTM 1000For metal and non-metal specimenHTG10003Tensile grip jaws for round specimen 945-ø55mmHTM 1000For metal and non-metal specimenHTG10004Tensile grip jaws for falt specimen 2-20mmFor metal and non-metal specimenHTG12005Tensile grip jaws for round specimen 915-ø30mmHTM 1000HTG12002Tensile grip jaws for round specimen 920-ø40mmFor metal and non-metal specimenHTG12003Tensile grip jaws for round specimen 930-ø45mmHTM 1200HTG12004Tensile grip jaws for round specimen 930-ø45mmHTM 1200HTG12005Tensile grip jaws for round specimen 930-ø45mmHTM 1200HTG12004Tensile grip jaws for round specimen 920-ø40mmHTM 1200HTG12005Tensile grip jaws for round specimen 920-ø40mmHTM 1200HTG20004Tensile grip jaws for round specimen 920-ø40mmHTM 2000HTG20005Tensile grip jaws for round specimen 920-ø40mmHTM 2000HTG20004Tensile grip jaws for round specimen 920-ø40mmHTM 2000HTG20005Tensile grip jaws for falt specimen 10-40mmHTM 2000HTG20005Tensile grip jaws for falt specimen 10-40mmFor metal and non-metal specimen <tr< td=""><td>HTG06002</td><td>Tensile grip jaws for round specimen ø18-ø29mm</td><td></td><td></td></tr<>	HTG06002	Tensile grip jaws for round specimen ø18-ø29mm		
HTG06004Tensile grip jaws for flat specimen 2-16mmHTG06005Tensile grip jaws for flat specimen 16-30mmHTG10001Tensile grip jaws for round specimen ø15-ø30mmHTG10002Tensile grip jaws for round specimen ø30-ø45mmHTG10004Tensile grip jaws for round specimen ø45-ø55mmHTG10005Tensile grip jaws for flat specimen 2-00mmHTG10005Tensile grip jaws for round specimen 915-ø30mmHTG10005Tensile grip jaws for round specimen 915-ø30mmHTG12001Tensile grip jaws for round specimen 915-ø30mmHTG12002Tensile grip jaws for round specimen 915-ø30mmHTG12003Tensile grip jaws for round specimen 915-ø30mmHTG12004Tensile grip jaws for round specimen 915-ø30mmHTG12005Tensile grip jaws for round specimen 920-940mmHTG12004Tensile grip jaws for round specimen 920-940mmHTG12005Tensile grip jaws for round specimen 920-940mmHTG20001Tensile grip jaws for round specimen 920-940mmHTG20002Tensile grip jaws for round specimen 920-940mmHTG20003Tensile grip jaws for round specimen 920-940mmHTG20004Tensile grip jaws for round specimen 920-940mmHTG20005Tensile grip jaws for round specimen 940-960mmHTG20004Tensile grip jaws for round specimen 940-960mmHTG20005Tensile grip jaws for round specimen 940-960mmHTG20004Tensile grip jaws for flat specimen 10-40mmHTG20005Tensile grip jaws for flat specimen 10-40mmHTG20005Tensile grip jaws for flat specimen 10-40mmHTG20005Tensile	HTG06003	Tensile grip jaws for round specimen ø29-ø40mm	HTM 600	For metal and non-metal specimen
HTG06005Tensile grip jaws for flat specimen 16-30mmHTG10001Tensile grip jaws for round specimen ø15-ø30mmHTG10002Tensile grip jaws for round specimen ø30-ø45mmHTM 1000For metal and non-metal specimenHTG10003Tensile grip jaws for round specimen ø45-ø55mmHTM 1000For metal and non-metal specimenHTG10004Tensile grip jaws for flat specimen 2-20mmHTM 1000For metal and non-metal specimenHTG10005Tensile grip jaws for flat specimen 20-40mmHTM 1000For metal and non-metal specimenHTG12002Tensile grip jaws for round specimen ø15-ø30mmHTM 1200For metal and non-metal specimenHTG12003Tensile grip jaws for round specimen ø15-ø30mmHTM 1200For metal and non-metal specimenHTG12004Tensile grip jaws for round specimen ø20-ø40mmHTM 1200For metal and non-metal specimenHTG20005Tensile grip jaws for round specimen ø20-ø40mmHTM 1200For metal and non-metal specimenHTG20004Tensile grip jaws for round specimen ø20-ø40mmHTM 2000For metal and non-metal specimenHTG2003Tensile grip jaws for round specimen ø20-ø40mmHTM 2000For metal and non-metal specimenHTG2004Tensile grip jaws for round specimen ø40-ø60mmHTM 2000For metal and non-metal specimenHTG2003Tensile grip jaws for flat specimen 10-40mmHTM 2000For metal and non-metal specimenHTG2005Tensile grip jaws for flat specimen 10-40mmHTM 2000For metal and non-metal specimen	HTG06004	Tensile grip jaws for flat specimen 2-16mm		
HTG10001Tensile grip jaws for round specimen ø15-ø30mmHTG10002Tensile grip jaws for round specimen ø30-ø45mmHTG10003Tensile grip jaws for round specimen ø45-ø55mmHTG10004Tensile grip jaws for falt specimen 2-20mmHTG10005Tensile grip jaws for falt specimen 20-40mmHTG12001Tensile grip jaws for round specimen ø15-ø30mmHTG12002Tensile grip jaws for round specimen ø30-ø45mmHTG12003Tensile grip jaws for round specimen ø30-ø45mmHTG12004Tensile grip jaws for round specimen ø45-ø55mmHTG1205Tensile grip jaws for round specimen ø45-ø55mmHTG12004Tensile grip jaws for round specimen ø20-ø40mmHTG20005Tensile grip jaws for round specimen ø20-ø40mmHTG20002Tensile grip jaws for round specimen ø20-ø40mmHTG20003Tensile grip jaws for round specimen ø40-ø60mmHTG20004Tensile grip jaws for round specimen ø60-ø80mmHTG2005Tensile grip jaws for falt specimen 10-40mmHTG2005Tensile grip jaws for falt specimen 10-40mmHTG2005Tensile grip jaws for falt specimen 40-70mm	HTG06005	Tensile grip jaws for flat specimen 16-30mm		
HTG10002Tensile grip jaws for round specimen ø30-ø45mmHTM 1000For metal and non-metal specimenHTG10003Tensile grip jaws for flat specimen 2-20mmHTM 1000For metal and non-metal specimenHTG10005Tensile grip jaws for flat specimen 20-40mmHTM 1000For metal and non-metal specimenHTG12001Tensile grip jaws for round specimen ø15-ø30mmHTM 1200For metal and non-metal specimenHTG12002Tensile grip jaws for round specimen ø30-ø45mmHTM 1200For metal and non-metal specimenHTG12003Tensile grip jaws for round specimen ø45-ø55mmHTM 1200For metal and non-metal specimenHTG12004Tensile grip jaws for flat specimen 2-20mmHTM 1200For metal and non-metal specimenHTG2005Tensile grip jaws for round specimen ø45-ø55mmHTM 1200For metal and non-metal specimenHTG2001Tensile grip jaws for round specimen ø40-ø60mmHTM 1200For metal and non-metal specimenHTG2002Tensile grip jaws for round specimen ø40-ø60mmHTM 2000For metal and non-metal specimenHTG2003Tensile grip jaws for round specimen ø40-ø60mmHTM 2000For metal and non-metal specimenHTG2004Tensile grip jaws for flat specimen 10-40mmHTM 2000For metal and non-metal specimenHTG2005Tensile grip jaws for flat specimen 10-40mmHTM 2000For metal and non-metal specimen	HTG10001	Tensile grip jaws for round specimen ø15-ø30mm		
HTG10003Tensile grip jaws for round specimen ø45-ø55mmHTM 1000For metal and non-metal specimenHTG10004Tensile grip jaws for flat specimen 2-20mmHTM 1000For metal and non-metal specimenHTG10005Tensile grip jaws for flat specimen 20-40mmHTM 1000For metal and non-metal specimenHTG12001Tensile grip jaws for round specimen ø15-ø30mmHTM 1200For metal and non-metal specimenHTG12002Tensile grip jaws for round specimen ø30-ø45mmHTM 1200For metal and non-metal specimenHTG12003Tensile grip jaws for round specimen ø45-ø55mmHTM 1200For metal and non-metal specimenHTG12004Tensile grip jaws for flat specimen 2-20mmHTM 1200For metal and non-metal specimenHTG2005Tensile grip jaws for round specimen ø20-ø40mmHTM 1200For metal and non-metal specimenHTG2002Tensile grip jaws for round specimen ø20-ø40mmHTM 2000For metal and non-metal specimenHTG2003Tensile grip jaws for round specimen ø40-ø60mmHTM 2000For metal and non-metal specimenHTG2004Tensile grip jaws for round specimen ø40-ø60mmHTM 2000For metal and non-metal specimenHTG2004Tensile grip jaws for flat specimen 10-40mmHTM 2000For metal and non-metal specimenHTG2005Tensile grip jaws for flat specimen 40-70mmHTM 2000For metal and non-metal specimen	HTG10002	Tensile grip jaws for round specimen ø30-ø45mm		
HTG10004Tensile grip jaws for flat specimen 2-20mmHTG10005Tensile grip jaws for flat specimen 20-40mmHTG12001Tensile grip jaws for round specimen ø15-ø30mmHTG12002Tensile grip jaws for round specimen ø30-ø45mmHTG12003Tensile grip jaws for round specimen ø45-ø55mmHTG12004Tensile grip jaws for flat specimen 2-20mmHTG12005Tensile grip jaws for flat specimen 2-20mmHTG12005Tensile grip jaws for flat specimen 2-40mmHTG20001Tensile grip jaws for round specimen ø20-ø40mmHTG20002Tensile grip jaws for round specimen ø40-ø60mmHTG20003Tensile grip jaws for round specimen ø40-ø60mmHTG20004Tensile grip jaws for round specimen ø60-ø80mmHTG2005Tensile grip jaws for flat specimen 10-40mmHTG2005Tensile grip jaws for flat specimen 10-40mmHTG2005Tensile grip jaws for flat specimen 40-70mm	HTG10003	Tensile grip jaws for round specimen ø45-ø55mm	HTM 1000	For metal and non-metal specimen
HTG10005Tensile grip jaws for flat specimen 20-40mmHTG12001Tensile grip jaws for round specimen ø15-ø30mmHTG12001Tensile grip jaws for round specimen ø30-ø45mmHTM 1200For metal and non-metal specimenHTG12003Tensile grip jaws for round specimen ø45-ø55mmHTM 1200For metal and non-metal specimenHTG12004Tensile grip jaws for flat specimen 2-20mmHTM 1200For metal and non-metal specimenHTG2005Tensile grip jaws for flat specimen 20-40mmHTM 1200For metal and non-metal specimenHTG2001Tensile grip jaws for round specimen ø20-ø40mmHTM 2000For metal and non-metal specimenHTG2002Tensile grip jaws for round specimen ø40-ø60mmHTM 2000For metal and non-metal specimenHTG2003Tensile grip jaws for round specimen ø40-ø60mmHTM 2000For metal and non-metal specimenHTG2004Tensile grip jaws for round specimen ø40-ø60mmHTM 2000For metal and non-metal specimenHTG2005Tensile grip jaws for flat specimen 10-40mmHTM 2000For metal and non-metal specimenHTG2005Tensile grip jaws for flat specimen 40-70mmHTM 2000For metal and non-metal specimen	HTG10004	Tensile grip jaws for flat specimen 2-20mm		
HTG12001Tensile grip jaws for round specimen ø15-ø30mmHTM 1200For metal and non-metal specimenHTG12002Tensile grip jaws for round specimen ø45-ø55mmHTM 1200For metal and non-metal specimenHTG12004Tensile grip jaws for flat specimen 2-20mmHTM 1200For metal and non-metal specimenHTG2005Tensile grip jaws for round specimen ø20-ø40mmHTM 1200For metal and non-metal specimenHTG20001Tensile grip jaws for round specimen ø20-ø40mmHTM 2000For metal and non-metal specimenHTG20002Tensile grip jaws for round specimen ø40-ø60mmFor metal and non-metal specimenHTG20003Tensile grip jaws for round specimen ø60-ø80mmHTM 2000HTG20004Tensile grip jaws for flat specimen 10-40mmFor metal and non-metal specimenHTG2005Tensile grip jaws for flat specimen 10-40mmHTM 2000HTG2005Tensile grip jaws for flat specimen 40-70mmHTM 2000	HTG10005	Tensile grip jaws for flat specimen 20-40mm		
HTG12002Tensile grip jaws for round specimen ø30-ø45mmHTM 1200For metal and non-metal specimenHTG12003Tensile grip jaws for round specimen ø45-ø55mmHTM 1200For metal and non-metal specimenHTG12004Tensile grip jaws for flat specimen 2-20mmHTM 1200For metal and non-metal specimenHTG2005Tensile grip jaws for round specimen ø20-ø40mmHTG20002Tensile grip jaws for round specimen ø20-ø40mmHTG20002Tensile grip jaws for round specimen ø40-ø60mmHTM 2000For metal and non-metal specimenHTG2003Tensile grip jaws for round specimen ø60-ø80mmHTM 2000For metal and non-metal specimenHTG2004Tensile grip jaws for flat specimen 10-40mmHTM 2000For metal and non-metal specimenHTG2005Tensile grip jaws for flat specimen 40-70mmHTM 2000For metal and non-metal specimen	HTG12001	Tensile grip jaws for round specimen ø15-ø30mm		
HTG12003Tensile grip jaws for round specimen ø45-ø55mmHTM 1200For metal and non-metal specimenHTG12004Tensile grip jaws for flat specimen 2-20mmHTM 1200For metal and non-metal specimenHTG2005Tensile grip jaws for flat specimen 20-40mmHTG20001Tensile grip jaws for round specimen ø20-ø40mmHTG20002Tensile grip jaws for round specimen ø40-ø60mmFor metal and non-metal specimenHTG2003Tensile grip jaws for round specimen ø60-ø80mmHTM 2000HTG2004Tensile grip jaws for flat specimen 10-40mmFor metal and non-metal specimenHTG2005Tensile grip jaws for flat specimen 40-70mmHTM 2000	HTG12002	Tensile grip jaws for round specimen ø30-ø45mm		
HTG12004Tensile grip jaws for flat specimen 2-20mmHTG12005Tensile grip jaws for flat specimen 20-40mmHTG20001Tensile grip jaws for round specimen ø20-ø40mmHTG20002Tensile grip jaws for round specimen ø40-ø60mmHTG20003Tensile grip jaws for round specimen ø60-ø80mmHTG20004Tensile grip jaws for flat specimen 10-40mmHTG20050Tensile grip jaws for flat specimen 10-40mmHTG20050Tensile grip jaws for flat specimen 40-70mm	HTG12003	Tensile grip jaws for round specimen ø45-ø55mm	HTM 1200	For metal and non-metal specimen
HTG12005Tensile grip jaws for flat specimen 20-40mmHTG20001Tensile grip jaws for round specimen ø20-ø40mmHTG20002Tensile grip jaws for round specimen ø40-ø60mmHTG20030Tensile grip jaws for round specimen ø60-ø80mmHTG2004Tensile grip jaws for flat specimen 10-40mmHTG20050Tensile grip jaws for flat specimen 10-40mmHTG20050Tensile grip jaws for flat specimen 40-70mm	HTG12004	Tensile grip jaws for flat specimen 2-20mm		·
HTG20001Tensile grip jaws for round specimen ø20-ø40mmHTG20002Tensile grip jaws for round specimen ø40-ø60mmHTG20003Tensile grip jaws for round specimen ø60-ø80mmHTG2004Tensile grip jaws for flat specimen 10-40mmHTG2005Tensile grip jaws for flat specimen 40-70mm	HTG12005	Tensile grip jaws for flat specimen 20-40mm		
HTG20002Tensile grip jaws for round specimen ø40-ø60mmHTM 2000HTG20003Tensile grip jaws for round specimen ø60-ø80mmHTM 2000HTG20004Tensile grip jaws for flat specimen 10-40mmFor metal and non-metal specimenHTG20005Tensile grip jaws for flat specimen 40-70mm	HTG20001	Tensile grip jaws for round specimen ø20-ø40mm		
HTG20003Tensile grip jaws for round specimen ø60-ø80mmHTM 2000For metal and non-metal specimenHTG20004Tensile grip jaws for flat specimen 10-40mmFor metal and non-metal specimenHTG20005Tensile grip jaws for flat specimen 40-70mmFor metal and non-metal specimen	HTG20002	Tensile grip jaws for round specimen ø40-ø60mm		
HTG20004Tensile grip jaws for flat specimen 10-40mmHTG20005Tensile grip jaws for flat specimen 40-70mm	HTG20003	Tensile grip jaws for round specimen ø60-ø80mm	HTM 2000	For metal and non-metal specimen
HTG20005 Tensile grip jaws for flat specimen 40-70mm	HTG20004	Tensile grip jaws for flat specimen 10-40mm		
	HTG20005	Tensile grip jaws for flat specimen 40-70mm		



