

High Performance Vibration Systems

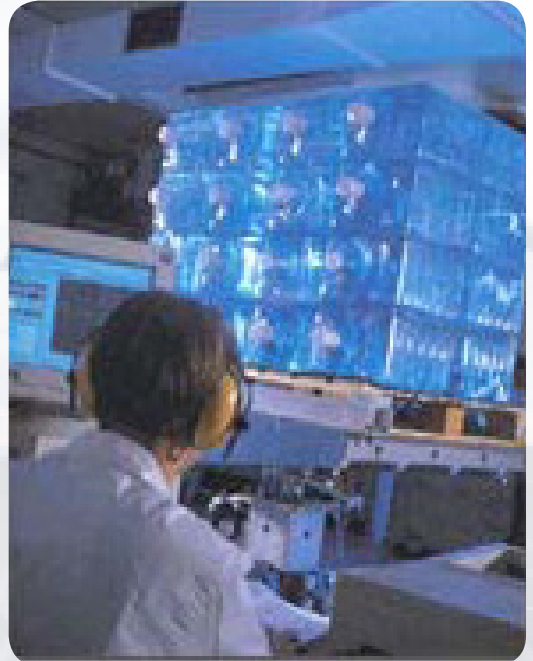
With many years experience in the vibration and shock testing field, Servotest are able to supply a range of vibration testing equipment, developed to exceed other manufacturers in the market place.

Servotest supply an unbeatable range of dynamic test equipment that cover Vertical and horizontal High Performance vibration Machines.

This system could be used to test any size and weight parts, providing a huge scope of testing in two independent axes from one machine.

Versions of this machine include systems with environmental chambers and single axis vibration systems of varying sizes are also available.

The tests involve vibration testing of parts and components in both the horizontal and vertical axes and require reliable testing to ensure high quality standards.



A world of experience...

Servotest is a World Class Test and Motion Simulation Company, with experience of operating around the globe, for multi national corporations, smaller specialist companies and Government Departments. Since the 1950s our engineers and equipment have been at the forefront of our industry. Product and Service quality is maintained by a program of continuous training and development of our engineers and equipment.

We operate in all of the key industry sectors for our marketplace, including Automotive, Marine, Civil Engineering, Aviation, Defence, Aerospace and Traction. The company holds both ISO14001 and 9001 Quality accreditation marks and is a member of many national & international trade organizations.



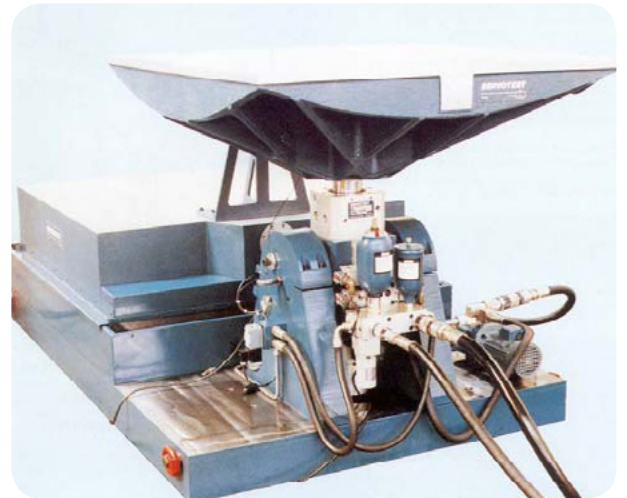
Servotest 443 High Frequency Vibration System

The Servotest 443 high frequency vibration systems provide a classical solution to a wide range of fatigue and vibration test requirements. The vibration actuators incorporate large diameter piston rods supported in hydrostatic bearings to provide high lateral stiffness and resistance to side loads and pitching moments. The robust design results in high performance and extended service life.

This equipment was built to vibrate a structure in both the horizontal and vertical axes independently, and required reliable testing to ensure high quality standards.

The solution – Servotest 443 vibration system

The Servotest 443 vibration system can be configured for both vertical and horizontal vibration testing. In the vertical mode the actuator is mounted on its trunnion and the lightweight vibration table is mounted directly onto the actuator. The table is of a lightweight rigid design with very high stiffness, avoiding any resonances or harmonics and ensuring a distortion free wave form. In the horizontal mode the actuator is rotated 90 degrees on its trunnion mount and attached to the horizontal slip table via a robust flexural link. The link has high axial rigidity which allows effective transmission of forces and motions to the platform, but avoids the complex aligning procedures normally associated with the stiff side load characteristics of the hydrostatic bearing actuator. The horizontal vibration platform is supported on four hydrostatic journal bearings, these very low friction bearings complement the actuator in accurate wave form reproduction. The high side load capacity of both actuator and platform provides high resistance to pitching moments, which can occur at high frequencies where the test specimen centre of gravity is significantly offset from the centre line of motion. This has particular significance when reproducing random waveforms.



