



Physical Test Solutions

Innovative Solutions in Material Test Equipment

Hydraulic Universal Testing Machines



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High capacity testing for metal, rebar, concrete, composites and other materials requires strong robust reliable hydraulic universal testing machines. With a wide selection of machine designs, **Physical Test Solutions (PTS)** has the right machine for each task. The hydraulic universal testing machines feature **turn-key solution** packages that include not only the basic accessories to get started right away like; load cells, grips and inserts, and then some; like compression plates and flex fixtures. High capacity machines (300KN and above) include sturdy and reliable hydraulic grips and more.

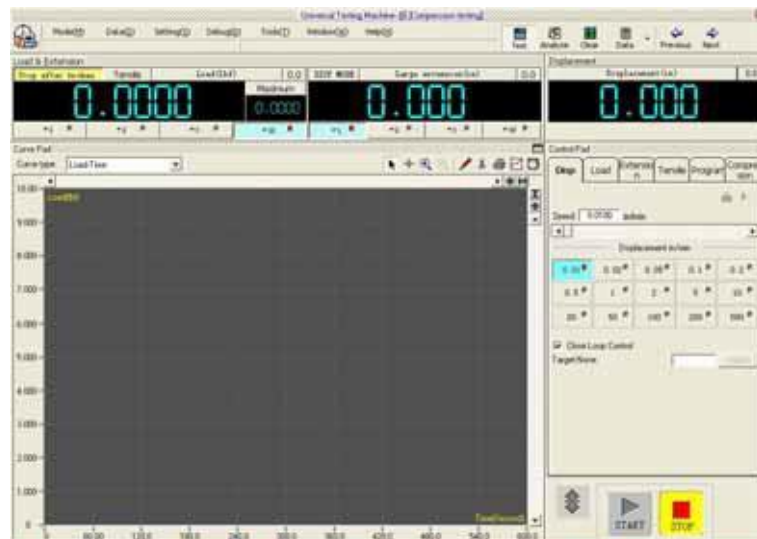
In high capacity hydraulic material testing machines (1000-2000 KN), PTS offers two options; top actuator systems or lower actuator systems. All units feature dual design for convenient tension and compression testing without the need to change compression plates or grips. Most hydraulic Universal testing machines include computer control electro-hydraulic Servo systems, encoder, computer and the user friendly **MaxTest software**.

All **PTS** hydraulic universal testing machines feature load cell technology instead of the old fashion force transducers, thus affording higher accuracy, more flexibility and lower maintenance costs. **PTS** hydraulic universal testing machines are manufactured in an ISO 9001 certified facility, have the CE mark and comply with ASTM A730, ASTM E4, ASTM E83, ISO6892, ISO7438, ISO75000-1 and EN 10002-4.

The **MaxTest software** operates in a windows environment and combines a user friendly working operation with powerful data acquisition and control capabilities.

The **MaxTest software** has the following outstanding features:

- Full digital control
- Individual or Batch Testing Capabilities
- Test Curve Analysis
- Convenient and Practical Parameter Settings
- Multilevel Security Management
- Versatile Operating Interface
- Automatic Program Control
- Versatile Test Report Generation
- Practical Database Management



Series HLC-150 Hydraulic Low-Capacity Universal Testing Machines



The series HLC-150 is the newest product in the extensive line of PTS hydraulic testing machines. This innovative model truly has no equal. At a price that is untouched by a similar product in the world market, the HLC-150 is the ideal solution for a variety of applications and provides performance to do the job with the utmost reliability at an affordable price.

The HLC-150 comes in three models, the HLC-150 that includes servo control capabilities with digital display, the HLC-150-B, a basic unit that does not have servo control capabilities, and the HLC-150-C computerized unit.

Amongst the many applications for the HLC-150 are; Fastener testing (pop rivets) in go no-go applications, incoming inspection for wire manufacturers, spot welding applications, weld bend tests, lap shear, sheet metal/banding tests, pull hoses and many more.

The machine is equipped with a double servo cylinder (actuator), and is controlled by a servo valve. The highly efficient hydraulic power supply has a smooth low noise operation during test. The unit incorporates accurate load cell technology for force measurement and features a digital display. The unit has

many standard features that are available as options with other similar units.

The unique design of the series HLC-150 allows compression testing without the need of a compression cage.

