MEASURING FREQUENCY AT THE TUNING FORK WITH STYLUS

AKD 01.03

Material:

Art.-Nr.	Anz.	Bezeichnung
DS101-1G	1	Support base, large, L=500 mm
DS400-2R	1	Clamp on saddle
P7240-1G	1	Support rod, round, L=500 mm, D=10 mm
DS400-3K	1	Bosshead cross-pattern, Demo, green
DW121-1S	1	Tuning fork large 02, variable frequency
P3120-2Z	1	Universal timer "inno"
P1320-4A	1	Light gate "demo" 04
P3120-5B	1	S-shaped assembly platform

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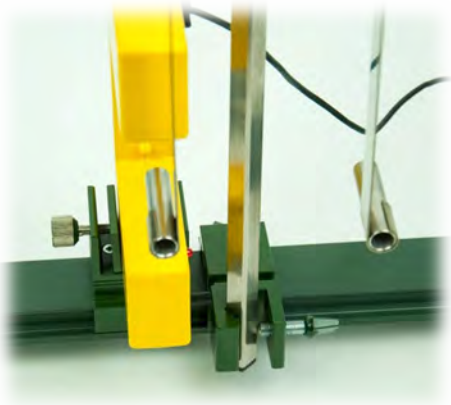
Goal:

How often does the tuning fork oscillate?

Setup:

- The clamp on saddle is placed centrally on the support base and fixed.
- We clamp the support rod 500 mm vertically into this clamp.
- The cross-pattern bosshead is screwed onto the upper end.
- With its handle the tuning fork is fixed hanging downwards.
- The clamp weights are fixed as close as possible to the ends of the legs at the same height.
- The light gate is connected to the "L1" socket of the counter.
- The universal timer is stapled to the assembly platform.
- The light gate is placed on the table standing sideways.
- We adjust the height and direction of the tuning fork so that one of the two sleeves for the stylus hangs exactly in the light signal of the light gate.
- The selector switch of the counter is set to position "L1 COUNT 10 S".



Experiment 1:

The counter is switched on.
With one hand, we press the two legs of the tuning fork together.
The universal timer counts the interruptions of the light beam for the duration of 10 seconds.

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Result:

Number of interruptions in 10 s: ……..

However, we want to determine the number of oscillations per time unit. Since one oscillation consists of a back and forth movement of the tuning fork, we must halve the number of interruptions. To get the oscillations per minute, we multiply by 6.

Number of oscillations per minute: …….

Experiment 2:

We move the clamp weights to the base of the thigh and perform another measurement.

Result:

Number of interruptions in 10 s: ……

Number of oscillations per minute: ……. (Frequency)

Note:

An oscillation (back and forth movement) is a periodic process. The number of oscillations per time unit is also called "frequency".

The unit of frequency is called Hertz (Hz).
Other units are also used in the literature, such as min^{-1} oder h^{-1}.