



# HVS系列液压伺服振动试验系统

## HVS SERIES HYDRAULIC SERVO VIBRATION TESTING SYSTEM

[www.king-design.com.cn](http://www.king-design.com.cn)

金顿科技股份有限公司  
金顿仪器科技(昆山)有限公司

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振动试验是产品研发试验和验证的有效手段。面对大推力、低频率和大位移的振动试验需求，液压伺服振动试验系统就成了必然的选择。金顿科技基于多年的振动试验经验和先进技术的积累，提供性能可靠的标准和非标系列液压伺服振动试验系统；可靠性高，为实验室环境下的振动模拟提供了可靠的和高性价比的产品方案选择。

Vibration testing is an effective method for product R&D testing and validation. For vibration testing in high-thrust, low frequency and large displacement, hydraulic servo vibration testing system will be your inevitable choice. With years of vibration testing experience and the accumulation of advanced technology, King Design provide reliable standard and non-standard series of hydraulic servo vibration test system; High reliability system offers you a reliable and cost-effective solution in the lab.

### 系统优势 System Advantage

推力：1T~30T 推力，满足不同试验的需求；  
频率：0.01Hz-400Hz；  
位移：位移可达到±200mm；  
多自由度：从垂直或水平的单自由度试验，到三轴六自由度试验；系统可靠性高。

Force: 1T~30T (meet the needs of different testing requirement);  
Frequency: 0.01 Hz - 400 Hz;  
Displacement: up to  $\pm 200$  mm;  
Multiple degrees of freedom: from vertical or horizontal single degree of freedom testing to triaxial six degrees of freedom testing; high reliability system.

### 产品规格 Product Specification

技术指标 Technical Parameter	HVS-1	HVS-2.5	HVS-5	HVS-10	HVS-20	HVS-30
正弦激振力 Sine Exciting Force (kN)	10	25	50	100	200	300
最大载重 Load cap (kg)	300	500	1000	2000	4000	6000
频率范围 Freq. Range (Hz)	0.1-400	0.1-400	0.1-400	0.1-400	0.1-400	0.1-400
额定位移 Rated Displacement (mm) P-P	400	400	400	400	400	400
额定速度 Rated Speed (m/s)	1	1	1	1	1	1
额定加速度 Rated Acceleration (m/s <sup>2</sup> )	20	40	40	40	40	40
最大抗倾覆力矩 Max Anti-overturning Torque	200000N·m					
工作台尺寸 Table Dimension (mm)	600×600	800×800	1000×1000	1500×1500	2000×2000	3000×3000
电源电压 Power/Pressure Req	三相 380V, (50~60) Hz    3 phase 380V, (50~60) Hz					
工作环境 Working Environment	温度 0~40℃, 湿度 ≤80%    Temperature 0~40℃, Humidity ≤80%					

## 订制服务 Customized Service

金顿科技可以根据用户的要求，定制多种非标系列的垂直或水平方向试验系统，多轴向多自由度振动试验系统，以及台面、夹具等。

结合先进的振动控制器及伺服控制器实现更准确、更可靠的控制

King Design can customize non-standard series vertical or horizontal testing system, multi-axial and multi degree of freedom vibration testing system, vibration table and fixture according to user requirements.

Combined with advanced vibration controller and servo controller Achieve more accurate and reliable control

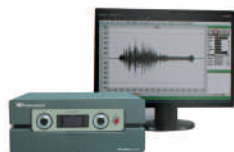
### Premax MIMO 振动控制器 Premax MIMO Vibration Controller

- PXI总线结构，QNZ实时操作系统
- 单机16-64个输入通道，多台可级联
- 每个输入通道独立的24位ADC
- 多DSP并行处理技术
- 100/1000MB以太网接口
- 灵活丰富的软件模块
- PXI bus structure, QNZ real-time operating system
- Single with 16-64 input channel, multiple can be cascaded
- Every input channel has independent 24 bits ADC
- Multiple DSP parallel processing technology
- 100/1000 MB Ethernet interface
- Flexible software modules



