

# ***SERVOTEST***

## Company Introduction



Servotest has gained international recognition as a World leader in servohydraulic test and motion simulation. The Company offers advanced, sometimes highly customised, servohydraulic systems backed by innovative design and development to achieve our customers requirements.

#### COMPANY PROFILE

Founded in 1958 Servotest is built on a strong engineering base with more than 70% of the workforce being qualified engineers. Our engineers together boast over 300 years' experience in servohydraulic engineering with an unrivalled level of knowledge in this specialist industry. The Company has the resources to deliver and support a test system that will completely satisfy the customer.

#### MARKET POSITION

The Company has supplied Multi Axis systems since 1970. All types of applications have been covered from durability testing to earthquake simulation to human vibration research. Our customers are wide ranging and we are proud to have been involved in the development of the space shuttle, Formula 1 cars, and the French Navy 'Le Triomphant' class of submarine. This relationship brings a flexible approach and close co-operation from our team that distinguishes us from other companies. Servotest has formed alliances with a number of companies around the globe. Thus enabling continued high levels of support to our customers whatever the time zone or language. Servotest has shipped to every corner of the globe and its commitment to excellence and renowned quality of product has guaranteed an enviable presence in the global market. The headquarters situated in Egham, England close to Heathrow airport, allow rapid response to our customers worldwide.

#### FLEXIBLE APPROACH

Servotest specialise in providing tailored solutions, working closely with customers to achieve solutions which match their test requirements. Servotest can provide everything from a general purpose actuator to complex multi axis shake table systems for seismic testing of structures and bridges.

Servotest are continually breaking new ground to meet the testing requirements of its customers, and thus have an extensive portfolio of product designs.

Quality of product and service is assured, and confirmed by the ISO9001 certification.

#### CUSTOMER SUPPORT

Within the servohydraulic testing arena, quality and service are a prerequisite in establishing the success of our product.

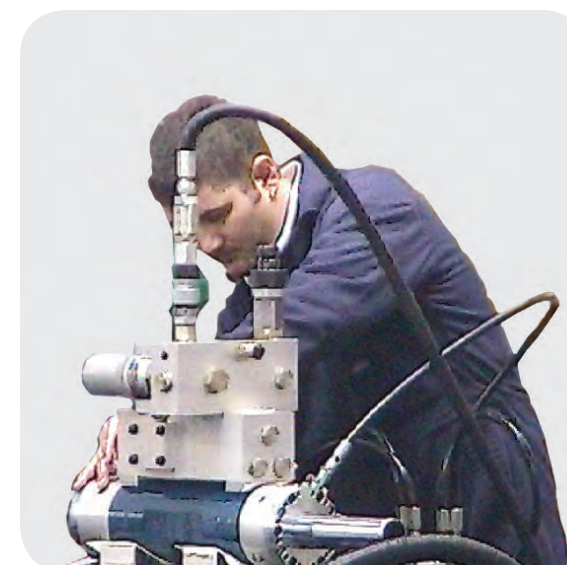
In recognising the value to our customers of a fast and efficient after sales service, Servotest has made significant investments in facilities and training within this area.

The company's products already carry an extendable 12 months full parts and labour warranty, which confirms our commitment to quality and continuing customer support. The company has expanded its service support to ensure rapid response, thereby maximising customer investment and providing excellent value for money through rapid response, high work efficiency, enthusiasm and value for money. Servotest provides a range of calibration activities for force, displacement, velocity, acceleration and pressure using traceable standards.



#### TRAINING

Servotest can provide an extensive range of courses from training operator to maintenance personnel. Software and computer courses are available to suit the customer needs, and training can be provided in-house at Servotest or at the customer's site. Technical support help-lines for both software and service are available.



#### WHY CHOOSE SERVOTEST?

The knowledge and experience to design and build completely unique test equipment for the most demanding applications.

- Equipment built to exactly meet the customers requirements.
- The support of a dedicated team of service engineers with 100's of years of experience in the field of servohydraulic testing.
- Global network to ensure speedy response and support.
- Superior quality at competitive prices.
- Reputation for equipment durability and consistently high system performance.



