Universal Testing Machine
HUNG TA INSTRUMENT CO., LTD., a pioneer in manufacturing quality control instruments, was established in September 1975. Our CAD-CAM and R&D center is fully equipped to ensure products of advanced technology, state of art knowhow in order to meet our company's strict policy of reliability, tenacity of purpose and good after sales service.

In order to comply with world wide requirement of quality control management, our R&D department has spared no effort in developing up to 200 types of various reliable testing instruments.

Our range of testing equipments are suitable for quality control of products of various fields, including rubber, plastic, shoe manufacturing, paper and pulp industries, machinery and hardware, construction industries, automobile parts, electrical wire and cable. They meet the needs of testing products like automobile, motorcycle, rackets, clubs, hardware items, reinforced concrete, bridge, optical fiber, cable, textile, dyeing and finishing, as well as environmental test equipments.

We also represent a number of reputable quality control equipments manufactured by renown American and European producers.

We are proud to be the only Taiwanese manufacturer approved by the Economic Department of National Calibration and Service Division of Taiwan as an laboratory for inspection and calibration (calibration cert. No.0002). Furthermore, we issue certificates recognized by the government.
力校正實驗室及檢測實驗室
The force calibration laboratory & inspection laboratory

電腦軟體及機械設計中心
Computer aided design center

電子計測系統製造中心
Electronic measuring system manufacturing center

展示測試中心
Show room & testing center

展示測試中心
Show room & testing center

▲度量衡國家檢校體系力校正實驗室證書及容量0 ~ 2000KN 符合ISO GUIDE 17025
▲Force calibration laboratory approved by CNLA, ISO GUIDE 17025

通過ISO-9001國際品質認證，證書號碼Q10161
Quality Management System accredited by ISO-9001 with the Certification No. Q10161

HT-0756P 電腦式儀器試驗機
Computer Type Disk Rheometer

HT-2101 電腦伺服油壓試驗機(開口式)
Computer-Control Servo Hydraulic Universal Testing Machine(Openfront-Jaw)

HT-2402 電腦伺服控制材料試驗機
Computer Servo Control Materials Testing Systems

HT-9770 自動化校正標準力量標準機
High Precision Automatic Dead Weight Primary Force Calibrator
(50 KN ~ 2000 KN)

2000 KN

50 KN
HT-2101 SERIES
OPEN CROSSHEAD COMPUTER SERVO
HYDRAULIC UNIVERSAL TESTING MACHINE

HT-2101 SERIES

(HT-2101)
HT-2101 Series Features

1 HIGH PRECISION
Adopts high precision load cell, with special production process gap-free ball screws, force accuracy can reach up to class 1 or class 0.5, displacement measuring accuracy ±0.5, which conforms to most international standards.

2 HIGH EFFICIENCY
Front open crosshead hydraulic grips design, easy and convenient for mounting specimen, safe and accurate.

3 HIGH SAFETY
Adopts hydraulic motor, stable for driving system up or down, durable and safe, with convenient remote controller. Self-moving crosshead adjusting mechanism, non-rotating of screws, ensuring high safety.

4 MULTI FUNCTIONS
With many different test applications, software and grips can be applied for various materials, finished products, for the tests of tensile, compression, shear, bending, transverse, peeling, tearing, adhesion, bonding, high/low temperature environmental tests and displacement measuring tests.

5 HIGH QUALITY
High stiffness FCD55 structural frame, with high strength axle material, durable steel construction and long time operation. Hydraulic system adopts high torque motor, high efficiency pump and high-response servo valve, high functional filter and working oil cooling system, safe to operate with multi-protection design and various modularized test applications, which meets the needs from many different fields.

6 STANDARDIZATION
Gripping base adopts modularized design, easy to interchange different jaws, easy and economic. Special equipment also adopts modularized package, with convenient options.

7 HIGH PERFORMANCE
With closed-loop servo hydraulic control system, equipped with full-functional window-based data analysis and control software, and powerful test functions. Available to execute low-cycle fatigue test, and many advance system control performance.

8 HIGH TECHNOLOGY
Micro-computer SOC indicator, with large and clear display blue screen. With the function of display and control, available to control along the frame and print out test data.
FUNCTIONS

- Only one connecting cable between the controller and the computer, safe and convenient
- Easily selectable Chinese or English menus
- Control mode through closed-loop fuzzy control, with wide application
- With four standard control modes:
  1. Fixed displacement control
  2. Fixed speed control
  3. Fixed load control
  4. Fixed load speed control
- A panel key directly controls the UP/DOWN function of crosshead, and is available to preset test speed at low/middle/high
- A rotating knob for direct fine tuning control of the UP/DOWN function of crosshead, and available to preset test speeds at low/middle/high
- A HOME key to return the crosshead back to original position from anywhere
- Displays the actual status of the tester
- Displays the values of load and displacement with the computer simultaneously
- 28 function and numerical keys, test function and display is used by conversational method
- Can be used for performing tensile testing, compression, etc.
- Can be extended up to 4 channels for load cell (optional)
- Load signal amplification 1, 2, 5, 10 through auto range function
- With independent channel for HT-9160 (optional)
- Load unit available to switch among N, kN, g, kg, ton, lb; displacement unit available to switch among mm, cm, inch
- Available to auto shift to fixed position control function after test
- With overload protection function in order to prevent load cell from overloading
- Can display or search the test data of each test
- Can output the test data to printer for a hard copy. And the report can calculate stress value and elongation rate

HARDWARE SPECIFICATIONS

- Load cell available to extend to 4 channels (350 ohm), signal input range of load cell 2 to 4mv/v
- A/D converting resolution 16 bit, A/D converting speed 25us
- D/A converting resolution 16 bit
- Encoder transfer circuit resolution is 4 times better
- Input power available to switch to 110/220V