### Premax VT-6008 伺服振动控制器 Premax VT-6008 Servo Vibration Controller

- 伺服与振动控制于一体
- 频率的范围：0.01-400Hz
- 位移可达 $\pm 200\text{mm}$ (P-P)
- 集成的PID控制
- 双闭环控制
- 数字显示屏
- 可靠的系统以及用户定制的系统设计
- Servo and vibration control combined into one
- Frequency Range : 0.01-400 Hz
- Displacement : up to  $\pm 200\text{ mm}$  (P - P)
- Integrated PID control
- Double closed-loop control
- Digital display screen
- Reliable system and customized design system



## 试验运用 Testing Application

### 地震模拟试验 Earthquake Simulation Testing

地震模拟振动台可以真实的再现地震振动和结构的反应，是公认的在实验室中研究结构地震反应和破坏机理的最直接的方法，通过缩尺模型地震模拟试验检验其设计计算，结构抗震设计理论、方法和计算模型的正确性。

Earthquake simulation vibration table can truly recreate the reaction of earthquake vibration and structure. It's widely recognized as direct way to study earthquake reaction structure and failure mechanism, and examine design calculation, structure anti-earthquake design theory, method and the correctness of calculation model by seismic scale model simulation testing.

## 地震模拟试验系统 Seismic Simulation Testing

该系统在水平或垂直方向都可以灵活的布置作动缸，采用金领科技的振动控制器和伺服控制器，针对不同的地震模拟试验提供了不同推力的振动台和承载台面；主要用于土木工程结构，大型电力、通信、核电等机电设备抗震能力的试验，该振动系统推力大，行程长，能模拟极低频率的地震波，从而可以评价土木结构的抗震能力。

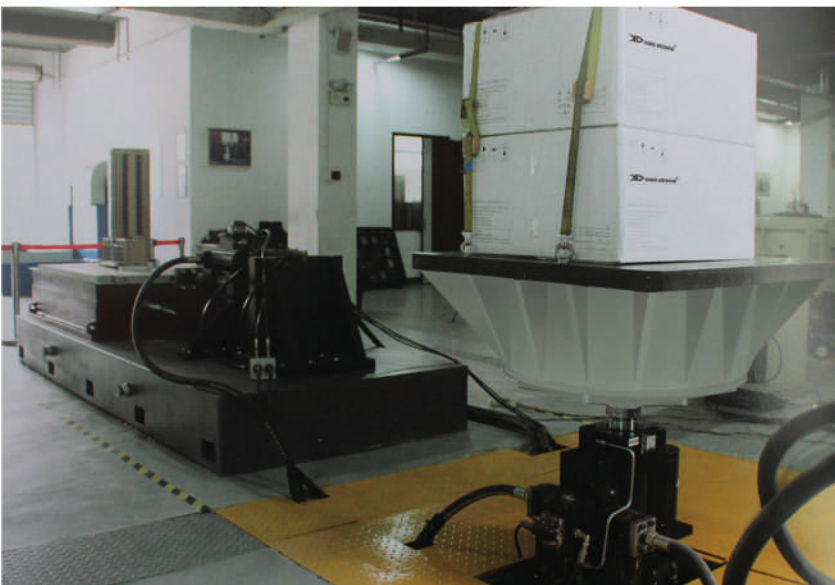
该系统满足《JGJ 101-96建筑抗震试验方法规程》的设备要求，能够准确的复现各种地震波（例如 El-centro地震波，人工合成的地震波等），用户只需根据试验要求及结构特点等因素，在建筑物结构模型上布置数量不等的加速度和应力测点，通过采集这些测点的地震反应（加速度，位移，动应力）来研究整体结构和主要构件在地震作用下的变形规律和受力状态。

同时，该地震模拟振动台可按照客户的需求灵活定制，并参考国内外地震模拟试验标准完成相应的地震模拟试验。例如 GR-63-CORE ISSUE3-2006、GB/T 13540-2009《高压开关设备和控制设备的抗震要求》、GB/T2424.25-2000《电工电子产品环境试验 第3部分：试验导则 地震实验方法》等。

Seismic simulation vibration testing system can flexibly set cylinder in horizontal or vertical direction, adopt King Design vibration controller and servo controller, provides different thrust vibration table and bearing platform based on different seismic simulation testing; mainly used for testing seismic capacity in civil engineering structure, large electric power, communication, nuclear power and other mechanical and electrical equipment, this vibration system has high-thrust, long stroke, and can simulate extremely low-frequency seismic wave, thus to evaluate the seismic resistance of civil structures.

