



## NextGen Servo Hydraulic 600 – 2000 kN Universal Testing Machine

### **NG- SHM CLASS DP – Servo Hydraulic Testing Machine**

#### **Standards**

BS 8110: PART 1: 1997 3.12.8.16.2, BS4482, BS4483, BS4449, ASTM A 1034: 10.5, 10.7, And more

#### **Test Type**

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

#### **Description**

Class DP 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

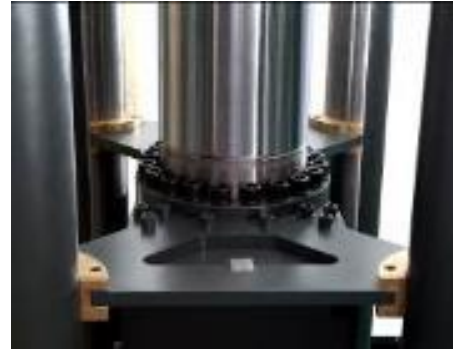
**Typical Specimens:** Fasteners, rebar, chain, welds, castings

#### **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 intensity.

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 shaft-torque, good performance, low noise, low shaking, high reliability and easy to maintain.



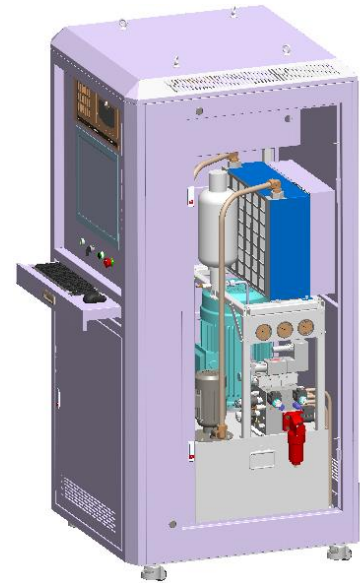
### **Main Cylinder**

- 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.
- NextGen 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 2MPa, 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:** Imported 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.



### **Remote Control Handset**

- The new design of the hand control box is made of aluminum cover and mounting seat, which is strong, beautiful and durable.
- The control button is intuitive and easy to operate, which is able to move piston up and down, open/close the upper and lower grip jaws.
- If rotate to “Return”, piston can return quickly.
- When the sample is well clamped as required, rotate to “Test” and start test directly without computer operation.
- Emergency stop button is built in the control handset for safety use.



## Controller

DTC-500 digital controller offers high speed and closed loop control of load, displacement and extension.



- Four-layer PCB layout, anti-resistance, high reliability;
- Connector with locking function, strong and durable, not easy to fall off, the interface layout is neat and reasonable, easy to plug and unplug;
- 6-channel 24 bit AD measurement channel;
- Up to 1200Hz sampling frequency;
- Up to 1200Hz closed loop control frequency;
- 20 bit resolution digital input;
- 3-channel high-speed digital acquisition, which is used to collect orthogonal pulse signals such as photoelectric encoder and grating ruler, with the highest signal acquisition frequency up to 4MHZ;
- Ethernet/USB interface mode is supported, and the transmission rate is greatly increased to support higher sampling frequency. Ethernet interface adopts special high-performance Ethernet interface chip and hardware logic gate circuit to realize complex TCP/IP protocol cluster, which has significant advantages such as high reliability and good security;
- TEDS function: transducer self-identification system, interface features can be set online by software, system structure is more reasonable;
- It has three closed-loop (force, extension and displacement) control functions, realizing all-digital three closed-loop control of force, extension and displacement. Each control loop can automatically switch between different control rings, and realize smooth transition when switching between different modes;
- Perfect limit protection, overload protection, emergency stop and other safety protection functions.

## Software

- Multi-language software with built-in English, Chinese and Russian, and user can customize their own translation freely
- 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
- Intuitive expression for easy programming of testing standards and testing process
- Testing report can be customized according to the requirement
- User authorization: The administrator can assign different functions for different level users
- Analysis can give typical test results like Young's modulus, Proof stress, Yield stress, stress, strain, Tensile strength, Elongation at break, compressive strength, bending strength, etc....

