

Product Name :
Vibration Trainer

Product Code :
TN714



Description :

Vibration Trainer

Technical Specification :

Vibration Trainer

The unit is perform the following experiments and investigations:

Learning Objectives / Experiments:

Experiments with pendulums

Kater's pendulum

Reduced pendulum length

Spring-mass system

Bar-type oscillator

Undamped oscillation

Damped oscillation

Forced vibration

Damped and undamped resonance

Absorber effect in multi-mass oscillators

To be supplied with;

Free and damped torsional vibrations

System for data acquisition

PC1 Computer-System with 21" TFT-Monitor Win 10 engl.

Specifications:

Vibration trainer with experiments on damping, resonance, dual-mass system and vibration absorption
6 pendulum oscillators, 2 bar-type oscillators and 1 spring-mass oscillator

Electrical imbalance exciter

Control unit for the imbalance exciter

A digital frequency display and a ttl output for triggering external devices

Tuneable absorber with a leaf spring

Adjustable oil damper

Electrically operated drum recorder for recording free vibrations

Polar chart recorder for determining the amplitude and phase of forced vibrations

Technical Data:

Beam, rigid: Length x Width x Height: 700x25x12mm, 1,6kg

Beam, elastic: Length x Width x Height: 700x25x4mm, 0,6kg

Tension-pressure springs

0,75N/mm

1,5N/mm

3,0N/mm

Imbalance exciter

0...50Hz

100cmg

Oil damper: 5...15Ns/m

Absorber

Leaf spring: wxh: 20x1,5mm

Total mass: 1,1kg

Tuneable: 5...50Hz

Drum recorder: 20mm/s, width 100mm

Polar chart recorder: $\tilde{A}$ 100mm

230V, 50Hz, 1 phase

230V, 60Hz, 1 phase; 120V, 60Hz, 1 phase

Dimensions and Weight

Length x Width x Height: 1010x760x1800mm

Frame opening Width x Height: 870x650mm

Weight: 150kg

1. Free and Damped Torsional Vibrations

Natural frequency of a rotary oscillator

Influence of torsional stiffness, mass and damping

Specification:

Supplementary experiment for torsional vibrations for the Vibration trainer

3 torsion bars with different diameters, freely selectable effective length

3 different mass disks with clamping chuck

3 with ball bearings and clamping chuck

Oil damper for damped vibrations

Recorder for recording the vibrations in the Vibration trainer

Technical Data:

Torsion bars, stainless steel

$\tilde{A}$ 3mm, 5mm, 6mm

Length: 800mm

Mass disks

Small: $\tilde{A}$ 150mm 2,7kg

Large: $\sim 228\text{mm}$ 4,8kg
Clamping chuck: $\sim 0,5\ldots 8,0\text{mm}$
Dimensions and Weight
Length x Width x Height: 480x240x1180mm
Weight: 33kg

2. System for Data Acquisition

natural vibration of a bar-type oscillator
damped vibration of a bar-type oscillator
forced vibration of a bar-type oscillator (damped and undamped resonance)
frequency and period time measurements
Kater's pendulum

Specification:

Data analysis for Vibration trainer
Measurement, recording and analysis of frequency response and transfer function
Functions as a digital storage oscilloscope
Interface box with 3 sensor inputs and 3 analogue outputs
1 inductive displacement sensor (amplitude), 1 reference sensor (exciter force)
Software for data acquisition via USB under Windows 7, 8.1, 10
Including PC1 Computer-System with 21" TFT-Monitor Win 10 engl.

Technical Data:

Sensor input channels: 3
Inputs in oscilloscope mode: 2
Time basis: 10...750ms/DIV
Record length: 2000 points
Displacement sensors
Measuring range: 5...10mm
Frequency range: 0...50hz
230V, 50Hz, 1 phase
230V, 60Hz, 1 phase
120V, 60Hz, 1 phase; UL/CSA optional
Dimensions and Weight
Length x Width x Height: 265x260x110mm (interface box)
Weight: 7kg
Length x Width x Height: 600x400x170mm (storage system)

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