

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.....

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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: 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 linearity and stability with ultra measurement accuracy.
7. Nemicon encoder provides with high accuracy of displacement measurement and control.
8. Imported MOOG servo valve offers fast response and high-accuracy control, and easy to maintain.
9. Equipped famous brand motor features high efficiency, energy-saving, high start-torque, 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



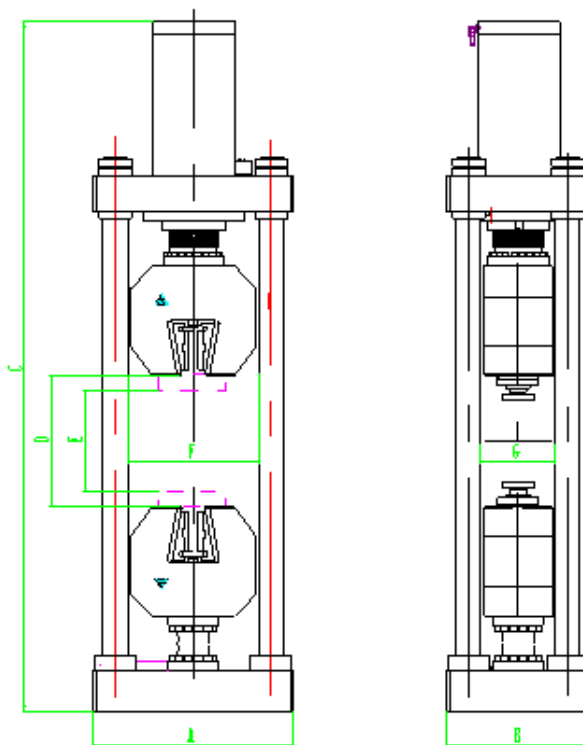
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ring , offering high ability to resist lateral force, thus to ensure cylinder of zero leakage and long service life.

- 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.

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
HUT305D	720x550x2835	600	390	475	600
HUT605D	740×600×2890	595	395	475	580
HUT106D	870×650×3340	700	485	585×365	680
HUT206D	1200×900×3930	800	525	770×470	780



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Specifications:

Model	HUT305	HUT605	HUT106	HUT206
Type	Type D			
Capacity (kN)	300	600	1000	2000
Calibration accuracy	Class 1 / Class 0.5			
Force accuracy	Better than $\pm 1\% / \pm 0.5\%$			
Force range	1% ~ 100%FS			
Extension range	1% ~ 100%FS			
Extension accuracy	Better than $\pm 1\% / \pm 0.5\%$			
Extension resolution	1/500000 of max extension			
Actuator (piston) up speed (mm/min)	340	280	240	195
Actuator (piston) down speed (mm/min)	1000	660	375	310
Force loading speed	0.02%-2% FS /s			
Column number	2	2	4	4
Column spacing (test space width) (mm)	500	475	585×365	770×470
Maximum tension space (mm)	600	595	700	800
Maximum compression space (mm)	390	395	485	525
Diameter of round specimens (mm)	$\Phi 10 \sim \Phi 32$	$\Phi 10 \sim \Phi 40$	$\Phi 15 \sim \Phi 55$	$\Phi 15 \sim \Phi 70$
Thickness of flat specimens (mm)	2 ~ 25	2 ~ 30	2~40	10 ~ 70
Compression platens (mm)	$\Phi 120$	$\Phi 150$	200x200	$\Phi 240$
Actuator (piston) stroke (mm)	600	580	680	780
Frame dimension (LxWxH) (mm)	720x550x2835	740x600x2890	870x650x3340	1200x900x3930
Hydraulic Power Unit dimension (LxWxH) (mm)	600x880x925	600x880x925	870x1080x1100	860x1350x1250
Oil tank capacity (Liter)	90	90	210	380
Anti-wear hydraulic oil	46#			
Power requirement	Three-phase, 5-line, 380 VAC, 50Hz			
Power consumption (kW)	5	5	8.5	12
Frame weight (kg)	2000+400	2500+400	4500+700	9800+1200



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