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

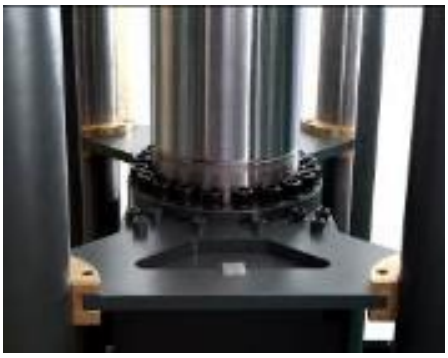
Typical Specimens: Fasteners, rebar, chain, welds, castings

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 linerity 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.

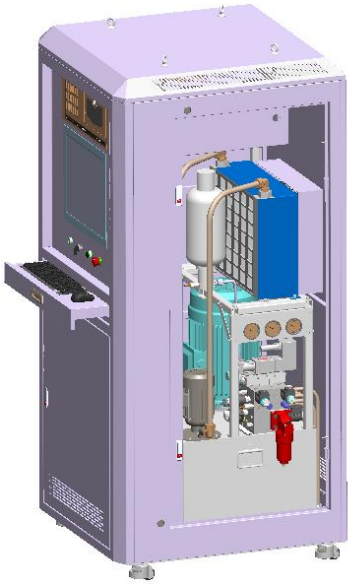
Main Cylinder

- 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.