Bending fixtures

Lower bending fixtures

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Model	Description	Suitable for:
2030BBFX	Maximum span 400mm, adjustable	HTM 200; HTM 300
5060BBFX	Maximum span 400mm, adjustable	HTM 500; HTM 600
1000BBFX	Maximum span 400mm, adjustable	HTM 1000; HTM 1200
2000BBFX	Maximum span 500mm, adjustable	HTM 2000
Upper bending	fixtures	
Model	Description	Suitable for:
018035UF-XXX	Upper fixture for bending nose from ø18-ø35mm	

 036060UF-XXX
 Upper fixture for bending nose from ø36-ø60mm

 060120UF-XXX
 Upper fixture for bending nose from ø60-ø120mm

 120200UF-XXX
 Upper fixture for bending nose from ø120-ø200mm

NOTE: To select the correct upper bending fixture must be indicated in the model the ø of the bending nose selected e.g. 018035UF-024. The example means the needing of ø24 bending nose adapter

NOTE: If not specified only one type of bending nose and support roller will be supplied: ø36mm for model HTM 200; HTM 300; HTM 500; HTM 600; HTM 1000; ø60mm for model HTM 2000

Bending noses for steel rebar bending test		Bending noses for steel rebar bending test		
Model	Bending nose diameter	Model	Bending nose diameter	
BN120018	18mm	BN120084	84mm	
BN120024	24mm	BN120088	88mm	
BN120030	30mm	BN120096	96mm	
BN120032	32mm	BN120100	100mm	
BN120036	36mm	BN120108	108mm	
BN120040	40mm	BN120112	112mm	
BN120042	42mm	BN120120	120mm	
BN120048	48mm	BN120128	128mm	
BN120054	54mm	BN120132	132mm	
BN120056	56mm	BN120140	140mm	
BN120060	60mm	BN120144	144mm	
BN120064	64mm	BN120150	150mm	
BN120066	66mm	BN120160	160mm	
BN120072	72mm	BN120180	180mm	
BN120075	75mm	BN120200	200mm	
BN120080	80mm			

NOTE: On request are available different bending noses and support roller diameters e.g. BN120XXX NOTE: On request 4-point bending fixture



HTM series

Bolt tensile and nut proof load test grips						
Model	Description	Suitable for:	Application			
1BTGM424	Grip for M4/M5/M6/M7/M8/M19/M12/M14/M16/M18/M20/M22/M24	HTM 200; HTM 300	For bolt tensile test class 12.9, nut proof load test class 10.9, metric coarse thread			
2BTGM430	Grip for M4/M5/M6/M7/M8/M19/M12/M14/M16/M18/M20/M22/M24/ M27/M30	HTM 500; HTM 600; HTM 1000; HTM 1200	For bolt tensile test class 12.9, nut proof load test class 10.9, metric coarse thread			
BTGM1648	Grip for M16/M18/M20/M22/M24/M27/M30/M36/M42/M48	HTM 2000	For bolt tensile test class 12.9, nut proof load test class 10.9, metric coarse thread			
Concrete compression grips						
Model	Description	Suitable for:	Application			
100CCG22	Grip dimensions 40x40mm	HTM 200; HTM 300; HTM 500; HTM 600	For concrete compression test			
Shearing test grips						
Model	Description	Suitable for:	Application			
23SG4600	Shear grip for round sample ø10mm; ø15mm; ø20mm	HTM 200; HTM 300; HTM 500; HTM 600; HTM 1000; HTM 1200	For shearing test of round sample			
23SG46W1	Shear grip for welded steel fabric	HTM 200; HTM 300	For shearing test of welded steel fabric			
23SG46W2	Shear grip for welded steel fabric	HTM 500; HTM 600; HTM 1000; HTM 1200	For shearing test of welded steel fabric			
NOTE: For shear grip for welded steel fabric, the sample dimensions are required						
Other special grins like shoulder tansile grin or concrete flexural grin, are available on request						

Computer Sys	tem	
	ECHOCS01	Computer
Computer System EC EC EC	ECHOCS02	Monitor
	ECHOCS03	Color printer
	ECHOCS04	Mouse
	ECHOCS05	Keyboard

Optional accessories

0011714004	
02HTM001	Front protection shield for HTM 200; HTM 300
02HTM002	Front protection shield for HTM 500: HTM 600
0011714000	
02HTM003	Front protection shield for HTM 1000; HTM 1200
02HTM004	Front protection shield for HTM 2000

HTM 200/300



HTM 500/600



- 2400mm -

HTM 1000/1200

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760mm

(11)

-|-430mm

-1020mm







- 2600mm -



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Electromechanical Universal Testing Machines

- > ETM series includes complete range of electromechanical Universal Testing Machines, from the compact and lightweight single column to robust double column floor-standing version.
- Equipped with load cells from 0.5 to 600kN, ETM series allow to perform wide range of tests on different kind of materials such as: metals, plastic, composites, wood, wires, biomaterials etc.
- Pre-loaded ball screws, heavy duty bearings and full protection covers, ensure long life with zero backlash. The result is an accurate and repeatable measurement which represents the specimen characteristics
- Aluminium column covers with chamfered corners for easy access to the test area, T-slots for easy positioning of testing accessories
- ETM series is equipped with high-speed and low vibration AC servo motor and servo controller, Japanese photoelectrical encoders for displacement measurement

- > American bi-directional load cells positioned in the middle of crosshead to prevent any collisions during to tension or compression tests
- > High speed and closed loop controller of load displacement and elongation, with over-load, over-current, over- voltage, over-speed, and over-travel protection.
- > Built-in port for PC communication, by RS232 or USB.
- Remote control keypad, with functions of Up, Down, Stop, Jog up, Jog down and Test start, simplify operations
- All models supported by test software to show and analyse graphs and all tests parameters.

Select the correct electromechanical universal testing machine by

choosing:

- > Frame type according to the load cell capacity
- > Tensile jaws according to the specimen material, dimension, pin diameter and maximum kN supported
- Compression fixture (if needed) in according to specimen dimensions, pin diameter and maximum kN supported
- > Bending fixture (if needed) in according to needed bend type (three or four points), pin diameter and maximum kN supported
- Shearing fixture (if needed) in according to specimen dimension, pin diameter and maximum kN supported
- > Peel/tear fixture (if needed) in according to pin diameter and maximum kN supported
- Film COF test fixture (if needed) in according to pin diameter and maximum kN supported
- > Extensometer according to standards indications



Applicable standards:

> EN 10002-2	> ASTM D412
> EN 10002-4	> ASTM D638
> ISO 34	> ASTM D790
> ISO 37	> ASTM D882
> ISO 178	> ASTM E4
> ISO 527	> ASTM E8
> ISO 604	> ASTM E83
> ISO 1184	> BS 1610
> ISO 6892	> JIS B7721
> ISO 9513	



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echean ETM 600

ETM 600

ETM 600

ETM double column series 600kN, floor type version. Designed with strong structure to ensure the linear crosshead travel.

High accuracy crosshead alignment reducing variability in measurement .

- > ETM 600kN is dual space type and is equipped with hydraulic grips for large and high strength samples.
- > Environmental chamber tests simulations are possible thanks to special optional.
- > Wide range of test accessories allows to meet test requirements of different standards and for different materials.
- > ETM series is suitable to test: metals, reinforced plastics, wires, composite materials, etc.

Model		ЕТМ 600
Load cell		
Load capacity	kN kaf	600
Calibration standard	-	ISO 7500
Accuracy grade	%	
Testing load accuracy	%	
Deformation accuracy	%	
Displacement accuracy	%	
Force range	FS	0.2%-100%
Force resolution	FS	1/500000
Force accuracy	%	0.5 of reading
Controller		
Sampling frequency	Hz	Up to 1000
Closed loop control frequency	Hz	Up to 1000
Resolution	bit	20
Software		
Software	-	echoTestPilot
Crosshead		
Position resolution	μm	0.021
Crosshead speed	mm/min	0.001-250
Crosshead speed accuracy	%	±1.0/±0.5 of set speed
Crosshead travel (without grip)	mm	1400
Main frame		
Frame type	-	Floor type double column/dual test space
Test width (upper compression, lower tension)	mm	700
Fixture adapter	mm	M64x4 screw connection
Grip pin	mm	M64x4 screw connection
Motor power	kW	5.5
Power supply	V-Hz-ph	400-50/60-3
Dimensions	mm	1535x1175x3000
Weight	ka	2000

Included accessories

Anchor bolt



ETM 300 - ETM 200 ETM 100

ETM double column series, from 100kN to 300kN, floor type version. Designed with strong structure to ensure the linear

crosshead travel.

High accuracy crosshead alignment reducing variability in measurement .

- > ETMs from 100kN to 300kN are dual space type.
- ETM 200 and ETM 300 are equipped with wedge action tensile grips,
 Environmental chamber tests simulations are possible thanks to
- special optional.
- > Wide range of test accessories allows to meet test requirements of different standards and for different materials.
- > ETM series is suitable to test: metals, reinforced plastics, wires, composite materials, etc.

ETW 100-200-300

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echeAB ETM 200

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Model		ETM 300	ETM 200	ETM 100			
Load cell							
Load capacity	kN	300	200	100			
	kgf	30000	30000 20000 10000				
Calibration standard	-		ISO 7500				
Accuracy grade	%						
Testing load accuracy	%		0.5 of roading				
Deformation accuracy	%		0.5 of reading				
Displacement accuracy	%						
Force range	FS		0.2%-100%				
Force resolution	FS		1/500000				
Force accuracy	%		0.5 of reading				
Controller							
Sampling frequency	Hz		Up to 1000				
Closed loop control frequency	Hz		Up to 1000				
Resolution	bit	20					
Software							
Software	-	echoTestPilot					
Crosshead							
Position resolution	μm	0.0)14	0.025			
Crosshead speed	mm/min	0.00	1-250	0.001-500			
Crosshead speed accuracy	%		$\pm 1.0/\pm 0.5$ of set speed				
Crosshead travel (without grip)	mm	11	50	1050			
Main frame							
Frame type	-	FI	loor type double column/dual test spa	ce			
Test width (upper compression, lower tension)	mm	65	50	600			
Fixture adapter	mm	Ø	60	ø40			
Grip pin	mm	ø	28	ø18			
Motor power	kW		5	1.5			
Power supply	V-Hz-ph	z-ph 400-50/60-3					
Dimensions	mm	1210x7	70x2600	1145x765x2340			
Weight	kg	15	00	1200			

Included accessories

Anchor bolt

Electromechanical Testing Machines



Accessories	
10003301103	

Accessories	Accessories				
Mechanical we	lge action tensile grips				
Model	Description	Max. force applied	Grip pin	Application	
JW1100B	Grip body				
JW1100F1	Tensile grip for flat specimens 0-7mm				
JW1100F2	Tensile grip for flat specimens 7-14mm				
JW1100F3	Tensile grip for file specimens 14-21mm	100kN	ø18mm	For metal and non-metal specimen	
JW1100R1	Tensile grip for round specimens ø4-9mm				
JW1100R2	Tensile grip for round specimens ø9-14mm				
JW1100R3	Tensile grip for round specimens ø14-19mm				
JW3100B	Grip body				
JW3100F1	Tensile grip for flat specimens 0-20mm	100kN	ø18mm	For metal and non-metal specimen	
JW3100R1	Tensile grip for round specimens ø14-19mm			·	
JW1300B	Grip body				
JW1300F1	Tensile grip for flat specimens 0-8mm				
JW1300F2	Tensile grip for flat specimens 8-16mm				
JW1300F3	Tensile grip for file specimens 16-24mm				
JW1300F4	Tensile grip for file specimens 24-32mm	300kN	ø28mm	For metal and non-metal specimen	
JW1300R1	Tensile grip for round specimens ø4-9mm			'	
JW1300R2	Tensile grip for round specimens ø9-16mm				
JW1300R3	Tensile grip for round specimens @16-23mm				
JW1300R4	Tensile grip for round specimens @23-30mm				
Hydraulic wedd	e action tensile grips				
HJ1100B	Grip body				
HJ1100F1	Tensile grip for flat specimens 0-8mm			For metal specimen	
HJ1100F2	Tensile grip for flat specimens 8-15mm	100kN	ø18mm		
HJ1100R1	Tensile grip for round specimens ø4-12mm				
HJ1100R2	Tensile grip for round specimens ø12-20mm				
HJ1300B	Grip body				
HJ1300F1	Tensile grip for flat specimens 0-6mm				
HJ1300F2	Tensile grip for flat specimens 6-18mm				
HJ1300F3	Tensile grip for flat specimens 18-30mm	300kN ø28mm		For metal specimen	
HJ1300R1	Tensile grip for round specimens ø6-16mm				
HJ1300R2	Tensile grip for round specimens ø16-26mm				
HJ1300R3	Tensile grip for round specimens ø26-36mm				
HJ1600B	Grip body				
HJ1600F1	Tensile grip for flat specimens 0-6mm				
HJ1600F2	Tensile grip for flat specimens 6-23mm				
HJ1600F3	Tensile grip for flat specimens 23-40mm	600kN	M64 x 4	For metal specimen	
HJ1600R1	Tensile grip for round specimens ø6-12mm				
HJ1600R2	Tensile grip for round specimens ø12-27mm				
HJ1600R3	Tensile grip for round specimens ø27-42mm				
Hydraulic wedg	e action tensile grips				
HSJ100B	Grip body				
HSJ100F1	Tensile grip for flat specimens 0-15mm	100kN	ø18mm	For metal specimen	
HSJ100R1	Tensile grip for round specimens ø5-10mm				
HSJ100R2	Tensile grip for round specimens ø10-20mm				
HSJ100B	Grip body				
HSJ300F1	Tensile grip for flat specimens 0-30mm				
HSJ300R1	Tensile grip for round specimens 6-16mm	300kN	ø28mm	For metal specimen	
HSJ300R2	Tensile grip for round specimens ø16-26mm				
HSJ300R3	Iensile grip for round specimens ø26-36mm				
HSJ600B	Grip body				
HSJ600F1	Tensile grip for flat specimens 0-40mm	000111		Frankland and	
HSJ600R1	rensile grip for round specimens 6-12mm	600KN	M64 x 4	For metal specimen	
	Tensile grip for round specimens Ø12-2/mm				
HOJOUUKS	Tensile grip for round specimens Ø27-42mm				