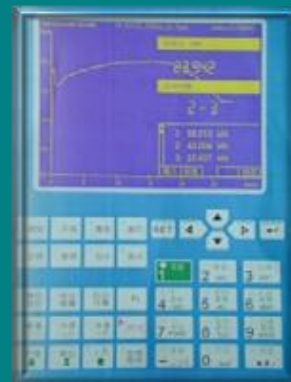
HLC-150 Features

- Practical compact design.
- Conveniently mounted digital display.
- Displays maximum load, load in real time, and yield strength and test curve in real time.
- Data can easily be sent to a printer for print-out.
- Automatic control mode.
- Automatic rate of speed control.
- Automatic rate of load display
- Ethernet output
- RS232 Output for micro-printer
- No need for compression cage in compression applications.
- Overload safety feature.
- Interchangeable load cells for accurate measurement.



HLC-150-B Features

- Practical compact design.
- Conveniently mounted digital display.
- Displays maximum load, load in real time and test curve in real time.
- Ethernet output
- RS232 Output for micro-printer
- No need for compression cage in compression applications.
- Overload safety feature.
- Interchangeable load cells for accurate measurement.



HLC-150-C Features

- Practical compact design.
- Computerized microprocessor control.
- Versatile MaxTest software for data acquisition, test control, archiving and report generation functions.
- Displays maximum load, load in real time, and yield strength and test curve in real time.
- Data can easily be sent to a printer for report print-out.
- Automatic control mode.
- Automatic rate of speed control.
- Automatic rate of load display
- Ethernet output
- No need for compression cage in compression applications.
- Overload safety feature.
- Interchangeable load cells for accurate measurement.

Model	HLC-50	HLC-100	HLC-150/200	HLC-300
Max. load capacity (kN)	50	100	150/200	300
Stiffness (kN)	50	100	150/200	300
Load accuracy (%)	± 0.5 / ± 1			
Tensile space (mm)	350			400
Distance between Columns (mm)	360			400
Piston stroke (mm)	200			250
Load speed (mm/min)	0.5-100			
Return speed (mm/min)	100			
Compression space (mm)	635			850
Round insert (mm)	Φ4-20		Φ9-26	Φ9-30
Flat insert (mm)	0-21			0-28
Compression platen (mm)	Φ100			Φ150
Dimensions of load frame (mm)	750x510x1610			850x550x1800
Weight (kg)	180		200	300

HL Series Hydraulic Universal Testing Machines

The **HL Series** is the flagship model of the **PTS** hydraulic universal testing machines. The **HL Series** introduces load cell technology in high capacity testing. Load cell force measurement technology affords higher accuracy and greater flexibility.

The **HL Series** universal testing machines have the following features:

Load Frame Construction:

- Accurate force measurement through load cell technology.
- Load cells can be changed for increased accuracy.
- Rigid four-column and two-lead screw, compact design construction.
- Dual workspace design: Upper for tension tests, lower for compression, bending and shearing tests.
- Movable lower crosshead provides exceptional ease of operation.
- Open front hydraulic wedge grips, facilitates changing of inserts and specimen loading.
- Integrated displacement photoelectric encoder.
- The cylinder is mounted at the bottom of the machine



Safety Features

- Overload protection: If load exceeds 2%-5% of maximum range, the system will unload.
- Stroke protection: Oil pump motor automatically stops when the piston reaches the upper limit position.
- Capacities from 300KN to 2000KN

Standard Accessories:

- Pentium IV computer system
- Printer
- PTS Solutions Software
- Hydraulic Grips
- Inserts for round specimen: 12 - 80 mm diameter
- Inserts for flat specimen: 10 - 70 mm
- Compression plate 204 mm diameter
- Bend fixture: 0 - 600 mm span
- Shear Fixture



Hydraulic Control Unit

- Closed loop servo control.
- Oil pressure up to 253 bar
- 40 liter reservoir
- Release safety valves
- Oil pressure gage



Specifications:

