

Standing Wave Kit

P6-7700

KIT CONTENTS:

10 Vibrator Units with string, battery holder and plastic disk
10 AA batteries

OPERATION:

To activate the motor, insert the battery into the battery holder. To deactivate, remove the battery.

EXPERIMENTS:

Demonstrating Standing Waves:

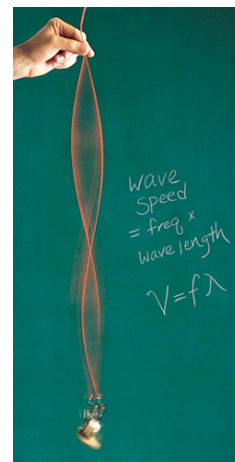
1. Activate the vibrator unit.
2. Hang the vibrator from the string. Adjust the length of string until a standing wave is obtained. To change the number of anti-nodes in the standing wave pattern, simply vary the length of the string.

Determining Wave Speed - Method 1

1. Establish a standing wave on the string.
2. Measure the distance between adjacent nodes. Multiply this distance by two to obtain the wavelength of the disturbance.
3. Use a strobe light to measure the frequency of wave.
4. Calculate wave speed from $v = f\lambda$.

Determining Wave Speed - Method 2

1. Use a balance to find the mass of the vibrator unit and the mass of a string sample.
2. Calculate the weight of the vibrator in Newtons. This equals the tension in the string (T).
3. Find the linear density of the string ($\mu = \text{mass/length}$).



4. Calculate the wave speed from $v=\sqrt{T/\mu}$.

RELATED PRODUCTS:

Singing Rods (Set of 2) (P7-7250). These rods are an easy way to demonstrate longitudinal waves as opposed to transverse waves.

Wave Sticks (P7-7310). With this true torsional wave, you can easily demonstrate nearly all the fundamental aspects of mechanical waves.

ACKNOWLEDGEMENT:

Thank you, Chris Chiaverina, for your help in developing this product.

