



Physical Test Solutions

Innovative Solutions in Material Test Equipment

Universal Testing Machines Special Applications



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Universal Testing Machines have applications that are diverse and truly special. The machines are called “universal” for good reason. In addition to the wide variety of applications for the universal testing machines, many have special designs to accommodate truly special applications. This catalog will illustrate a few of the many special applications available from **PTS.**

Electronic Creep and Rupture Testing Machine

Electronic creep rupture series testing machines are mainly used for tension and compression creep tests, rupture strength tests and slack tests for metal and nonmetallic materials. They can also perform routine tension and compression tests as well as low-cycle fatigue and creep fatigue tests with the corresponding accessories.

Features:

- ✓ Uses electromechanical servo system and ball screw transmission system, replacing the old lever arm loading system. The unit can transfer constant rate loading to constant-load or constant stain loading automatically.
- ✓ Electronic load measuring system to measure load and strain with digital display.
- ✓ The computer software is used for data collection.
- ✓ Models are available with single-column or multi-column depending on work volume.
- ✓ Environmental chambers, grip and extensometers are available to meet the need of different material testing applications.

Main Specifications:

- ⌚ Maximum load: 10kN, 20kN, 50kN, 100kN, 200kN, 500kN
- ⌚ Load measurement error: ± 1 % reading
- ⌚ Deformation measurement with LVDT or extensometer. The range is selectable from choose ± 1 , ± 3 , ± 5 , ± 10 mm.
- ⌚ Deformation measurement error: ± 0.5 %F.S.
- ⌚ Long-timely control steady of load deformation: ± 1 %.
- ⌚ Rate of pull rod: 0.01—50mm/min.
- ⌚ Temperature Selectable with environment chambers and furnaces split furnace: 300—1000 C temperature chamber: -70—+350 C vacuum furnace: 800—1600 C
- ⌚ Temperature fluctuation: less than ± 2 C.
- ⌚ Travel of pull rod: 200mm.



HCT-28 Horizontal Creep Testing Machine

The HCT-28 combines electromechanical load application with dead weight long term creep tension. The load frame includes crossheads and frame. The crosshead connects to the front crosshead through adjusting screws. The front grips and load cell are fixed to the crosshead. The rear grips connect the rear crosshead by tension rod and rope. There is one linear bearing between tension rod and bracket. That makes a coaxial force and also lowers the friction.

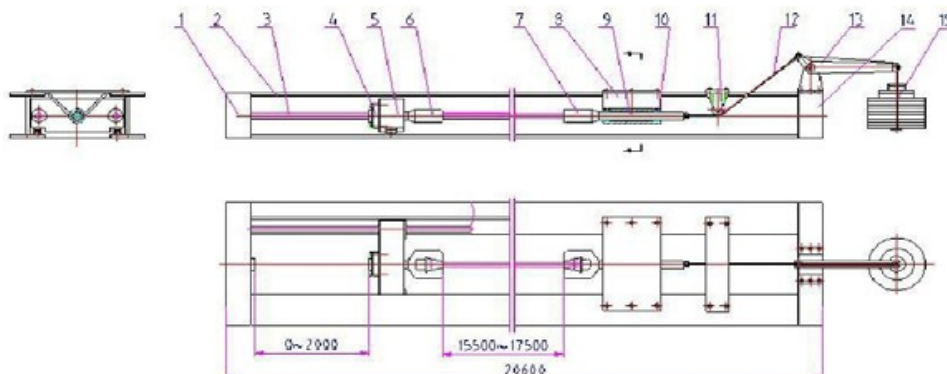
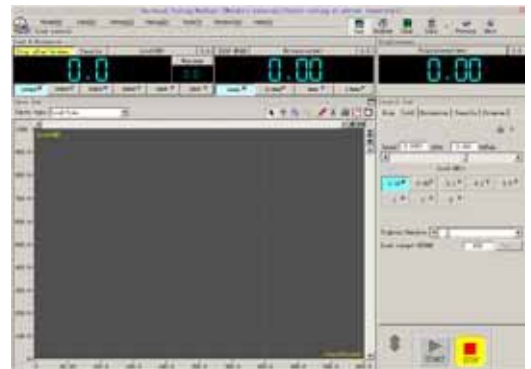
After the specimen is clamped, the specimen will be pre-tensioned by the crosshead. The turning bracket amplifies the tension load from the weight and applies the load to the tension rope. This configuration passes the load to the specimen through the tension rod and grip. The load is then measured through the load cell mounted on the grips.

