



## Work Done by Variable Force Apparatus (SMT-MM-21)

This experiment is designed to reinforce the general principle that the work done, particularly by a variable force, can be determined simply by measuring the area under the graph of force and distance moved. It forms a good introduction to simple machines, leading to later studies on machine performance. The apparatus is a simple lifting mechanism with obvious non-linear characteristics. A suspension cord carrying a loaded trolley at mid span is tensioned by passing the cord over a pulley at one end and down to a weight hanger. As the vertical effort is increased, the tensioned cord will move to a new equilibrium position lifting the loaded trolley. Heights of the load and effort are measured relative to the base. A pivoted arm carrying a load hanger at its end is restrained by a spring balance at right angles to the arm. The angular position of the arm is indicated by a protractor scale attached to the back board.

## TECHNICAL SPECIFICATIONS

### Specification:

- Table unit for experiments on mechanical work and potential energy.
- Lifting a weight using a lever and a dynamometer (spring balance).

### Technical Data:

- Integrated angle measuring scale (protractor).
- 2 set of weights.
- Both experiments catered for on individual sides of back board.
  - Spring balance 0...60N.



### Experiments:

- To determine the work done by a variable effort and to compare with the work done in lifting the load.
- To show that the work done by the effort is equal to the change in potential energy of the load.
- To obtain the experimental relationship between effort and distance moved by effort, and to compare with a theoretical prediction.
- To show that the work done is the area under a graph of load against distance moved.