CONTROL MODES

- Power function SOC Indicator & Controller

CONTROL FUNCTION BLOCK DIAGRAM
HT-2010 MICRO COMPUTER U.T.M. INDICATOR

Powerful function SOC Indicator & Controller

HT-2010 U.T.M. INDICATOR

- Large LCD display screen, with blue screen and back-light function, display is clear and easy to read in darkness
- Easily selectable Chinese or English menus
- Load unit available to switch among N, kN, g, kg, ton, lb
- Displacement unit available to switch among mm, cm, inch
- A panel key directly controls the UP/DOWN function of crosshead, and is available to preset test speed at low/middle/high
- With 28 function and numerical keys, test function and display is used by conversational method, easy and convenient
- A rotating knob for direct fine tuning control of the UP/DOWN function of crosshead, and available to preset test speeds at low/middle/high

COMPUTER SYSTEM

—Super Powerful program, with superior control functions

HIGH INTELLIGENCE COMPUTER SYSTEM

- Chinese-English 32 bit Windows 2000 or Windows XP operating system, high safety and stability.
- Operation interface by icons, which makes user easy to learn.
- Test standards, specimen information and test data under database management, with high expandability.
- On-line graph switch-and-display, control testing dynamics, with high testing integrity. Test graphs include Load-Displacement, Load-Time, Displacement-Time, Stress-Strain, Load-Extensometer & Load-lateral extensometer.
- Formula opens for free editing, with clear formula parameters, easy to understand and learn. Including all normal testing for different industries like metal, rubber, footwear, peeling...etc.
- Test standards can set load sampling, displacement sampling, interval setting and yield point interval setting.
- Re-calculation analysis can change specimen information, various parameters and formula change calculating.

Excellent interface

Easy setting for modularization
SUPER POWERFUL CONTROL FUNCTIONS

- Basic control mode includes fixed velocity, fixed displacement, Constant load speed control, constant stress speed control and constant strain speed control
- Switching of control mode can be set freely, including displacement $\geq$, displacement $\leq$, load $\leq$, yield point, break point, stress $\geq$, stress $\leq$, strain $\geq$, strain $\leq$.
- Available to set cyclic mode, cycle times, and continue the next control mode when preset cycle time is up

- Tensile and compression control mode setting
- Database management for control modes, available to edit or set repeatedly.
- Control mode covers all international testing standards, including GB, CNS, ASTM, ISO, DIN, JIS... etc.
- Available to perform low frequency cyclic control tests (limited cycles).

Main menu

Test graph

Report editor

Formula editor
COMPUTER SYSTEM
Super Powerful program, with superior control functions

PROGRAM CONTROL FUNCTIONS

► Standard control modes

► No.1

► No.2

► No.3

► Special control modes (for HT-2101AP, HT-2101BP only)
(optional upon extra costs)

► No.4

► No.5

► No.6

► No.7

► No.8

► No.9

► No.10

► No.11

► No.12
T-2101A, HT-2101B
OPEN CROSSHEAD COMPUTER SERVO HYDRAULIC UNIVERSAL TESTING MACHINE

HT-2101A OPEN CROSSHEAD COMPUTER SERVO HYDRAULIC UNIVERSAL TESTING MACHINE

HT-2101B OPEN CROSSHEAD SOC SERVO HYDRAULIC UNIVERSAL TESTING MACHINE
**T-2101, 2101A, HT-2101B**  
OPEN CROSSHEAD COMPUTER SERVO HYDRAULIC UNIVERSAL TESTING MACHINE

### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Unit</th>
<th>Load Displacement</th>
<th>N, kN, g, kg, ton, lb</th>
<th>mm, cm, inch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile (mm)</td>
<td>Max. grip span</td>
<td>800</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Round fixture</td>
<td>0°9–20, 0°20–40</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plate fixture</td>
<td>0°20, 0°40 (width50)</td>
<td></td>
</tr>
<tr>
<td>Compression (mm)</td>
<td>Max. comp. distance</td>
<td>700</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Platen size</td>
<td>0°120</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Max. distance</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>Transverse bending</td>
<td>Support dia. x width</td>
<td>30 x 120</td>
<td>120</td>
</tr>
<tr>
<td>(mm)</td>
<td>Punch tip radius x width</td>
<td>15 x 60</td>
<td>60</td>
</tr>
<tr>
<td>Loading speed (mm/s)</td>
<td>100 MAX / 1.5KW</td>
<td>80 MAX / 1.5KW</td>
<td>70 MAX / 2.2K</td>
</tr>
<tr>
<td>Motor capacity (3phase)</td>
<td>250</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>Ram stroke (mm)</td>
<td>250</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crosshead speed (mm/min)</td>
<td>300</td>
<td>300 (hydraulic motor)</td>
<td></td>
</tr>
<tr>
<td>Effective width of working table (mm) (width x depth)</td>
<td>540 x 620</td>
<td>650 x 650</td>
<td>750 x 750</td>
</tr>
<tr>
<td>Power consumption (under 3/220V/60Hz)</td>
<td>4.0KVA</td>
<td>6.0KVA</td>
<td>8.0KVA</td>
</tr>
<tr>
<td>Dimension (mm)</td>
<td>Main frame</td>
<td>1120 x 620 x 2320</td>
<td>1200 x 700 x 2200</td>
</tr>
<tr>
<td></td>
<td>Weight (kg)</td>
<td>160</td>
<td>1200 x 650 x 1280</td>
</tr>
<tr>
<td></td>
<td>Control box</td>
<td>160</td>
<td>200</td>
</tr>
<tr>
<td>Standard accessories</td>
<td>Jaw holder, Jaw plate (for plane), Jaw plate (for round)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optional accessories</td>
<td>Bending fixture, Compression platen</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### HT-2101 SERIES STANDARD ACCESSORIES

1. Jaw holder
2. Jaw plate (for plane)
3. Jaw plate (for round)
4. Bending fixture
5. Compression platen

### HT-2101 SERIES OPTIONAL ACCESSORIES
T-9501 SERIES
COMPUTER SERVO HYDRAULIC UNIVERSAL TESTING MACHINE

HT-9501 SYSTEM CATEGORIES
- Quality management system ISO9001 certified
- Frame FCD55 high stiffness material
- High precision load cell
- Control & display system type A, B C available