Specifications:

- ❖ Maximum creep test: 28KN (6,300 lb)
- ❖ Load applied: Pre-tensioned by screw. Creep load by weight.
- ❖ Load measured by load cell and computer display.
- ❖ Test space: 20,000-25,000mm (65 ft – 82 ft)
- ❖ Weight: Approximately 6 metric tons.(13,300 lb)

Configuration:

- ✓ Load Frame
- ✓ Front and rear crosshead
- ✓ Moving crosshead
- ✓ Adjusting screw
- ✓ Fix bracket
- ✓ Fixed pulley
- ✓ Linear bearing
- ✓ Tension rope and turning bracket
- ✓ Weight to apply creep test
- ✓ Control console
- ✓ Computer
- ✓ MaxTest software and printer



HHT-600-7 Computer Control Hydraulic Horizontal Tensile Testing Machine

Principle:

The load frame is designed with a structure in which the tensile space can be adjusted by a moving cart. A digital controller controls the servo cylinder that applies the load. Load force is measure via an accurate load cell measuring the load. Crosshead displacement is measure by a photoelectrical encoder. Operational control, test results and reports are performed with the use a computer and PTS Solutions Software.

Functions & Applications:

The testing machine features a full digital controller that coupled with a servo valve control system along with the standard analytic software provides closed loop control of load and displacement. , Zero setting is achieved digitally and physically with a software-hardware interface which also provides digital calibrating, protection, limit-position and signal input. +In addition the machine can be equipped special analysis software that includes a flexible report generation format that can be customized to specific customer requirements. The user friendly PTS Solutions Software allows screen display of test data, material and operating information, test curve, data storage and database management.

Technical Data:

1. Maximum test load: 600KN (134,800 lbf)
2. Test load range: 4% - 100% of full scale
3. Load accuracy: $\pm 1\%$
4. Ram stroke: 500mm
5. Test tensile space: 6900-7500mm
6. Ram no-load speed: $\geq 100\text{mm/min}$ (4"/min)
7. Measuring mode: load cell measuring the load
8. Displacement measurement: by photoelectric encoder measuring
9. Deformation measurement: by LVDT.
10. Dimensions of load frame: 11000x900x530mm
11. Control mode: Keyboard input operation and mouse control provides maximum flexibility and smooth maneuvering of the test process. The three channel parameters are stored in ASCII format and used for analog repetition of the testing procession for re-analysis of test data. Thanks to its digital amplifier technology, zero setting and change of steps can all be automatically done by the computer, so the computer fictitious instruments can give full play to its strong functions. The PTS Solutions Software has the capability of displaying several types of curves in real time, and can store test parameters during the test process, so it can guarantee to reprocess the test data and web-net operation. The data processing section can analyze and process the test results according to the customers' requirements.
12. Safety features:
 - a. Overload protection function: When load applied goes over 2% - 5% of maximum test load of per step, the machine stops automatically.
 - b. A limit switch is used to control ram and crosshead travel.
 - c. The system features an automatic alarm function that is activated when the oil filter is choked and oil temperature rises.
13. Power supply: 380V, 50Hz, or 240V, 60Hz.

Configuration:

The machine consists of the following main components.

1. Load frame system.
 1. Servo cylinder (Ram stroke 1500mm ((59"), system pressure 25MPa)
 2. Back pull head, crosshead and adjusting components (motorized adjustment of test space and pre-load by pulling the moving cart)
 3. Oil cylinder base
 4. Moving cart and rail and safety protection cover
 5. Front pull head, small crosshead and pull rod.
2. Control cabinet
 3. Hydraulic system
 1. Oil source
 2. Servo valve
 3. Gear pump, connecting pipes and motor.
 4. Computer control and display system
 1. Dell computer, 17" LCD Monitor
 2. Hp printer
 3. Computer servo control system and data processing software system.
 4. Amplifier
 5. Transducer
 1. Load cell
 2. Photoelectric encoder
 6. Grips for Aluminum conductor and ACSR.