Model	HL-300/400	HL-500/600	HL-1000	HL-2000
Max. capacity (kN)	300/400	500/600	1000	2000
Stiffness of load frame (kN/mm)	400	600	1000	2000
Load accuracy	$\pm 1.0 / 0.5 \%$			
Deformation accuracy (μm)	1			
Max. loading speed (mm/min)	70			
Crosshead moving speed (mm/min)	200			
Piston stroke (mm)	250			
Distance between columns (mm)	435x195	475x185	565x255	840x900
Max. tension space (Including piston stroke, mm)	690	750	750	1000
Round insert (mm)	$\Phi 9-20, \Phi 20-32$	$\Phi 13-26, \Phi 26-40$	$\Phi 20-40, \Phi 40-60$	$\Phi 20-40, \Phi 40-60, \Phi 60-80$
Flat insert (mm)	0-15	0-15, 15-30	0-30, 10-40	10-40, 40-70
Max. Compression space (mm)	570	620	620	850
Dimension of plate (mm)	$\Phi 128 \times 30$	$\Phi 128 \times 30$	$\Phi 148 \times 40$	$\Phi 200 \times 60$
Span of bending attachment (mm)	30-480	30-500	50-500	50-720
Length of roller (mm)	120	120	160	160
Height of supporter of bending (mm)	100	100	180	180
Computer data processing	Upper & lower yield point, Max load point, testing load of breaking point, stress, deformation, elongation rate, elastic module & Rp0.2.etc.			
Power (kW)	1.7	2.1	3	4
Dimensions of load frame (mm)	725x560x1950	770x600x2130	900x650x2380	1300x900x3260
Dimensions of power package (mm)	550x550x1410			
Weight of machine (kg)	1300	2600	3700	8800

HT Series Hydraulic Universal Testing Machines

The **HT Series** of hydraulic Universal testing machines is especially suited for very high capacities of 1,000 kN (225,000 lb) or 2,000 kN (450,000 lb). Series **HT** facilitates loading and unloading of tension samples by having the tension cavity on the bottom, thanks to the top actuator design. The large size of the very high capacity machines demands that the machine either be placed in a lower floor or that a platform is built in order to have access to the tension test cavity. By having the actuator on the top, the tension cavity is on the bottom, with the compression cavity on the top. This top actuator design is not only convenient but also saves money in the set-up and installation process by avoiding the need to place the testing machine in a recessed floor or having to build a wood platform.



Just like the rest of the hydraulic universal testing machines, the **HT Series** of hydraulic universal testing machines also includes as standard equipment the servo

control unit as well as the complete set of standard accessories listed on page three.

Specifications:

Model	HT-300/400	HT-500/600	HT-1000	HT-1500/2000
Max. load capacity (kN)	300/400	500/600	1000	1500/2000
Accuracy of testing load (%)	$\pm 0.5 / \pm 1$			
Accuracy of deformation (%)	$\pm 0.5 / \pm 1$			
Max. tensile space (mm)	600	610	700	720
Max. compression space (mm)	300	300	450	500
Actuator stroke (mm)	500			600
Max. loading speed (mm/min)	100	100	75	50
Distance between columns (mm)	520	600X330	660X450	800X450
Round insert (mm)	$\Phi 5-30$	$\Phi 13-40$	$\Phi 20-60$	$\Phi 20-80$
Flat insert (mm)	0-15	0-30	0-40	0-60
Compression platens (mm)	$\Phi 120$	$\Phi 150$	$\Phi 150/204 \times 204$	$\Phi 200/204 \times 204$
Dimensions of load frame (mm)	880X630x2980	880X630x2980	980x720x3530	1220x880x4180

SALES OFFICES

Headquarters

PHYSICAL TEST SOLUTIONS
11952 Lindblade St.
Culver City, CA. 90230
Tel: (310) 736-1901
info@physicaltestsolutions.com
www.physicaltestsolutions.com/

USA

Assurance Technologies, Inc.
Telephone: (630) 550-5000
Sales@atiquality.com

Anderson Electronics, Inc.
Tel. (248) 526-7000
sales@ael-sales.com

Physical Testing Equipment Services
Tel: (401) 944-4760
support@ptes-inc.com

Measure-All, Inc., Ohio
Tel: 1-800-758-2376
sales@measure-all.com

México

Cientec, Guadalajara.
Tel : (33)3817-0140
ventas@cientec.com.mx

Cientec, Mexico.
Tel : (55) 500-59250
centro@cientec.com.mx

Cientec, Bajío
Tel : (442) 290-3819
bajio@cientec.com.mx

Cientec, Monterrey.
Tel : (81) 8334-2073
norte@cientec.com.mx

Cientec, Saltillo
Tel : (844) 140-8749
salttillo@cientec.com.mx

Tecnica Test
Tel: (442) 216-8265
m.saldamando@tecnicatest.com

Quality Lab Systems, Puebla
Tel: (244) 4465349
victor@qualitylab.com.mx

Centro de Servicios Metrológicos S.A. de C.V.
Cd. Juarez, Chi. 32650
cesemet@hotmail.com

