

High Temperature Creep and Relaxation Testing Machine GWTA Series 30kN-100kN

Introduction:

GWTA series High Temperature Creep and Relaxation Testing Machine is designed as low cost solutions for long-term creep and stress relaxation testing applications of metallic and alloy materials under high temperature in accordance with ASTM, BS, EN, ISO and other similar international testing standards. SANS offers three models electronic high temperature creep-testing machine with full closed-loop servo-control in three capacities: 30kN, 50kN and 100kN

Creep and Relaxation



Fig1 GWTA high temperature creep and relaxation testing machine

Instruction & configuration

GWTA Series high temperature creep and relaxation testing machine apply advanced servo motor and ball screw actuator which assure loading conveniently and simply. The drive system comprises a printed circuit motor with toothed belt and gearbox to the recirculating ball screw actuator. A backlash-free, anti-torque bar and a pneumatically operated mains failure protection device are incorporated as standard. Load cells, electronic extensometers, DCS-300 controller,

furnaces, temperature controllers, elapsed time meters and loading bars are identical to those applications for the GWTA series.

A completely enclosed robust base unit supports the lower crosshead and test actuator. This base unit houses an integral spur gear box/HTD toothed belt drive assembly, printed circuit motor & tachometer

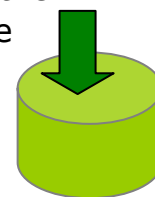
Features & Functions:

- Motorized draw-head assembly automatically compensates for specimen elongation and keeps loading bar with excellent load accuracy of +/- 0.5% guaranteed.
- Both room temperature and elevated temperature systems are available
- Furnace and chambers available with temperature ranges from 200 °C to 1200°C in common air environments
- Numerous high temperature pull rods, specimen holders, furnace systems and extensometers available for creep and stress Relaxation applications. Many of which are also adaptable to hot tensile testing applications on universal testing machines.
- Relaxation test be available via GWTA Series instead of lever type-high temperature stress rupture testing machine
- DSC-300 control system owns the three closed control function as load control, extension control, and velocity control. High precise control and accurate load with load measurement resolution reach 1/300000; the loading testing curve can be plotted automatically.
- Additionally, manual operation also be offered, users can unload to protect the apparatus by hand, especial the load cell, when suddenly power cut off.
- SANS Powertest software owns powerful function offering specimens registration, apparatus control, test data acquisition and store, test result inquiring, data processing and test report export
- Remote communication control function saves your operators invigilation during testing process; alarm message can be transmitted to your mobile phone to inform you test situation by equipping with special dial number device.

High Temperature Furnace:

SANS new designed three-zone open cylindrical furnace features ceramic fiber insulation structure which is the first application in China. The heating elements are individually take action on ceramic half tube sections, and provide three heat zones for excellent control of temperature gradients and reliably continuous operation up to the specified maximum temperature. During the

test the temperature is controlled directly by a thermocouple on the test specimen. The three-zone controllers incorporate the microprocessor based instruments which give three-term control and digital display. Proportional band, integral and derivative time constants, cut back and heat power limit are standard features. In addition, a



range of test chamber assemblies is available for use inside the high temperature furnaces, thus allowing

creep studies under hostile atmospheric conditions.

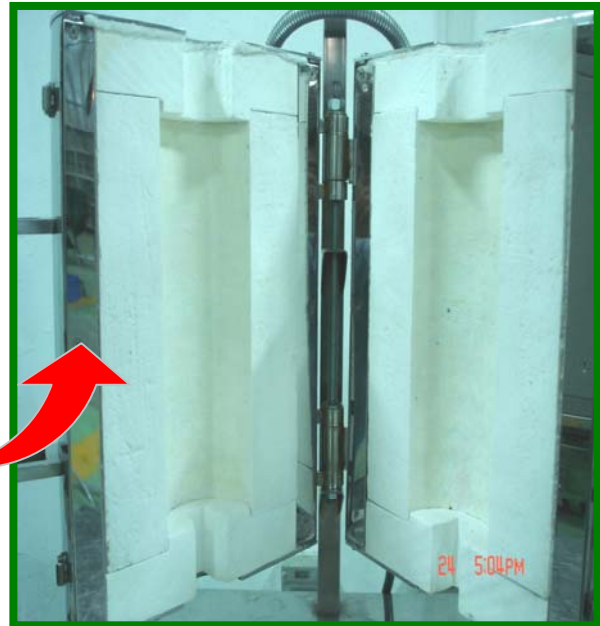


Fig2. Three zone open high temperature furnace

Temperature Controller:

