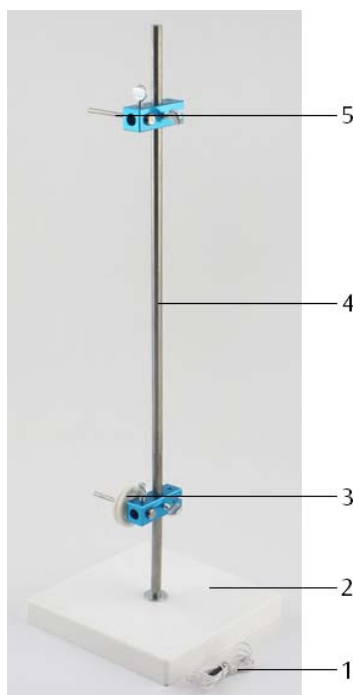


Accessories for Rope Waves U85560081

Instruction Sheet

09/10 ALF



- 1 Rubber rope
- 2 Base plate
- 3 Deflection device
- 4 Stand rod
- 5 Holder for dynamometer

1. Description

The set of accessories for rope waves is used with the vibration generator U8556001 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
- 1 Holder for dynamometer
- 1 Deflection device
- 1 Rubber rope

3. Technical data

Dimensions: 180 x 180 x 525 mm³ approx.
 Rope length: 1 m approx.

4. Additionally required equipment

- 1 Vibration generator U8556001
- 1 Function generator F12 (230 V, 50/60 Hz) U21015-230 or
- 1 Function generator F12 (115 V, 50/60 Hz) U21015-115
- 1 Precision dynamometer, 5 N U20034
- Experiment leads

5. Operation

5.1 Set-up

- Screw the stand rod into the base plate.
- Screw the deflection device and the holder for the dynamometer onto the stand rod and clamp them in position.
- Hang the dynamometer on the holder. If necessary, first calibrate the zero point.
- Connect the function generator to the vibration generator.
- Attach the rubber rope to the vibration generator, pass it under the deflection device then upwards, and hang it on the dynamometer. Ensure that it runs as parallel as possible to the base plate. The length of the rope when stretched should be between 50 cm and 70 cm.

5.2 Experiment procedure

- Apply tension to the rubber rope by moving the dynamometer.
- On the function generator, select the “sine” waveform 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 deflection device): 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

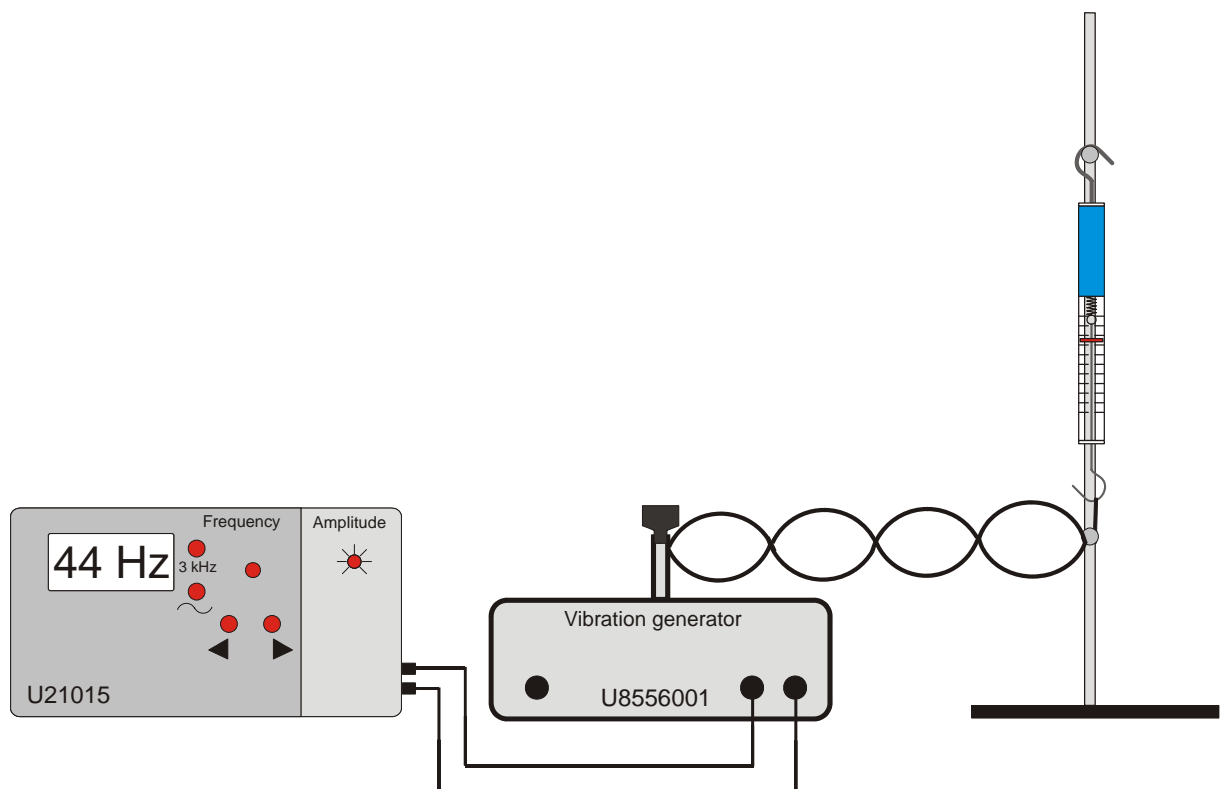


Fig. 1 Experiment set-up