Canada

M&L Testing Equipment
Tel: (905) 689-7327
info@mltest.com

Middle East

Egypt

Scientific Trading Co.
Tel: : 202-2670-3806
galal_nough@nough.com.eg

Dubai

BDH MIDDLE EAST LLC
Tel: 971 4 2852211
sanjay@bdhme.com

Saudi Arabia

Saudi Technology & Equipment Company
(SATECH)
Tel: +96614502928
abbas@satech-co.com

Jordan

Elshaktori Trading Establishment
Tel: 962-6-5651057
elshak@nets.com.jo

Latin America

Argentina

Mess s.a.
Tel. 54 11- 5291-0460 / 0461
ventas@messmedicion.com.ar
www.messmedicion.com.ar/

Brazil

Metromec
Tel: 55 11 4735 3819
Lisias.Serra@metromec.com.br
www.metromec.com.br

Colombia

Mave Instrumentacion y Quimicos Ltda
Tel: (571) 757-9907
mave07@telmex.net.co

Chile

Arquimed S.A.
Tel: (56-2) 6346266
jortiz@arquimed.cl

Peru

DIECOM
Tel: 51-12222717
jbustamante@diecomforestry.com

Venezuela

Proyectos Produtec C.A.
Tel: 58 212 761 61 15
corredor@cantv.net

Bolivia

Reguimport - Lab
Tel. +591 22 456 215
gmalleac@entelnet.bo

Costa Rica

Suinsa S.A.
Tel:(506)8330-1536
edwar.suinsa@gmail.com

Europe

Italy

NOSELAB ATS s.r.l.
Tel: +039 036240413
info@noselab-ats.com

England

A.J.T. Equipment Limited
Tel: +44 (0) 1384 482 848
admin@ajtequipment.co.uk

Spain

Zaragoza Wap
Tel:976382592
nacho.gonzalez@zaragozawap.com

France

Sodexim
Tel: 33-(0) 326-0291-11
sodexim@sodexim.org

Greece

M.I Priniotakis
S.A. 30-210-
7227719
ikafegidakis@priniotakis.gr

Russia

SPE Monotest LLC
Tel: 7-916-654-9189
105@monotest.ru

Ukraine

ALT Ukraine Ltd
Tel: 380 44 492 72 70
valery.diumin@alt.ua

Israel

Fisher Intl Ltd
Tel: 972-8-934 8455
fisherma@inter.net.il

Poland

COMEF Aparatura Naukowo-Badawcza
Tel:+48 32 203 41 49
grzegorz@comef.com.pl

Estonia

Laboritugi OÜ
Tel: 3725249849
laboritugi@laboritugi.ee

Romania

SC RedoxLab SRL
Tel. 004-0264-416427
glodan.mihai@redox.com.ro

Asia

China

Earth Products China Ltd.
Tel: 852-39654890
carmenli@epc.com.hk

India

Unitestmac Systems Ltd.
Tel:91-11-25894580 / 25894782
sales@unitestmac.com

Thailand

Max Value Technologies
Tel. : 66 2 717-7199
maxvalue@asiaaccess.net.th

Malaysia

Dutech Scientific (M) Sdn. Bhd.
Tel: 6 03-7956 7861
pau@dutech-inst.com

Korea

Fine T&S Co.,Ltd
harryfin@chol.com
Telephone: +82-2-2244-9584

Indonesia

CV Trimitra Tehnik
Tel (62) 21-591-3967
cv_trimitra@yahoo.com

Singapore

Skyray Instruments
Tel. (65) 64823491
taygj@sigmet.com.sg

Vietnam

Top Technology JSC
Tel: 84 8 2842405
t-tech@viettel.vn

Africa

Nigeria

MD-Mudiam
www.mudiam.com