

# Resonance Tube

Senior  
High  
School

ESP60343

- + Resonance tube provides an easy experiment of sounds.
- + Loudspeaker which is connected to the audio generator produces stable wave pattern with changeable sound frequency.
- + Equipped with Sound level meter (SLM) to observe the wave node and antinode position in the resonance state.
- + By connecting the microphone to the oscillator, wave pattern is better and easily determinable.
- + This apparatus is used to find out sound wave on both opened and closed tube, and to observe the stationary sound wave pattern inside the tube by the oscilloscope.



## Component List

Cat. code	Description	Qty
<b>A</b> ESP60340	Resonance Tube	1 set

<b>a</b> <b>Loudspeaker</b> Loudspeaker is mounted on plexiglass foot; movable around the open end of the tube.	
<b>b</b> <b>Wind Musical Instrument Hole</b> There is a pair of holes to observe the influence of the opened and closed hole on the wind musical instrument. These holes can be shut by its shutter when the hole is not in use.	
<b>c</b> <b>Hole Ring Cover</b> Two slip ring covers are provided to close the hole for performing other experiments.	
<b>d</b> <b>Microphone</b> Mounted on the end of position adjuster rod to make it easier when finding the position of the node and antinode inside the tube; microphone is connected to an oscilloscope.	
<b>e</b> <b>Piston</b> Piston is used to adjust the length of the tube. It can be easily moved inside the tube by the position adjuster rod.	

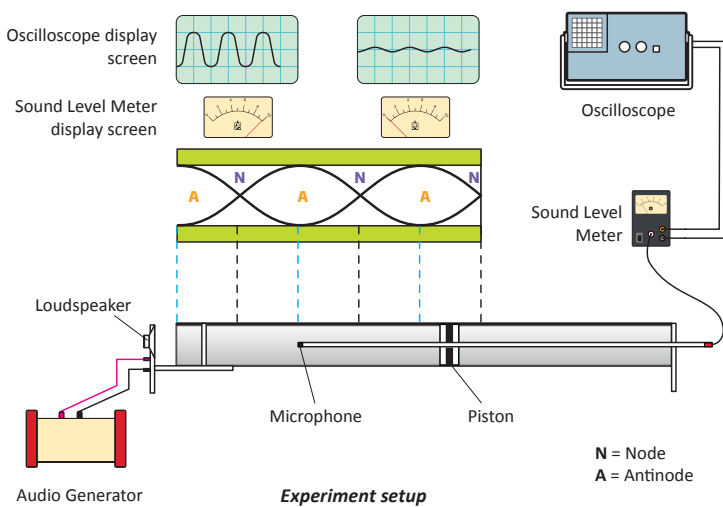




Cat. code	Description	Qty	
<b>f</b> Tube	Fine quality plexiglass tube, equipped with milimeter graduation to make it easy to find out the length of the tube and the microphone position.		
<b>g</b> Graduated Tube	To easily facilitate the tube measurement length and to determine stationer wave nodes and antinodes inside the tube.		
<b>h</b> Position Adjuster Rod	This rod is used to adjust the position of the piston and the microphone.		
<b>B</b> ESPS 160 02	Microphone	Microphone is mounted on the end of the position adjuster rod to make it easy to find the position of standing wave node and antinode inside the tube. Microphone is connected to an oscilloscope through an amplifier unit.	1 pc
<b>C</b> ESPS 160 03	Sound Level Meter	Consisting of analog meter to show the sound strength (amplitude) in 0 – 10 scale. Equipped with microphone amplifier to make it visible on the oscilloscope; battery operated, 9 volt.	1 pc



### Node and Antinode on the Resonance State



### Supporting Tools

➔ For detailed information, please refer to The Catalogue

Cat. code	Tool	Qty
ESP60296	Audio Frequency Generator	1 pc
ESP60600	Oscilloscope, ESOS 620	1 pc

### Experiment Topics

- P 16 01 1 Resonant Frequencies of a Tube
- P 16 01 2 Standing Wave in a Tube
- P 16 02 1 Speed of Sound in Air
- P 16 05 Wind Instrument

Resonance Tube experiment guide in English (LPC 200E).



P 16 01 2 Standing Wave in a Tube