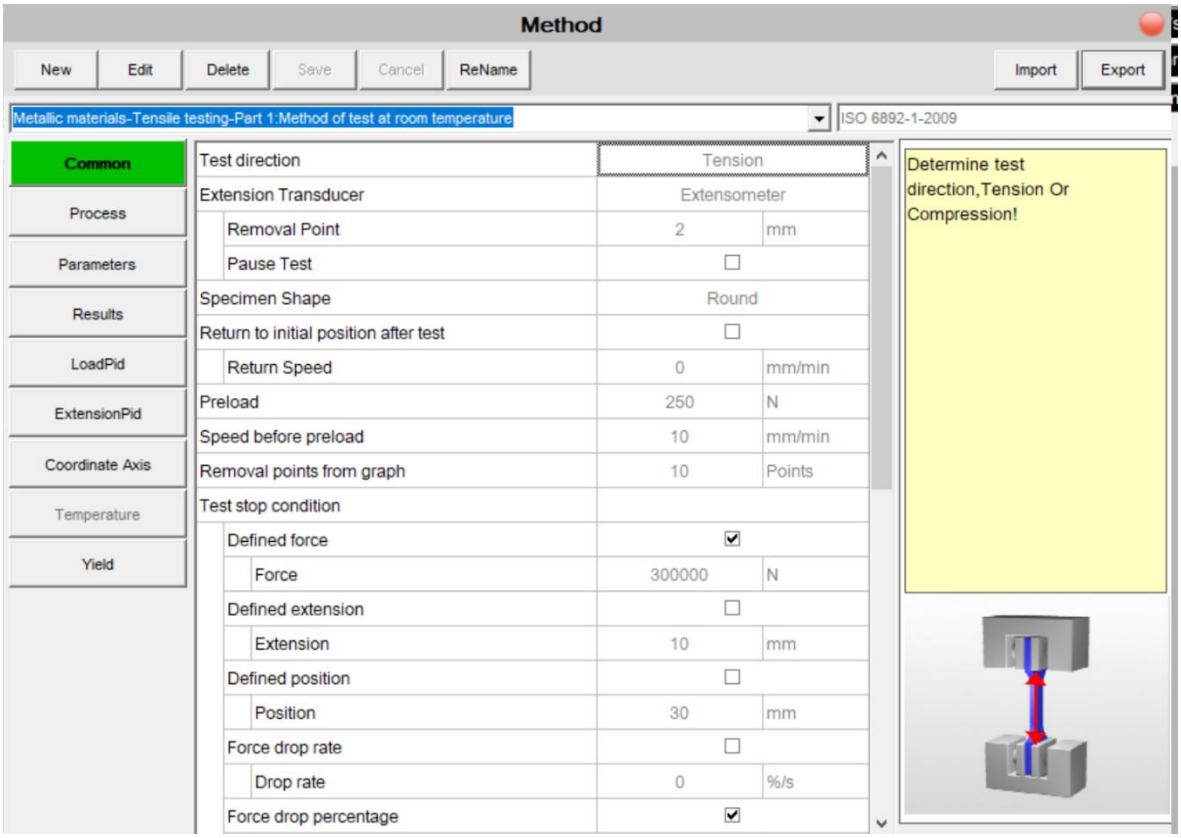
Controller

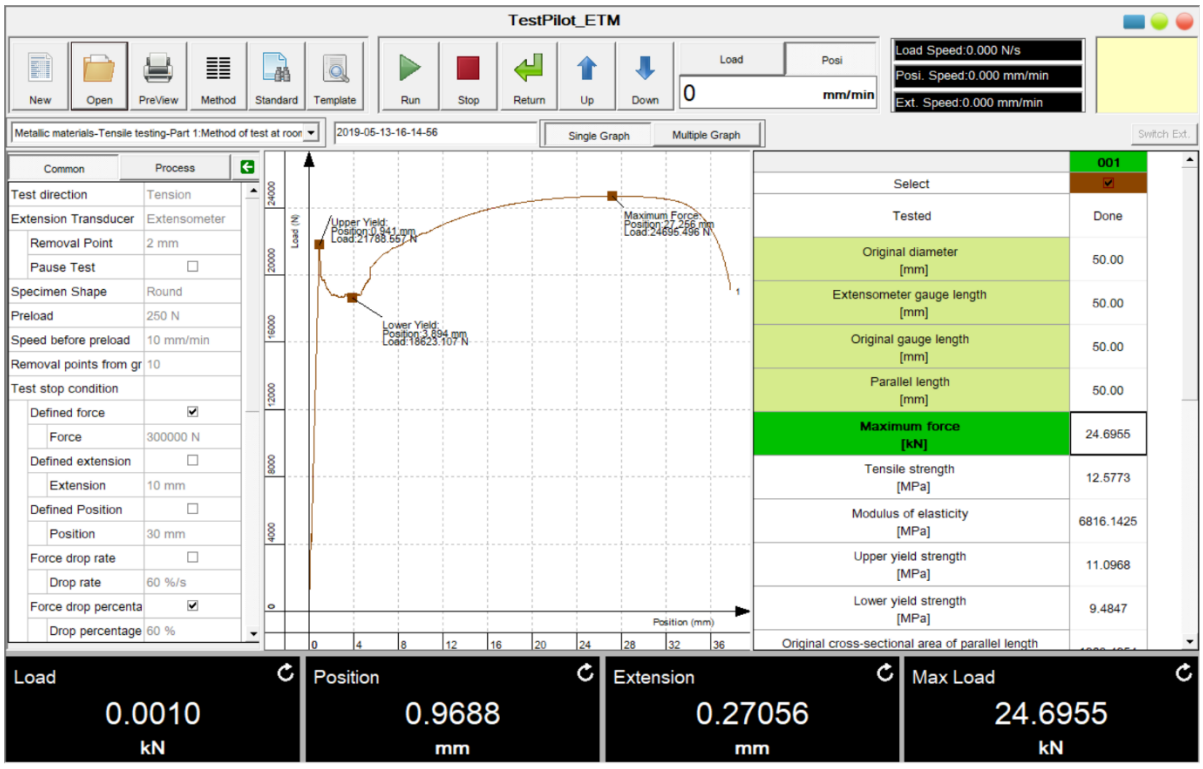
DTC-500 digital controller offers high speed and closed loop control of load, displacement and extension.

- 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
New
Edit
Delete
Save
Cancel
ReName
Import
Export
Metallic materials-Tensile testing-Part 1:Method of test at room temperature
ISO 6892-1-2009
Common
Process
Parameters
Results
LoadPid
ExtensionPid
Coordinate Axis
Temperature
Yield
Test direction
Tension
Extension Transducer
Extensometer
Removal Point
2
mm
Pause Test
Specimen Shape
Round
Return to initial position after test
Return Speed
0
mm/min
Preload
250
N
Speed before preload
10
mm/min
Removal points from graph
10
Points
Test stop condition
Defined force
Force
300000
N
Defined extension
Extension
10
mm
Defined position
Position
30
mm
Force drop rate
Drop rate
0
%/s
Force drop percentage
Determine test direction,Tension Or Compression!


TestPilot_ETM
New
Open
PreView
Method
Standard
Template
Run
Stop
Return
Up
Down
Load
Posi
0
mm/min
Load Speed:0.000 N/s
Posi. Speed:0.000 mm/min
Ext. Speed:0.000 mm/min
Metallic materials-Tensile testing-Part 1:Method of test at roor
2019-05-13-16-14-56
Single Graph
Multiple Graph
Switch Ext.
Common
Process
Test direction
Tension
Extension Transducer
Extensometer
Removal Point
2 mm
Pause Test
Specimen Shape
Round
Preload
250 N
Speed before preload
10 mm/min
Removal points from gr
10
Test stop condition
Defined force
Force
300000 N
Defined extension
Extension
10 mm
Defined Position
Position
30 mm
Force drop rate
Drop rate
60 %/s
Force drop percenta
Drop percentage
60 %
Load (N)
Position (mm)
Upper Yield:
Position:0.941 mm
Load:21788.667 N
Lower Yield
Position:3.894 mm
Load:18623.107 N
Maximum Force
Position:27.256 mm
Load:24696.496 N
001
Select
Tested
Done
Original diameter [mm]
50.00
Extensometer gauge length [mm]
50.00
Original gauge length [mm]
50.00
Parallel length [mm]
50.00
Maximum force [kN]
24.6955
Tensile strength [MPa]
12.5773
Modulus of elasticity [MPa]
6816.1425
Upper yield strength [MPa]
11.0968
Lower yield strength [MPa]
9.4847
Original cross-sectional area of parallel length
Load
0.0010
kN
Position
0.9688
mm
Extension
0.27056
mm
Max Load
24.6955
kN

Technical Specifications

Model	DP605	DP106	DP206
Type	Type D		
Capacity (kN)	600	1000	2000
Calibration accuracy	Class 0.5		
Force accuracy	Better than ±0.5%		
Force range	1% - 100%FS		
Extension range	1% - 100%FS		
Extension accuracy	Better than ±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)	550×370	650×400	770×470
Maximum tension space (mm)	600	700	800
Maximum compression space (mm)	400	485	520
Diameter of round specimens (mm)	Φ10- Φ40	Φ 12- Φ 55	Φ15 - Φ70
Maximum tension space (mm)	600	700	800
Maximum compression space (mm)	400	485	520
Diameter of round specimens (mm)	Φ10- Φ40	Φ 12- Φ 55	Φ15 - Φ70
Thickness of flat specimens (mm)	2 - 30	2-40	10 - 70
Compression platens (mm)	Φ150	200x200	Φ240
Actuator (piston) stroke (mm)	580	680	780
Frame dimension (LxWxH) (mm)	800×650×2960	940×720×3290	1180×880×3960
Hydraulic Power Unit dimension (LxWxH) (mm)	900×920×2000	900×920×2000	900×1120×2000
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