HT-9501 COMPUTER SERVO HYDRAULIC UNIVERSAL TESTING MACHINE
- Super powerful control function, high intelligence computer system
- Closed loop servo hydraulic control system
- 16-bit HT-9606 interface

HT-9501B SOC SERVO HYDRAULIC UNIVERSAL TESTING MACHINE
- High-tech SOC micro-computer control & display system
- Closed loop servo hydraulic control system

HT-9501A COMPUTER SOC SERVO HYDRAULIC UNIVERSAL TESTING MACHINE
- Super powerful control function, high intelligence computer system
- Closed loop servo hydraulic control system
- Dual control & display system (computer & SOC system)

HT-9501C MICRO-COMPUTER HYDRAULIC UNIVERSAL TESTING MACHINE
- Super powerful control function, high intelligence computer system
- Closed loop servo hydraulic control system
- Dual control & display system (computer & SOC system)
T-9501 SERIES
COMPUTER SERVO HYDRAULIC UNIVERSAL TESTING MACHINE

HYDRAULIC UNIVERSAL TESTING MACHINE

- Suitable for various testing purposes in industries such as aerospace, metal, polymer, ceramic, machinery, electric, electronic, auto parts, sports equipment, leather, chemical fiber, webbing, ropes, cable & cord, steel wire, constructional hardware, concrete, rubber, plastic, film, paper, package, food...etc., and available for the application of inspection and research for the static testing of tensile, compression, bending, and shear...etc.

- Conforming to main international standards like ISO 7500/1, EN 1002-2, BS 1610, DIN 5122, ASTM E4, JIS B7721/B7733, GB 228-87, JTG 139-1999, CNS 2111, 9471, 9470.

- Computer Universal Testing Machine

- Closed-loop fuzzy control with high precision servo valve

- Fully integrated software application for controlling the tester, storing results, viewing and comparing...etc. Printer for making hard copies of test results quickly and conveniently.

- Easy access door for maintenance (control box).

- Protective cover for pipes and cables for user safety and convenience.

(HT-9501A)
**HT-9501 FEATURES**

- **HIGH PRECISION, HIGH STIFFNESS STRUCTURE**
  - FCD55 high strength casting material, driving screws and high stiffness axle materials, strong structure, high stability, long durability. Hydraulic system adopts high efficiency pump and high conversational servo valve, with excellent filtration. Cooling system matches special oil tank makes operation safe, stable and precise.

- **STANDARDIZATION, MODULARIZATION**
  - Standardized jaw holder specifications, available to replace, economic, convenient and speedy. Mechanical hydraulic grips easy and convenient to interchange, available for compression, bending and shear.

- **MULTI-FUNCTION, HIGH PERFORMANCE**
  - Multi-purpose application test program, available to test various materials and products, for conducting tensile testing, compression, shear, bending, peeling and displacement measurements, and also available to be equipped with high/low temperature testing equipment for environmental testing.

- **HIGH ACCURACY, SUPER POWERFUL CONTROL FUNCTION**
  - Uses low profile high precision load cell, with stable and sensitive sensing features and low error. Process of calibration conforms to ISO GUIDE 25 with CNLA certificate of calibration, meeting various international standards. Closed-loop servo hydraulic control system, with high intelligent computer system, full-functional data analysis. Control software with complete test functions. Powerful but easy to use. Modularized setting, available to conduct the control modes of Fix displacement, fixed speed, fixed load, constant load speed, for graph display, calculation and analysis.

**MEASURING UNIT**

- **METHOD OF MEASUREMENT**
  - a. IBM compatible computer system with SVGA color monitor and color inkjet printer.
  - b. Load signal from high precision load cell
  - c. Displacement signal from optical encoder or optionally from analogue strain gauge.
  - d. Signal processed and amplified by low-noise high linearity electronics

- **Signal amplification 1, 2, 5, 10 Auto range (optional 20 & 50)**

- **Automatic load ranging and switch over to a higher next range when load exceeds 90% of present range**

- **Accuracy of load: within ±1%**

- **Real time display for various kinds of graphs available**
  - a. load - displacement
  - b. load - time
  - c. displacement - time
  - d. stress - strain
  - e. load - extensometer (optional)

**CONTROL UNIT**

- **Method of control: closed-loop fuzzy control**
- **High precision servo valve**
- **Control mode:**
  - a. Fixed Displacement
  - b. Fixed Velocity
  - c. Fixed Load
  - d. Constant Load Speed
  - e. Constant Strain Speed
  - f. Constant Stress Speed
  - g. Stress->Strain Speed
  - h. Fixed velocity -> Load
  - i. Fixed velocity -> Displacement

- **Setting of testing parameters: database modularized**
- **Display of testing parameters: value and real-time curve (load, stroke or elongation) available to be displayed and switched by computer**
- **Control mode of operation: auto/manual function available to switch off**
- **Emergency shut down button & overload protection (auto stop) functions equipped**
# T-9501 SERIES
## COMPUTER SERVO HYDRAULIC UNIVERSAL TESTING MACHINE

### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Model</th>
<th>H-200kN</th>
<th>H-300kN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capacity (kN)</strong></td>
<td>200kN</td>
<td>300kN</td>
</tr>
<tr>
<td><strong>Tensile (mm)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. grip distance</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>Round fixture</td>
<td>Φ8-40</td>
<td>Φ8-40</td>
</tr>
<tr>
<td>Plane fixture</td>
<td>0-35 (width 50)</td>
<td>0-35 (width 50)</td>
</tr>
<tr>
<td><strong>Compression (mm)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. distance</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>Platen size</td>
<td>Φ120</td>
<td>Φ120</td>
</tr>
<tr>
<td><strong>Transversebending (mm)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. distance</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>Support dia. x width</td>
<td>30x120</td>
<td>30x120</td>
</tr>
<tr>
<td>Punch tip x width</td>
<td>15x120</td>
<td>15x120</td>
</tr>
<tr>
<td><strong>Loading speed (mm/min)</strong></td>
<td>Max 100/1.5KVA</td>
<td>Max 100/1.5KVA</td>
</tr>
<tr>
<td><strong>Ram stroke (mm)</strong></td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td><strong>Crosshead speed (approx)(mm/min)</strong></td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td><strong>Effective width of working table (W×D)(mm)</strong></td>
<td>450x580</td>
<td>450x580</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>30/220V/60Hz or 30/380-415V/50Hz</td>
<td></td>
</tr>
<tr>
<td><strong>Power consumption</strong></td>
<td>3.0KVA</td>
<td>3.0KVA</td>
</tr>
<tr>
<td><strong>Dimension (mm)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main frame</td>
<td>900x600x2000</td>
<td>1120x620x2000</td>
</tr>
<tr>
<td>Control box</td>
<td>1200x650x1280</td>
<td>1200x650x1280</td>
</tr>
<tr>
<td><strong>Weight (approx) (Kg)</strong></td>
<td>1300</td>
<td>1700</td>
</tr>
</tbody>
</table>

### HT-9501 SERIES STANDARD ACCESSORIES

- Jaw holder 4pcs/set
- Jaw plate for round 8 pcs/set
- Jaw plate for plane 4 pcs/set
- Compression platen 2 pcs/set
- Liner (thick/thin) 8 pcs/set
<table>
<thead>
<tr>
<th>H-500kN</th>
<th>H-1000kN</th>
<th>H-2000kN</th>
<th>H-3000kN</th>
<th>H-4000kN</th>
</tr>
</thead>
<tbody>
<tr>
<td>500kN</td>
<td>1000 kN</td>
<td>2000 kN</td>
<td>3000 kN</td>
<td>4000 kN</td>
</tr>
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<td>700</td>
<td>600</td>
<td>600</td>
<td>1200</td>
<td>1400</td>
</tr>
<tr>
<td>Φ12-50</td>
<td>Φ12-70</td>
<td>Φ20-90</td>
<td>Φ20-110</td>
<td>Φ30-120</td>
</tr>
<tr>
<td>0-45 (width 50)</td>
<td>0-65 (width 65)</td>
<td>0-85 (width 90)</td>
<td>0-105 (width 110)</td>
<td>0-115 (width 120)</td>
</tr>
<tr>
<td>700</td>
<td>600</td>
<td>600</td>
<td>1000</td>
<td>1150</td>
</tr>
<tr>
<td>Φ120</td>
<td>Φ160</td>
<td>Φ220</td>
<td>Φ280</td>
<td>Φ300</td>
</tr>
<tr>
<td>500</td>
<td>800</td>
<td>800</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>50x120</td>
<td>50x160</td>
<td>70x220</td>
<td>80x250</td>
<td>80x250</td>
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<tr>
<td>25x160</td>
<td>25x160</td>
<td>25/40x160</td>
<td>40/50x250</td>
<td>40/50x250</td>
</tr>
<tr>
<td>Max 80/1.5KVA</td>
<td>Max 70 / 2.2KVA</td>
<td>Max 50 / 5.5KVA</td>
<td>Max 50 / 5.5KVA</td>
<td>Max 50 / 7.5KVA</td>
</tr>
<tr>
<td>250</td>
<td>250</td>
<td>300</td>
<td>300</td>
<td>350</td>
</tr>
<tr>
<td>300</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>550x620</td>
<td>620x820</td>
<td>720x820</td>
<td>1000x1000</td>
<td>1150x1150</td>
</tr>
</tbody>
</table>

3φ/220V/60Hz or 3φ/380-415V/50Hz

<table>
<thead>
<tr>
<th>4.0KVA</th>
<th>5.0KVA</th>
<th>10KVA</th>
<th>1KVA</th>
<th>16KVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1120x620x2050</td>
<td>1330x750x2470</td>
<td>1550x820x3000</td>
<td>1860x1100x3970</td>
<td>2200x1400x4800</td>
</tr>
<tr>
<td>1200x650x1350</td>
<td>1200x650x1280</td>
<td>1000x650x1280</td>
<td>1000x1000x1280</td>
<td>1000x1000x1280</td>
</tr>
<tr>
<td>2000</td>
<td>3200</td>
<td>6800</td>
<td>8000</td>
<td>11000</td>
</tr>
</tbody>
</table>

1120

**HT-9501 SERIES OPTIONAL ACCESSORIES**

1. Fastening handle 2 pcs/set
2. Pinion shaft 2 pcs/set
3. Bending head 1 pcs/set
4. Bending table 1 pc/set
5. Hydraulic grips

**HT-9501 SERIES**
**APPLICATION**

- Suitable for testing longer specimens like wire, cable, connecting rod, steel wire, steel cable, steel link, metal chain, chain assembly, spring, webbing, rope, anchor chain, hook, piping, metal fasteners...etc.
- Conforming to most international standards like ISO 7500/1, EN1002-2, BS1610, DIN5122, ASTM E4, JIS 7721/B7733, GB228-87, JJG139-1999, CNS2111, 9471, 9470...etc.

**CONTROL UNIT**

- Method of control: closed-loop fuzzy control
- High precision servo valve
- Control mode:
  a. Fixed Displacement
  b. Fixed Velocity
  c. Fixed Load
  d. Constant Load Speed
  e. Constant Strain Speed
  f. Constant Stress Speed
  g. Stress->Strain Speed
  h. Fixed velocity -> Load
  i. Fixed velocity -> Displacement
- Setting of testing parameters: database modularized
- Display of testing parameters: value and real-time curve (load, stroke or elongation) available to be displayed and switched by computer
- Control mode of operation: auto/manual function available to switch off
- Emergency shut down button & overload protection (auto stop) functions equipped

