Open Speaker

Model No. WA-9900



PASCO ®
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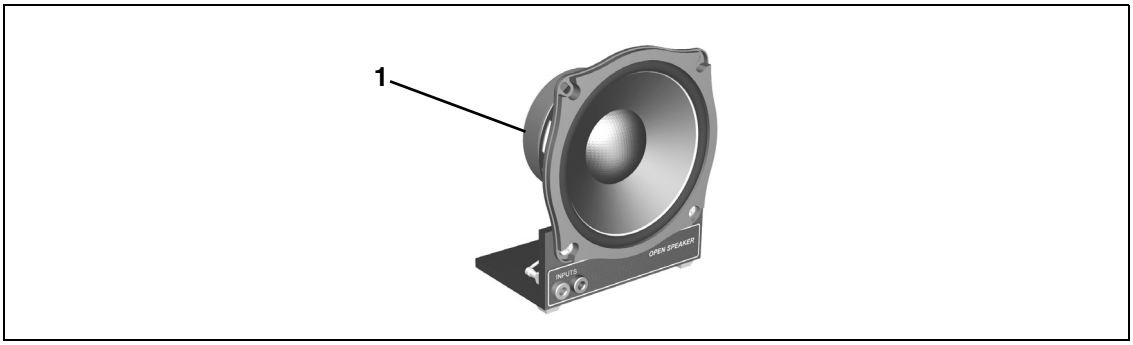
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Open Speaker

Model No. WA-9900



Included Equipment	Replacement Model Number*
1. Open Speaker	WA-9900

*Use Replacement Model Numbers to expedite replacement orders.

Additional Equipment Recommended (for Experiments)	
Economy Resonance Tube	WA-9495
Function Generator	PI-9587C
Banana Plugs (red and black)	SE-9750 (red set) SE-9751 (black set)

Introduction

The Open Speaker is designed for the study of sound wave properties including frequency, amplitude, pitch, wavelength, and resonance. The rugged aluminum bracket holds the speaker perpendicular to the table and provides two standard banana plugs for power input. The speaker is a 5 ¼" woofer with a polypropylene cone and high efficiency 10 oz. magnet.

The Open Speaker is designed without a speaker cabinet to reduce the resonance of the air surrounding the rear of the speaker. This helps students to more easily hear the resonance created in a closed or open tube of air.

Suggested Experiments:

Equipment Required: Open Speaker (WA-9900), Economy Resonance Tube (WA-9495), Function Generator (PI-9587C), Banana Plugs [SE-9750 (red set of 5), SE-9751 (black set of 5)]

a) Studying Sound Wave Properties

1. Connect the Open Speaker to a function generator using standard banana plugs.
2. Ask students to listen to the sound as you change the amplitude and to write down the property of the sound that is changing. Help students to mentally connect the amplitude of a sound wave to the volume.
3. Repeat step 2, but instead of changing the amplitude, change the frequency of the sound. Ask students for the "music" term for frequency (pitch).

b) Resonance of an Air Column

1. Connect the Open Speaker to a function generator using standard banana plugs.
2. Place the Economy Resonance Tube (WA-9495) directly in front of the Open Speaker (See Figure 1 on the next page).

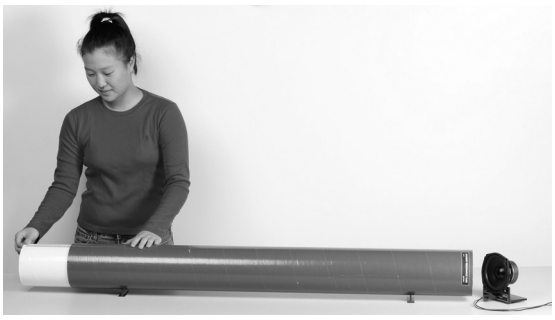


Figure 1: Placement of Resonance Tube relative to the Open Speaker

3. Ask students to adjust the Resonance Tube such that a 50 cm closed tube is created.

4. Have students start at a frequency of 50 Hz and increase until they find four different resonant frequencies. Ask students to look for a pattern in the data.

5. Increase the length of the closed tube to 100 cm and repeat step 4. Have students compare/contrast their data from the two different length tubes.

6. Remove the inner tube from the Economy Resonance Tube and repeat the experiment. Have students compare/contrast their data for the open and closed tubes.

Specifications:

Open Speaker	
Frequency range:	80-80,000 Hz
Diameter:	5 1/4” woofer
Maximum power:	60 Watts
Sensitivity:	85 dB
Impedance:	8 Ohms

Appendix A: Technical Support

For assistance with the WA-9900 Open Speaker or any other PASCO products, contact PASCO as follows:

Address: PASCO scientific
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