Hooke's law - Stand setup

Object of the experiment

1. Investigating the relation between the force acting on a helical spring and the spring elongation

Setup

Apparatus

1 helical spring, 32 N/m	352 12
1 Weight, 0.1 kg	683 10
1 Weight, 0.2 kg	683 11
1 Weight, 0.5 kg	315 38
1 Weight, 1 kg	315 39
1 Metal rule 1 m	311 02
1 Pointer, pair	301 29
1 Stand base, V-shape, large	300 01
1 Stand rod, 100 cm, 12 mm diam.	300 44
1 Clamp with hook	301 08

Carrying out the experiment

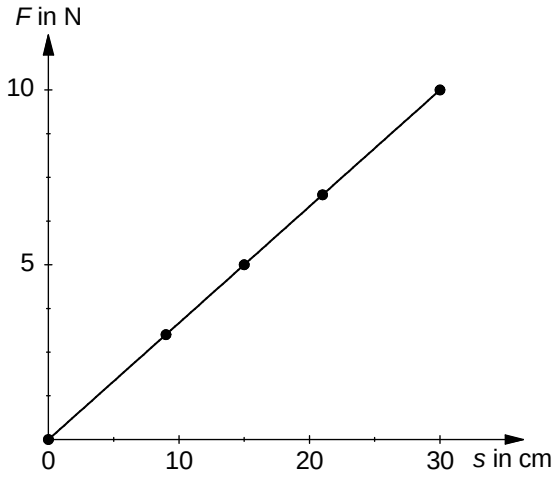
- Suspend the helical spring from the clamp with hook.
- Mark the lower edge of the unloaded helical spring with a pointer and define this point to be the zero.
- Suspend the weights 0.1 kg and 0.2 kg from the helical spring as acting force *F*.
- Mark the lower edge of the helical spring, which now is elongated, with the second pointer.
- Measure the spring elongation *s* between the two pointers.
- Enhance the acting force *F* by suspending further weights, and measure the corresponding spring elongations.

Measuring example

Mass *m* in kg	*Force *F* in N	Spring elongation *s* in cm
0	0	0
0.3	3	9
0.5	5	15
0.7	7	21
1.0	10	30

* $F = m \cdot g$ (round values)

Evaluation



At a helical spring, the acting force and the spring elongation are proportional: $F \sim s$.

The ratio of the force *F* and the elongation *s* is a constant, which is called spring constant *D*: $\frac{F}{s} = D$.

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LEYBOLD DIDACTIC GMBH · Leyboldstrasse 1 · D-50354 Hürth · Phone (02233) 604-0 · Fax (02233) 604-222 · e-mail: info@leybold-didactic.de