**MEASURING UNIT**

- Method of measurement
  a. IBM compatible computer system with SVGA color monitor and color inkjet printer
  b. Load signal from high precision load cell
- Signal amplification 1, 2, 5, 10 auto range (20 & 50 optional)
- Automatic load ranging and switch over to a higher next range when load exceeds 90% of present range
- Accuracy of load: within 1%
- Real time display for various kinds of graphs available
  a. load - displacement
  b. load - time
  c. displacement - time
  d. stress - strain
  e. load - extensometer (optional)

**DATA PROCESSING SYSTEM**

- Data acquisition and data-analysis / clarification
- Available to backup and modify the write/read path of database
- SI unit and other conversion unit: N, kN, g, kg, ton, lb for force; mm, cm, inch for length
- Self-defined testing modules based upon any kind of standard test norms (optional)
- Software password security protection (optional)
- XBAR-R engineering diagram and SQC quality control diagram (optional)
- Various kinds of software providing data manipulation and analysis (optional)

(HT-8296 Series Main Frame)
**Model No. HT-8296 SERIES**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>100, 300, 500, 1000, 2000, 5000, 10000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load resolution</td>
<td>1/20,000</td>
</tr>
<tr>
<td>Load accuracy</td>
<td>±1%</td>
</tr>
<tr>
<td>Load amplification (auto range)</td>
<td>x1 x2 x5 x10 Auto range (X20 and above are optional)</td>
</tr>
<tr>
<td>Testing width (mm)</td>
<td>500</td>
</tr>
<tr>
<td>Ram stroke (mm)</td>
<td>750mm as standard (1000, 1500, 2000mm optional)</td>
</tr>
<tr>
<td>Loading speed (mm/min)</td>
<td>Max.100 as standard (Max. 200 and above optional)</td>
</tr>
<tr>
<td>Gripping distance (mm)</td>
<td>300</td>
</tr>
<tr>
<td>Power</td>
<td>3ø/220V/60Hz or 3ø/380-415V/50Hz</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimension (WxDxH) (cm)</th>
<th>Frame 140x (as per testing length) x110 120 x 65 x 128</th>
<th>Control 190x (as per testing length) x110 120 x 65 x 128</th>
</tr>
</thead>
</table>

- For metal & wire samples: Wedge holder with jaw plates for plane and rod
- For webbing & rope: Pin-thru holder with pins of (50 & 100mm x 1 set each)
- For others: special design & manufacture as per actual size of test samples

**HT-8296 SERIES CONTROL & DISPLAY SYSTEM**

- HT-8296 COMPUTER SERVO HYDRAULIC HORIZONTAL MATERIALS TESTING MACHINE (Control & display system + Main frame)
- HT-8296A Computer SOC Servo Hydraulic Horizontal Materials Testing Machine (Control & display system + Main frame)
- HT-8296C Micro-computer Hydraulic Horizontal Materials Testing Machine (Control & display system + Main frame)

- Super powerful control function, with high intelligent computer system
- Closed-loop servo hydraulic control system
- 16-bit HT-9606 interface
- Super powerful control function, with high intelligent computer system
- Closed-loop servo hydraulic control system
- Dual control & display system (computer & SOC system)
- Load/Hold/Return control valve, easy operation
- High precision & stability hydraulic system
- Non-servo hydraulic system
# HT-8747
Thermostat Chamber

<table>
<thead>
<tr>
<th>Models</th>
<th>HT-8747A</th>
<th>HT-8747B</th>
<th>HT-8747C</th>
<th>HT-8747D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement of test force</td>
<td>RT +200°C</td>
<td>-30° +200°C</td>
<td>-50° +200°C</td>
<td>+30° +800°C</td>
</tr>
<tr>
<td>Inside dimensions (WxDxH)</td>
<td>standard type: 30x30x60 cm</td>
<td>special type: 30x45x60 cm</td>
<td>21x25 cm</td>
<td></td>
</tr>
<tr>
<td>outside dimensions (WxDxH)</td>
<td>standard 48x82x82 cm</td>
<td>48x100x90 cm</td>
<td>48x120x90 cm</td>
<td>36x35 cm</td>
</tr>
<tr>
<td>Method of heat-up or cool-down</td>
<td>Electric heating</td>
<td>Electric heating &amp; refrigerant with compressor</td>
<td></td>
<td>Electric heating</td>
</tr>
<tr>
<td>Temperature control method</td>
<td>PID automatic temperature controller with digital temperature indicator</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applied models</td>
<td>Suitable for HT-2402, HT-9102, HT-2102 type series tensile testers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td>1 phase 220 V</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**HT-8747 A / B / C Type Thermostat testing chamber HT-2402 / HT-2102 / HT-9102 / HT-8503**

For capacities less than 20kN, it is suitable for special (wider) type 560 mm only

**HT-8160 Two extensometer can be selected together with HT-8747 series chambers, but cannot be used at the same time.**

**HT-8474D Type Thermostat testing chamber**
Two-point extensometer series (Suitable for models HT-2402, HT-2101, HT-9501)

<table>
<thead>
<tr>
<th>Models</th>
<th>HT-8160A</th>
<th>HT-8160B</th>
<th>HT-9160A</th>
<th>HT-9160B</th>
<th>HT-9160C</th>
<th>HT-9160D</th>
<th>HT-9161</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gauge length (mm)</td>
<td>20–40</td>
<td>50</td>
<td>50</td>
<td>100</td>
<td>25</td>
<td>25</td>
<td>50</td>
</tr>
<tr>
<td>Travel (mm)</td>
<td>0–800</td>
<td>25</td>
<td>5</td>
<td>25</td>
<td>5</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Resolution (mm)</td>
<td>0.02</td>
<td>0.001</td>
<td>0.001</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Application</td>
<td>Rubber, plastic, PE board, fabric, webbing, textile</td>
<td>PE film, latex, PVC tubing industry</td>
<td>Suitable for measuring elongation for metal, or non-metal materials with lower deformation, suitable for working circum stance R = 50°C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Model**

