

**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: Ø 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  
Ø 3mm, 5mm, 6mm  
Length: 800mm  
Mass disks  
Small: Ø 150mm 2,7kg

Large: Ø 228mm 4,8kg  
Clamping chuck: Ø 0,5...8,0mm  
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)

## Naugralabequipments

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