

Vibration test facilities of the Human Factors Research Unit

6-axis Motion Simulator

Description

Unique motion simulator for high fidelity reproduction of 6-axis motions: fore-and-aft, lateral, vertical, roll, pitch, yaw.

Very low levels of background vibration, waveform distortion, and cross-axis motion.

For production of sinusoidal, random or recorded vibration time-histories.

Applications

Fundamental and applied research in areas concerned with human responses to vibration, including comfort and perception of vibration, postural stability, human body impedance, seat performance, and motion sickness.

Simulation of transport environments: facilities also allow control of noise, temperature, and humidity.

Standardised vibration tests.

Testing to specific customer requirements.

Outline specification

Displacement: 1-m vertical
0.5-m fore-and-aft
0.5-m lateral
~20-degree roll, pitch, yaw

Acceleration: $\pm 10 \text{ ms}^{-2}$ translational motion
 $\pm 5 \text{ rads}^{-2}$ rotational motion

Frequency range: 0 to 50 Hz

Platform: ~2 m by ~3 m

Payload: ~1 tonne

Dynamic force: ~10 kN

Control system

Servotest PULSAR digital control system



Simulation of transport environments



Studies of human vibration comfort and motion sickness



Studies of postural stability in moving environments