**HT-9860 video extensometer**

- Resolution (mm): 0.025
- Measuring range (mm): Max 2000
- Measuring method: computer-aided image recognition and automatic tracking marking points control & measurement
- Quantity: 2 pcs
- Driving method: Step motor
- Driving media: Ball screw x 2 pcs
- Method of transmission: LAN
- Computer system: PIII 850MHz or above, VGA card, AGP 32MB, TNT or above, Windows 2000 Professional

**HT-9161 made in USA**
HT-8336 
LOW PROFILE HIGH PRECISION LOAD CELL

**HT-8336 FEATURES**
- With excellent linearity owing to small change of structural area.
- With excellent symmetry, available to withstand a larger eccentric or lateral load
- Low profile, with low deflection under load
- With even heat compensation
- Material with high stiffness and low deflection, with better overload protection
- Wide range of measuring 5~2000kN

**HT-8336 SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Model</th>
<th>HT-8336</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Output</td>
<td>2mV/V ± 5%</td>
</tr>
<tr>
<td>Zero Balance</td>
<td>1% of R.O.</td>
</tr>
<tr>
<td>Creep at (20min) rated capacity</td>
<td>0.03% of R.O.</td>
</tr>
<tr>
<td>Nonlinearity hysteresis and repeatability</td>
<td>0.05% of R.O.</td>
</tr>
<tr>
<td>Input impedance</td>
<td>395 ± 20 ohm</td>
</tr>
<tr>
<td>Output Impedance</td>
<td>350 ± 3 ohm</td>
</tr>
<tr>
<td>Temperature compensated</td>
<td>0°C to 45°C</td>
</tr>
<tr>
<td>Temperature effect on output</td>
<td>0.003% of applied load / °C</td>
</tr>
<tr>
<td>Temperature effect on zero</td>
<td>0.006% of rated output / °C</td>
</tr>
<tr>
<td>Safe over loading</td>
<td>1.5 × rated capacity</td>
</tr>
<tr>
<td>Recommended excitation</td>
<td>10V DC OR AC</td>
</tr>
<tr>
<td>Capacity (kN)</td>
<td>25, 10, 20, 50, 100, 200, 500, 1000, 2000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Cap (kN)</th>
<th>25, 10, 20, 50</th>
<th>100</th>
<th>200</th>
<th>500</th>
<th>1000</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>104.8</td>
<td>154</td>
<td>154</td>
<td>203.2</td>
<td>280.0</td>
<td>280</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>35.4</td>
<td>45</td>
<td>45.4</td>
<td>63.5</td>
<td>89.3</td>
<td>89.3</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>32</td>
<td>42</td>
<td>42</td>
<td>57.1</td>
<td>76.2</td>
<td>76.2</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>34.0</td>
<td>58</td>
<td>66.2</td>
<td>95.5</td>
<td>122.5</td>
<td>122.5</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>89.0</td>
<td>130</td>
<td>130.0</td>
<td>165.1</td>
<td>228.6</td>
<td>228.6</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>22.5</td>
<td>15.0</td>
<td>15.0</td>
<td>11.25</td>
<td>11.25</td>
<td>11.25</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>7.10</td>
<td>10.5</td>
<td>10.5</td>
<td>13.5</td>
<td>16.8</td>
<td>16.8</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>8 places</td>
<td>12 places</td>
<td>12 places</td>
<td>16 places</td>
<td>16 places</td>
<td>16 places</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>M20 × 1.5-4H</td>
<td>M24 × 2-4H</td>
<td>M33 × 2-4H</td>
<td>M42 × 2-4H</td>
<td>M72 × 2-4H</td>
<td>M72 × 2-4H</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
<td>10</td>
<td>10</td>
<td>12</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>

unit : mm

HT-8336 SERIES
T-8041A
CHARPY IMPACT TESTING MACHINE

ASTM D256, JIS K7111, K6911, K6743, CNS 10425, B7255

FEATURES

- This tester is used to determine the energy required to break plastics, composites and metallic materials. Notch is fixed at the center of test specimen of rectangular shape. Both ends are used as supports. (Impact force is applied). The energy required to break a specimen is calculated versus the angle which specimen swings up corresponding to the residual energy.

OPTIONAL ACCESSORIES

1. Automatic pendulum lift system
2. HT-96355 LCD Indicator
3. Computer system

SPECIFICATION

<table>
<thead>
<tr>
<th>Type</th>
<th>HC-50</th>
<th>HC-30</th>
<th>HC-10</th>
<th>HC-5</th>
<th>HC-1.5</th>
<th>HC-1.0</th>
<th>HC-0.5</th>
<th>HC-0.3</th>
<th>HC-0.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity (kg-m)</td>
<td>50</td>
<td>30</td>
<td>10</td>
<td>5</td>
<td>150</td>
<td>100</td>
<td>60</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>Distance between center of hammer (mm)</td>
<td>850</td>
<td>750</td>
<td>600</td>
<td>600</td>
<td>400</td>
<td>400</td>
<td>230</td>
<td>230</td>
<td>230</td>
</tr>
<tr>
<td>Revolving axis and strike point (mm)</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Radius of hammer knife edge (mm)</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Angle of hammer knife edge</td>
<td>30°</td>
<td>30°</td>
<td>30°</td>
<td>30°</td>
<td>30°</td>
<td>30°</td>
<td>30°</td>
<td>30°</td>
<td>30°</td>
</tr>
<tr>
<td>Lift angle of hammer (approx)</td>
<td>140°</td>
<td>140°</td>
<td>140°</td>
<td>140°</td>
<td>130°</td>
<td>150°</td>
<td>150°</td>
<td>150°</td>
<td>150°</td>
</tr>
<tr>
<td>Weight of hammer (kg) approx</td>
<td>37</td>
<td>26</td>
<td>11</td>
<td>8</td>
<td>2.6</td>
<td>1.8</td>
<td>1.3</td>
<td>1.3</td>
<td>1.3</td>
</tr>
<tr>
<td>Speed of hammer at impact point (m/sec)</td>
<td>5.5</td>
<td>5</td>
<td>4.5</td>
<td>4.2</td>
<td>3.8</td>
<td>3.8</td>
<td>2.9</td>
<td>2.9</td>
<td>2.9</td>
</tr>
<tr>
<td>Dimension (WxDxH) (cm)</td>
<td>50x110x144</td>
<td>46x88x130</td>
<td>33x75x110</td>
<td>33x75x110</td>
<td>33x58x76</td>
<td>38x50x79</td>
<td>28x40x96</td>
<td>26x40x65</td>
<td>28x40x65</td>
</tr>
<tr>
<td>Weight (approx)(kg)</td>
<td>400</td>
<td>300</td>
<td>250</td>
<td>200</td>
<td>70</td>
<td>65</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