Pneumatic tensile grips

BD2007

BD2008

BD2009

Model	Description	Max. force applied	Grip pin	Application
PNJ3016	Tensile grip for flat specimens 0-10mm	100kN	ø18mm	For low force test of non-metal specimen
PNJ3017	Tensile grip for flat specimens 10-21mm	100kN	ø18mm	For low force test of non-metal specimen
PNJ3018	Tensile grip for round specimens ø4-9mm	100kN	ø18mm	For low force test of non-metal specimen
PNJ3019	Tensile grip for round specimens ø9-14mm	100kN	ø18mm	For low force test of non-metal specimen
PNJ3020	Tensile grip for round specimens ø14-19mm	100kN	ø18mm	For low force test of non-metal specimen
Compression	fixtures			
Model	Description	Max. force applied	Grip pin	Application
CP1202	Platen ø100mm	100kN	ø18mm	For compression test
CP1203	Platen ø100mm	300kN	ø28mm	For compression test
CP1204	Platen ø150mm	300kN	ø28mm	For compression test
CP1205	Platen ø200mm	600kN	Screw	For compression test
Bending fixtur	es			
Model	Description	Max. force applied	Grip pin	Application
	Bending nose R10mm			
BD2006	Support roller R10mm	100kN	a18mm	For bending test
602000	Maximum span 340mm, adjustable	TOOKIN	Tomm	
	3-point bending, bending nose e support roller exchangeable			
	Bending nose R10mm			
BB0007	Upper span maximum 170mm, adjustable	501.01	40	

50kN

300kN

600kN

ø18mm

ø28mm

Screw

connection

For bending test

For bending test

For bending test

NOTE: On request different bending nose and support roller diameters are available

Lower span maximum 320mm, adjustable

Maximum span 340mm, adjustable

Maximum span 370mm, adjustable

Bending nose R15mm Support roller R15mm

Bending nose R15mm Support roller R15mm

4-point bending, bending nose e support roller exchangeable

3-point bending, bending nose e support roller exchangeable

3-point bending, bending nose e support roller exchangeable

Shear grips					
Model	Description	Max. force applied	Grip pin	Application	
SG6781	Shear grip for specimen diameter ≤10mm	100kN	ø18mm	For metal and non-metal shear test	
Lever grips					
Model	Description	Max. force applied	Grip pin	Application	
11/0004	Lever grip with clamping width <70mm	FOLN		For rubber tensile test	
LVG024	Max. opening 30mm	DUKIN	ØTømm		
	Lever grip with clamping width <170mm	4001 N	ø18mm	For rubber tensile test	
LVG025	Max. opening 35mm	TUUKIN			
Shoulder grips					
Model	Description	Max. force applied	Grip pin	Application	
SHG781	Grip for specimen with diameter 3mm	100kN	ø18mm	For high hardness specimens tensile test	
SHG782	Grip for specimen with diameter 5mm	100kN	ø18mm	For high hardness specimens tensile test	
SHG783	Grip for specimen with diameter 10mm	100kN	ø18mm	For high hardness specimens tensile test	
SHG791	Grip for specimen with diameter 10mm	200kN	ø28mm	For high hardness specimens tensile test	
SHG792	Grip for specimen with diameter 10mm	300kN	ø28mm	For high hardness specimens tensile test	
Other special gr	ips are available on request				

Electromechanical Testing Machines



Comput	er System
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Computer System	ECHOCS01	Computer
	ECHOCS02	Monitor
	ECHOCS03	Color printer
	ECHOCS04	Mouse
	ECHOCS05	Keyboard

Optional accessories

01ETM004	Front protection shield for ETM 100		
01ETM005	Full-closed protection shield for ETM 100		
01ETM006	Front protection shield for ETM 200 and ETM 300		
01ETM007	Full-closed protection shield for ETM 200 and ETM 300		
01ETM008	Front protection shield for ETM 600		
01ETM009	Full-closed protection shield for ETM 600		
HF110	Furnace		
HF11001	Tensile grip for furnace for round specimen ø5mm (M8 gripping end)		
HF11002	Tensile grip for furnace for flat specimen from 1 to 3mm		
HF11003	Tensile grip for furnace for round specimen ø10mm (M16 gripping end)		
HF11004	S type thermocouple 3pcs		
HF11005	Pullord for gripping ends ≤M16		
ETT100-2	Environmental chamber		
ETT300A-2	Environmental chamber		
ETT300B-2	Environmental chamber		
NOTE: For tests with environmental chamber and with furnace, the fixture must be on request			

ETM 100



ETM 200/300

650mm

Ē

-1210mm

1150mm

-2600mm-

ETM 600



-770mm -



ETM 50 - ETM 20 ETM 10

ETM double column series from 10kN to 50kN. Dual space bench type version, designed with strong guidance column to increase lateral stiffness and unsure a linear crosshead travel.

- > Environmental chamber tests simulations are possible thanks to special optional.
- > Wide range of test accessories allows to meet test requirements of different standards and for different materials.
- > ETM series is suitable to test: metals, reinforced plastics, wires, textiles, small components, adhesive materials, etc.



Model		ETM 50	ЕТМ 20	ETM 10		
Load cell						
Load conceity	kN	50	20	10		
	kgf	5000	2000	1000		
Calibration standard	-		ISO 7500			
Accuracy grade	%					
Testing load accuracy	%					
Deformation accuracy	%		0.5 of reading			
Displacement accuracy	%					
Force range	FS		0.2%-100%			
Force resolution	FS		1/500000			
Force accuracy	%		0.5 of reading			
Controller						
Sampling frequency	Hz		Up to 1000			
Closed loop control frequency	Hz		Up to 1000			
Resolution	bit	20				
Software						
Software	-	echoTestPilot				
Crosshead						
Position resolution	μm	0.06				
Crosshead speed	mm/min		0.001-500			
Crosshead speed accuracy	%		$\pm 1.0/\pm 0.5$ of set speed			
Crosshead travel (without grip)	mm	1000				
Main frame						
Frame type	-	Floor type double column/dual test space				
Test width	mm	420				
Fixture adapter	mm	ø40	ø20			
Grip pin	mm	ø18	ø10			
Motor power	kW	0.85				
Power supply	V-Hz-ph		230-50/60-1			
Dimensions	mm		775x660x1802			
Weight	kg	400				



Accessories

Mechanical wedge action tensile grips

Model	Description	Max. force applied	Grip pin	Application
JW310B	Grip body			
JW310F1	Tensile grip for flat specimens 0-20mm	10kN	ø10mm	For motal and non-motal specimen
JW310R1	Tensile grip for round specimens ø4-9mm	IUKIN		For metal and non-metal speciment
JW310R2	Tensile grip for round specimens ø9-14mm			
JW120B	Grip body			
JW120F1	Tensile grip for flat specimens 0-6mm			
JW120F2	Tensile grip for flat specimens 6-12mm			
JW120F3	Tensile grip for file specimens 0-6mm	20kN	ø10mm	For metal and non-metal specimen
JW120R1	Tensile grip for round specimens ø4-9mm			
JW120R2	Tensile grip for round specimens Ø9-14mm			
JW130B	Grin body			
IW/130E1	Tensile grin for flat specimens 0.7mm			
IW/130E2	Tensile grip for flat specimens 7-14mm			
IW/130E3	Tensile grip for file specimens 1/-21mm	30kN	ø10mm	For metal and non-metal specimen
IW/130D1	Tonsile grip for file specimens 14-2 min	0000		To metal and non-metal specimen
JW 130K 1	Tensile grip for round specimens #4-5mm			
	Tensile grip for round specimens Ø9-14mm			
JVVIJURJ	Prensile grip for round specimens @14-19mm			
JW1100B	Grip body			
JW1100F1	Iensile grip for flat specimens 0-7mm			
JW1100F2	Tensile grip for flat specimens 7-14mm			
JW1100F3	Tensile grip for file specimens 14-21mm	100kN	ø18mm	For metal and non-metal specimen
JW1100R1	Tensile grip for round specimens ø4-9mm			
JW1100R2	Tensile grip for round specimens ø9-14mm			
JW1100R3	Tensile grip for round specimens ø14-19mm			
JW3100B	Grip body			
JW3100F1	Tensile grip for flat specimens 0-20mm	100kN	ø18mm	For metal and non-metal specimen
JW3100R1	Tensile grip for round specimens ø14-19mm			
Hydraulic wed	ge action tensile grips			
Model	Description	Max. force applied	Grip pin	Application
HJ1100B	Grip body			
H.I1100E1	Tensile grin for flat specimens 0-8mm			
H 11100E2	Tensile grip for flat specimens 8-15mm	100kN	a18mm	For metal specimen
H 11100P1	Tensile grip for nor specimens of 13mm	TOORIN		To metal specifien
	Tonsile grip for round specimens #4-12.1111			
HJ HUUKZ	rensile grip for found specimens @12-20mm			
Hydraulic side action tensile grips				
Model	Description	Max. force applied	Grip pin	Application
HSJ1100B	Grip body			
HS.I100F1	Tensile grip for flat specimens 0-15mm			
HS.1100R1	Tensile grip for round specimens ø5-10mm	100kN	ø18mm	For metal specimen
HS 1100P2	Tensile grip for round specimens g10-20mm			
1100100112	Tensile grip for found specimens & ro-zomm			
Pneumatic ten	sile grips			
Model	Description	Max. force applied	Grip pin	Application
PNJ3007	Tensile grip for flat specimens 0-10mm, width 50mm	5kN	ø10mm	For low force test of non-metal specimen
DN 12040	Tensile grip with rubber coated jaw 25.4x25.4mm	101-11		For total to total total
PINJOUIZ	Sample thickness ≤14mm	TUKIN	ØTUMIM	For textile tensile test
DN 10040	Tensile grip with rubber coated jaw 50.8x76.2mm	401.01		Franks, Charles and the frank
PNJ3013	Sample thickness ≤14mm	10kN	ø10mm	For textile tensile test
D 110044	Tensile grip with diamond jaw 25.4x25.8mm	(0).11	4.0	
PNJ3014	Sample thickness ≤14mm	10kN	ø10mm	For textile tensile test
	Tensile grip with diamond jaw 25.4x70mm			
PNJ3015	Sample thickness <14mm	10kN	ø10mm	For textile tensile test
PN.I3016	Tensile grip for flat specimens 0-10mm	100kN	ø18mm	For low force test of non-metal specimen
PN.13017	Tensile grip for flat specimens 10-21mm	100kN	ø18mm	For low force test of non-metal specimen
DN 13019	Topeilo grip for round specimens of 0mm	100kN	a19mm	For low force test of non-metal specifien
	Tensile grip for round specimens #4-9mm	TUUKIN		For low force test of non-metal specimen
PNJ3019	Tensile grip for round specifiens Ø9-14mm	TUUKN	ØISMM	For low force test of non-metal specimen
PNJ3020	rensile grip for round specimens Ø14-19mm	100kN	Ø18mm	For low force test of non-metal specimen



ETM 50 - ETM 20 ETM 10

Compression	Compression fixtures			
Model	Description	Max. force applied	Grip pin	Application
CP1200	Platen ø100mm	20kN	ø10mm	For compression test
CP1201	Platen ø200mm	20kN	ø10mm	For compression test
CP1202	Platen ø100mm	100kN	ø18mm	For compression test
Bending fixtur	es			
Model	Description	Max. force applied	Grip pin	Application
	Bending nose R5mm			
20002	Support roller R2mm	1060	a10mm	For bonding toot
DD2002	Maximum span 160mm, adjustable	IUKIN	UTOIIIII	For bending test
	3-point bending, support roller exchangeable			
	Bending nose R3mm			
00000	Upper span 110mm adjustable	40101		Fach and include
BD2003	Lower span maximum 220mm adjustable	IUKIN	øiumm	For bending test
	4-point bending, support roller fixed			
	Bending nose R5mm			For bending test
DD0004	Support roller R2mm	00LN		
BD2004	Maximum span 200mm, adjustable	ZUKN	ØTUMM	
	3-point bending, support roller exchangeable			
	Bending nose R5mm	20kN	ø10mm	For bending test
	Support roller R2mm			
BD2005	Maximum span 200mm, adjustable			
	3-point bending, support roller exchangeable			
	Micrometer included			
	Bending nose R10mm			For bending test
00007	Upper span maximum 170mm, adjustable	FOLN		
BD2007	Lower span maximum 320mm, adjustable	SUKIN	øïðmm	
	4-point bending , bending nose e support roller exchangeable			
	Bending nose R10mm			E. I. K. I.
DD0000	Support roller R10mm	1001-01		
BD2006	Maximum span 340mm, adjustable	TUUKN	øïðmm	For bending test
	3-point bending, bending nose e support roller exchangeable			
Wide strap tensile grips				
Model	Description	Max. force applied	Grip pin	Application
W\$5503	Tensile grip with clamping width <200mm	20kN	@10mm	For wide strap for geo textile tensile test
W00000	Max. opening 12mm	ZORIN	UTOITIIT	To wide strap for geo textile tensile test
Shear grips				
Model	Description	Max. force applied	Grip pin	Application
SG6781	Shear grip for specimen diameter ≤10mm	100kN	ø18mm	For metal and non-metal shear test



Lever grips

Model	Description	Max. force applied	Grip pin	Application
11/0004	Lever grip with clamping width <70mm	FOLN	a19mm	For rubber tensile test
LVG024	Max. opening 30mm	JUKIN	U I OI IIIII	
11/0025	Lever grip with clamping width <170mm	100kN	ø18mm	For rubber tensile test
LVG025	Max. opening 35mm	TOOKIN		
Shoulder grips				
Model	Description	Max. force applied	Grip pin	Application
SHG771	Grip for specimen with diameter 3mm	50kN	ø18mm	For high hardness specimens tensile test
SHG772	Grip for specimen with diameter 5mm	50kN	ø18mm	For high hardness specimens tensile test
SHG773	Grip for specimen with diameter 10mm	50kN	ø18mm	For high hardness specimens tensile test
Other special grip	s are available on request			

Computer System			
	ECHOCS01	Computer	
Computer System	ECHOCS02	Monitor	
	ECHOCS03	Color printer	
	ECHOCS04	Mouse	
	ECHOCS05	Keyboard	

Optional accessories				
01ETM003	Front protection shield			
ETT100-1	Environmental chamber			
ETT300A-1	Environmental chamber			
ETT300B-1	Environmental chamber			
NOTE: For tests	with environmental chamber, the fixture must be on request			





ETM 5 - ETM 1

ETM 1 and ETM 5 bench type double column version with compact design.

- Best solution for the operator who needs a small force but the stability of double column frame.
- > Wide range of test accessories allows to meet test requirements of different standards and for different materials.
- > ETM series is suitable to test: metals, reinforced plastics, wires,
- textiles, small components, adhesive materials, etc.



