



Physical Test Solutions

Innovative Solutions in Material Test Equipment

Hydraulic Universal Testing Machines



HYDRAULIC
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Hydraulic Universal Testing Machines

High capacity testing of 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 (or pressure transducers), grips and inserts, and then some, like compression plates, flex fixtures, sturdy and reliable hydraulic grips and more. No need for manual lever actions grips or unreliable hydraulic operated lever grips.

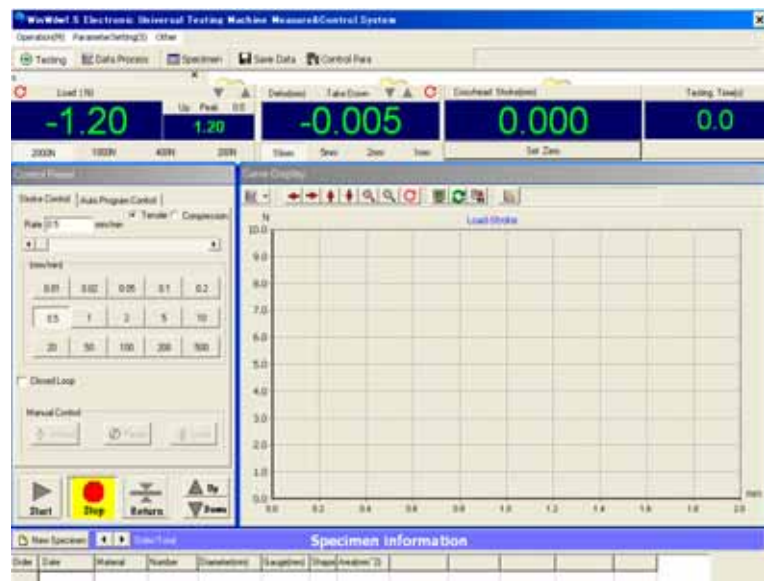
The hydraulic universal testing machines feature dual cavity for convenient tension and compression testing without the need to change compression plates or grips. Most hydraulic Universal testing machines include computer control electro-hydraulic Servo systems, encoder, computer and the user friendly *Solutions Software*.

Physical Test Solutions (PTS) 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 *Solutions Software* operates in a windows environment and combines a user friendly working operation with powerful data acquisition and control capabilities.

The *Solutions 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 Interfase
- Automatic Program Control
- Versatile Test Report Generation
- Practical Database Management



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



HLCS-1000

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.

Standard Accessories:

- ✓ Pentium IV computer system
- ✓ Printer
- ✓ PTS Solutions Software
- ✓ Hydraulic Grips
- ✓ Inserts for round specimen: 20 - 80 mm diameter
- ✓ Inserts for flat specimen: 10 - 70 mm
- ✓ Compression plate 250 mm diameter
- ✓ Bend fixture: 0 - 600 mm span
- ✓ Shear Fixture

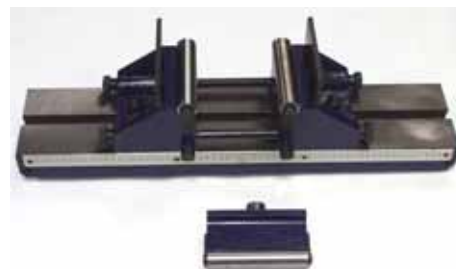
Hydraulic Control Unit

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

Oil pressure gage



Compression Plates



Bend Fixture

HC Series Hydraulic Universal Testing Machines

The **HC Series** of hydraulic Universal testing machines features the traditional reliable design of hydraulic systems. Using force transducers for load measurement, the **HC** series constitutes a cost effective solution to high capacity testing.

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

Load Frame Construction:

- Force transducer force measurement.
- Two column and two-lead screw design
- 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

Hydraulic Universal Testing Machine Capacities:

- ❖ 300 KN (67,500 lbf)
- ❖ 500 KN (121,500 lbf)
- ❖ 600 KN (135,000 lbf)
- ❖ 1,000 KN (225,000 lbf)
- ❖ 1,500 KN (337,500 lbf)
- ❖ 2,000 KN (450,000 lbf)



Shear Fixture



HCS-600

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.



