WANCE®
Do Our Best for Your Test

Servo-hydraulic Universal Testing Machine | HUT Type D

Test type

- Slip & Tensile Strength
- Permanent Elongation & Tensile Strength
- Static Tension Test
- Static Compression Test

Test standards

- BS 8110: PART 1: 1997 3.12.8.16.2
- BS4482
- BS4483
- BS4449
- ASTM A 1034: 10.5, 10.7
- Others…….

Servo-hydraulic Universal Testing Machine | HUT Type D

Description

HUT series type D servo-hydraulic universal testing machine is designed with up-mounted actuator structure. Bidirectional differential cylinder provides bidirectional control of tension and compression in one single space.

Clearance-free structure and actuator up and down to adjust the test space offers easy operation and high efficiency. This machine is mainly used for tensile test of metallic materials. It provides closed loop control of constant force, constant displacement and constant extension, smoothly switching among them.

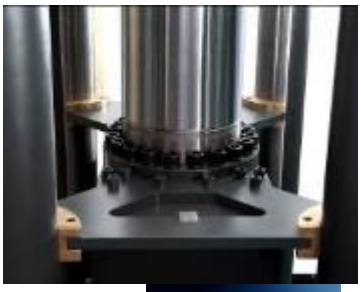
Test results can be automatically calculated and be able to printed and exported.

Load Frame Configuration: 2/4 columns, servo-controlled hydraulic
Capacity: 600kN, 1000kN, 2000kN
Test Space: Single zone
Typical specimens: Fasteners, rebar, chain, welds, castings

Features

Load frame

1. Single zone design ensures all types of tests finish in one space. Compact and reasonable design is ergonomic and effectively reduces labor intensify.
2. Upper actuator features excellent axis alignment, good shock absorption and easy to adjust test space.
3. Advanced wedge type hydraulic tensile grips provide high gripping performance for high strength and high hardness materials.



4. Long travel double-acting cylinder can accommodate different specimen size. One-body forging piston and rod, and imported sealing components, ensure perfect sealing, high accuracy and repeatability.
5. Robust and high-accuracy guidance protects cylinder from lateral force, improving the working life of sealing components.
6. "I" shape force transducer features excellent linerity and stability with ultra measurement accuracy.

7. Nemicon encoder provides with high accuracy of displacement measurement and control.

8. DDV D633 MOOG servo valve offers fast response and high-accuracy control, and easy to maintain.
9. Equipped ABB motor features high efficiency, energy-saving, high start-toque, good performance, low noise, low shaking, high reliability and easy to maintain.

Main cylinder

- Piston rod is Nickel and Chrome plated. Plating thickness can reach 0.1mm with strong anti-corrosion and anti-wearing ability.
- Extra thick rod ensures high stiffness to resist lateral loading.
- Piston and rod are one-body forging with strong impact resistance.
- Sealing components are Hallite U shape and double sealing ring, ensuring zero leakage.
- Hallite guidance wearing ring is applied to ensure high resistance to lateral force and low friction.
- Main cylinder matching with differential circuit allows fast return of piston.
- Zero clearance and pre-loading connection between piston rod and upper grip guarantees high reliability.
- WANCE uses most advanced Piston / guide sleeve copper melting process as wearing ring, with service life five times than polymer material.