Model		ETM 5	ETM 1	
Load cell				
Lood conceit.	kN	5	1	
	kgf	500	100	
Calibration standard	-	ISO	7500	
Accuracy grade	%			
Testing load accuracy	%	0.5 of	rooding	
Deformation accuracy	%	0.5 01	reading	
Displacement accuracy	%			
Force range	FS	0.2%	-100%	
Force resolution	FS	1/50	0000	
Force accuracy	%	0.5 of	reading	
Controller				
Sampling frequency	Hz	Up to	0 1000	
Closed loop control frequency	Hz	Up to	0 1000	
Resolution	bit	20		
Software				
Software	-	echoT	estPilot	
Crosshead				
Position resolution	μm	0.0	027	
Crosshead speed	mm/min	0.00	1-500	
Crosshead speed accuracy	%	±1.0/±0.5 0	of set speed	
Crosshead travel (without grip)	mm	10	000	
Main frame				
Frame type	-	Bench top d	ouble column	
Test width	mm	4	20	
Fixture adapter	mm	Ø	20	
_Grip pin	mm	Ø	10	
Motor power	kW	0	.4	
Power supply	V-Hz-ph	230-5	0/60-1	
Dimensions	mm	728x47	/0x1520	
Weight	kg	1	50	



Accessories

Mechanical wedge action tensile grips

ino on an our me	age action tenene gripe						
Model	Description	Max. force applied	Grip pin	Application			
JW310B	Grip body						
JW310F1	Tensile grip for flat specimens 0-20mm	10kN	ø10mm	For metal and non-metal specimen			
JW310R1	Tensile grip for round specimens ø4-9mm	IONN		r or metar and normetar speciment			
JW310R2	Tensile grip for round specimens ø9-14mm						
JW120B	Grip body						
JW120F1	Tensile grip for flat specimens 0-6mm						
JW120F2	Tensile grip for flat specimens 6-12mm	2044	a10mm	For motal and non-motal choosimon			
JW120F3	Tensile grip for file specimens 0-6mm	ZUKIN	TOUIIII	r or metar and non-metar specimen			
JW120R1	Tensile grip for round specimens ø4-9mm						
JW120R2	Tensile grip for round specimens ø9-14mm						
JW130B	Grip body						
JW130F1	Tensile grip for flat specimens 0-7mm						
JW130F2	Tensile grip for flat specimens 7-14mm						
JW130F3	Tensile grip for file specimens 14-21mm	30kN	ø10mm	For metal and non-metal specimen			
JW130R1	Tensile grip for round specimens ø4-9mm						
JW130R2	Tensile grip for round specimens ø9-14mm						
JW130R3	Tensile grip for round specimens ø14-19mm						
Pneumatic ten	sile grips						
Model	Description	Max. force applied	Grip pin	Application			
PNJ3001	Tensile grip for sample diameter ≤1mm	500N	ø10mm	For low force test of non-metal specimen			
PNJ3002	Tensile grip for sample diameter ≤1mm (nylon cord)	500N	ø10mm	For nylon cord			
PNJ3003	Tensile grip with clamping width ≤25mm	500N	ø10mm	For low force test of non-metal specimen			
	Sample thickness ≤6.5mm, no liner						
PNJ3005	Tensile grip with clamping width ≤30mm	500N	ø10mm	For low force test of non-metal specimen			
	Sample thickness ≤4mm, with liner						
PNJ3010	Tensile grip with clamping width ≤150mm	1kN	ø10mm	For low force test of non-metal specimen			
	Sample thickness ≤/mm, no liner						
PNJ3004	Iensile grip with clamping width <25mm	1kN	ø10mm	For low force test of non-metal specimen			
		OLNI	a10mm	For low force test of non-motel and simon			
FINJ3000	Tensile grip for sample diameter Somm	ZKIN	ØTUIIIII	For low force test of non-metal speciment			
PNJ3008	Sample thickness ≤9mm with liner	2kN	ø10mm	For low force test of non-metal specimen			
PNJ3009	Tensile grip for sample diameter ≤3mm	3kN	ø10mm	For low force test of non-metal specimen			
PNJ3011	Tensile grip for flat specimens 0-4mm	3kN	ø10mm	For glass fiber specimen			
PNJ3007	Tensile grip for flat specimens 0-10mm, width 50mm	5kN	ø10mm	For low force test of non-metal specimen			
DN 12012	Tensile grip with rubber coated jaw 25.4X25.4mm	1060	a10mm	For taytile topoile test			
PINJOUIZ	Sample thickness ≤14mm	TUKIN	ØTUMM				
DN 13013	Tensile grip with rubber coated jaw 50.8x76.2mm	10kN	a10mm	For toxtilo toncilo tost			
F1105015	Sample thickness ≤14mm	TOKIN	TOUIIII				
DN 13014	Tensile grip with diamond jaw 25.4x25.8mm	10kN	a10mm	For taxtile tensile test			
1100014	Sample thickness ≤14mm	TORN	Øromin				
PNJ3015	Tensile grip with diamond jaw 25.4x70mm	10kN	ø10mm	For textile tensile test			
	Sample thickness ≤14mm						
Compression fixtures							
Model	Description	Max. force applied	Grip pin	Application			
CP1200	Platen ø100mm	20kN	ø10mm	For compression test			
CP1201	Platen ø200mm	20kN	ø10mm	For compression test			



Bending fixtures					
Model	Description	Max. force applied	Grip pin	Application	
	Bending nose R5mm				
	Support roller R2mm		ø10mm		
BD2002	Maximum span 160mm, adjustable	10kN		For bending test	
	3-point bending, support roller exchangeable				
	Bending nose R3mm				
2003	Upper span 110mm adjustable	40151	a10mm	For bonding toot	
552003	Lower span maximum 220mm adjustable	TOKIN	ØTUIIIII		
	4-point bending, support roller fixed				
	Bending nose R5mm				
BD2004	Support roller R2mm	20kN	a10mm	For bending test	
DD2004	Maximum span 200mm, adjustable	ZUNN	UTUITIITI	For bending test	
	3-point bending, support roller exchangeable				
	Bending nose R5mm			For bending test	
BD2005	Support roller R2mm		ø10mm		
	Maximum span 200mm, adjustable	20kN			
	3-point bending, support roller exchangeable				
	Micrometer included				
Lever grips					
Model	Description	Max. force applied	Grip pin	Application	
11/0021	Lever grip with clamping width <22mm	2kN	ø10mm	For rubber tensile test	
LVGUZT	Max. opening 10mm	ZKIN			
11/0000	Lever grip with clamping width <40mm	01.01	ø10mm	For rubber tensile test	
LVG022	Max. opening 7mm	2KN			
11/0000	Lever grip with clamping width <40mm	FLN	ø10mm	For which as to as its to at	
LVG023	Max. opening 12mm	JKIN			
Peeling grips					
Model	Description	Max. force applied	Grip pin	Application	
PLG971	Grip for stainless steel composite pipe ID-OD 12-16; 16-20; 20-25; 26-32; 33-40	2kN	ø10mm	For stainless steel compopsite pipe peeling test	
PLG972	Grip for metal bond sample width <20mm	3kN	ø10mm	For metal bond specimen 90° peeling test	
Vice grips					
Model	Description	Max. force applied	Grip pin	Application	
	Sample thickness ≤8mm				
VG3201	Vice grip with clamping width <32mm	500N	ø10mm	For plastic and film tensile and peeling test	
	Sample thickness ≤13.5mm				
VG3202	Vice grip with clamping width <25mm	1kN	ø10mm	For wire, foil, film, fiber, rubber tensile test	

Electromechanical Testing Machines



VG3203	Sample thickness ≤12mm	5kN	ø10mm	For sheet metal fiber plastic rubber tensile test			
	Vice grip with clamping width <70mm		2.0				
Wire, cord tensile grips							
Model	Description	Max. force applied	Grip pin	Application			
CWG021	Wire grip for sample diameter ≤1mm	500N	ø10mm	For wire tensile test			
CWG022	Wire grip for sample diameter ≤0.5mm	500N	ø10mm	For wire tensile test			
CWG023	Wire grip for sample diameter ≤1.5mm	2kN	ø10mm	For wire tensile test			
CWG024	Wire grip for sample diameter ≤1.5mm	5kN	ø10mm	For wire tensile test			
Other special grips are available on request							

Computer System					
Computer System	ECHOCS01	Computer			
	ECHOCS02	Monitor			
	ECHOCS03	Color printer			
	ECHOCS04	Mouse			
	ECHOCS05	Keyboard			

01ETM002 Front protection shield	







ETM SC series

ETM SC series single column testing system for tension and compression applications where loads less than 5kN.

- > Designed with strong linear motion guide and servo motor. > Increased lateral stiffness to ensure linear crosshead travel.
- > Servo motor equipped with precise planet-gear speed reducer providing higher efficiency and low noise.
- > Wide range of test accessories allows to meet test requirements of different standards and for different materials.
- > ETM SC series is suitable to test: plastics, wires, bars, biomaterials, adhesive materials, etc...
- > ETM SC series is suitable to test: plastics, wires, bars, biomaterials, adhesive materials, etc...

Grip pin Motor power

Power supply

Dimensions

Weight

Model		ETM 5 SC	ETM 2 SC	ETM 1 SC	ETM 0.5 SC	
Load cell						
Load capacity	kN	5	2	1	0.5	
Calibration standard	Kgt	500	200	ISO 7500	50	
Accuracy grade	%			100 1000		
Testing load accuracy	%	1				
Deformation accuracy	%	- 0.5 of reading				
Displacement accuracy	%	1				
Force range	FS	0.2%-100%				
Force resolution	FS	1/500000				
Force accuracy	%	0.5 of reading				
Controller						
Sampling frequency	Hz			Up to 1000		
Closed loop control frequency	Hz			Up to 1000		
Resolution	bit			20		
Software						
Software	-			echoTestPilot		
Crosshead		r				
Position resolution	μm			0.042		
Crosshead speed	mm/min			0.001-750		
Crosshead speed accuracy	%		±1.0	/±0.5 of set speed		
Crosshead travel (without grip)	mm	1000				
Main frame		· · · · · · · · · · · · · · · · · · ·				
Frame type	-		Benc	h top single column		
Front opening space	mm			100		
Fixture adapter	mm			ø20		
Grip pin	mm			ø10		
Motor power	kW			0.2		

230-50/60-1

530x490x1590mm

90

V-Hz-ph

mm

kg



ETM SC series

Accessories

Mechanical wedge action tensile grips						
Model	Description	Max. force applied	Grip pin	Application		
JW310B	Grip body					
JW310F1	Tensile grip for flat specimens 0-20mm	101-01	ø10mm	For metal and non-metal specimen		
JW310R1	Tensile grip for round specimens ø4-9mm	TUKIN				
JW310R2	Tensile grip for round specimens ø9-14mm					
JW120B	Grip body					
JW120F1	Tensile grip for flat specimens 0-6mm					
JW120F2	Tensile grip for flat specimens 6-12mm	001 N		For metal and non-metal specimen		
JW120F3	Tensile grip for file specimens 0-6mm	ZUKIN	ø10mm			
JW120R1	Tensile grip for round specimens ø4-9mm					
JW120R2	Tensile grip for round specimens ø9-14mm					
JW130B	Grip body					
JW130F1	Tensile grip for flat specimens 0-7mm					
JW130F2	Tensile grip for flat specimens 7-14mm					
JW130F3	Tensile grip for file specimens 14-21mm	30kN	ø10mm	For metal and non-metal specimen		
JW130R1	Tensile grip for round specimens ø4-9mm					
JW130R2	Tensile grip for round specimens ø9-14mm					
JW130R3	Tensile grip for round specimens ø14-19mm					
Pneumatic tensile grips						
Model	Description	Max. force applied	Grip pin	Application		
PNJ3001	Tensile grip for sample diameter ≤1mm	500N	ø10mm	For low force test of non-metal specimen		
	To a literation for a second solid second second second (All Issues and)		10			

PNJ3001	Tensile grip for sample diameter \leq Imm	500N	ø10mm	For low force test of non-metal specimen
PNJ3002	Tensile grip for sample diameter ≤1mm (Nylon cord)	500N	ø10mm	For nylon cord
PNJ3003	Tensile grip with clamping width ≤25mm Sample thickness ≤6.5mm, no liner	500N	ø10mm	For low force test of non-metal specimen
PNJ3005	Tensile grip with clamping width ≤30mm Sample thickness ≤4mm, with liner	500N	ø10mm	For low force test of non-metal specimen
PNJ3010	Tensile grip with clamping width ≤150mm Sample thickness ≤7mm, no liner	1kN	ø10mm	For low force test of non-metal specimen
PNJ3004	Tensile grip with clamping width ≤25mm Sample thickness ≤6.5mm, no liner	1kN	ø10mm	For low force test of non-metal specimen
PNJ3006	Tensile grip for sample diameter ≤3mm	2kN	ø10mm	For low force test of non-metal specimen
PNJ3008	Tensile grip jaw 25x50mm Sample thickness ≤9mm with liner	2kN	ø10mm	For low force test of non-metal specimen
PNJ3009	Tensile grip for sample diameter ≤3mm	3kN	ø10mm	For low force test of non-metal specimen
PNJ3011	Tensile grip for flat specimens 0-4mm	3kN	ø10mm	For glass fiber specimen
PNJ3007	Tensile grip for flat specimens 0-10mm, width 50mm	5kN	ø10mm	For low force test of non-metal specimen
PNJ3012	Tensile grip with rubber coated jaw 25.4x25.4mm Sample thickness ≤14mm	10kN	ø10mm	For textile tensile test
PNJ3013	Tensile grip with rubber coated jaw 50.8x76.2mm Sample thickness ≤14mm	10kN	ø10mm	For textile tensile test
PNJ3014	Tensile grip with diamond jaw 25.4x25.8mm Sample thickness ≤14mm	10kN	ø10mm	For textile tensile test
PNJ3015	Tensile grip with diamond jaw 25.4x70mm Sample thickness ≤14mm	10kN	ø10mm	For textile tensile test
Compression	fixtures			

Model	Description	Max. force applied	Grip pin	Application
CP1200	Platen ø100mm	20kN	ø10mm	For compression test
CP1201	Platen ø200mm	20kN	ø10mm	For compression test



Bending fixtures						
Model	Description	Max. force applied	Grip pin	Application		
	Bending nose R5mm					
00000	Support roller R2mm	10101	ø10mm	For booting tool		
BD2002	Maximum span 160mm, adjustable	IUKIN		For bending test		
	3-point bending, support roller exchangeable					
	Bending nose R3mm					
00000	Upper span 110mm adjustable	10kN	ø10mm	For bonding toot		
BD2003	Lower span maximum 220mm adjustable			For bending test		
	4-point bending, support roller fixed					
	Bending nose R5mm					
00004	Support roller R2mm	20141	-10	For booting tool		
BD2004	Maximum span 200mm, adjustable	20kN	øïumm	For bending test		
	3-point bending, support roller exchangeable					
	Bending nose R5mm		ø10mm	For bending test		
BD2005	Support roller R2mm					
	Maximum span 200mm, adjustable	20kN				
	3-point bending, support roller exchangeable					
	Micrometer included					
Lever grips						
Model	Description	Max. force applied	Grip pin	Application		
1//6021	Lever grip with clamping width <22mm	2kN	ø10mm	For rubber tensile test		
200021	Max. opening 10mm	ZININ				
1//6022	Lever grip with clamping width <40mm	2601	ø10mm	For rubber tensile test		
LV0022	Max. opening 7mm	ZNN				
11/6023	Lever grip with clamping width <40mm	541	ø10mm	For rubber tensile test		
200025	Max. opening 12mm	JAN				
Peeling grips						
Model	Description	Max. force applied	Grip pin	Application		
PLG971	Grip for stainless steel composite pipe ID-OD 12-16; 16-20; 20-25; 26-32; 33-40	2kN	ø10mm	For stainless steel composite pipe peeling test		
PLG972	Grip for metal bond sample width <20mm	3kN	ø10mm	For metal bond specimen 90° peeling test		
Vice grips						
Model	Description	Max. force applied	Grip pin	Application		
VG3201	Sample thickness ≤8mm	500N	a10mm	For plactic and film tansile and pooling test		
VG3201	Vice grip with clamping width <32mm	50014	ø10mm	For plastic and him tensile and peeling test		
VG3202	Sample thickness ≤13.5mm	1LN	a10mm	For wire fail film fiber subject topoils test		
v G3202	Vice grip with clamping width <25mm	IKIN	ווווווווווו			
1/03203	Sample thickness ≤12mm	5LN	a10mm	For cheat motal, fiber, plastic, rubber tanaile test		
VG3203	Vice grip with clamping width <70mm	5kN	ø10mm	For sheet metal, tiber, plastic, rubber tensile test		



Wire, cord tensile grip

Model	Description	Max. force applied	Grip pin	Application	
CWG021	Wire grip for sample diameter ≤1mm	500N	ø10mm	For wire tensile test	
CWG022	Wire grip for sample diameter ≤0.5mm	500N	ø10mm	For wire tensile test	
CWG023	Wire grip for sample diameter ≤1.5mm	2kN	ø10mm	For wire tensile test	
CWG024	Wire grip for sample diameter ≤1.5mm	5kN	ø10mm	For wire tensile test	

Other special grips are available on request

Computer System				
Computer System	ECHOCS01	Computer		
	ECHOCS02	Monitor		
	ECHOCS03	Color printer		
	ECHOCS04	Mouse		
	ECHOCS05	Keyboard		

Optional accessories 01ETM001 Front protection shield








AMM 10

Full-automatic Gauge Length Marking Machine is mainly used for the gauge length marking for metal bar, rebar, and wire rod.

