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Manufacturer & Exporter · Ambala, Haryana, India

PRODUCT DATA SHEET
Catalogue reference for product evaluation

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Universal Vibration Apparatus | Vibrano X - 06

Category: Vibration Technology Lab Equipment · **Country of Origin:** India

Product Overview

The Universal Vibration Apparatus - Vibrano X - 06 covers a wide range of mechanical vibration technology topics on a sturdy, low-vibration aluminum frame. It includes 6 pendulum types, spring mass vibration study, and rigid and flexible beam vibration experiments with free, forced, damped, and un-damped configurations. This Universal Vibration Apparatus features a linear exciter, a DC imbalance exciter, an adjustable oil damper, and both drum and polar diagram recorders. An optional LabVIEW based data acquisition software with electrical sensors is available for advanced measurement.

View this product online: https://scienticoindia.com/product/universal-vibration-apparatus-vibrano-x-06/



Request a model-specific quotation
Include quantity and delivery country.

Technical Specifications

Universal Vibration Apparatus - Vibrano X - 06, Technical Specifications

Specification	Detail
Frame	Sturdy, low-vibration frame with quick fastening elements
Study Sections	Pendulums, spring mass vibrations, rigid beam vibration (free, forced, damped, un-damped), flexible beam vibrations, rigid beam vibration with unbalance excitation
Pendulums	6 types installed
Exciters	Linear exciter with servo motor and driver; DC rotary exciter
Exciter Control	Frequency set precisely via control unit with digital display
Damper	Adjustable oil damper used as vibration absorber
Recording	Mechanical drum recorder and polar diagram recorder
Storage	Storage tray supplied with equipment
Optional Sensor	Electrical amplitude measurement of various oscillators
Optional Software	Data Acquisition Based System for measured value evaluation

Technical Data

Beams

Parameter	Value
Rigid Beam	700 x 29 x 11mm
Material	Stainless Steel

Tension / Compression Springs (Approx.)

Parameter	Value
Spring 1	0.65 ~ 0.8N/mm
Spring 2	1.5 ~ 1.7N/mm
Spring 3	2.25 ~ 2.35N/mm

Imbalance Exciter

Parameter	Value
Type	DC Motor type
Speed	0 ~ 3000rpm (0...50Hz)
Unbalance Mass	Approx. 100cmg

Linear Exciter

Parameter	Value
Type	Motorised
Motor Speed	0 ~ 2800rpm
Linear Movement	0 ~ 50mm, free adjustable

Vibration Damper

Parameter	Value
Damping Coefficient	5...15Ns/m (Approx.)
Type	Oil Type
Material	Aluminum with Steel components

Recorders

Parameter	Value
Drum recorder feed rate	20mm/s
Paper width	100mm
Type	Geared AC Synchronous Motor
Plotter	Spring loaded pen

Touch Probe

Parameter	Value
Type	Electrical Touch with Light indication
Measurement	Micrometer 0.001mm count
Maximum travel	25mm

Pendulums

Parameter	Value
Six Types	25mm Steel Ball, 50mm Steel Ball, 50mm Wooden Ball, Compound Pendulum, Wooden Pendulum, Bifilar Pendulum

Absorber

Parameter	Value
Type	Leaf Spring with adjustable masses
Total weight	approx. 1.1kg
Adjustable Range	5...50Hz

Flexible Beams

Parameter	Value
Material	Stainless steel and Aluminum
Dimension	700 x 25 x 4mm

Polar Diagram Recorder

Parameter	Value
Diameter	100mm
Plotter	Spring loaded pen

Universal Mounting Frame

Parameter	Value
Material	Aluminum
Type	Profiled Structure
Groove width of profile	10mm
Internal Size	900mm x 700mm