Hydraulic power unit

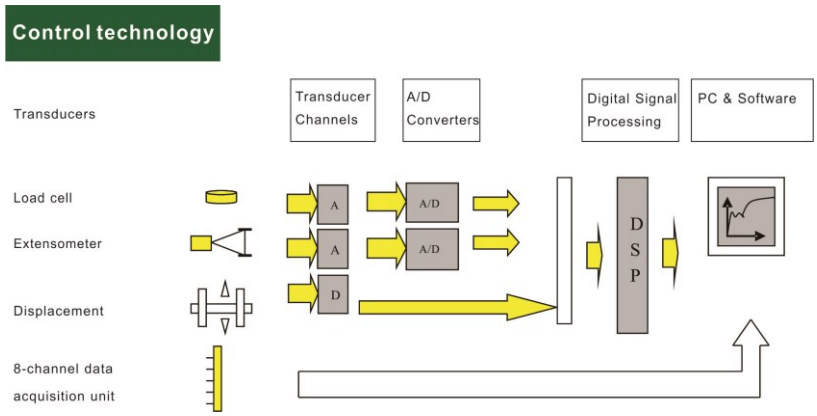
- Equipped with SUN Cartridge logic valve in the hydraulic system of the equipment, it can be smart regulation of system pressure. The pressure servo technology can guarantee that the system pressure is always only higher than the cylinder pressure 1MPa, when the test force is low, the pump output pressure is lower, when the test force increases, pump output pressure increases the proportion too.
- The differential pressure is adjustable to ensure no shaking during test, thus saving energy and reducing heating
- Low noise: NACHI Japan gear pump, combined with our technology of HPU production, its noise is not more than 70dB, improving the working conditions of workers.
- Easy installation and maintenance: The hydraulic unit is designed with semi-open structure. Rear cover opens two doors, easy maintenance and parts replacement.
- Low heating and good cooling: The unique pressure differential servo control technique makes the system heat significantly reduced. The hydraulic unit is designed with semi-open structure and air-cooling device. Cooling devices can start automatically or manually. The air-cooling motor automatically starts when the temperature reaches the preset value of oil temperature gauge, making the system in high temperature environment continue to work normally. The whole system heating power is 2kW.
- High filtration precision: triple filter, the particle size is less than 5 microns before entering the servo valve, improving the service life of the servo valve and control accuracy, easier to maintain.
- Pressure overload protection: when the pressure exceeds the system rated pressure, relief valve will begin to overflow, to ensure the security of the entire system.
- Seal method: the hydraulic lines from the tubing to the connector are equipped with Eaton products from USA. Piping lines are sealed with high-pressure hose sleeve type Cone fittings with excellent sealing performance, which can be repeated assembly and disassembly. Cylinder piston rod and piston seal are used with British Hallite patented

Hythane U- seals and dust ring , at the same time with Hallite high anti-lateral pressure and low friction rate of large-size guide ring , offering high ability to resist lateral force, thus to ensure cylinder of zero leakage and long service life.

- The advantages of the HPU: HPU consists of 25MPa high-pressure part and 50MPa super high pressure part. The main cylinder working pressure is around 25MPa and the clamping cylinder working pressure is around 48MPa. Only one motor drives oil pump. Through the booster to gain extra-high pressure, thus with lower noise.
- The system has two sets of differential circuit. One is for main cylinder, so that after the end of the test, the main cylinder piston can faster return to improve work efficiency. Another is for the clamping cylinder. Clamping cylinder allows fast and low pressure gripping the specimen. Only after samples are fully clamped, extra-high pressure can be supplied, avoiding damaging sample because of too high clamping force. After specimen is broken, high pressure will be automatically released. This design fully takes the efficiency and operational safety into account.