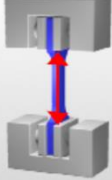
### Method

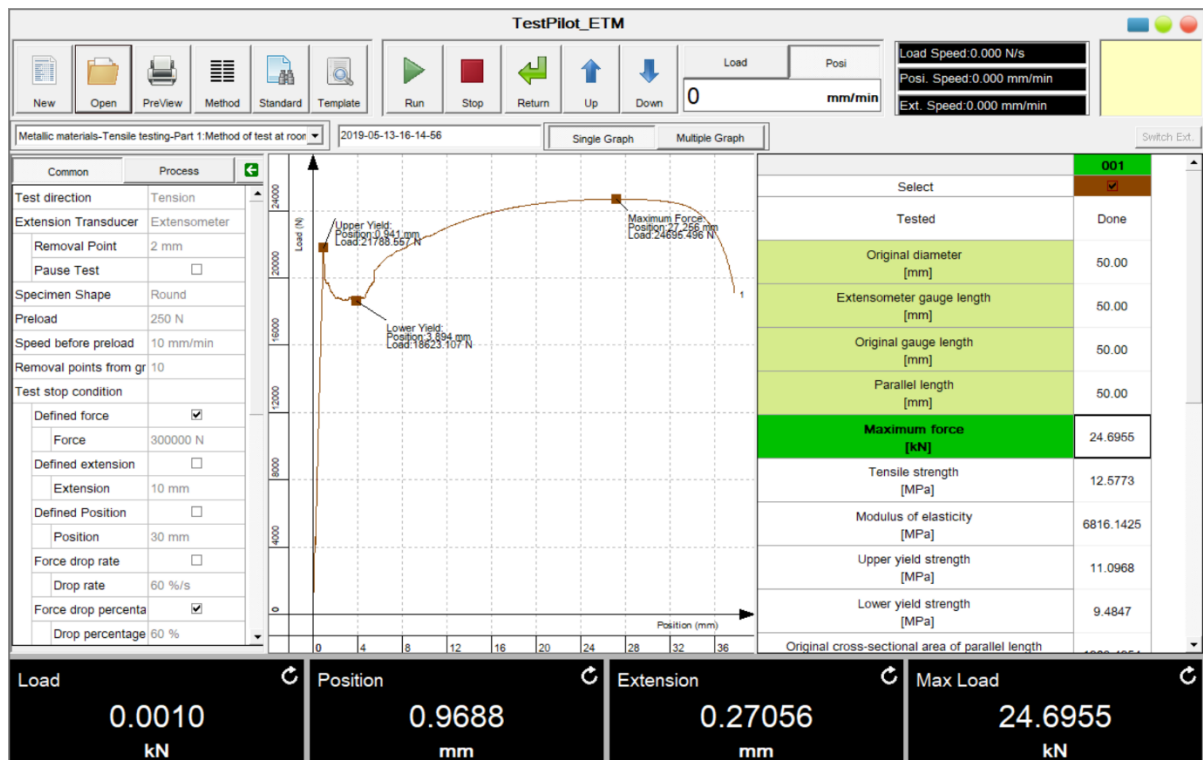
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Metallic materials-Tensile testing-Part 1:Method of test at room temperature ISO 6892-1-2009

<b>Common</b>	Test direction	Tension
Process	Extension Transducer	Extensometer
	Removal Point	2 mm
Parameters	Pause Test	<input type="checkbox"/>
	Specimen Shape	Round
Results	Return to initial position after test	<input type="checkbox"/>
	Return Speed	0 mm/min
LoadPid	Preload	250 N
ExtensionPid	Speed before preload	10 mm/min
	Removal points from graph	10 Points
Coordinate Axis	Test stop condition	
	Defined force	<input checked="" type="checkbox"/>
Temperature	Force	300000 N
	Defined extension	<input type="checkbox"/>
Yield	Extension	10 mm
	Defined position	<input type="checkbox"/>
	Position	30 mm
	Force drop rate	<input type="checkbox"/>
	Drop rate	0 %/s
	Force drop percentage	<input checked="" type="checkbox"/>

Determine test direction, Tension Or Compression!





## Technical Specifications

Model	DP605	DP106	DP206
Type	Type D		
Capacity (kN)	600	1000	2000
Calibration accuracy	Class 0.5		
Force accuracy	Better than $\pm 0.5\%$		
Force range	1% - 100%FS		
Extension range	1% - 100%FS		
Extension accuracy	Better than $\pm 0.5\%$		
Extension resolution	1/500,000 of max extension		
Displacement resolution (mm)	0.003		
Actuator (piston) up speed (mm/min)	230	190	190
Actuator (piston) down speed (mm/min)	550	300	300
Force loading speed	0.02%-2% FS /s		
Column number	4	4	4
Column spacing (test space width) (mm)	550x370	650x400	770x470
Maximum tension space (mm)	600	700	800
Maximum compression space (mm)	400	485	520
Diameter of round specimens (mm)	$\Phi 10$ - $\Phi 40$	$\Phi 12$ - $\Phi 55$	$\Phi 15$ - $\Phi 70$
Maximum tension space (mm)	600	700	800
Maximum compression space (mm)	400	485	520
Diameter of round specimens (mm)	$\Phi 10$ - $\Phi 40$	$\Phi 12$ - $\Phi 55$	$\Phi 15$ - $\Phi 70$
Thickness of flat specimens (mm)	2 - 30	2-40	10 - 70
Compression platens (mm)	$\Phi 150$	200x200	$\Phi 240$
Actuator (piston) stroke (mm)	580	680	780
Frame dimension (LxWxH) (mm)	800x650x2960	940x720x3290	1180x880x3960
Hydraulic Power Unit dimension (LxWxH) (mm)	900x920x2000	900x920x2000	900x1120x2000
Oil tank capacity (Liter)	154	140	270
Anti-wear hydraulic oil	46#		
Power requirement	Three-phase, 5-line, 380 VAC, 50Hz		
Power consumption (kW)	5.5	9	12.5
Frame weight (kg)	2500+650	4500+650	9500+850

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