Servotest provides a range of calibration activities for force, displacement, velocity, acceleration and pressure using traceable standards.



## VEHICLE TEST SYSTEMS

Servotest offers a complete range of ride simulators for NVH, squeak & rattle and endurance testing applications. Vehicle test systems can be man rated, voice or remotely controlled, or linked to visual systems. From two posters to sixteen posters, Servotest have the system to suit your requirements.

### FOUR POSTER RIGS

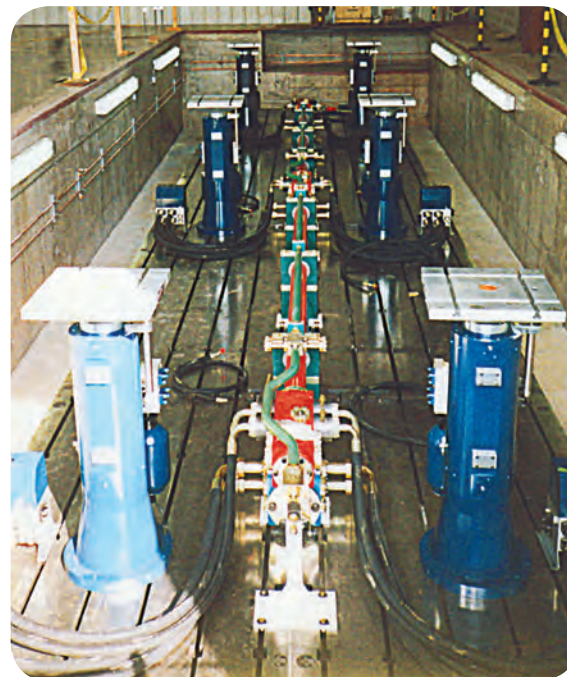
The Four Poster rig is used to test passenger cars and small trucks. High precision actuators, with very low friction levels and high side load capabilities combined with unique digital control techniques to accurately replicate service conditions. Race teams have also made use of the four poster system. Tests previously conducted on the track can be replicated in the laboratory.

### SIX POSTER RIGS

Four Poster test rigs can be expanded to test large double axis vehicles, such as trucks and buses.

### SEVEN POSTER RIGS

Servotest invented the Seven Poster to meet the demands of testing in the motor sports industry. In addition to the 4 road profile inputs applied through the wheelpan actuators, aerodynamic down-force and pitch and roll weight transfer effects, are superimposed on the vehicle body by three additional actuators, to realistically investigate the suspension characteristics and tyre contact loads. The Servotest 7 post rig sets the standard for race car simulation.



Servotest four, six and seven poster vehicle test rigs

## COMPONENT TESTING

### SUSPENSION TESTING

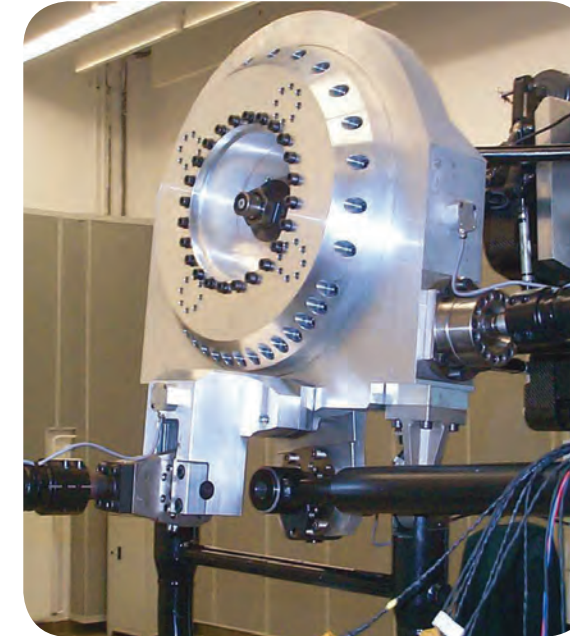
The Servotest Tetraxial test system is available as one, two or four combined units to create up to sixteen channels of fixed body simulation.