Controlling system – DTC-350

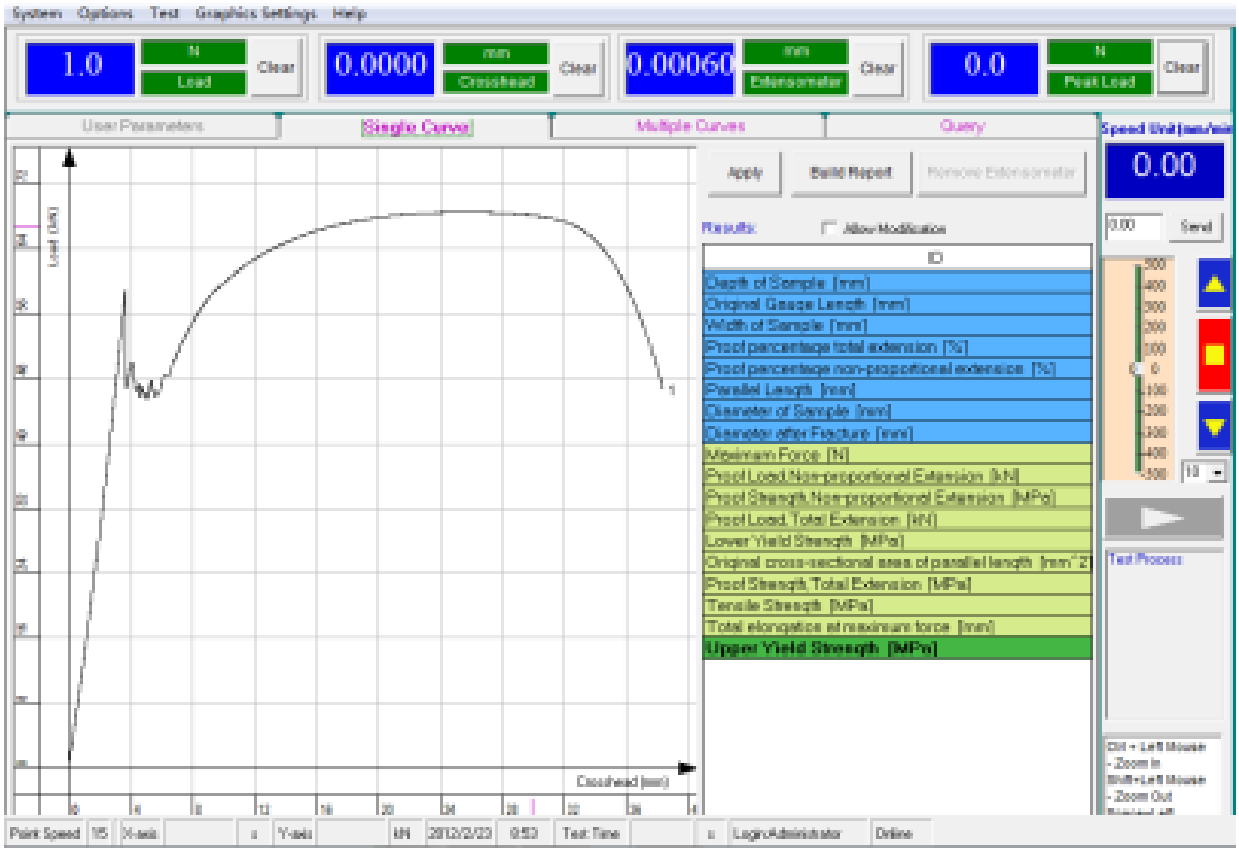
1. Closed loop control of stress, strain and displacement.
   Control loops can switch automatically and smoothly. Control algorithm adopts advanced neural element self-adapting PID. Neural element has ability of close to any non-linear function , simple structure and learning algorithm. It can adapt changing of control object by changing its own synapse weighting and distinguish parameter on line, rebuild object model on line.
2. Control system based on DSP
   DSP, the professional CPU and RISC, is used as control chip of the products. The chip has many functions, such as 40MIPS, 32-digit fixed point, vector control, A/D exchange, position capturing , etc. It is a CPU widely used in industry controlling and suitable to be IC of our products.
3. USB 2.0 communication
   Data exchange between hardware and software via USB 2.0 inrerface and velocity of 12Mb/s. USB is main direction of development of communication, which has merits of high communication velocity, variety of communication mode(such as controlling , breaking, batch, real time ,etc.), and will be the main mode of communication.
4. Data acquisition system and position capturing system. Data acquisition system consists of 8 channels of 24 bit A/D exchange; effective resolution is 1/350000 with non-step in full range . Exchange velocity and gain are programmable on line. The products contain 3 channels of encoder position capturing system permitting photo-electric orthogonal code impulse. Frequency can reach 5 MHZ, which has functions of correcting, direction identifying and number-counting.



Professional test software

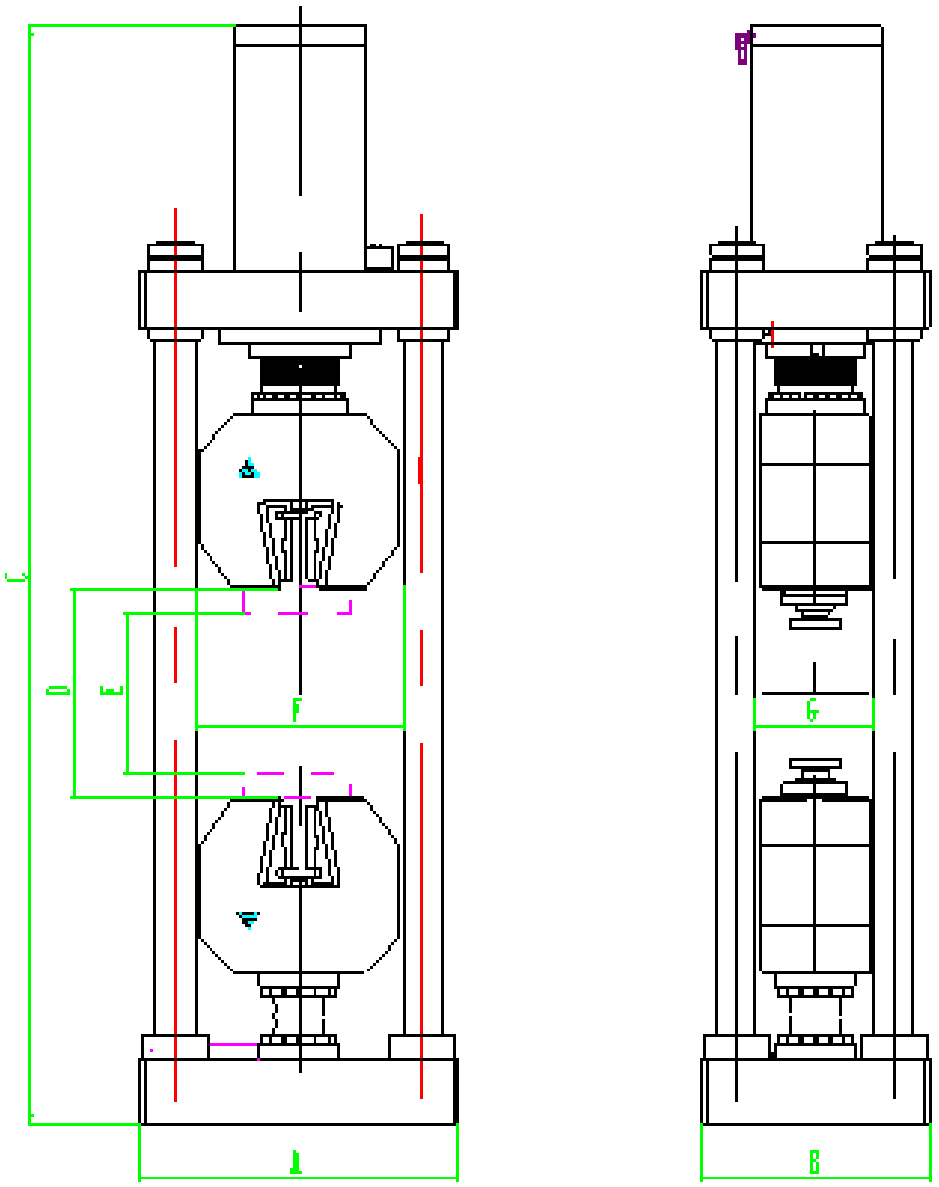
This software features a large, growing host of pre-packaged test methods to help you quickly and efficiently meet the requirements of global test standards such as ASTM, ISO, DIN, EN, BS, and more. Selected by an operator at runtime, these methods are crafted to meet the specific test flow, analysis and reporting requirements of industry standards across a range of specimen and test types. Pre-packaged test methods are available in a wide selection of bundled sets, including: Polymers & Plastics, Metals, Construction Materials, Biomedical Products, Paper Products, Adhesives, foam, textiles and more.