Suitable for:

- > Measuring the deformation of the samples to determinate the elongation after the test
- > Standards: GB/T228.1-2010, ISO6892-1:2009



- > The needle used for marking is made of tungsten steel with hardness of HRC60-65, featuring long service life of 150,000 times marking work under the condition of one needle without polishing or replacing. The marking needle is combined with pneumatic parts as a whole, easy to replace.
- > The needle is pneumatically driven, more reliable. For samples with different hardness, the marking force can be adjusted by regulating the air pressure.
- > Lead screw driven by servo motor ensures more accurate marking spacing. Spacing can be easily switched between 5mm and 10mm, no need to adjust sample position manually, with higher accuracy and more efficiency.
- > Working head is driven by pneumatic cylinder, guarantee samples firmly positioned.
- > Press block can be adjusted manually to satisfy different length samples.
- > The sample fixture can move forward and backward to satisfy round and flat samples.

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Model		AMM 10
Gauge length range	mm	0~500
Marking distance	mm	5/10
Samples	mm	Round: Ø 4~50mm Flat: width 15~60mm, thickness 0~50mm
Gauge length accuracy	mm	±0.05mm, or 0.5%, whichever is bigger
Dimension	mm	805x350x460
Weight	kg	50
Motor power	kW	1,1
Power supply	V-Hz-ph	230-50/60-1

Included accessories

Main machine

Pneumatic Marking needles

Air pump

Optional accessories

AMM 10 - MK Spare Marking Needle





DSM 25

Dumbbell specimen making machine. Complete with high quality cutting tool, smooth edge, burr and dirt free. Equipped with vacuum cleaner for scraps removal during operation.

Suitable for:

- Rectangle specimen for HDT and other test: length ≤170mm, width 16-30mm, 3mm≤ thickness ≤25mm
- Dumbbell specimen for plastic pipe tensile test: ISO 6259-2 type 1; ISO 6259-3 type 1; ISO 6295-3 type 2
- Dumbbell specimen for plastic tensile test: ISO 527-2 type A1; ISO 527-3 type 2.

Model		DSM 25
Cutter diameter	mm	25
Motor speed	rpm	1440
Motor power	kW	0.5
Power supply	V-Hz-ph	230-50/60-1
Dimensions	mm	500x450x450
Weight	kg	70
NOTE: Consistent time and size would be an add		

Inclu	ded	access	ories

Cutter Specimen prototype

Fixture

CELAD DSM 25

NOTE: Specimen type and size must be specified by user

EG710

Manual engraving pen is suitable to easily draw marking line and reference number on test specimen.

Suitable for:

Rectangle specimen for HDT and other test: length ≤170mm, width 16-30mm, 3mm≤ thickness ≤25mm



Model	Туре	Stroke/min	Power	Power supply	Standard accessories	Weight	Recommended for:
EG 710	Engraving pen	7100	0,1 kW	230V - 50Hz	2 set of tips	0,3kg	Samples marking





Furnace HF110

- > Three zone split furnaces designed for models ETM 100, ETM 200, ETM 300, ETM 600.
- Elements designed to achieve optimum performances. Heating elements individually mullite covered, three heat zones for an excellent temperature gradients control and reliable continuous operation up to maximum temperature.
- > High performance multi-crystal refractory fabrics insulation reduce heat losses and provides fast heat up rate. Sample is heated primarily through radiation.
- Stainless steel cover. Adjustable latches keep the furnace sections locked together during tests and facilitate the furnace opening and closing.
- > Ceramic closures at top and bottom turn around the leading bars and reduce heat loss at these points.
- > Furnaces needs to be firmly fixed to the test system during use but also easily removed to allow the access to specimen for setting-up.
- > Radiation reflector protect grips from heat diffusion.

> Furnace is supplied with K type temperature monitoring thermocouples, to provide the most accurate indication of the

> Control systems are compatible with all furnace systems.

> Wide range of pull rods and grips available.

specimen temperature.

Water ______Reflect Pull rod ______

High temperatrure extensometer



	Optional accessories		
	Model	Description	
		Tensile grip for round specimen ø5mm	
		Threaded specimen M12	
	HF11001	Working temperature range 300-950°C	
		ISO6892-2	
		ISO783	
	-	Tensile grip for flat specimen 1-3mm	
		Working temperature range 300-950°C	
	HF11002	ISO6892-2	
	_	ISO783	
	HF11003	Pull rod for gripping ends ≤M16 mm	
		Working temperature ≤950°C	
	HF11004	S type thermocouple	

NOTE: For high temperature tests it is necessary a special type extensometer for high temperatures

Model		HF110
Temperature range	°C	300-1100
Uniform temperature zone	mm	150
		300-600:2
Temperature gradient	°C	600-900:3
		900-1100:4
		300-600:≤±2
Temperature fluctuation	°C	600-900:≤±3
		900-1100:≤±:4
Inside diameter	mm	ø110x350
Outer diameter	mm	ø310x450

Included accessories

Pull rod & tensile grips for round specimen ø10mm and threaded specimen M16 at temperature range 300-1050°C in according to ISO6892-2, ISO783

Environmental Chambers

ETT300

Environmental chamber for ETM series.

- Temperature range from -40°C to 150°C and -40°C to 350°C using compressor cooling system.
- > ETT300A-1 and ETT300B-1 are designed for ETM 10, ETM 20 and ETM 50.
- > ETT300A-1 and ETT300B-1 are designed for ETM 100, ETM 200 and ETM 600.



Model		ETT300A-1	ETT300A-2	ETT300B-1	ETT300B-2
Temperature range	°C	−40 t	o 350	-70 t	o 350
Air circulation method	-		Centrifug	al blower	
Temperture accuracy	°C		< 200 ≥ 200) ≤±2 ≤±3,5	
Temperature fluctuation	°C		S	±1	
Temperature uniformity	°C	<pre>< 200 ≤±2 ≥ 200 ≤±3,5</pre>			
Temperature control meter accuracy	°C		0	.1	
Heating time	°C/min	≥3			
Cooling time	°C/min	≥2			
Cooling method	-		Comp	ressor	
Heat insulating material	-		Ammonia poly	ester bubbled	
Heating power	kW	4,3	4,9	4,7	5,3
Pull rod hole diameter	mm		4	8	
Inner dimensions	mm	240x200x600	320x300x600	240x200x600	320x300x600
Outside dimensions	mm	1820x650x930	1900x710x930	1820x650x930	1900x710x930
Weight	kg	310	330	320	350
Power supply	V-Hz-ph		400-5	0/60-3	

Included accessories

Bracket Pt100 temperature sensors Temperature controller

Optional accessories

Model	Description
WXSB204B	Tensile grip
	V jaw: Ø4 - Ø9, Ø9 - Ø14
	Flat jaw: 0~6mm, 6~12mm
	Maximum specimen size: 40mmx54mm
WYA304A	Compression fixture
	Platen diameter:
WZWA304	Bending fixture
	Maximum span: 80mm, adjustable
	Bending nose: R5mm, support roller: R2mm





ETT100

Environmental chamber for ETM series.

- > Temperature range from -70°C to 350°C using liquid nitrogen cooling system. > ETT100-1 is designed for ETM 10, ETM 20 and ETM 50.
- > ETT100-2 is designed for ETM 100, ETM 200 and ETM 600.



Model		ETT100-1	ETT100-2	
Temperature range	°C	-70 1	to 350	
Air circulation method	-	Centrifuç	gal blower	
Temperture accuracy	۰ ۲	-70 to 2	200:≤±2	
	U	200 to 350:≤±3,5		
Temperature fluctuation	°C	≤	±1	
Temperature uniformity	۰ ۲	-70 to 2	200:≤±2	
	U	200 to 350:≤±3,5		
Temperature control meter accuracy	°C	C	,1	
Heating time	°C/min	2	≥3	
Cooling time	°C/min	2	≥2	
Cooling method	-	Liquid	nitrogen	
Heat insulating material	-	Aluminum	silicate wool	
Heating power	kW	1,6	2,4	
Inner dimensions	mm	240x200x600	320x300x600	
Outside dimensions with nitrogen cylinder	mm	900x350x760	950x450x760	
Dimensions with machine	mm	2300x730x1500	2500x780x1800	
Power supply	V-Hz-ph	230-50/60-1	400-50/60-3	

Optional accessories

Description

Tensile grip

V jaw: Ø4 - Ø9, Ø9 - Ø14

Compression fixture

Bending fixture

R2mm

Flat jaw: 0~6mm, 6~12mm

Platen diameter: Φ100mm

Maximum specimen size: 40mmx54mm

Maximum span: 80mm, adjustable

Bending nose: R5mm, support roller:

Model

WXSB204B

WYA304A

WZWA304



Configuration Sample

Included accessories

Bracket	
Liquid nitrogen cylinder	Capacity: 15.2 liter
	Working pressure: <0.1MPa
	Outside diameter: 355mm
	Height: 600mm
	Empty weight: 8.6kg
	Nitrogen effective days: 126~157 days





Extensometers

- > High quality machine level calls for high quality extensometer.
- > Wide range of EPSILON extensometers allows accurate tests in every condition: from high temperature to very small specimens





Axial extensometer

- > Series 3542 is the most used version and is applicable for testing with the following standards:
- > ISO 6892-1, 527-2, 527-4, 527-5, 10113
- > ASTM E8, E9, D3039, D638, A370, D3552, E517, E646
- > The correct extensometer must be selected in according to:
 - Gauge Length
 - Measuring range
 - Temperature range
- > Standard to follow.
- > To compose the Epsilon code must be indicated the series chosen, the gauge length, measuring and temperature range needed.

Gauge length mm	Code part
10.0	-10M
12.0	-12M
12.5	-0125M
25.0	-025M
50.0	-050M
80.0	-080M

EXAMPLE: 3542-025M-025-LT

Measuring range	Code part	
±5%	-005	
±10%	-010	
20%/-10%	-020	
25%/-10%	-025	
50%/-10%	-050	
100%/-10%	-100	





Degree	Code part
-270°C to 100°C	-LT
-40°C to 100°C	-ST
-40°C to 150°C	-HT1
-40°C to 200°C	-HT2
-270°C to 200°C	-LHT



Extensometers

> Other series of axial extensometers are available, from the miniature extensometer 3442 to long gauge length extensometer 3542L and 3543, bi-axial extensometer 3560, high elongation extensometer 3800 until laser extensometer LE-05 & LE-15



High temperature axial extensometer

- > Series 3448 high temperature self-supporting extensioneter for temperature up to 1200°C designed by Epsilon.
- > To chose the correct model of this series is necessary to select the gauge lenght and the measuring range:

Gauge length mm	Code part
10.0	-10M
25.0	-025M
50.0	-050M

Measuring range	Code part
±5%	-005
±10%	-010
20%/-10%	-020
50%/-10%	-050

EXAMPLE: 3448-025M-020

> Other series of high temperature axial extensometers are available, like series 3549, high temperature hot mountable furnace extensometers for test up to 1600°C, the high temperature strain capacitive extensometers (1200°C or 1600°C) 3648, series 76590A high temperature strain, extended performance capacitive extensometers (1200°C or 1600°C) and the high temperature un-cooled extensometers (700°C) 7642.

Others

Wide range of specialized Epsilon products is available:

- > Fracture Mechanic Clip-On gages
- > Deflectometers
- > Transverse and Diametral extensometers
- High temperature Tansverse and Diametral extensioneters
- > Rock, Concrete and Asphalt extensometer
- > Averaging, Bi-Axial and Axial/Torsion extensometers
- > Bolt proof, Lap shear and specialty extensometers.













TestPilot UTM

- > echoTestPilot is designed to perform accurate and repeatable tests of materials, components and finished goods across a wide range of applications. It provides a simple and user-friendly interface needed for fast and efficient quality assurance and quality control testing. The software is fully compatible with echoLAB electromechanical and hydraulic Universal Testing Machines.
- Features a large, growing host of pre-packaged test methods for easy access to meet the requirements of global test standards such as ASTM, ISO, DIN, EN, BS, and more.
- echoTestPilot software is an open architecture programming; the operator can design the testing program according to own testing requirements.
- Operator can edit the format of testing report according to the requirement, and also export to EXCEL, ACCESS files.
- > Management System: The administrator can activate the functions according to different operators.

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- > Data logger communication function, which can collect the data from logger, such as dial gage, percent meter, etc.; it also reserves additional 6 channels for machine expansion, which can conduct the real time data collection, data displaying and data processing.
- > Advanced function of data retrieval: searching by any information of the testing results, like testing date, series number, testing program, etc.
- > The software displays curves/graphs of Load Displacement, Load -Time, Load - Extension and Displacement - Time.

- > echoTestPilot allows to mark interesting points on curves, zoom in and zoom out and curves traversing. During the test, curves can be displayed separately in a screen; after the test, the operator can manually define the upper yield point, lower yield point by determining the parameters.
- > Operator can choose different data unit according to the requirements, the software can convert the unit of testing data and results accordingly.
- > Analysis give typical test results like Young's modulus, Proof stress, Yield stress, Stress, Strain, Tensile strength, Elongation at break, Compressive strength, Bending strength and more.