### BALL JOINT TESTING

Ball joints experience continuous loading from a multitude of sources when operating in a vehicle. They are also subject to extreme temperatures in test chambers. As they are expected to last the lifetime of the vehicle, ensuring that they are fully tested is critical before going into production. Servotest has produced test systems to accurately simulate these loads and if required at extreme temperatures.

### DAMPER TESTING

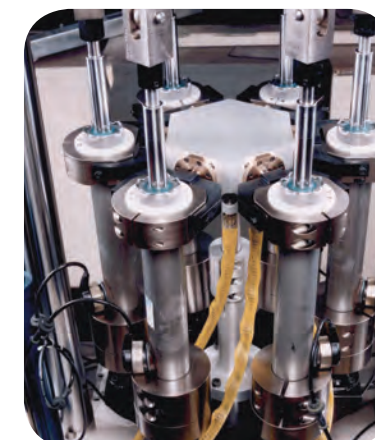
Servotest has over 30 years experience in building systems for the largest damper manufacturers in the World. These machines provide excellent performance, repeatability, flexibility and reliability. Servotest offer a range of machines for research and development, production and endurance testing.



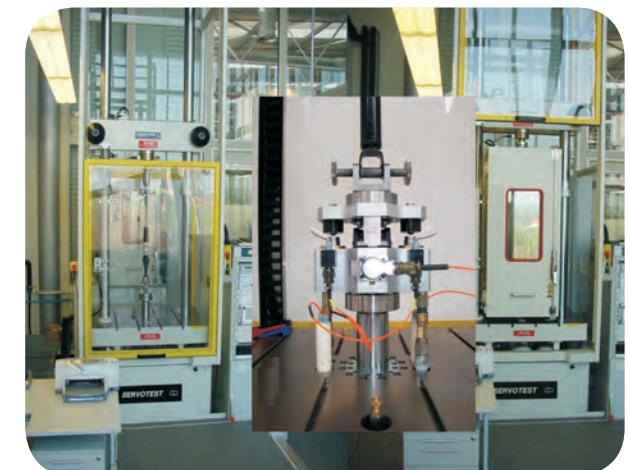
Servotest tetraxial suspension test system



Five Axis 2 Ball Joints test-rig



Six station damper test machine



Servotest Damper Test Rig with Environmental Chamber and Side Loading



COMPONENT TESTING

SEAT BELT ANCHORAGE TESTING

The Servotest seat belt anchorage test equipment (up to 9 channels) is designed for development laboratory to assess the integrity of the chassis regarding seatbelt anchorage strength and also both internal and external body intrusion assessment and analysis.

LEAF SPRING TESTING

Servotest have supplied leaf spring test rigs to accommodate a number of test regimes. Both fatigue and scragging test systems have been built, with versatility and expandability built into the design.

SEAT TESTING

Servotest manufactures sophisticated, digitally controlled multi-axis simulators that allow specimens to be excited simultaneously in all 6 spatial degrees of freedom. This allows for realistic simulation of a broad range of anticipated load events. These systems can also be man-rated.

STEERING TEST SYSTEMS

SERVOTEST will provide a range of 3 to 5 DOF steering system test rig for durability and characterization tests. The rigid mechanical structure, stable hydraulic facilities, accurate instrumentation and sensors, and powerful digital control system and software, make it an excellent platform for durability and characterization tests of steering system



Seat testing



Seatbelt anchorage test machine



Two station leaf spring test machine

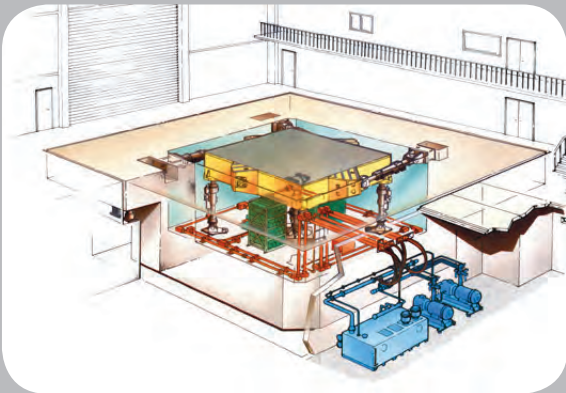


5 DOF durability and characterization steering test machine

MULTI-AXIS SHAKE TABLES (MAST)

MAST SYSTEMS

Servotest have manufactured many MAST systems of various sizes and formats. The application of these systems is wide, varying from power train vibration to earthquake simulation.