- Versatile, easy-to-use TestPilot software with a large and growing library of standards-compliant test methods (ASTM, ISO, DIN, EN, BS, and more)
- Modular design permits easy upgrading
- Plenty of test standards are built in the library of the software for routine tests.
- User configured report: user can preset report template and include necessary information, like company information, statistics, and etc. Test report can export to Excel or Word.
- Powerful graphic function: real time display curves, like displacement-load, stress-strain, displacement-time, load-times, and others
- Powerful analysis function can calculate typical value and display on the curve, like Fm, ReL, ReH, Rp.
- Measurement unit: Users can select SI, or others, like N, kN, Kgf, lbf, Mpa, and so on, user can define the unit by themselves using formula.



Machine dimension

Model	Dimension (mm) A×B×C	Effective tensile space (mm) D	Maximum compression space(mm) E	Distance between columns (mm) F×G	Piston travel
HUT605D	740×400×2820	600	420	475	580
HUT106D	870×650×3270	700	460	575×355	680
HUT206D	1200×900×3820	800	540	770×470	780



Specifications:

Model	HUT605	HUT106	HUT206
Type	Type D		
Capacity (kN)	600	1000	2000
Calibration accuracy	Class 1 / Class 0.5		
Force accuracy	Better than ±1%/±0.5%		
Force range	1% ~ 100%FS		
Extension range	1% ~ 100%FS		
Extension accuracy	Better than ±1%/±0.5%		
Extension resolution	1/350000 of max extension		
Actuator (piston) up speed (mm/min)	230	230	200
Actuator (piston) down speed (mm/min)	310	360	310
Force loading speed	0.02%-2% FS /s		
Column number	2	4	4
Column spacing (test space width) (mm)	475	575×355	770×470
Maximum tension space (mm)	600	700	800
Maximum compression space (mm)	420	460	540
Diameter of round specimens (mm)	Φ10 ~ Φ40	Φ15 ~ Φ55	Φ15 ~ Φ70
Thickness of flat specimens (mm)	2 ~ 30	2 ~ 40	10 ~ 70
Compression platens (mm)	Φ150	Φ200	Φ200
Actuator (piston) stroke (mm)	580	680	780
Frame dimension (LxWxH) (mm)	740×400×2820	870×650×3270	1200×900×3820
Hydraulic Power Unit dimension (LxWxH) (mm)	500X880X925	710×1130×1100	860×1210×1100
Power consumption (kW)	5	8.5	12
Power supply	3-phase, 5-line, AC380V, 50Hz		
Frame weight (kg)	3000	6000	9000