Structure Diagram of Load Frame

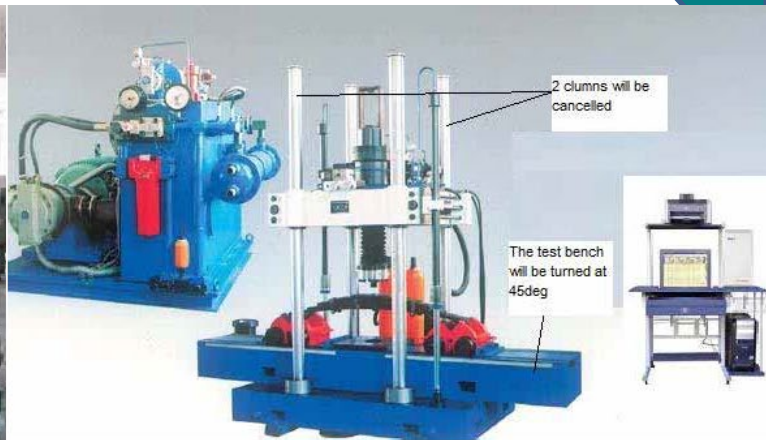
1. Moving crosshead 2. Load cell 3. Pull rod
4. Cylinder base 5. Cylinder 6. Front crosshead
7. 8. Pull head 9. Back crosshead
10. lead screw adjusting system

HST-200 Leaf Spring Fatigue Testing System

Model HST-200 is a servo hydraulic computer controlled system designed especially for fatigue tests on automobile leaf springs. The load frame has 2 columns which fixed diagonally at the base. The design facilitates loading and unloading of the specimens. The system has a special design to perform static compression test as well as dynamic tests on a variety of leaf springs.

Main Specifications:

- ❖ Maximum static load: 200kN
- ❖ Maximum dynamic load: ± 130 kN
- ❖ Load accuracy: 1%
- ❖ Frequency of fatigue test: 0.1-5Hz. When the frequency is 1Hz, the swing is 200mm (± 100 mm), and the dynamic load is 120kN.
- ❖ Displacement measuring accuracy: $\pm 1\%$
- ❖ Maximum leaf spring length: 800-2000mm.
- ❖ Maximum width: 120mm.
- ❖ Maximum thickness: 250mm.
- ❖ Load frame dimensions: 1700 x 2600 x 2900 mm
- ❖ Weight: 2500 kg



BST Series Constant Pressure Servo Pump Station



Pump station control unit



Pump station

MCTS Mattress Compression Testing System

Introduction and Application:

The system is designed to perform compression tests on mattresses according to ASTM F1566-99. The load frame is door frame design type. The load frame is to be fixed to the foundation by bolts. The load is applied by a servo motor and is measured by a load cell. The manual displacement is measured by an encoder. The test procedure and the data processing are performed according to No. 6 of ASTM F1566-99.

Specifications:

1. Maximum load: 500 lb. (2000N)
2. Load measuring range: 4%-100%
3. Load accuracy: $\pm 1\%$
4. Testing space: 10" – 18" (250-450mm)
5. Compression stroke: 8" (200mm)
6. Power: 110V, 60Hz.
7. Load frame dimensions: 128" X 20" X 42" (3250x500x1080mm)

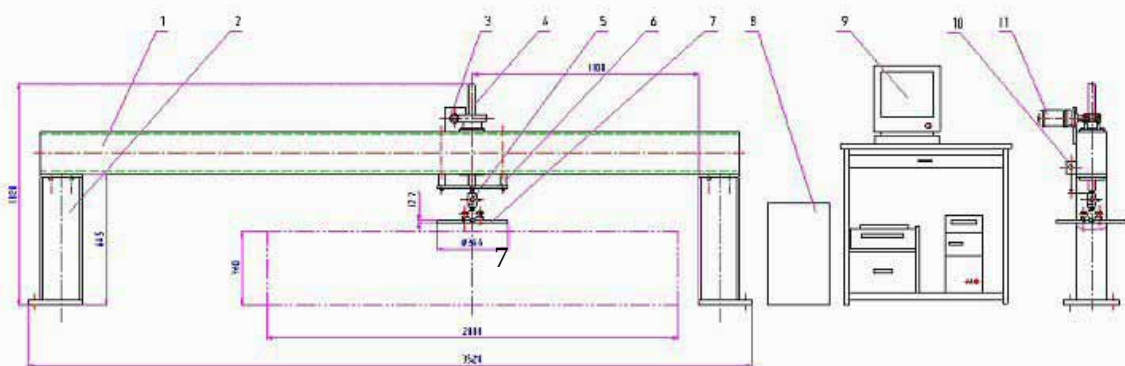
Pneumatic Positioning System

Structure and Application

This is an optional devise for the MCTS Mattress Compression Testing System. The main function is to lift up the mattress by a pneumatic supporter in order to place the mattress in the required testing position, and stretch the 4 wheels to adjust the position easily. After completing the adjustment, the wheels are withdrawn to place the mattress on the floor, and then perform the test.