SANS temperature Control systems are designed for controlling the heat output of furnaces in testing of creep, stress-rupture, or hot tensile systems and others. The system is compatible with all furnace systems offered as new equipment and can be configured to operate nearly any furnace with any one of several different thermocouple types. SANS can also provide a fully computerized supervision, monitoring and data logging system for both mechanical and electronic creep machines. This creep laboratory management system is designed to monitor up to 101

individual machines or test points on a minute by minute basis. A complete laboratory status display keeps the supervisor constantly up to date with exactly what is happening at each test point. Errors and warnings are audible and visual, and are shown on the computer screen as well as recorded on a printout. Using the in-built databases of available equipment including: test point type, weights, furnaces, thermocouples and round ridged, round grooved and flat test specimens and are of twin transducer design.



Fig3. Temperature Controller for high temperature furnace

Powertest Software:

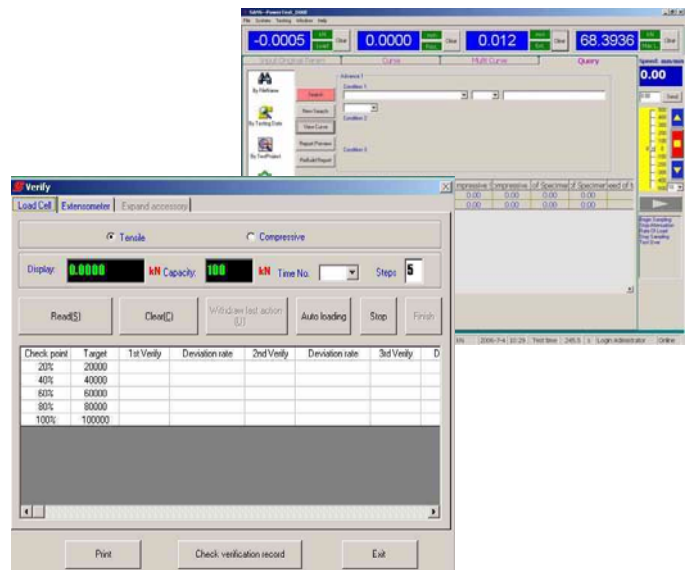
Building on our long history of providing solutions to an enormous variety of different testing problems, SANS offers a comprehensive range of software products, each design in the hope of making testing simple, precise and efficient. Specific and focused application software products have been developed in close cooperation with our customers around the world.

There are several valuable features that are common to all. Perhaps the most important is the ability to further customize the testing parameters that are used to collect and document testing data, as well as control the

testing machine. Specifically, our range of application software is for data acquisition, data analysis, and closed loop control of SANS testing machines that have a compatible servo system or four-quadrant drive. All versions of our focused application software are rich with standard features that improve productivity and enable you to build, access, and use a powerful material testing database.

Use of modern databases:

- Generation of user customized reports.
- Standard SPC programs for X-bar, R, and frequency distributions/histograms.
- Ability to recall, replot, and rescale curves.
- Recall of data that spans different test modules.
- User-configurable machine parameter and control setting



Technique Specifications:

Model	GWTA304	GWTA504	GWTA105
Load range (kN)	0.3-30	0.5-50	1-100
Accuracy	Grade 0.5/1		
Load measurement accuracy	$\leq \pm 1\% / \pm 0.5\%$ of indicating		
Load deflection	$\leq \pm 1\% / \pm 0.5\%$ of indicating		
Axiality of upper and lower grips	$\leq 10\%$		
Load resolution	1/300000 of capacity		
Extension measure range	Depends on customer's requirements		
Extension indicating accuracy	$\pm 1\%$		
Loading speed (maximum)	2500N/s	3000N/s	4000N/s
Lower loading bar speed	0.05-100mm/min		
Lower loading bar travel	150mm		180mm
Servomotor power	850W	1.3kW	2.9kW
Furnace type	Three zone open		
Temperature range(°C)	200-1200		
Medial temperature zone range	>150mm		
Temperature fluctuation & temperature gradient	Temperature	Temperature fluctuation	temperature gradient
	≤ 600	± 2	2
	600-900	± 3	3
	900-1200	± 4	4

Creep testing specification:

Deformation measurement range: depends on customers' requirement

Deformation measurement accuracy: $\leq 1\%FS$

Deformation measurement resolution: 0.001mm

Power: standard optional voltages 220/240 VAC, 50- 60 Hz; power must be free of spikes and surges exceeding 10% of the nominal voltage

Specifications subject to change without notice