Key Features

Key Features

- **Core Function:** this Universal Vibration Apparatus covers a wide range of mechanical vibration technology topics
- **Frame:** sturdy, low-vibration frame with quick fastening elements
- **Pendulum Study:** 6 pendulum types of different sizes and materials
- **Spring Mass Vibrations:** free hanged spring study with interchangeable masses to demonstrate Hooke's law
- **Rigid Beam Vibration:** free, forced, damped, and un-damped studies supported
- **Flexible Beam Vibrations:** studied using stainless steel and aluminum beams, dimension 700 x 25 x 4mm
- **Imbalance Excitation:** DC motor type exciter, speed 0 ~ 3000rpm (0...50Hz)
- **Linear Exciter:** motorised, motor speed 0 ~ 2800rpm, linear movement 0 ~ 50mm free adjustable
- **Exciter Control:** frequency set precisely via control unit with digital display
- **Vibration Damping:** adjustable oil damper, damping coefficient 5...15Ns/m approx.
- **Recording:** mechanical drum recorder (feed rate 20mm/s, paper width 100mm) and polar diagram recorder (dia. 100mm)
- **Touch Probe:** electrical touch with light indication, micrometer 0.001mm count, 25mm max travel
- **Absorber:** leaf spring with adjustable masses, total weight approx. 1.1kg, adjustable 5...50Hz
- **Mounting Frame:** aluminum profiled structure, internal size 900mm x 700mm
- **Optional Upgrade:** electrical amplitude sensor and LabVIEW based data acquisition software available
- **Storage:** all parts stored in a supplied storage tray

Experiments

- Experiments with different types of pendulums
- Kater's pendulum
- Reduced pendulum length and effect of natural oscillation
- Hooke's Law
- Spring-mass system
- Beam vibrations
- Un-damped vibration
- Damped oscillation
- Forced vibration (Linear Excitation, Imbalance Excitation)
- Damped and un-damped using oil based damper
- Absorber effect in multi-mass oscillators

Construction and Design

The Universal Vibration Apparatus - Vibrano X - 06 is mounted on a sturdy, low-vibration aluminum profiled frame with an internal size of 900mm x 700mm and a groove width of 10mm. Quick fastening elements engage the formed grooves for accurate experimental set-up. The trainer is organized into sections covering pendulum studies, spring mass vibrations, rigid beam vibration, and flexible beam vibrations.

Six pendulums of different sizes and materials are installed, including steel balls, a wooden ball, a compound pendulum, a wooden pendulum, and a bifilar pendulum. The spring mass vibration section uses a free hanged spring with interchangeable masses. The rigid beam is made of stainless steel, sized 700 x 29 x 11mm.

Forced vibration is generated using an electrical motor-driven imbalance exciter. Two exciter types are fitted: a linear exciter with servo motor and driver, and a DC rotary exciter. Exciter frequency is set precisely through a control unit with digital display. An adjustable oil damper made of aluminum with steel components acts as the vibration absorber. A mechanical drum recorder and a polar diagram recorder, both using a spring loaded pen plotter, record vibration output. This Universal Vibration Apparatus stores all its parts in a supplied storage tray for organized handling.

Software

Software Vibrano X - 06 (optional)

DAQ software specially designed in National Instrument™, LabVIEW™ environment to measure and calculate the results of the apparatus. The software is optional. While using the software, a set of electrical vibration sensors with clamping set is included. The software can be run with any Windows™ environment.

Scope of Delivery

- 1 experimental module
- 1 rigid beam
- 1 linear exciter
- 1 imbalance exciter
- 1 set of springs
- 1 measuring scale
- 1 oil damper
- 1 set of pendulums
- 1 absorber
- 1 set of flexible beams
- 1 polar diagram recorder
- 1 touch probe for amplitude measurements
- 1 drum recorder
- 1 control unit
- 1 stopwatch
- 1 thread
- 1 instruction manual
- 1 set of tools

Ordering & Delivery

- Send the product name, quantity, delivery country and destination with your enquiry.
- Production schedule, freight, payment terms and export documents are confirmed in the written quotation.

Frequently Asked Questions

Q: What topics does the Universal Vibration Apparatus - Vibrano X - 06 cover?
A: It covers pendulum studies, spring mass vibrations, rigid beam vibration (free, forced, damped, un-damped), and flexible beam vibrations.

Q: How many pendulum types are included?
A: Six pendulum types are included: 25mm steel ball, 50mm steel ball, 50mm wooden ball, compound pendulum, wooden pendulum, and bifilar pendulum.

Q: How is forced vibration generated in the beam sections?
A: Forced vibration is generated using an electrical motor-driven imbalance exciter, available in linear exciter and DC rotary exciter configurations.

Q: Is data acquisition software available?
A: Yes, the DAQ software (Software Vibrano X - 06) is optional, built in National Instrument™ LabVIEW™ environment, and runs on any Windows™ environment. It includes a set of electrical vibration sensors with a clamping set when selected.

Q: What is used to record vibration output?
A: A mechanical drum recorder and a polar diagram recorder, both fitted with a spring loaded pen plotter, are used to record vibration.

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