

A hollow tube can be used to investigate stationary waves in sound. The tube is closed at one end and open at the other end. A loudspeaker connected to Signal Generator is placed near the open end of the tube as shown



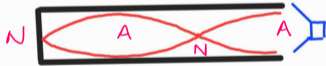
When the frequency is adjusted, a stationary wave is formed in the tube. The lowest frequency (fundamental frequency) representation is shown below.



diagram ①
fundamental

*Node always formed at Closed end
Anti Node always formed at Open end*

When the frequency is further increased, a loud sound is again observed. This frequency corresponds to the first overtone.



diag ②
first overtone

If the frequency is increased even further another loud sound (second overtone) appears



diag ③
Second Overtone

If you continue with this procedure, third, fourth overtones can also be produced



diag ④
Third Overtone