The Servotest 443 biaxial vibration system provides a viable solution for correctly testing complex high value products, which would otherwise be tested in a conventional manner then rotated through 90 degrees to simulate vibration testing in the horizontal plane. The Servotest 443 vibration system can operate in the range of frequencies up to 500 Hz, with payloads of up to 500 Kg as standard and with peak accelerations in excess of 10 g's.

443 Systems utilizes precision servo hydraulics combined with state-of-the-art, unique techniques in digital control systems and latest PC technology. Whilst Servotest 50 HP Hydraulic Power Supply powers the system.

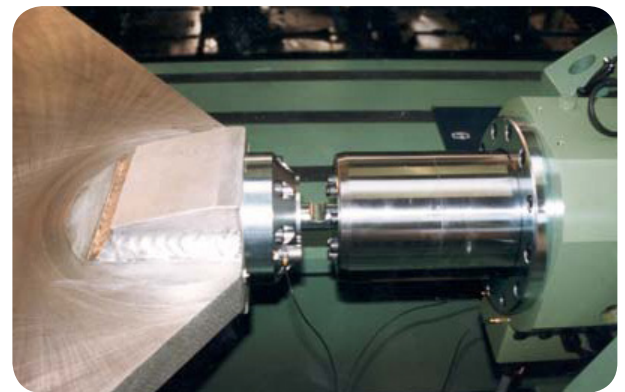
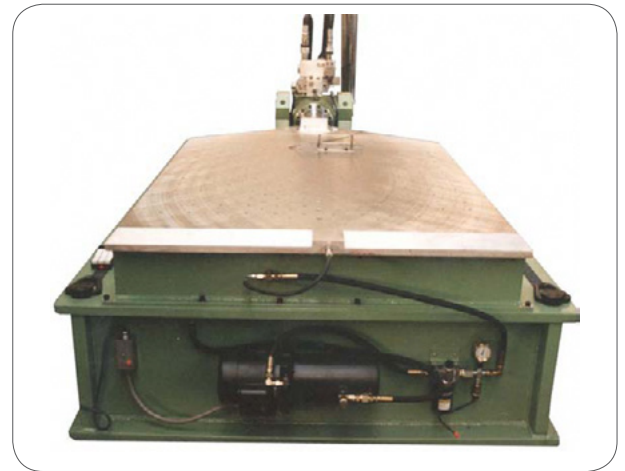


Servotest 443 High Frequency Vibration System

High precision bi-axial vibration test machines are used to simulate a range of real life conditions to allow engineers to exhaustively test their units before release. These proof tests provide accurate recreation of the vibration duty life to investigate flaws or weaknesses in the design and manufacture of the item, such that once it has passed the tests, it will be safe for use in its designed capacity.

The tests in both axes are independently performed by the same actuator, making the system compact and easy to use. The actuator is swiveled through 90 degrees to attach in one orientation to a vertical vibration table and the other to a horizontal shake table. The vertical table is removed when the horizontal tests are being performed.

The horizontal table has a seismic mass in its base to ensure that only very low levels of acceleration are seen by the surroundings. The system can be housed in an environmental chamber to allow for accurate temperature control, ensuring more realistic simulation of actual in-car conditions. The system is controlled by the PULSAR Digital Control System. The Servotest Hydraulic Power Supply powers the system.



- Wide selection of programmable test parameters for increased flexibility.
- Dual axis testing performed on a single system, giving amore compact design.
- Accurate transducer measurements ensuring high repeatability.
- Engineered for increased service life, reliability and maintainability.
- High lateral rigidity with 150mm diameter piston rod.
- Environmental chamber providing accurate simulation of engine temperatures to improve level of simulation.
- Great accuracy of digital control with wide range of safety features to ensure trouble free operation.

Pulsar Node Modules

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 system, and is also available as a software upgrade to existing DCS2000 systems.



Provide connection to the controller for the following transducers and devices:

Transducers

Cover DC and AC excited transducers of the following common types:

- Load Cells
- Torque Transducers
- LVDT
- RVDT
- LVT
- Accelerometers
- Pressure Transducers
- Thermocouples
- Extensometers
- Optical Encoders

Devices

- Three stage EFB valve drive
- Two stage valve drive
- Analogue Input for customer and system use
- Analogue Output for customer and system use
- Digital I/O