Note: Optional. Unit of Joule is available.
T-8041B
IZOD IMPACT TESTING MACHINE

ASTM D256, JIS K7111, K6911, K6743, CNS 10425, B7225

FEATURES
- Designed for testing the impact fracture strength of plastics, composites & metallic materials etc. Impact is applied to a test piece put on an anvil by a hammer brought up to a specified level and the absorbed energy required for the fracturing is read from the conversion table.

OPTIONAL ACCESSORIES
- Automatic pendulum lift system
- HT-96355 LCD Indicator
- Computer system

SPECIFICATION

<table>
<thead>
<tr>
<th>Type</th>
<th>HI-50</th>
<th>HI-30</th>
<th>HI-17</th>
<th>HI-10</th>
<th>HI-5</th>
<th>HI-1.5</th>
<th>HI-1.0</th>
<th>HI-0.5</th>
<th>HI-0.3</th>
<th>HI-0.15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity (kgf·m)</td>
<td>50</td>
<td>30</td>
<td>17</td>
<td>10</td>
<td>5</td>
<td>400</td>
<td>400</td>
<td>310</td>
<td>310</td>
<td>310</td>
</tr>
<tr>
<td>Distance between center of Hammer Revolving axis and strike point (mm)</td>
<td>1322</td>
<td>1250</td>
<td>1220</td>
<td>600</td>
<td>600</td>
<td>400</td>
<td>310</td>
<td>310</td>
<td>310</td>
<td></td>
</tr>
<tr>
<td>Radius of Hammer knife edge (mm)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>Angle of Hammer knife edge</td>
<td>75°</td>
<td>75°</td>
<td>75°</td>
<td>75°</td>
<td>75°</td>
<td>75°</td>
<td>75°</td>
<td>75°</td>
<td>75°</td>
<td>75°</td>
</tr>
<tr>
<td>Lift angle of Hammer (approx)</td>
<td>60°</td>
<td>60°</td>
<td>60°</td>
<td>60°</td>
<td>60°</td>
<td>150°</td>
<td>150°</td>
<td>150°</td>
<td>150°</td>
<td>150°</td>
</tr>
<tr>
<td>Weight of Hammer (kg) approx</td>
<td>110</td>
<td>90</td>
<td>40</td>
<td>11.5</td>
<td>11.5</td>
<td>2.6</td>
<td>1.8</td>
<td>1.3</td>
<td>1.3</td>
<td>1.3</td>
</tr>
<tr>
<td>Speed of hammer at impact point (m/sec)</td>
<td>3.6</td>
<td>3.5</td>
<td>3.5</td>
<td>3.4</td>
<td>3.4</td>
<td>3.8</td>
<td>3.8</td>
<td>3.35</td>
<td>3.35</td>
<td>3.35</td>
</tr>
<tr>
<td>Dimension (W) x (D) x (H) (cm)</td>
<td>80 x 250 x 851 x 140 x 272 x 35 x 140 x 150 x 95 x 140</td>
<td>80 x 85 x 140 x 35 x 95 x 140</td>
<td>80 x 75 x 140 x 35 x 85 x 79</td>
<td>32 x 50 x 85 x 32 x 50 x 85</td>
<td>32 x 50 x 85 x 32 x 50 x 85</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight (approx) (kg)</td>
<td>600</td>
<td>400</td>
<td>300</td>
<td>250</td>
<td>200</td>
<td>70</td>
<td>50</td>
<td>40</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

※ Optional: Unit of Joule is available.
T-8120
ROTARY BENDING FATIGUE TESTING MACHINE

PURPOSE
This testing machine is used for fatigue strength tests of metals or various industrial materials and assures easy operation. Furnished two hollow rotation shafts on the left and right sides of strongly built steel frame base with accelerating high speed rotation to the test specimen fixed on both ends, also applied loads to the both ends of hollow rotation shaft then effect uniform bending strength to the test specimen.

