



## Set pulleys, springs and deformations

EQ008G

### Function

Intended for experimental study, physics laboratory and carrying out physics experiments on: Matter and energy. A simple machine called a fixed pulley. A simple machine called a movable pulley. The force applied to a spring and the elongation it undergoes. Building table and graph. Dynamics. Dynamic determination of  $K$  of a helical spring, mass oscillator and spring. The period, frequency and amplitude of a movement of a mass and spring oscillator. The operation of the dynamometer, the calibration of a rubber ring and a helical spring. Difference between applied force and restoring force. Measuring mass weights. The  $P$  versus  $m$  Graph. The helical spring and Hookes law. helical spring and Hookes law. The table and graph. The mathematical ratio between the applied force and the elongation. The slope of the graph and its physical interpretation. Building the table and graph in a spreadsheet. The function that governs the intensity of the springs elastic force in relation to the springs elongation. Association of helical springs in series. Determination of the elasticity constant of helical springs in series. Association of helical springs in parallel.40

Determination of the elasticity constant of helical springs in parallel. Energy Conservation. Work and energy in a mass and helical spring system. The energy exchanges that occur in an oscillating mass-spring system. The work done by a force acting on a body and causing a displacement of that body. Elastic potential energy and the work done by the spring. The principle of conservation of energy and kinetic energy. Work and energy in a system of mass and oscillating helical spring, conservation of mechanical energy. The energy

exchanges that occur in a mass and oscillating spring system. The work done by the elastic force. Elastic potential energy. The work done and the energy in transit. Energy cannot be generated or destroyed. Kinetic energy. The conservation of mechanical energy. Wave. The simple pendulum. The period of oscillation of a simple pendulum. What happens to the period when the length of the pendulum is changed. The MHS in a mass system and oscillating helical spring, etc.

## **Knowledge areas**

Physics - Compact Kits

## **Key Experiments**

Dynamic determination of a coil spring  $K$ , mass and spring oscillator

The operation of a dynamometer, calibration of a rubber belt and a coil spring

Coil spring and Hooke's law

Work and energy in a mass system and coil spring

The MHS in a mass and coil spring system, oscillating

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