The Pulsar Control System – Software Overview

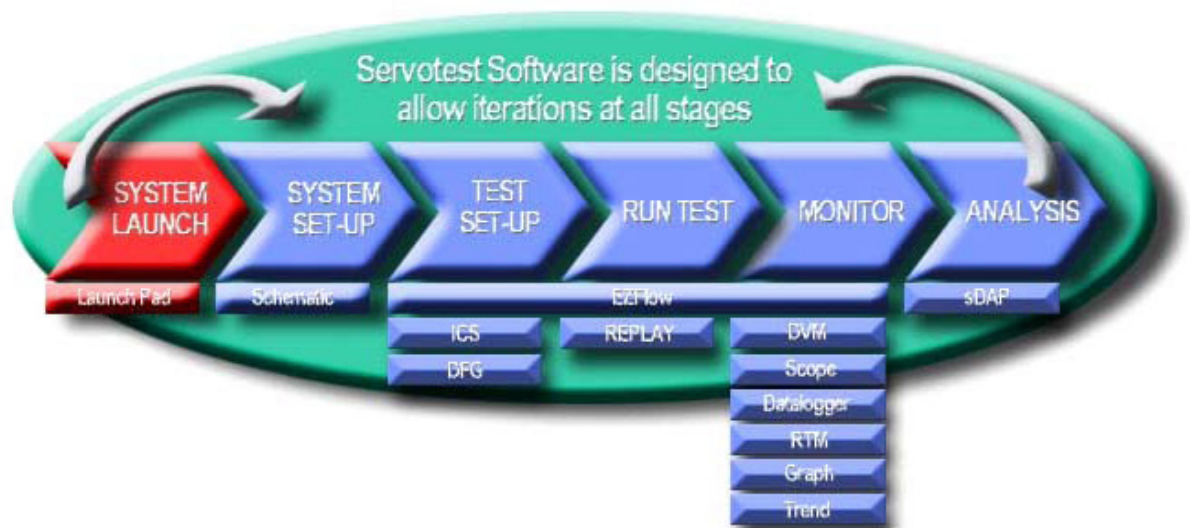


The Pulsar software uses the latest and most advanced tools and techniques in software engineering, with extensive use being made of object-oriented design and programming to ensure a solid base for future development. Throughout its design, great emphasis has been placed on ease of use, without compromising the power and flexibility of the system. The system configuration is stored within industry standard database files, which are created and updated using a set of simple configuration screens.

The Pulsar software runs within the Microsoft Windows™ environment, providing the user with a powerful, easy to use interface. The software revolves around the concept of signals which are arranged into groups for ease of selection.

Command signals to the actuators can have Cycle Counter and multiple Function Generator inputs applied to them. Signals can be Monitored, displayed on software Oscilloscopes, sent to the Analogue Outputs or the Data Logger which allows triggering and user-defined acquisition rates. Monitored signals can be displayed as Maximum, Minimum, Average and RMS or Instantaneous values, and have a user selectable averaging period. Multiple Safety Limits can be set on any signal with the Limit action selectable between Indicate, Trip or Shut.

A large high resolution colour monitor will be supplied with the control system providing the user with a large screen area to display signals, configure tests and analyse data.



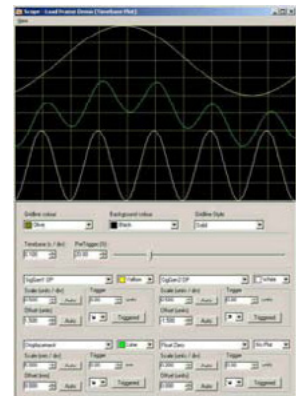
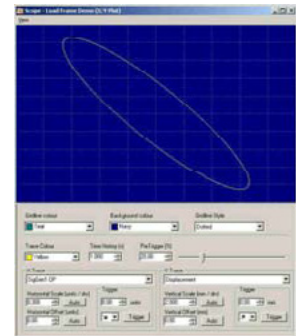
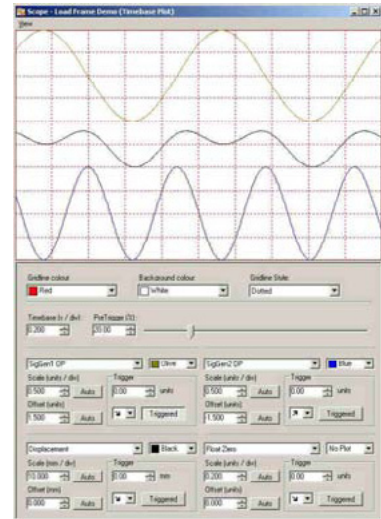
443 / 444 Vibration Systems – Specification Table

System & Software

- Maximum speed of 0.8m/s.
- Actuator force of 50,000 Newtons.
- Maximum acceleration in excess of 5g with a payload of approximately 75kg.
- Environmental chamber temperature range of -40 to 150 degrees Fahrenheit with a gradient of 2 degrees/second on a 75kg test piece.

Scope of Supply

- Actuator – Trunnion mounted 443 or 444 from 50 to 300mm stroke and 20 to 1000KN.
- Servovalves 38, 76, 55 litres/min, 2 stage or 3 stage.
- Vertical table assembly 1.2m x 1.3m.
- Monobase Slip table assembly 1.3m x 1.5m.
- Power Pack 20HP to 250Hp (210 or 280 Bar).
- Environmental Chamber.



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