HTCS-2000

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.

HR Series Hydraulic Universal Testing Machines

For applications that call for basic universal testing applications with no servo control capabilities, **PTS** has the **HR Series** of hydraulic universal testing machines. The **HR Series** offers more than the traditional readout, as it includes a computer and software as a readout system. Consistent with the hydraulic universal testing machines, the **HR Series** includes the complete package of standard equipment without the servo control but with:

- ✓ Hydraulic grips
- ✓ Vee and flat inserts
- ✓ Compression plates
- ✓ Bend fixture
- ✓ Shear fixture
- ✓ Computer
- ✓ Printer



HCR-300

HC / HL / HT / HR LOAD FRAMES

MODEL	HC / HL-300	HC / HL-600	HC /HL-1000	HTCS-1000	HC /HL-2000	HTCS-2000
Capacity KN	300	600	1000	1000	2000	2000
Capacity Kgf	30, 591	61,182	101,971	101,971	203,943	203,943
Capacity Lbf	67,500	135,000	225,000	225,000	450,000	450,000
Actuator	Bottom	Bottom	Bottom	Top	Bottom	Top
Load Accuracy	1% *	1% *	1% *	1% *	1 % *	1% *
Force Measurement	Pressure Transducer	Pressure Transducer	Pressure Transducer	Pressure Transducer	Pressure Transducer	Pressure Transducer
Encoder Resolution	0.0005 mm. (0.00002 in.)	0.0005 mm. (0.00002 in.)	0.0005 mm. (0.00002 in.)	0.0005 mm. (0.00002 in.)	0.0005 mm. (0.00002 in.)	0.0005 mm. (0.00002 in.)
Max. Ram Stroke	250 (mm)	250 (mm)	250 (mm)	250 (mm)	250 (mm)	250 (mm)
Max. Test Space	800 (mm)	900 (mm)	800 (mm)	780 (mm)	800 (mm)	850 (mm)
Max. Compression Space	700 (mm)	650 (mm)	750 (mm)	850 (mm)	750 (mm)	720 (mm)
Max. Ram Speed	125 (mm/min)	125 (mm/min)	125 (mm/min)	125 (mm/min)	125 (mm/min)	125 (mm/min)
Grip Type	Hydraulic	Hydraulic	Hydraulic	Hydraulic	Hydraulic	Hydraulic
Flat Inserts (mm)	0 - 15	0 - 30	0 - 55	0 - 40	0 - 55	0 - 50
"V" Inserts (mm)	10 - 32	13 - 40	12 - 60	13 - 60	12 - 60	15 - 70
Insert Dimensions (mm)	90 H x 76 W	90 H x 76 W	90 H x 76 W	90 H x 76 W	90 H x 76 W	90 H x 76 W
Compression Plate (mm)	130 x 130	204 x 204	204 x 204	204 x 204	204 x 204	204 x 204
Number of Columns	2	2 (HL has 4)	2 (HL has 4)	4	2 (HL has 4)	4
Load frame Stiffness (KN/mm)	566	644	1,152	1,152	1,152	1,300
Bend Fixture Span (mm.)	350	600	800	600	600	800
Bend Support & Nose Width (mm)	140	140	140	140	140	140
Max. Bend Displacement (mm)	100	100	100	100	100	100
Shear Specimen Diameter (mm)	10	10	Optional	Optional	Optional	Optional
Load Frame Dimension (LxWxH)(mm)	900 x 600 x 2,250	1,200 x 900 x 2,940	800 x 1,320 x 3,100	1,255 x 900 x 3,900	1,300x900x3,530	1,510 x 1,040 x 4,700
Weight (Kg.)	2,910	3,150	5,690	4,500	9,700	11,900

Notes:

- A capacity 1,500 KN model is also available
- Accuracy of 0.5 % available as an option.
- All hydraulic testers use pressure transducer except HL series that uses a load cell.
- Load frame specifications for HR digital readout testers are the same as the servo controlled testers

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