Import	Delete	Exit	Add New	Change Name	Modify	Export
Standard name		Standard Description				A
ASTMD 790-2003	3	Flexural Properties of U	nreinforced and Reinforced	Piastics and Electrica	I Insulating Materia	ls
ASTM E290-1997	a	Metallic materials-Bend	test			
ISO 7438-1985		Metallic materials-Bend	test			
ISO 7438-1985E		Metallic materials-Bend	test			
ASTM E23-1998		Metallic materials-bend	ing testing			
DIN 10002.1-2001		Metallic materials-Tens	ile testing at ambient tempe	rature		
ISO 6892-1998		Metallic materials-Tens	ile testing at ambient tempe	rature		
ISO 604:2002(E)		Plastics-Determination	of compressive properties			
ISO 178-1993		Plastics-Determination	of flexural properties			
ISO 527-1:1996		Plastics-Determination	of tensile properties			
ISO 37:1994		Rubber,vulcanized or th	ermoplastic-Determination	of tensile stress-strain	properties	
ASTM D695-1998	6	Standard Test Method f	or Compressive Properties	of Rigid Plastics		
ASTM D638-2003	3	Standard Test Method f	or Tensile Properties of Pla	stics		
ASTM FRM-2004		Standard Test Methods	for Tancion Tacting of Mat	allic Matoriale		•
Item(s) in Standard:	Attent	ion:Double click Standard to edit				
Coefficient of Cross 5 Deflection at break Diatnote between su Hexural strength Inettis moment of cross Length of test piece Maximum flexural force Modukus of elasticity PI Proof stree, non-propo Proof streen, non-propo Proof streen, non-propo Proof streen, non-propo Proof streen, non-propo	ection ports :s section e rtional flexural sportional flexural sportional flexural					E







asic Parameter Ctrl Mode Original Param Result Par	am Curve	Yield Method
Select project name	Select standard	
Metallic materials-Tensile testing-round with EXT(ISO689, Delete	ISO 6892:1998	•
Test Type Normal	Metallic materials-Tensile testir	19
Normal	Fracture judgment setting	03
Test direction Start condition	Load(KN).	100
Compression Preload: 2000 N	Load(kN)	2000
Shape	Extension(mm)	10
Tanula Commune Rend Code Bound C Bestanda C Source	Position(mm)	500
C Riss C Absender C Instantia (Absender C Instantia)	C Overload %	0
 Pipe Administry Ignore(arc or pipe) 	Force drop rate(%/s)	0.01
	Load(Negative)	0
Specimen protect Sampling setup	Extension(Negative)	20
Active Discontinuous Interval 0		20
sampling		0
Valve opening control	1 Valve(Negative)	50
Active Intial valve 2000	-Auto return to initial position-	
		m/min): [0
Auto Test	Canada Musehau	
Auto Test Time(s): 0.6	Auto C Designate	1 •
shift point of extensometer		
Active shift point of extensometer 1.2 mm	Backup data in real time	
T Pause	Active Interval time	(s): 0





Computer requirements

> CPU: ≥1GHz

- > Memory: ≥1GB
- > Hard disk storage: ≥10GB
- > CD-ROM drive: Only for software installation.
- > Graphic card: ≥1GB memory
- > Port: At least one COM port for communication.
- If some accessories require RS232 communication with computer directly, more COM ports will be necessary.
- > Operating system: Microsoft Windows 7 or the latest.





FATIGUE TESTING MACHINES

DEVCO develops servo-hydraulic systems for accurate and reliable fatigue tests. In our machines we use hydrostatic type custom made actuators that minimize friction and allow to perform high frequency tests up to 600 Hz (with a load of 10 kN).

Thanks to these performances our machines are used in high standard laboratories to perform testing of materials and components used in advanced applications.

In order to ensure the long-life of the tested material, a fatigue testing machine requires high-frequency equipment. Actually, a 109 cycles test performed with a traditional 50 Hz fatigue testing machine requires more than 7 months. The same fatigue test performed with a high-frequency 600 Hz fatigue testing machine would take only 19 days.

Even for long time tests, our machines maintain a high-fidelity waveform while running at a high frequency. According to the customers' needs, we can provide testing machines with static load from 5 to 1000 kN with standard waveforms (sine, ramp, square) or programmable ones.



echo AB;

COIL SPRING TESTING MACHINES

Coil spring testing machines, with nominal load from 5 to 500 kN, are characterized by a vertical or horizontal servo-controlled actuator which charges the spring and detects the deflection and the force exerted using potentiometers and load cells.

Coil spring testing machines can be equipped with a floating table to measure the chasse value. This measurement is performed through the use of two potentiometers that detect the motion of the spring base in relation to its axis during compression.

These machines can be also equipped with a lateral actuator that, through the floating table, detects the spring lateral flexibility.



LEAF-SPRING TESTING MACHINES

Leaf-spring testing machines with nominal load up to 500 kN, are characterized by a vertical servo-controlled actuator which presses the leaf and allows the measurement of free height, deflection and force exerted.





VIBRATION-DAMPING TESTS ON RUBBER COMPONENTS

Machines which perform tests on rubber or metal-rubber components are specifically designed to detect and compare the static and dynamic characteristics (stiffness and damping) of the specimen under test.

In order to simulate a real working condition of the tested specimen, two tests could be performed in sequence:

- Low speed test (static test): through this test, which detects the static diagram in real working conditions, it is possible to obtain the value of the static rigidity of the sample tested;
- Dynamic test: through this test it is possible to measure the dynamic stiffness and the phase shift angle between displacement and load. This allows to identify the damping value of the sample tested.







Detections are made using accurate position transducers for acceleration and load.

The operation frequency ranges of this kind of machines are essentially two: 4-25/40 Hz, with +/- 0.05/2.5 mm excitation amplitude and 25-500 Hz, with +/- 0.025/0.2 mm excitation amplitude. For special requirements, such as checking a motor support in resonance conditions, an inertial mass with variable weights can be installed on the machine.

Even for long time tests, our machines maintain a high-fidelity waveform while running at a high frequency. According to the customers' needs, we can provide testing machines with static load from 5 to 1000 kN with standard waveforms (sine, ramp, square) or programmable ones.









SHOCK ABSORBER TESTING MACHINES

Shock absorber testing machines detect displacement, speed and load using potentiometers speed transducers and load cells. Detected data are stored in files by the machine controlling software and can be used for the creation of diagrams (force-displacement, force-speed, force-temperature etc.) for the shock absorber characterization.

Shock absorber testing machines can be electromechanical, driven by direct current or brushless motor or hydraulic, equipped with a servo-controlled actuator suitable for high speed tests (max 3m/sec).



Even for long time tests, our machines maintain a high-fidelity waveform while running at a high frequency. According to the customers' needs, we can provide testing machines with static load from 5 to 1000 kN with standard waveforms (sine, ramp, square) or programmable ones.



TORSION TESTING MACHINES

Torsion testing machines are designed to perform **torsion tests**. Torque measurement is performed through the counterreaction control of the force and the angular displacement using accurate torque meters and rotary potentiometers.

These testing machines are suitable for tests of rubber-metal specimens. The torque can be measured over the whole programmed angular range. The component to be tested can be fixed according to its shape using a customized jaw. The machine can be also equipped with a no-good parts automatic marker.

All our machines are customized according to the customer needs. We can supply testing machines with robotized loading for production lines. Testing machines can be also equipped with Environmental Chambers to determine the effects of temperature during the fatigue test performed with controlled temperature.











IMPACT TEST

In material science, resilience is the ability of a material to absorb energy when it is deformed elastically, and release that energy upon unloading. Proof resilience is defined as the maximum energy that can be absorbed up to the elastic limit, without creating a permanent distortion. The modulus of resilience is defined as the maximum energy that can be absorbed per unit volume without creating a permanent distortion.

In the laboratories the resilience is calculated by the Charpy and Izod impact testing tests. The apparatus consists of a pendulum of known mass and length which is released from a known height to impact a notched specimen. The energy transferred to the material can be inferred by comparing the difference in the height of the hammer before and after the fracture (energy absorbed by the fracture event). The notch in the sample affects the results of the impact test, thus it is necessary for the notch to be of regular dimensions and geometry. The size of the sample can also affect results, since the dimensions determine whether or not the material is in plane strain.





Impact Testing Machines

- > Accurate impact testing on a wide range of materials like metals, polymers, plastic, etc, require high performance equipment.
- > echoLAB pendulum family for Charpy, Izod and Tensile test in according to standards like ISO 148, ISO 179, ISO 180, ISO 8256, ISO 9854-1, ASTM D256, ASTM D1822 and ASTM E23.

Different systems:

- > Uninstructed system that provides the absorbed energy value
- > Fully instrumented system for collect complete analysis of material reactions to impact for evaluate the type of failure and the dynamic response
- > Complete range of pendulum:
- > 1J to 50J for Charpy test, 1J to 22J for Izod test on plastic and polymers samples
- > 150, 300 and 450J for steel resilience tests
- > 600 and 750J for high-strength metals resilience tests





ITM-MP series

ITM-MP series impact tester for:

- > Charpy and Izod
- > Tensile impact test
- > Wedge impact test of adhesive bond
- Brugger method test of toothed gear wheels
- fully complying to ISO 148, ISO 14556, ISO 11343, >EN 10045,
 ASTM E23, ASTM E1820, ASTM E2298, GOST 9574, JIS Z 2242,
 JIS B 7722 with impact energy 150J, 300J, 450J.

CHARPY AND IZOD METHODS

- > Heavy solid steel base machine structure for anvil and heavy-duty cast steel uprights supports.
- > Structure designed to change different pendulums easily.
- Impact testing machines equipped with electromagnetic hammer release system and clutch for locking and raising to initial position, dumper to prevent strong bump.
- > ITM-MP series equipped with Siemens PLC for tester controls and with high precision rotary encoder NEMICON, to measure the angle with resolution of 0.025° to ensure high accuracy of impact energy

Three versions available:

- ITM-MPD with analogue dial gauge and touch screen display
- ITM-MPC with computer connection and software echoTestPilot .
- ITM-MPI with instrumented impact system consisting in striking knife with force transducer, data sampling card, signal conditioner and test software.
- > For all versions are available, as optional, automatic specimen feeding systems and the related automatic cooling systems up to -180°C, combined with software allow fully automatic impact testing.
- ITM-MP series supplied with pendulums projected to ensure accurate striking point and moment.
- > High stiffness pendulum rod, no vibration after impact.
- > 450J pendulum consists in 300J pendulum with two counter weights. This flexible design facilitates switching impact energy.





> ITM-MP series standard configuration includes Charpy support and anvil with a smart design and easy to assemble, possibility to install multi-purpose fixture for Charpy, Izod and Tensile impact tests.

Multi-purpose fixtures available:

Manual type:

- For Charpy test with manual sample centering
- For Izod test with manual sample clamp

Pneumatic type:

- For Charpy test with pneumatic cylinder sample centering
 For Izod test with pneumatic cylinder sample clamping





Charpy pneumatic type

Charpy manual type



Izod manual type



Izod pneumatic type

Impact Testing Machines



ITM-MP series

Model		ITM-MPD	ITM-MPC	ITM-MPI
Version		Easy	Conventional	Instrumented
Max Energy	J	450		
Analog display	-	Included	Included	Included
Touch screen	-	Included	Included	Included
Software and RS232 cable	-	N/A	Included	Included
Instrumented impact system	-	N/A	N/A	Included
Pendulum moment 150J			80.3848	
Pendulum moment 300J			150.7695	
Pendulum moment 450J	Nm		241.1543	
Pendulum moment 600J			321.5390	
Pendulum moment 750J		401.9238		
Angle resolution	0	0.025		
Striking angle	•	30-150 adjustable		
Distance from support axis to percussion center	mm	750		
Striking velocity	m/s	5.24		
Support span	mm	40		
Radius of support curvature	mm	1		
Angle of support taper	•	11±1		
Striking edge radius	mm	2(R2) or 8(R8)		
Striking thickness	mm	16		
Striking tip angle	•	30		
	mm	55x10x10		
Specimen dimensions	mm	55x10x7.5		
		55x10x5		
Motor power	kW	0.8		
Power supply	V-Hz-ph	400-50/60-3		
Dimensions	mm	1960x680x2000		
Weight	kg	800		



Included accessories

SIEM	MENS	PLC

Full-closed protection cover
Pendulum lock/release system
Driving system
Angle measurement system
Servo motor
Anchor bolt
Charpy support and anvil compliance with ISO and ASTM
Span block
Specimen centering block
Centering tongs
Wedge block
Specimen collection device

Accessories

Model	Description
PITM-MP15	Pendulum without striker knife 150J
PITM-MP30	Pendulum without striker knife 300J
PITM-MP45	450J pendulum counter weights assembled on 300J pendulum
CSKR2	Charpy striker knife ISO 148, R2 (For versions ITM-MPD and ITM-MPC)
CSKR8	Charpy striker knife ASTM E23, R8 (For versions ITM-MPD and ITM-MPC)
ISKI	Izod striker knife ASTM E23 (For versions ITM-MPD and ITM-MPC)
IISSK2I	Instrumented Charpy striking knife ISO 148, R2 with 30kN force transducer (For version ITM-MPI)
IISSK8I	Instrumented Charpy striking knife ISO 148, R8 with 30kN force transducer (For version ITM-MPI)
IISISKI	Instrumented Izod striker knife ASTM E23 (For versions ITM-MPI)
FIX010	Manual specimen fixture for Charpy and Izod
FIX020	Pneumatic specimen fixture for Charpy and Izod
FIX030	Tensile impact fixture for round specimen
FIX040	Tensile impact fixture for flat specimen
AP004	Air pump tfor with model FIX020

Instrumented impact system

Model	Description	
Force transducer	kN	30/50
A/D sampling resolution	bits	16
Maximum sampling frequency	MHz	1.25
Frequency band width	kHz	500
Motor power	kW	0.1
Power supply	V-Hz-ph	230-50/60-1

Optional accessories

Automatic system	
Model	Description
AFS100	Automatic specimen feeding system to test 40 specimens at time continuously at room temperature
AFS180	Automatic specimen feeding system to test 12 specimens at time continuously at room temperature
	Cylinder liquid nitrogen cooling capacity 160L
ACS60	Automatic cooling system to use with model AFS100
	Temperature range from environment to -60°
	Cylinder liquid nitrogen cooling capacity 160L
ACS100	Automatic cooling system to use with model AFS100
	Temperature range from environment to -100°
	Cylinder liquid nitrogen cooling capacity 160L
ACS180	Automatic cooling system to use with model AFS180
	Temperature range from environment to -180°
BMA 350	Motorized notching machine
NPP 50	Notch profile projector
CCS 65	Low temperature chamber -60°C
CCS 85	Low temperature chamber -80°C



Impact Testing Machines

ITM-HF series

ITM-HF series impact tester for:

- > Impact on metals, Charpy, both non-instrumented and instrumented
- Servo motor driven pendulum can stop at any position, realizing different angle/energy impact test for R&D use
- > Standards: ASTM E23, ASTM E1820, ASTM E2298, ISO 148, EN10045, ISO 14556, JIS Z 2242, GOST 9454-78

HIGH LOADS

- Heavy solid steel base machine structure for anvil and heavyduty cast steel uprights supports.
- Structure designed to change different pendulums easily.
- Impact testing machines equipped with electromagnetic hammer release system and clutch for locking and raising to initial position, dumper to prevent strong bump.
- ITM-HF series equipped with Siemens PLC for tester controls and with high precision rotary encoder NEMICON, to measure the angle with resolution of 0.025° to ensure high accuracy of impact energy

Three versions available:

- ITM-HFD with analogue dial gauge and touch screen display
- ITM-HFC with computer connection and software echoTestPilot .
- ITM-HFI with instrumented impact system consisting in striking knife with force transducer, data sampling card, signal conditioner and test software.
- > For all versions are available, as optional, automatic specimen feeding systems and the related automatic cooling systems up to -180°C, combined with software allow fully automatic impact testing.
- > High stiffness pendulum rod, no vibration after impact.
- > 450J, 750J pendulum consists in 300J, 600J pendulum with two counter weights. This flexible design facilitates switching impact energy.

