



Balance of Reciprocating Masses

Every reciprocating engine generates mass forces. The mass forces of the oscillating masses can't be compensated completely while the mass forces of the rotating masses are fully compensated. By using several cylinders it is possible that the forces compensate each other. Still, disturbing moments may occur. The experimental unit TM 180 enables to investigate the free masses and moments of a reciprocating engine with a single cylinder, with two cylinders or with four cylinders. The engine model comprises pistons with plastic slide bushes. The slide bushes don't require lubrication. For each cylinder, the angle between cranks can be adjusted continuously. As an aid, marks are provided at 0° , 90° , 180° and 270° . The oscillating masses can be varied by using additional weights at the pistons. The four-throw crankshaft is driven by a DC motor and a synchronous belt. The speed is electronically controlled and digitally displayed. The free forces and moments are recorded by force sensors placed at the support of the model. All electronic functions are integrated in the display and control unit. The display and control control unit also contains the USB interface for data acquisition. The GUNT software enables the detailed evaluation of the signals of forces and moments.

Category: Teaching Equipment

Courses: Mechanical Vibrations



Free and Forced Vibration Apparatus

All set-ups of this experimental unit on the theory of vibrations are rapidly and securely assembled on a double profile frame made of aluminium using slot nuts and clamping levers.

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Static and Dynamic Balancing Apparatus

The main element of the benchtop unit is a smooth shaft to which four variable unbalance weights can be attached at any angle or distance. The rotor is supported horizontally in ball bearings and is driven by a speed-controlled motor. The speed is measured electronically and shown on a digital display. For determination of the unbalance weight by measuring the balance of moments the driving belt can be removed. Using different weights dragging on the pulley defined moments can be exerted to the shaft. They can be compared with those caused by the unbalance weights when rotating. The transparent hood prevents contact with the rotating parts and provides a good view of the rotor. Fastening of the supporting base with elastic elements neutralizes undesirable vibrations.

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Centrifugal Force Apparatus

A horizontal rotating member carries two pivoted counterbalanced bell cranks. This demonstrates the relationship between centrifugal force, mass of a rotating body, its distance from the axis, and its angular velocity

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Universal Vibration Apparatus

This apparatus enables a comprehensive range of vibration experiments to be conducted on a single basic framework. The experiments are specially designed for quick and easy assembly onto the framework, using a minimum number of ordinary engineering tools

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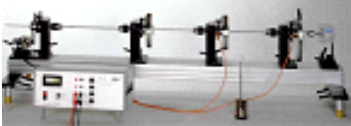


Machinery Fault Simulator

Machines that simulate common vibration causing faults such as Misalignment and Imbalance. The severity and condition of faults can be adjusted.

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Torsional Vibration Machine

It monitors and measures and the vibration induced in rotating element

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