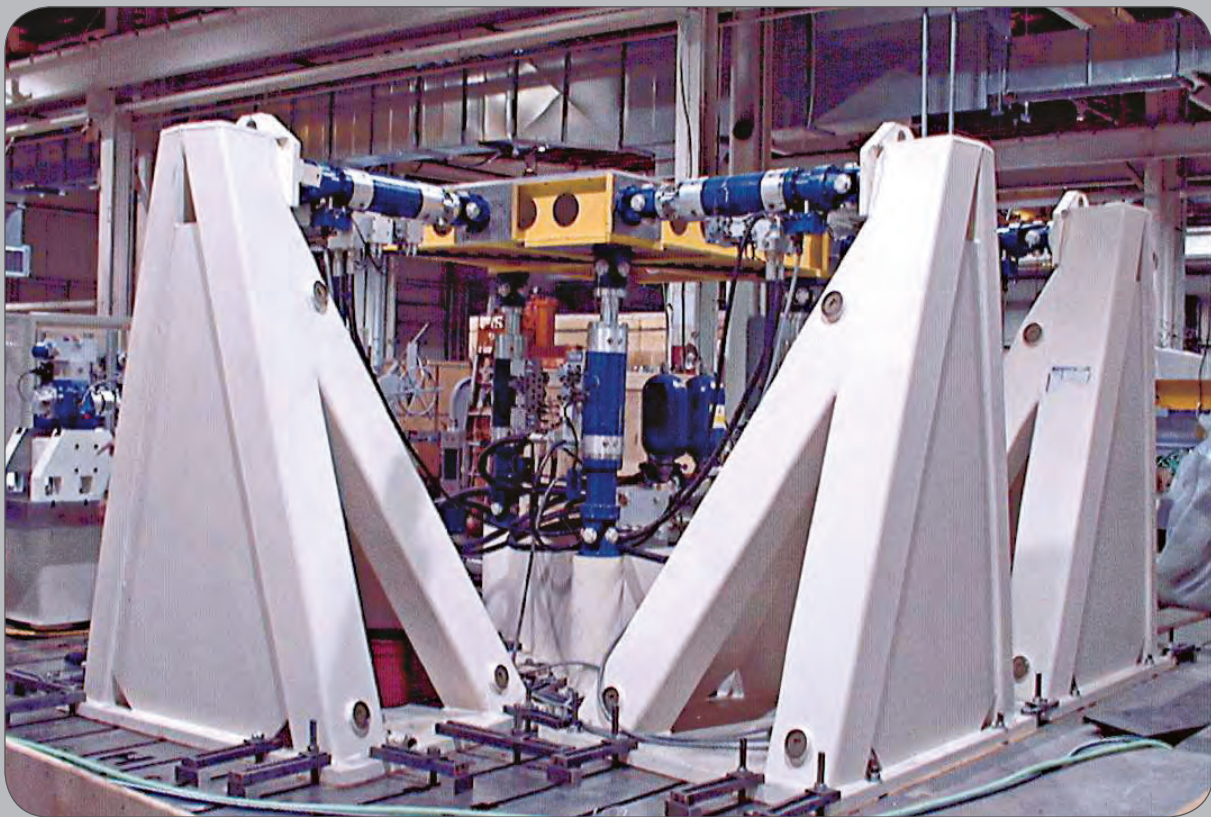


NVH TEST SYSTEMS

Noise, vibration and harshness testing is a prerequisite in the automotive industry. Car dashboards, instrument consoles etc, need to be checked thoroughly before being approved for inclusion in passenger cars. Simultaneous multi axis tests or vertical/horizontal tests can be carried out without having to remount the specimen.