The system meet the "JGJ 101-96 building seismic testing method rules" equipment requirements, can accurately recreate kinds of seismic wave (such as El-Centro seismic wave, artificial synthetic seismic wave, etc), user simply need to set acceleration and stress point based on testing requirement and structure features. By acquiring seismic response of these measuring points (acceleration, displacement, dynamic stress), to study seismic deformation rule and stress state of overall structure and main components.

Meanwhile, the seismic simulation vibration table can be customized according to customer's requirements, and referenced earthquake simulation testing standard at home and abroad to complete the corresponding testing, E.g.: GR-63-CORE ISSUE3-2006、GB/T 13540-2009、Seismic requirements of high-voltage switchgear and control equipment、GB/T2424.25-2000 "Environmental testing for electric and electronic products Part 3: Test Guidance Seismic Test Method".



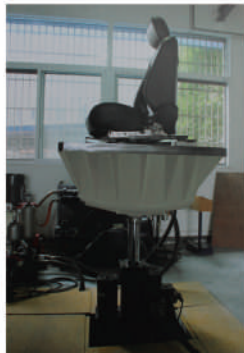


## 道路模拟试验 Road simulation testing

道路模拟试验可广泛应用于车辆零部件与整车的行驶舒适性试验，例如仪表、悬架、进排气、座椅与乘员、整车的载荷谱仿真。在实验室内进行台架式道路模拟试验是研究汽车整车可靠性的的重要手段，越来越受到汽车厂商的重视。这种试验可以大大缩短试验周期和节约资金，并且可控性好，结果可重复性强、精度高，且不受天气影响。

Road simulation testing can be widely applied in vehicles parts and vehicle comfort test, such as meter, suspension, Intake and exhaust, seat and passenger, vehicle load spectrum simulation.

Bench road simulation testing in lab is an important way to study car reliability, and win more and more attention from car manufacturers. Such testing can greatly shorten testing cycle and save money, excellent controllability and good result repeatability, high accuracy, and won't be affected by weather.



## 液压伺服悬架减振试验台 Hydraulic servo suspension damping table

该悬架减振试验台采用液压伺服作动器，实现振动波形、幅值与加载频率可调，可模拟正弦波、三角波、随机波、道路谱等波形，对车辆悬架器件如磁流变阻尼器（MRD）、减震器等进行道路谱激励，验证悬架器件减振性能、疲劳可靠性等指标。

The suspension servo damping table adopts hydraulic servo actuator, make vibration waveform, amplitude and loading frequency adjustable, simulate many wave, E.g.: sine wave, triangular wave, random wave and road spectrum waveform, make road spectrum excitation for vehicle suspension device E.g.: magnetorheological damper (MRD), shock absorbers and other road excite spectrum to road spectrum excitation for the vehicle suspension device such as the magnetorheological damper (MRD) and shock absorber, verify suspension damping device performance and fatigue reliability.

## 整车道路模拟系统 Vehicle Road Simulation System

该道路模拟振动台在垂直方向布置 2 或 4 个作动缸，用于 2 轮或 4 轮整车的道路谱激励仿真试验。该系统推力大，能再现车辆在实际道路行驶时的振动环境，从而评价车辆舒适性与可靠性。

The road simulation vibration table set 2 or 4 cylinder in the vertical direction, used for the road spectrum excitation simulation test of the vehicle with 2 wheels or 4 wheels. The system with high-thrust can reproduce the actual road vibration environment so as to effectively evaluate the vehicle comfort and reliability.

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