Noia series vertical biaxial testing machine

The Noia series vertical biaxial testing machine offers a load range from 50KN to 500KN.It boasts exceptionally high precision and remarkable efficiency. Capable of accurately testing various properties of materials under biaxial stress conditions, such as crucial indicators like strength, deformation and failure. It can meet the requirements for biaxial creep tests for at least 500 hours. Providing valuable experimental data for product development, structural optimisation and performance enhancement. It is able to lend significant support to engineering design and scientific research in fields such as aerospace, rail transportation, automobile manufacturing and new energy.

Scope of application

Biaxial tensile, compression, creep, fatigue and other tests of materials such as plastics, rubber, metals, composite materials, resins, ceramics, and concrete.

Performance Characteristics

- Boast coordinated loading in four directions of two axes, comprising four sets of independently controllable precision servo actuation systems and load/displacement sensors.
- In creep tests, the biaxial load and displacement ratios can be continuously altered. In quasi-static tests, arbitrary non-proportional loading paths for displacement and load can be implemented.
- Through the electrical control system, displacement synchronization is accomplished. The electric cylinder can achieve displacement synchronization in four directions or two-by-two displacement synchronization.
- It can be paired with an environmental chamber to conduct tests in corrosive environments such as high and low temperatures, high hydrostatic pressure, and seawater, and achieve precise coordinated control between the environmental chamber and the biaxial loading system.
- It is capable of achieving high-resolution optical image acquisition on the surface of test specimens when an environmental chamber is involved. By integrating with digital image correlation software (DIC), it can perform analysis, calculation and output of full-field displacement, strain and other variables. Additionally, it supports subsequent advanced material mechanical behavior analysis and modeling functions.

Technical parameters

Type	Noia-50	Noia-100	Noia-300	Noia-500
Load capacity	50KN	100KN	300KN	500KN
Stroke	10-200mm	10-200mm	10-200mm	10-200mm
Maximum speed	≥100mm/min	≥100mm/min	≥100mm/min	≥100mm/min
Minimum speed	≤0.1μm/min	≤0.1μm/min	≤0.1μm/min	≤0.1μm/min
Repeat positioning accuracy of four axes	≤1μm	≤1μm	≤1μm	≤1μm
Biaxial four-direction displacement synchronization error	≤0.5%	≤0.5%	≤0.5%	≤0.5%
Load measurement accuracy	±0.05%	±0.05%	±0.05%	±0.05%
Displacement measurement accuracy	±0.05%	±0.05%	±0.05%	±0.05%
Speed control accuracy	0.1%	0.1%	0.1%	0.1%
Work area size	≥0.8m*0.8m	≥1m*1m	≥1m*1m	≥1m*1m

Product features

- Load, stroke, maximum speed, test machine dimensions and frame can all be customized according to customer requirements.
- Suitable for tension/compression and quasi-static or low-cycle fatigue testing of planar test specimens.
- Can perform various combined loadings such as tension-tension, tension-compression and compression-compression.
- The test machine frame and the employed sensors have undergone long-term creep resistance testing.

- Capable of achieving high-precision four-axis synchronous displacement and load control.
- Strain gauges and acquisition units can be added to realize variable ratio loading at designated positions. Can be paired with an optical strain measurement system.
- Equipped with a lateral stiffness retention system to ensure structural stability during long-term operation.