Servotest has delivered a unique low distortion, low noise, long stroke, man rated MAST system



Transportation simulation



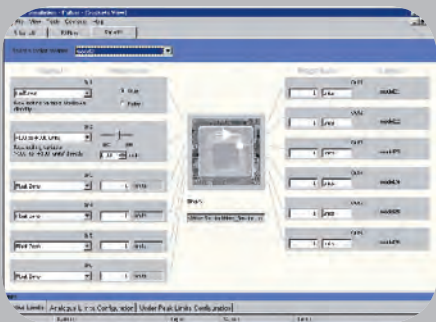
MULTI-AXIS SHAKE TABLES (MAST)

SEISMIC SIMULATION

Research into safe structures is a growing sector, especially in the developing World. Accurate reproduction of actual seismic conditions allows research institutes, power companies and construction manufacturers to put a structure on top of a table, to see how it bares up to a simulated earthquake. These systems require huge dynamic force capabilities to be able to simulate earthquakes. In addition the building that houses the system, and its foundations, have to be reinforced to cope with the stresses. Our state of the art Digital Control Systems controls high performance actuators to give precision control of the x, y, z axes and roll, pitch and yaw. Independent or simultaneous control of each axis is possible. The systems are designed to precisely reproduce actual seismic conditions to test the ability of the specimen to withstand earthquake inputs. In addition to earthquake reproduction, random time history generation, shock pulse generation and multichannel Sine sweeps can be created quickly and easily.

STRUCTURAL TESTING

Pseudo-dynamic test method is fast becoming a viable alternative to large scale shaking table systems for the evaluation of dynamic integrity of large scale structures. This method incorporates a hybrid of testing methodologies, in which computational modeling is carried out in conjunction with experimental testing of structures or sub-systems of structures.



6m x 6m 6 DOF MAST



3m x 6m 6 DOF Twin MAST



Pseudo dynamic test system

VIBRATION TEST SYSTEMS

SINGLE-AXIAL VIBRATION TEST SYSTEMS

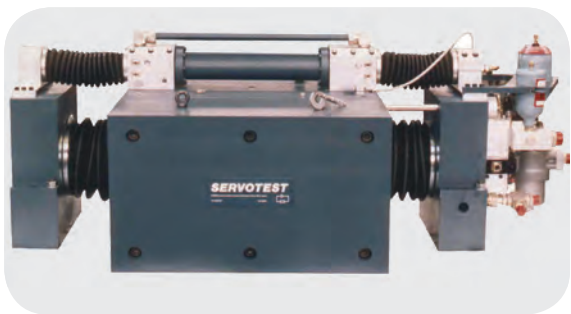
Servotest can offer a range of single-axial (horizontal or vertical) vibration test systems to match customer requirements of table size, payload and performance. These systems are used to simulate a range of real life conditions to allow engineers to exhaustively test their units.

BI-AXIAL VIBRATION SYSTEMS

Multiple DOF vibration table can simulate the actual service condition more realistically. This high precision biaxial vibration test machines is provided allowing simultaneous vibration in vertical and one horizontal axis. It benefits customer with higher efficiency, lower cost on fixtures, and smaller footprint. Also it is easier for integration with environmental test chamber.