600J pendulum Counter weights 750J pendulum





Striking knife is tightened by wedge block, simple to change. Striking knife is available with R2 and R8, fully complying with ASTM, JIS, DIN, GB, ISO, EN and other standards.

Striking knife is made of anti-wearing high speed tool steel with hardening treatment, and hardness is larger than HRC60, with high strength, ductility and abrasion resistance.



Supports and anvils:

- > The anvil material is made high quality steel, the hardness is larger than HRC60, with high strength, ductility and abrasion resistance.
- It is very simple to change anvils with inner hexagon spanner. The anvil is machined by special process with high precision and good interchangeability.
- > Anvil is exchangeable and can be used four times by changing mount directions, greatly improving the servicing life and saving cost.





Safety system

> This series of machine has fully closed protection shield to protect operator against specimen splitting during test, and to deny any access to the inside during test. Built-in door interlock further ensures operator safety. The protection shield is constructed with aluminum alloy profile for frame and fiber glass for easy observation. Split-type door design is simple to repair and change pendulum.



Impact Testing Machines



ITM-HF series

Model		ITM-HFD	ITM-HFC	ITM-HFI	
Version		Easy	Conventional	Instrumented	
Max Energy	J	750			
Analog display	-	Included	Included	Included	
Touch screen	-	Included	Included	Included	
Software and RS232 cable	-	N/A	Included	Included	
Instrumented impact system	-	N/A	N/A	Included	
Pendulum moment 150J		80.3848			
Pendulum moment 300J			150.7695		
Pendulum moment 450J	Nm		241.1543		
Pendulum moment 600J			321.5390		
Pendulum moment 750J			401.9238		
Angle resolution	•	0.025			
Striking angle	o	30-150 adjustable			
Distance from support axis to percussion center	mm	750			
Striking velocity	m/s	5.24			
Support span	mm	40			
Radius of support curvature	mm	1			
Angle of support taper	o	11±1			
Striking edge radius	mm	2 (R2) or 8 (R8)			
Striking thickness	mm	16			
Striking tip angle	o	30			
	mm	55x10x10			
Specimen dimensions	mm	55x10x7.5			
	mm	55x10x5			
Motor power	kW	1			
Power supply	V-Hz-ph	400-50/60-3			
Dimensions	mm	2200x800x2150			
Weight	kg	800			



Included accessories

Full-closed protection cover
Pendulum lock/release system
Driving system
Angle measurement system
Servo motor
Anchor bolt
Charpy support and anvil compliance with ISO and ASTM
Span block
Specimen centering block
Centering tongs
Wedge block
Specimen collection device

Accessories

Model	Description
PITM-HF30	Pendulum without striker knife 300J
PITM-HF45	450J pendulum counter weights assembled on 300J pendulum
PITM-HF60	Pendulum without striker knife 600J
PITM-HF75	750J pendulum counter weights assembled on 600J pendulum
CSKR2	Charpy striker knife ISO 148, R2 (For versions ITM-HFD and ITM-HFC)
CSKR8	Charpy striker knife ASTM E23, R8 (For versions ITM-HFD and ITM-HFC)
IISSK2I	Instrumented Charpy striking knife ISO 148, R2 with 30kN force transducer (For version ITM-HFI)
IISSK8I	Instrumented Charpy striking knife ISO 148, R8 with 30kN force transducer (For version ITM-HFI)

Instrumented impact system

Model	Description	
Force transducer	kN	30/50
A/D sampling resolution	bits	16
Maximum sampling frequency	MHz	1.25
Frequency band width	kHz	500
Motor power	kW	0.1
Power supply	V-Hz-ph	230-50/60-1

Optional accessories

Automatic system	
Model	Description
AFS100	Automatic specimen feeding system to test 40 specimens at time continuously at room temperature
AFS180	Automatic specimen feeding system to test 12 specimens at time continuously at room temperature
ACS60	Cylinder liquid nitrogen cooling capacity 160L
	Automatic cooling system to use with model AFS100
	Temperature range from environment to -60°
	Cylinder liquid nitrogen cooling capacity 160L
ACS100	Automatic cooling system to use with model AFS100
	Temperature range from environment to -100°
	Cylinder liquid nitrogen cooling capacity 160L
ACS180	Automatic cooling system to use with model AFS180
	Temperature range from environment to -180°
BMA 350	Motorized notching machine
NPP 50	Notch profile projector
CCS 65	Low temperature chamber -60°C
CCS 85	Low temperature chamber -80°C




ITM-S series

ITM-S series impact tester for metal and other materials, fully complying to ISO 148, EN 10045, ASTM E23, GOST 9574

- > One-body cast frame design structure provides high stability and rigidity.
- > Front and rear columns are symmetrical and pendulum arm is designed as cantilever beam support.
- > ITM-S series is equipped with small friction high precision bearings. Absorbed energy without loading less than 0.3%.
- > Double reduction gear system replaces the old drive system with high efficiency avoiding transmission failure.

MOST VERSATILE

- > Round pendulum head design reduces the windage losses and its arm prevents axial and transverse vibrations.
- Structure designed to change different pendulums easily.
- Impact testing machines equipped with electromagnetic hammer release system and clutch for locking and raising to initial position, dumper to prevent strong bump.
- > ITM-S series equipped with Siemens PLC for tester controls and with high precision rotary encoder NEMICON, to measure the angle with resolution of 0.025° to ensure high accuracy of impact energy

Three available versions:

- ITM-SD with analogue dial gauge and touch screen display
- ITM-SC with computer connection and software echoTestPilot
- ITM-SI with instrumented impact system consisting in striking knife with force transducer, data sampling card, signal conditioner and test software

Automatic Specimen Feeding System

For all versions are available, as optional, automatic specimen feeding systems and the related automatic cooling systems up to -180°C, combined with software allow fully automatic impact testing.



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Included accessories		Instrumented impact system		
SIEMENS PLC		Force transducer	kN	30/50
Full-closed protection cover		A/D sampling resolution	bits	16
Pendulum lock/release syste	m	Maximum sampling frequency	MHz	1.25
Driving system		Frequency band width	kHz	500
Angle measurement system		Motor power	kW	0.1
Anchor bolts		Power supply	V-Hz-ph	230-50/60-1
Span block				
Specimen centering block		Computer System		
Centering tongs		Computer System		
Wedge block			ECHOCS01	Computer
Specimen collection device			ECHOCS02	Monitor
		Computer System	ECHOCS03	Color printer
Accessories			ECHOCS04	Mouse
			ECHOCS05	Keyboard
CPITM-S15	Charpy pendulum without striker knife 150J			
CPITM-S30	Charpy pendulum without striker knife 300J	Optional accessories		
CPITM-S45	(For versions frim-3D and frim-3C) Charpy pendulum without striker knife 450J	AFS100	Automatic spec specimens at ti	timen feeding system to test 40 me conitnuously at room temperature
CPITM-SIIS15	(For versions TIM-SD and TIM-SC) Charpy pendulum with instrumented striker knife 150J	AFS180	Automatic spec specimens at ti	simen feeding system to test 18 me conitnuously at room temperature
	(FOR VERSION IT IM-SI)		Cylinder liquid	nitrogen cooling capacity 160L
CPITM-SIIS30	(For version ITM-SI)	ACS60	Automatic cooli	ing system to use with model AFS100
	Charpy pendulum with instrumented striker knife 450 l		Temperature ra	inge from environment to -60°
CPITM-SIIS45	(For version ITM-SI)		Cylinder liquid	nitrogen cooling capacity 160L
CSKR2	Charpy striker knife ISO 148, R2	ACS100	Automatic cooling system to use with model AFS100	
CSKR8	Charpy striker knife ASTM E23, R8	Temperature range from environment		inge from environment to -100°
			Cylinder liquid	nitrogen cooling capacity 160L

NOTE: Choose the knife between ISO 148, R2 or ASTM E23, R8

ACS180 Automatic cooling system to use with model AFS180 Temperature range from environment to -180° BMA 350 Motorized notching machine NPP 50 CCS 65 CCS 85 Notch profile projector

Low temperature chamber -60°C Low temperature chamber -80°C







ITM-B series

ITM-B series for Charpy tests on metallic materials, fully complying to ISO 148, EN 10045, ASTM E23, with impact energy 150J, 300J and 450J

- > Vibration damping cast iron structure, possibility to choose between three versions:
- ITM-BA with analogue dial gauge for impact energy reading
- ITM-BD with analogue dial gauge and touch screen display
- ITM-BC with computer control and software echoTestPilot.



- > Impact testing machine structure, weight and height, are precisely designed to ensure high accuracy
- > High precision bearing for small friction.
- > ITM-B equipped with motor-driven hammer raising system, auto-return after impact and with electromagnetic pendulum lock.
- > Siemens PLC control unit allows high accuracy pendulum action.
- > Round shape pendulum design reduces wind resistance

Model		ІТМ-ВА	ITM-BD	ІТМ-ВС
Version		Easy	Conventional	Instrumented
Max Energy	J		450	
Analog display	-	Included	N/A	N/A
Touch screen	-	N/A	Included	Included
Software and RS232 cable	-	N/A	N/A	Included
Pendulum moment 150J			80,385	
Pendulum moment 300J	Nm		160,770	
Pendulum moment 450J			241,154	
Angle resolution	0		0.025	
Striking angle	0		150±1	
Distance from support axis to percussion center	mm		750	
Striking velocity	m/s	5.2		
Support span	mm		40,000	
Radius of support curvature	mm		2.5	
Angle of support slope	0		0	
Angle of support taper	0		11±1	
Striking edge radius	mm		2-2.5	
Striking thickness	mm		16	
	mm	55x10x10		
Specimen dimensions	mm	55x10x7.5		
	mm	55x10x5		
Motor power	kW		0.8	
Power supply	V-Hz-ph		400-50/60-3	
Dimensions	mm		1950x575x1460	
Weight	kg		700	

Impact Testing Machines



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		al.I.E.S.	

SIEMENS PLC Full-closed protection cover Pendulum lock/release system Driving system Angle measurement system Anchor bolts Span block Specimen centering block Centering tongs Wedge block

Optional accessories

Model	Description
BMA 350	Motorized notching machine
NPP 50	Notch profile projector
CCS 65	Low temperature chamber -60°C
CCS 85	Low temperature chamber -80°C

Accessories

Model	Description
CPITM-B15	Charpy pendulum without striker knife 150J
CPITM-B30	Charpy pendulum without striker knife 300J
CPITM-B45	Charpy pendulum without striker knife 450J
CSKR2	Charpy striker knife ISO 148, R2
CSKR8	Charpy striker knife ASTM E23, R8

Computer System

Computer System	ECHOCS01	Computer
	ECHOCS02	Monitor
	ECHOCS03	Color printer
	ECHOCS04	Mouse
	ECHOCS05	Keyboard





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	⊷ 57	'5mm	_>

Impact Testing Machines



IMP series

IMP series for Izod, Charpy and Tensile impact tests on plastic pipes, films, sheets and polymers.

This new series offer the best configuration for Charpy test from 1J to 50J and Izod test from 1J to 22J, in according to international standards like:

- ISO 179
- ISO 180
- ISO 8256
- ISO 9854-1
- ASTM D256
- ASTM D1822

ensile hs, sheets in according to

The IMP series is designed according to high engineering standards with:

- > High resolution: shaftless encoder allows angle resolution of 0.045°.
- Energy losses: shaftless encoder rotates without any friction, only support bearings friction and windage has the lowest energy losses
- > Center alignment: rotating design, fast and accurate specimen alignment center for Charpy test
- Support and anvils: supports tightened by dovetail groove firmly. Fast disassembly for change the supports
- > Exchangeable pendulum: simply change the pendulum to perform Izod, Charpy and Tensile impact test
- > LCD display: LCD display provides easy setup of specimen dimensions, pendulum energy, units and calibration data. Display test results like impact toughness and absorbed energy.





f l



Model		IMP550	
	_		
Main frame	ı.		
Max Energy	J	50	
Niotor power	кvv •	150	
	0	0.045	
Digital display resolution	1	0.043	
Power supply	V-Hz-nh	230-50/60-1	
Dimensions	mm	1000x326x810	
Weight	ka	140	
Pendulum moment	1.5		
	1J	0.5358983 Nm	
	2J	1.0717967 Nm	
	4J	2.1435935 Nm	
Charpy	7.5J	4.0192 Nm	
	15J	8.0385 Nm	
	25J	13.397 Nm	
	50J	26.795 Nm	
	2.75J	1.4737205 Nm	
lad	5.5J	2.94744 Nm	
1200	11J	5.8949 Nm	
	22J	11.7898 Nm	
	7.5J	4.01923 Nm	
Tensile impact	15J	8.03847 Nm	
	25J	13.39745 Nm	
Charpy test for plastic (ISO 179)	1		
Impact energy	J	1/2/4/7.5/15/25/50	
Impact speed	m/s	2.9 (≤5J)	
	m/s	3.8 (>5J)	
Distance from support axis to percussion center	mm	230 (≤5J)	
	mm	395 (>5J)	
Radius of striker edge	mm	2±0.5	
Span	mm	40/60/70 (adjustable by span block)	
	mm	80x10x4	
Specimen dimensions (support span 40mm)	mm	50x6x4	
	mm	120x15x10	
Charpy test for plastic pipe (ISO 9854-1)			
Impact energy	J	15/50	
Impact speed	m/s	3.8	
Distance from support axis to percussion center	mm	395	
	mm	2±0.5	
Span	mm		
Speamen amensions LXVVXH (support span 40mm)	 	120 + 0 2×15 + 0 5×E	
Specimen dimensions LxWxH (support span 70mm)	mm	120±0.2X13±0.3XE	
Izod test (ISO180 ASTM D256)	1 11111		
Impact energy		2 75/4/5 5/11/22	
Impact sneed	m/e	35	
Distance from support axis to percussion center	mm	335	
Distance from striking knife to vice upper surface	mm	22+0.2	
Radius of striker edge	mm	0.8+0.2	
	mm	80x10x4	
	mm	63 5x12 27x12 27	
Specimen dimensions LxWxH (impact energy 2.75J)	mm	63.5x12.7x6.4	
	mm	63 5x12 7x3 2	
Tensile impact test (ASTM D1288, ISO 8256)			
Impact energy	J	7.5/15/25	
Impact speed	m/s	3.444	
Distance from support axis to percussion center	mm	327	
Starting height	mm	610	
Maximum specimen thickness	mm	4	

Included accessories

Encoder angle Shaftless	
Controller with digital display	
Electromagnetic hook	
Half portection shield	

Accessories

Model	Description
550CA	Charpy anvil
550IA	Izod anvil

Accessories Charpy (ISO 179)

Description
Charpy pendulum 1J
Charpy pendulum 2J
Charpy pendulum 4J
Charpy pendulum 7.5J
Charpy pendulum 15J
Charpy pendulum 25J
Charpy pendulum 50J

Accessories Charpy (ISO 9854-1)

Model	Description
CP159854	Charpy pendulum 15J for pipe test
CP509854	Charpy pendulum 50J for pipe test

Accessories Izod (ISO 180, ASTM D256)

