



**Vibration Lab Testing Services**

- Sine frequency sweep with constant displacement or acceleration
- Random with frequency weighted power spectral density
- Shock with half-sine, haversine, triangular or saw-tooth pulses
- Environmental conditions and test procedures for airborne equipment
- Shock Response Spectrum (SRS) with frequency weighted spectral density
- Vibration testing of shipping containers
- Combined sinusoidal vibration, dry heat or cold
- Temperature cycles combined with sinusoidal or random vibration
- Military standard, mechanical vibrations of shipboard equipment
- Serving clients for more than 20 years



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# Shock and Vibration Testing

Engineers know well the potential for mechanical vibration to compromise performance or cause failure. However, the details of vibratory environments are often not well understood, making it difficult to determine how to best simulate real world vibration in the laboratory. Various industry vibration testing standards may help, including the following for which Rexnord Innovation Center (RIC) is accredited by the American Association for Laboratory Accreditation (A2LA) to perform.

- MIL-STD 810, METHOD 514 Sinusoidal Vibration
- MIL-STD 810, METHOD 516 Shock
- IEC 68-2-6 Sinusoidal Vibration
- IEC 68-2-64 Random Vibration
- IEC 68-2-27 Shock

The experience and ingenuity of vibration experts at RIC can be instrumental to application of the standards, effective fixturing methods and interpreting test results. We have capabilities ranging from measuring vibration in actual use and analyzing designs for vibratory durability to recommending a test plan, performing shock or vibration tests and recommending design changes.

Vibration testing at frequencies greater than 100 hertz requires the use of an electrodynamic shaker. Vibration testing of heavy samples at low frequencies may require use of a servo-hydraulic actuation.

Electrodynamic shakers at RIC:

- From 100 to 7,200 pounds force
- From 5 to 4,000 hertz
- Up to 3.5 inches peak to peak displacement
- Oil film slip table 36" x 36"

Servo-hydraulic systems:

- Up to 300,000 pounds force
- Up to 6 inches peak to peak displacement

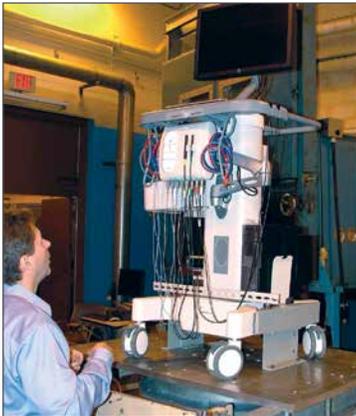
Vibration testing may be combined with environmental testing:

- -100 degrees Fahrenheit (F) to 650 F
- 5% to 95% relative humidity
- 50 to 106 kPa (altitude)

This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this test report have been determined in accordance with the laboratory's terms of accreditation unless stated otherwise in this report.



Testing Cert #0584-01



### Mechanical shock and vibration

Your products may be required to meet rigorous military, electronic, industrial, or medical device standards for resistance to shock and vibration prior to acceptance. Rexnord can provide testing for product-specific test protocols over a wide range of amplitudes, frequencies, and spectrums.

RIC utilizes well proven closed loop acceleration feedback control to simulate or recreate almost any shock or vibration environment that your product may encounter. This includes but goes well beyond industry and military vibration and shock testing methods established by the International Electrotechnical Commission, Society of Automotive Engineers, United States Military Standards (MIL-STD), and the Department of Defense.

Many products, however, are not covered by existing standards and you may require help determining the best test practices to cost effectively provide the product reliability your customers demand. Rexnord can help you to establish a logical shock and vibration test protocol, run the tests and help in any resulting redesign activities.

If your test requires operational testing during vibration, Rexnord has expertise in engineering monitoring systems to record operational functions such as electrical signals, continuity, pressures, and temperatures. These signals can be fed back into the system to record failures or stop the test.



### Case study: Field measurement and vibration testing of electronic equipment

An aggregate processing machinery manufacturer wanted to know whether an electrical cabinet would be able to withstand the vibrational loads sustained in the field. RIC engineers traveled to the customer's site and collected vibration data on the machine. They were then able to replicate in the lab what was experienced during operation. Next, Rexnord accurately predicted component failures, allowing for redesign before deployment of the equipment into the field.

The RIC has eight electrodynamic shakers, ranging in capacity from 100 pounds force to 7,200 pounds force. Random, shock and drop, and wind milling tests are typical. We can also perform "at altitude" tests in the environmental chamber while the shaker is running, saving customers money as the equipment stays in its same location.



### Customer Testimonial

"Excellent service and cost effective pricing ... we always receive excellent service from the Innovation Center ... Thanks for all your support on our development projects. "

— automotive lock manufacturer