INERTIA VIBRATION

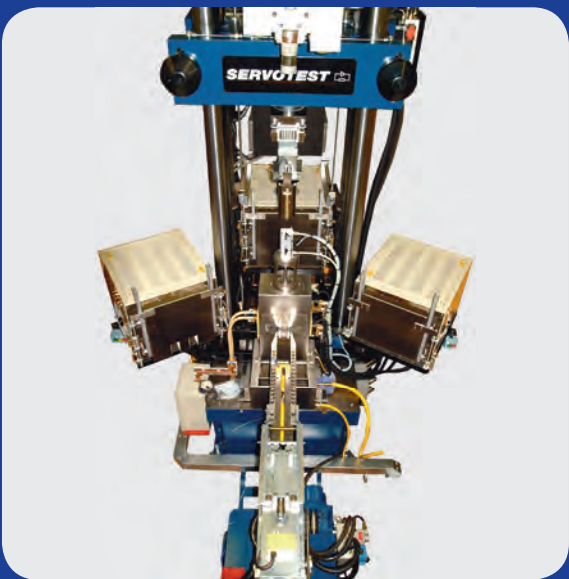
Inertia vibrators are used for the study of resonance, modes of vibration and damping of structures as diverse as aircraft, ships, buildings, bridge foundations and large machine coatings. These vibrators exert accurately controlled forces, the frequencies and amplitudes of which can be easily controlled via the Servotest Pulsar controller.



METALLURGY TEST SYSTEMS

HIGH RATE THERMO MECHANICAL TREATMENT SIMULATORS (TMTS)

A versatile servohydraulic testing machine capable of simulating high temperature, multiple pass deformation schedules on ferrous and non-ferrous alloys. The machine has the capability to test both plane strain and axisymmetric compression.

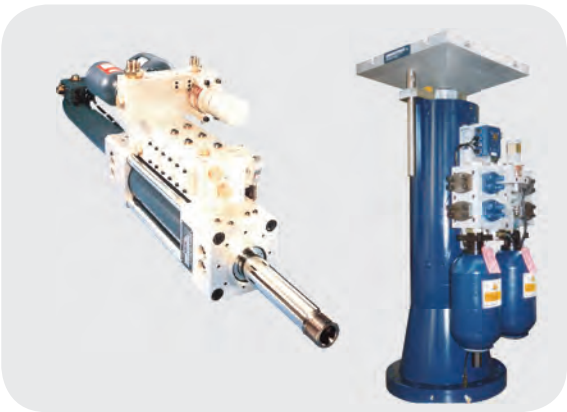


TMTS machine

HIGH PERFORMANCE ACTUATORS

LINEAR ACTUATORS

Servotest high performance linear actuators provide the accuracy, repeatability and maintainability which are essential for testing applications. Servotest actuators have been used in the automotive, aerospace and defence industries and are recognised for their engineering, performance and durability. Used as standard in Servotest test systems, they can also be procured individually for general purposedtesting.



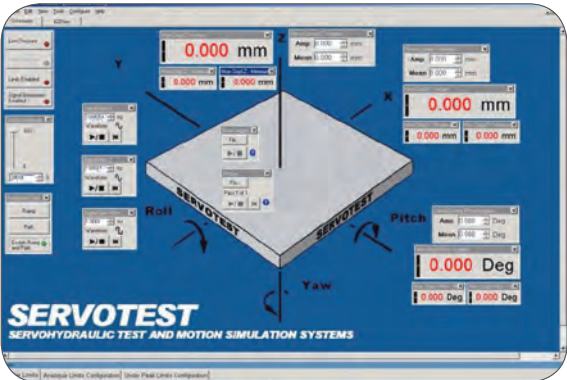
ROTARY ACTUATORS

Servotest rotary actuators are used to generate torsional forces and motions for the testing of components in the automotive, aerospace and defence industries. Two types of rotary actuator are available; the first is the piston type, which uses two miniature linear actuators driving a crank assembly to produce the rotary output. The second is a vane type, this is designed for much heavier duty, robust testing and has a much greater torque and stroke capability. Single or dual vane configuration is possible, giving either 90 or 270 degree rotation.



PULSAR – ADVANCE DIGITAL CONTROL

The Servotest Pulsar control system offers the user the very latest in digital control for servohydraulic test and simulation systems. It employs state-of-the-art real-time control techniques to ensure optimum accuracy. The system is based on a revolutionary I/O system, using distributed fibre-optic technology. Building on the success and popularity of its predecessor, DCS2000, the Pulsar control system provides a powerful, reliable and flexible total control solution. The Servotest Pulsar controller is offered as a complete control and monitor system. The Pulsar software is also available to upgrade from an existing Servotest DCS system or as a retrofit to another controller.



# SERVOTEST

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