DIMENSION OF TEST SPECIMEN

<table>
<thead>
<tr>
<th>Type</th>
<th>HT-10</th>
<th>HT-20</th>
<th>HT-30</th>
<th>HT-45</th>
<th>HT-60</th>
<th>HT-100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Temperature</td>
<td>10kgf-M</td>
<td>20kgf-M</td>
<td>30kgf-M</td>
<td>45kgf-M</td>
<td>60kgf-M</td>
<td>100kgf-M</td>
</tr>
<tr>
<td>Revolution Number (approx)</td>
<td>2900R.P.M. (50Hz)</td>
<td>3500R.P.M. (60Hz)</td>
<td>1500R.P.M.</td>
<td>1500R.P.M.</td>
<td>1500R.P.M.</td>
<td>1000R.P.M.</td>
</tr>
<tr>
<td>Counter</td>
<td>10'</td>
<td>10'</td>
<td>10'</td>
<td>10'</td>
<td>10'</td>
<td>10'</td>
</tr>
<tr>
<td>Length of Loading Leaver</td>
<td>200mm Min. over 2kg</td>
<td>250mm Min. over 2kg</td>
<td>300mm Min. over 2kg</td>
<td>400mm Min. over 5kg</td>
<td>400mm Min. over 5kg</td>
<td>500mm Min. over 10kg</td>
</tr>
<tr>
<td>Loading Weights</td>
<td>Combined 100kg</td>
<td>Combined 160kg</td>
<td>Combined 200kg</td>
<td>Combined 225kg</td>
<td>Combined 300kg</td>
<td>Combined 400kg</td>
</tr>
<tr>
<td>Motor</td>
<td>220V. 3PH 0.4kw</td>
<td>220V. 3PH 0.75kw</td>
<td>220V. 3PH 1.5kw</td>
<td>220V. 3PH 1.5kw</td>
<td>220V. 3PH 2.2kw</td>
<td>220V. 3PH 3.7kw</td>
</tr>
<tr>
<td>Automatic Stopper</td>
<td>Auto count stop</td>
<td>Auto count stop</td>
<td>Auto count stop</td>
<td>Auto count stop</td>
<td>Auto count stop</td>
<td>Auto count stop</td>
</tr>
<tr>
<td>Dimension of machine (W)x(D)x(H) (cm)</td>
<td>1300x400x1000</td>
<td>1700x500x1000</td>
<td>1800x500x1100</td>
<td>2400x800x1300</td>
<td>2400x800x1300</td>
<td>2800x1000x1600</td>
</tr>
<tr>
<td>Weight (approx)</td>
<td>350kg</td>
<td>500kg</td>
<td>600kg</td>
<td>1100kg</td>
<td>1200kg</td>
<td>1800kg</td>
</tr>
<tr>
<td>Power supply</td>
<td>3ø, 220VAC, 50/60HZ (optional 380V or 415V)</td>
<td>3ø, 220VAC, 50/60HZ (optional 380V or 415V)</td>
<td>3ø, 220VAC, 50/60HZ (optional 380V or 415V)</td>
<td>3ø, 220VAC, 50/60HZ (optional 380V or 415V)</td>
<td>3ø, 220VAC, 50/60HZ (optional 380V or 415V)</td>
<td>3ø, 220VAC, 50/60HZ (optional 380V or 415V)</td>
</tr>
</tbody>
</table>
T-8391PC
COMPUTER-CONTROL SERVO HYDRAULIC CONCRETE COMPRESSION TESTING MACHINE

HT-8391PC & HT-8391C MAIN FRAME

<table>
<thead>
<tr>
<th>Capacity (T / kN)</th>
<th>100T / 1000 kN</th>
<th>150T / 1500 kN</th>
<th>200T / 2000 kN</th>
<th>300T / 3000 kN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Vertical clearance (mm)</td>
<td>340</td>
<td>340</td>
<td>340</td>
<td>400</td>
</tr>
<tr>
<td>Horizontal clearance (mm)</td>
<td>330</td>
<td>330</td>
<td>380</td>
<td>380</td>
</tr>
<tr>
<td>Upper platen (ball seat) size (mm)</td>
<td>ø160</td>
<td>ø160</td>
<td>ø160/210</td>
<td>ø260</td>
</tr>
<tr>
<td>Ram stroke (mm)</td>
<td>50</td>
<td>50</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>Loading speed</td>
<td>HT-8391C Indicator model available to display stress increasing rate</td>
<td>HT-8391PC computer model available to set 1.41~3.52kg/cm²/sec</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Return speed</td>
<td>Max. 50 mm/min</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight of loading frame (approx)</td>
<td>700</td>
<td>700</td>
<td>900</td>
<td>1000</td>
</tr>
<tr>
<td>Dimension of loading frame (approx)</td>
<td>55x45x145</td>
<td>55x45x145</td>
<td>63x46x160</td>
<td>62x46x204</td>
</tr>
<tr>
<td>Dimension of control box (approx)</td>
<td>100x65x121</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td>3ø, 220/380/415V, 50/60HZ</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

HT-8391PC
- Specially designed for compression test of concrete. Precise control and easy operation is the basic principle of design.
- High precision servo control and simple-operated program improves effectively the convenience and reliability of test.

HT-8391PC & HT-8391C
- Besides servo hydraulic model the types of traditional hydraulic & manual control with the display by computer monitor or digital indicator (available to display load & stress speed) can be selected as optional.
### Descriptions for HT-8391PC

#### MEASURING UNIT

1. Method of load/displacement measurement:
   a. IBM compatible computer system with a SVGA color monitor and a 24-pin dot matrix printer
   b. load signal from high precision load cell
   c. displacement signal from L.V.D.T. (optional)
   d. signal processed and amplified by low-noise high linearity electronics
   e. completed with a friction-free ram.
2. Signal amplification 1, 2, 5, 10, (optional 20 & 50)
3. Automatic load ranging and switch over to a higher next range when load exceeds 90% of present range
4. Accuracy of load: within ±1%
5. Various kinds of curves available
   * load - time
   * stress - time
   * load-vertical displacement (optional)
   * load-horizontal displacement (optional)
   * stress-strain (optional)

#### CONTROL UNIT

1. Computer-control hydraulic servo system.
2. High precision automatic control valve
3. Control mode:
   a. Constant speed ram stroke control Control range: ram return position~max. ram stroke speed Setting range: 0.5 ~70 mm/min
   b. Constant speed load control Control range: 5~100% of full scale load Speed setting range: 0.1~2.0 full scale/min (but up to specimen material)
   c. Constant speed stress control: 1.41~3.52(kg/cm²)/sec
   d. Constant speed strain control: Control range: 5~100% of full scale strain Speed setting range: 0.1~50%/min
   e. Fixed displacement control
   f. Fixed load control
   Note: items with star mark * are only available when L.V.D.T. displacement sensor is selected
4. Setting of testing parameters: database modularized
5. Display of testing parameters: value and real-time curve (load, stroke or elongation) available to be displayed and switched by computer
6. Control mode of operation: auto/manual function switchable
7. Emergency shut down button & overload protection (auto stop) function equipped

#### DATA-PROCESSING SYSTEM

1. Data-acquisition and data-analysis/clarification
2. Available to backup and modify the write/read path of data file
3. Self-defined testing module based upon any kind of standard test norms (optional)
4. Software password security protection (optional)
5. XBAR-R engineering diagram and SQC quality control diagram (optional)
6. Various kinds of softwares providing data manipulation and analysis (optional)
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