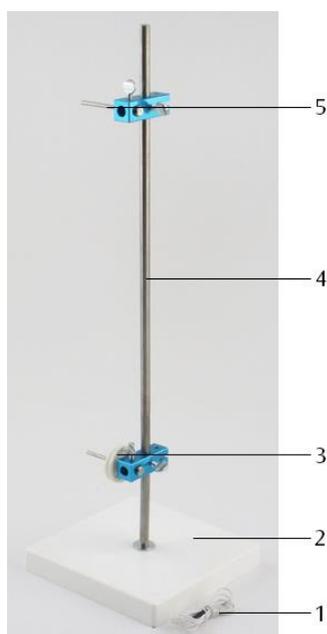


Accessories for Waves on a Rope 1008540

Instruction Sheet

05/15 ALF



- 1 Rubber rope
- 2 Base plate
- 3 Rope guide (pulley)
- 4 Stand rod
- 5 Holder for dynamometer

1. Description

The set of accessories for waves on a rope is used with the vibration generator 1000701 to demonstrate standing transverse waves on a rubber rope and to investigate the dependence of their wavelength on the frequency and the tension.

The stretched rope is excited into oscillation by applying the vibration generator to one side of it.

2. Contents

- 1 Base plate
- 1 Stand rod, long
- 1 Stand rod, short
- 1 Stand rod with pin
- 1 Holder for dynamometer
- 1 Rope guide
- 1 Rubber rope

3. Technical data

Dimensions:	180x180x550 mm ³ approx.
Stand rods :	150 mm and 400 mm
Rope length:	1 m approx.

4. Additionally required equipment

1 Vibration generator	1000701
1 Function generator FG 100 @230 V)	1009957
or	
1 Function generator FG 100 @115 V	1009956
1 Precision dynamometer, 5 N	1003106
Experiment leads	

5. Operation

5.1 Set-up

- Before using the equipment, remove the transport safeguard (screw with nut) from the base plate.
- Screw the short stand rod into the base plate. Screw the long stand rod into the short stand rod.
- Screw the rope guide and the holder for the dynamometer onto the stand rod and clamp them in position.
- Fasten the stand rod with pin into the holder at the back of the vibration generator.
- Hang the dynamometer on the holder. If necessary, first calibrate the zero point.
- Suspend the rubber rope from the dynamometer and thread it under the rope guide to connect it to the vibration generator. Ensure that it runs as parallel as possible to the base plate.
- Thread the rope through both pins and attach it to the stand rod with the knurled screw. This will relieve transverse tension on the speaker membrane. Do not tighten the knurled screw of the vibration generator until the rope is taut. The length of the rope when stretched should be between 50 cm and 70 cm.
- Connect the function generator to the vibration generator.

5.2 Experiment procedure

- Apply tension to the rubber rope by moving the dynamometer.
- On the function generator, select the “sine” wave-form and the 3 kHz frequency range.
- Adjust the frequency until 4 vibration loops are obtained.

The wavelength is now half the length of the cord.

- Move the dynamometer higher up the rod until the tension is four times the previous value.

The band now vibrates with just one peak and one trough. The wavelength is therefore equal to the length of the band.

The following parameters are found to give good results:

Rope length (= distance from vibration generator to rope guide): 60 cm, Frequency; approx. 44 Hz, initial cord tension: 0.5 N

Rope length: 70 cm, Frequency; approx. 38 Hz, initial cord tension: 0.5 N

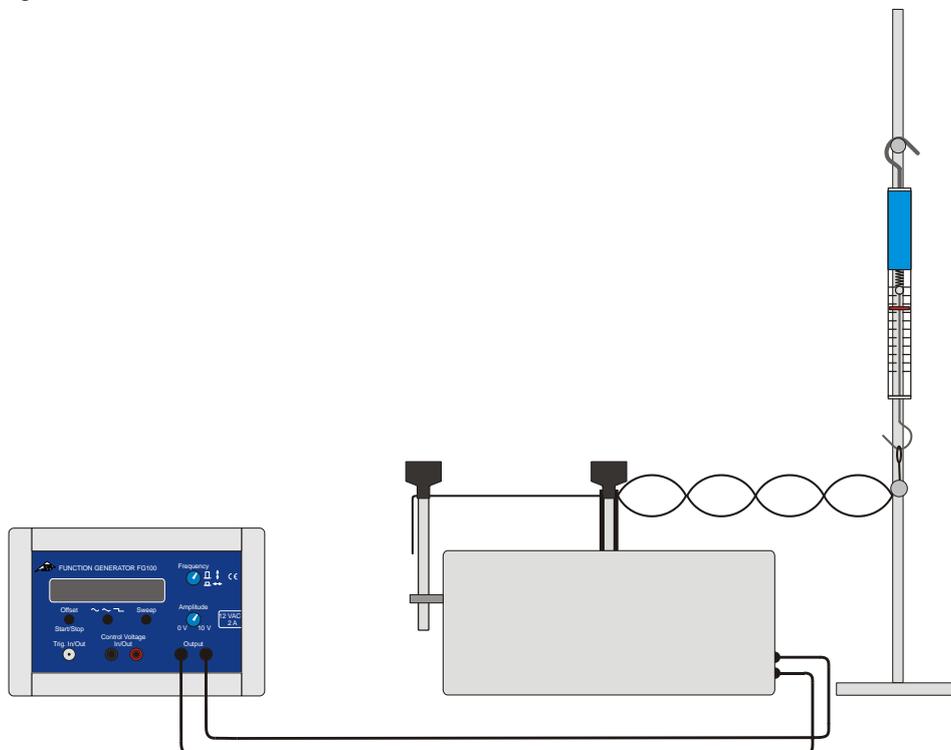


Fig. 1 Experiment set-up