Nodel	Description
55012.75180	Izod pendulum 2,75J (ISO 180)
55015.5180	Izod pendulum 5.5J (ISO 180)
550111180	Izod pendulum 11J (ISO 180)
550122180	Izod pendulum 22J (ISO 180)
55012.75256	Izod pendulum 2,5J (ASTM D256)
55015.5256	Izod pendulum 5.5J (ASTM D256)
550111256	Izod pendulum 11J (ASTM D256)
550122256	Izod pendulum 22J (ASTM D256)

Accessories Tensile Impact (ASTM D1822, ISO 8256 method B)

Model	Description
TI7.51822	Tensile impact pendulum 7.5J
TI151822	Tensile impact pendulum 15J
TI251822	Tensile impact pendulum 25J
TI1822TIA	Tensile impact anvil

Optional accessories

Model	Description
PNM 100	Manual notching machine



Notching Machines



BMA 350

Motorized notching machine for Charpy tests specimen





Included accessories

Knife type U5 compliance with ISO 148, ASTM E23 Knife type V2 compliance with ISO 148, ASTM E23

Model		BMA 350	Kr
Broaching speed	mm/s	20	
Broach travel	mm	260	A
	mm	10x10x55	
Sample dimensions	mm	10x7.5x55	M
	mm	10x5x55	
Power supply	V-Hz-ph	400-50/60-3	ы
Dimensions	mm	320x460x1050	D
Weight	kg	110	Ы

Accessories

odel	Description
MA-U3	Knife type U3 compliance with GOST 9454
MA-U2	Knife type U2 compliance with GOST 9454



Model		PNM 100
Motor speed	rpm	1440
Feeding stroke	mm	20
Power supply	V-Hz-ph	230-50/60-1
Dimensions	mm	316x366x450
Weight	kg	30

Accessories

Model Description	
BR01A Knife type A compliance to ISO 179 ISO 180, ASTM D256	,
BR01B Knife type B compliance to ISO 179 ISO 180	,

SAMPLE CUTTING TYPE



> BMA 350 Notches

> PNM 100 Notches



Radius of notch base $r_N = 0.25 \text{ mm} \pm 0.05 \text{ mm}$

Туре А



Radius of notch base $r_N = 1,00 \text{ mm} \pm 0,05 \text{ mm}$











Notching Machines



NPP 50

Notch profile projector

 Optical instrument for quality inspection of U and V shaped impact testing sample notches, in according to ASTM E23 and ISO 148 standards



Model		NPP 50
Magnification	-	50x
Screen size BxH	mm	200x200
Notch type	-	V U in according to ISO 148, ASTM E23
	mm	Vertical ±10
Table displacement	mm	Horizontal ±10
	mm	Up ±12
	mm	Down ±12
Table rotation	0	360
Light	-	12V,100W
Power supply	V-Hz-ph	230-50/60-1
Dimensions	mm	515x224x603
Weight	kg	18







Cryogenic and feeding units

CCS series

Low temperature chamber

> CCS low temperature chambers uses compressor refrigeration technology or liquid nitrogen for impact test sample cooling. Auto-cool and constant temperature features allow the right specimen preparation according to the international standards.



echo AB;

Model		CCS 65	CCS 85	
Cooling temperature	°C	-60	-80	
Cooling speed	°C/min	From ambient to 0°C 2 From 0 to -20°C 1.5 From -20 to -60°C 1	From ambient to 0°C 2 From 0 to -20°C 1.5 From -20 to -60°C 1 From -60 to -80°C 0.5	
Accuracy	°C	±0.3		
Timer	-	From 1 s to 99 min		
Timer resolution	s	1		
Digital thermometer resolution	°C	0.1		
Cooling media	-	Absolute Ethyl Alcohol (Purity ≥99,7%) 5,4 I approx		
Tank dimensions	mm	280x160x120		
Max. sample quanitity (10x10x55mm)	рс	60		
Motor power	kW	2.2		
Power supply	V-Hz-p	230-50/60-1		
Dimensions	mm	770x550x850		
Weight	kg	150		

Cryogenic and feeding units

echo AR:

Automatic specimen feeding system

 > ITM-S, ITM-HF and ITM-MP series can be upgraded with two types of automatic specimen feeding systems, AFS100 with capacity to test 40 specimens and ASF180 with capacity to test 12 specimens.
 > Systems can be connected also with three types of automatic cooling chambers



- > Specimens rack can accommodate 40 or 12 specimens
- > When used in combination with low temperature chamber, the charging system automatically place the specimen from the rack to cooling chamber and, after set temperature will be reached, take out the sample and placing to the anvil
- > Specimen positioning system automatically center the specimen automatically. After striking, the pendulum automatically rises to starting position for the next impact test, meanwhile the broken specimen is tacked out by the collection and filtering device.

The time of automatic test cycle, including the cooling process, is around to 10 seconds.

Specimen charging system

Cooling chamber (optional)

Specimen feeding system

Automatic specimen feeding system and cooling chamber

Model		ACS60 + AFS100	ACS100 + AFS100	ACS180 + AFS180	
Temperature range	°C	From environmental to -60	From environmental to -100	From environmental to -180	
Cooling method	-	Double-stage compressor	Liquid Nitrogen	Liquid Nitrogen	
Temperature control accuracy	°C		±1		
Temperature fluctuation	°C	±2			
Specimen accomodation	рс	40	40	12	
Specimen feeding time	S		3		
			55x10x10		
Specimen dimensions	mm	55x10x7.5			
		55x10x5			
Air supply	MPa	0.4-0.7			
Flow rate	l/min		≥30		







Easy Version mount a touch screen digital display with following features:

- > Pendulum control release and raise
- > Test parameter settings as specimen data informations
- Calibration
- > Auto-feeding system control
- Display real-time, striker angle, impact energy, toughness and other parameters



Test

0.000

0.000

0.000

Back

0.000

0.000

0.000

Conventional Version

Conventional Version has all the features from Easy Version but also has TestPilot ITM Software that is specifically designed for testing metals in accordance to following standards:

- > ASTM E23-07a Standard Test Methods for Notched Bar Impact Testing of Metallic Materials
- > ISO 148.1-2009 Metallic materials Charpy pendulum impact test - Part 1:Test method
- > ISO 148.2-2008 Metallic materials Charpy pendulum impact test Part 2: Verification of testing machines
- ISO 148.3-2008 Metallic materials Charpy pendulum impact test - Part 3: Preparation and characterization of Charpy V-notch test pieces for indirect verification of pendulum impact machines
- > ISO14556-2000 Steel Charpy V-notch pendulum impact test - Instrumented test method
- > ASTM E1820-2008 Standard Test Method for Measurement of Fracture Toughness
- > ASTM E2298-2009 Standard Test Method for Instrumented Impact Testing of Metallic Materials

Software provides a user-friendly method for calculations and storage of impact test results.

Channel display

- > Current angle: real-time pendulum angle value
- > Current energy: real-time pendulum initial energy
- > Striking angle: preset angle for impact test
- > Angle of rise: impact angle after impact test
- > Absorbed energy: absorbed energy after impact test
- > Total impact energy: absorbed energy for one batch of samples
- > Test results can be printed and exported to EXCEL files



Computer requirements

- > CPU: ≥1GHz
- > Memory: ≥1GB
- > Hard disk storage: ≥10GB
- > CD-ROM drive: Only for software installation.
- > Graphic card: ≥1GB memory
- > Port: At least one COM port for communication. If some
- > Accessories requires RS232 communication with computer directly, more COM ports will be necessary.
- >>Operating system: Microsoft Windows 7 or latest.



Instrumented Version

Instrumented Version has all the features from Conventional Version but also has the Instrumented Impact System composed by:

- > Striking knife with force transducer
- > Data sampling card
- > Signal conditioner
- > Advanced test software



- > Force signal from striker transducer is transferred by high-speed signal conditioner.
- > Amplified signal is A/D converted by data sampling card, then transferred to the computer for storage and analysis.
- > After analysis of force and displacement curve, is possible define more sample characteristic, deformation and fracture properties.

Instrumented data analysis system - Software

The software with instrumented impact system allows perform automatic measures:

- > Automatic curve fitting of Force Displacements
- > Automatically Fgy, Fm, Fiu, Fa and other characteristic parameter, after calculation Sgy, Sm, Siu, Sa, St, Wm, Wiu, Wa, Wt and others.
- > Fully automatic data processing allows to get test results and report, after each test, immediately.
- > Curve and raw data can be exported in EXCEL files.







echo AB;

BENDING TEST

The bending flexural test provides modulus of elasticity in bending values, flexural stress, flexural strain and the flexural stress-strain response of the material.

The upper-positioned cylinder applies the bending force to specimen at preset angle. Then two oppsite horizontal cylinders bend the specimen to required angle.

The common test requires machines which allow 180° bend test with complete sets of mandrels according to international standards.

BENDING





We reserve the right to make changes without notice



BTV Series

- > BTV series Bending Testing Machines designed with compact cast steel structure, high stiffness and ergonomic.
- All models designed with three hydraulic cylinders structure.
 Two horizontal positioned cylinders, controlled by highly precise synchronous valve with and error less than 2%, and one upper positioned cylinder, which apply the force to bend the specimen under test.

BTV series features:

- > Automatic and manual bending test
- > High accuracy, reliability and stability load cell
- > Self-calibration system which allow to perform automatic calibration, force and displacement, in according to the standards
- > High speed DSP control electronics
- > Overload protections
- > Full range stepless 1/500000 resolution controller
- > Low noise hydraulic unit

BTV series machines are in according to the follow internatio-

nal standards:

- > ISO 5173
- > ISO 7438
- > GOST 6996
- > ASTM A 370
- > ASTM E 190
- > ASTM E 290

For selection the correct bending testing machine must be

- choosen:
- > Frame type according to load capacity
- > Mandrels diameters according to standard indications



Main frame

Bending Testing Machines



BTV Series



Model		BTV 2000	BTV 1000	BTV 500
Load cell				
Max vertical force	kN	2000	1000	500
Max horizontal force	kN	1000	400	300
Accuracy	-		Class 1	
Force resolution	Fs		1/500000	
Accuracy in synchronism	%		<2	
Displacement resolution	mm		0.01	
Displacement accuracy	%		±1 of reading	
Testing speed				
Force loading speed	kN/s	0.2	2-20	0.4-40
Vertical compression speed	mm/min	170	167	350
Horizontal compression speed	mm/min	2x196	2x196	2x300
Main frame				
Frame structure	-		One body cast steel	
Maximun specimen thickness	mm	4	40	20
Maximum piston travel	mm	350	347	150
Maximum span	mm	360		150
Support roller/mandrel	mm	ø80x210/ø5-ø160	ø50x200/ø5-ø160	ø30x130/ø1-ø75
Power consumption	kW	14	10	9
Power supply	V-Hz-ph	400-50/60-3ph		
Hydraulic unit dimensions	mm	1150x600x1000	845x1070x460	Built-in machine
Hydraulic unit flow rate	l/min	14		7.2
Dimensions	mm	1650x672x2450	1580x550x2200	950x550x1850
Weight	kg	4500	3300	1000

Bending Testing Machines



Accessories				
Computer Syste	m			
	ECHOCS01	Computer		
	ECHOCS02	Monitor		
Computer System	ECHOCS03	Color printer		
. ,	ECHOCS04	Mouse		
	ECHOCS05	Keyboard		
Mandrels		Mandrels		
Model	Bending nose diameter	Model	Bending nose diameter	
BTV460018	18mm	BTV460075	75mm	
BTV460024	24mm	BTV460080	80mm	
BTV460030	30mm	BTV460084	84mm	
BTV460032	32mm	BTV460088	88mm	
BTV460036	36mm	BTV460096	96mm	
BTV460040	40mm	BTV460100	100mm	
BTV460042	42mm	BTV460108	108mm	
BTV460048	48mm	BTV460112	112mm	
BTV460054	54mm	BTV460120	120mm	
BTV460056	56mm	BTV460128	128mm	
BTV460060	60mm	BTV460132	132mm	
BTV460064	64mm	BTV460140	140mm	
BTV460066	66mm	BTV460144	144mm	
BTV460072	72mm	BTV460150	150mm	
NOTE: On request different bending noses		BTV460160	160mm	
and support roller	diameters available, e.g. BTV460XXX	BTV460180	180mm	
and ouppoint offer		BTV460200	200mm	

NOTE: On request different bending noses and support roller diameters available, e.g. BTV460XXX



We reserve the right to make changes without notice





Export

TestPilot BTM

- echoechoTestPilot is designed to perform accurate and repeatable tests of materials, components and finished goods across a wide range of applications. It provides the simplicity and user-friendly interfaces needed for fast and efficient quality assurance and quality control testing. The software is fully compatible with echoLAB Bending Testing Machines.
- Features a large, growing host of prepackaged test methods for easy access to meet the requirements of global test standards such as ASTM, ISO, DIN, EN, BS, and more.

	Method									
New Edit [Delete	Save	Import	Export						
Bend test for I bend	ISO I	7438-2005	Metallic r	materials-E	end te	st				
Common	Show	how Name			Unit		Default	Default value	Display	Col Width
Drocoss	V	Angle of bend			[°]	~	V	150	V	100
Process	V	Diameter of the former			mm	~	V	90	V	150
Parameters	V	Diameter of the supporter		mm	~	V	50	✓	150	
Results LoadPid	V	Length			mm	~	V	300	V	120
	✓	Thickness			mm	~	V	15	V	120
		Width			mm	~	V	30	✓	120
ExtensionPID	V	Span		mm	~	V	200	V	120	
PositionPID										

- > echoTestPilot software is an open architecture programming; the operator can design the testing program according to own testing requirements.
- > Operator can edit the format of testing report according to the requirement, and also export to EXCEL, ACC
- > Management System: The administrator can activate the functions according to different operators.
- > Data logger communication function, which can collect the data from logger, such as dial gage, percent meter, etc.; it also reserves additional 6 channels for machine expansion, which can conduct the real time data collection, data displaying and data processing.
- > Advanced function of data retrieval: searching by any information of the testing results, like testing date, series number, testing program, etc.
- > The software displays bending angle, bending force, etc.
- > echoTestPilot allows to mark interesting points on curves, zoom in and zoom out and curves traversing. During the test, curves can be displayed separately in a screen; after the test, the operator can manually define the upper yield point, lower yield point by determining the parameters.
- > Operator can choose different data unit according to the requirements, the software can convert the unit of testing data and results accordingly.
- Analysis give typical test results like Stress, Strain, Compressive strength, Bending strength and more

Bend test for I bend ISO 7438	-2005 Metallic materials-	Bend test 🗸 😭 2016-10-08-08-48-05
Common	Process	10 000-
Test direction	Compression/flexure	10.000
Extension transducer	Crosshead	
Bend Type	I Bend	
Specimen shape	Flat	8.000-
Preload	50 N	
Speed before preload	5 mm/min	
Removal points from graph	2 points	6.000-
Test stop condition	3	Z v
Defined force		Le Co
Force	300000 N	
Demo Filename	A-1	4.000-

	· · · · ·
Code	Name
ASTM E9	Metal compression
ISO 6892	Metal tensile test at room temperature
ISO 7438	Metal bending test
ISO37	Rubber tensile test
ISO527	Plastics tensile test



Computer requirements

>CCPU: ≥1GHz

- > Memory: ≥1GB
- > Hard disk storage: ≥10GB
- > CD-ROM drive: Only for software installation.
- > Graphic card: ≥1GB memory
- > Port: At least one COM port for communication.
- If some accessories require RS232 communication with computer directly, more COM ports will be necessary.
- > Operating system: Microsoft Windows 7 or the latest

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