Structure: The structure is made of fine hardwood with aluminum sheet around the hardwood as the main support for the mattress, and uses air cylinder and wheel separately in the 4 corners. Note: this system requires compressed air for proper operation.

Dimension: 2050mm×2100mm×150mm (L×W×D)



- 1.- Crosshead 2.- Column 3.- Worm wheel and worm 4.- Ball screw
5.- Load cell 6.- Guider pillar 7.- Compression plate 8.- Power console
9.- Computer 10.- Encoder 11.- Servo motor

Plastic Pipe Tester

The Physical Test Solutions plastic pipe tester is a special design system used to test extra large plastic pipes. The machine includes a special load frame to accommodate the pipe size, a computer data acquisition and control system that includes computer and software. The software has complete programming, archiving and report generation capabilities.

The turn-key package includes load frame, compression plates and all of the necessary accessories to commence work upon receipt.



CTM.25 Box Compression Testing Machine

Model CTM-25 is designed and manufactured according to ISO 2872, AS 130-1-800 S, ASTM D 4169, ASTM D 642, and TAPPI T 804 standards. It is connected with software, suitable for the compression tests and stack test of packing boxes. The system is microprocessor controlled and is equipped with a PC computer and software for analyzing and data processing. The machine is widely used in the fields of carton and packaging industries.



Applications:

- ✓ Box Compression Tests
- ✓ Stack Testing
- ✓ Other Compression Test

Specifications:

- ⇒ Maximum capacity: 25kN
- ⇒ Variable Test Speed: 1_200mm/min
- ⇒ Return speed: 200mm/min or more
- ⇒ Accuracy: $\pm 1\%$ F.S
- ⇒ Position Accuracy: $\pm 1\%$ 9
- ⇒ Test space: 1000×1000×900 mm
- ⇒ Platen Size: 1000 ×1000 mm
- ⇒ Dimension of load frame: 1400×1000×2000 mm
- ⇒ Power: 3 Phs, 380V, 50Hz or customer's requirements

Multi-Station Tensile Tester

This tester constitutes an ideal solution for high volume testing in tensile, peel, tearing, heat seal and adhesive test of plastic film, complex film, flexible packaging materials, adhesives, adhesive tapes, glue, rubber, paper, etc.

Features:

- ❑ 6 stations design, capable to process six tests at one time, new world-class efficiency.
- ❑ Complies with the following international standards: ISO 37, ASTM E4, ASTM D828, ASTM D882, ASTM D1938, ASTM D3330, ASTM F88, ASTM F904, JIS P8113
- ❑ High accuracy 0.5%, flexible range, easy to exchange
- ❑ Micro-computer controls, pneumatic specimen grips, easy to operate and reliable.
- ❑ Optional test speed controlled by software, return fast and automatically when finished
- ❑ Multiple test items including tensile, distortion, heat seal, tearing, peel. Provide the data analysis of rated force, modulus of elasticity, and stress, etc.
- ❑ Process controlled by computer, user friendly human- equipment interaction.
- ❑ Powerful software, multiply curve display methods. Group of test curve analysis, Statistics and analysis of maximum, minimum, average and standard deviation.
- ❑ Test results displayed by international unit, metric unit, British unit, no need for manual conversion.
- ❑ Test report curve can be zoomed in and out , cursor display, easy for data analysis
- ❑ Auto zero, intelligent fault alarm, overloading protection, multilevel go-switch protection, safe and reliable



Technical Data

- ⌚ Specification: 500N 50N¹⁰
- ⌚ Accuracy: $\pm 0.5\%$ of reading force
- ⌚ Test speed: 100 150 200 250 300 and 500 (mm/min)
- ⌚ No. of specimens: 1 ~ 6 pieces
- ⌚ Width of specimen: 0 ~ 30 mm
- ⌚ Stroke: 1200mm
- ⌚ Gas supply pressure: 0.5 MPa ~ 0.7 MPa
- ⌚ Dimension: 1020mm (L) × 510mm (B) × 2100mm (H)
- ⌚ Power: AC 220V 50Hz/60Hz
- ⌚ Net weight: 210 kg

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