8 INVESTIGATING STATIONARY WAVES USING SOUND SOURCE

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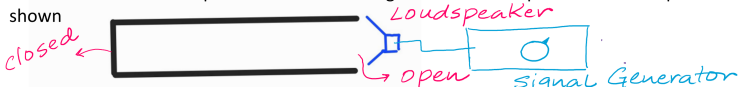
A hollow tube can be used to investigate stationary waves in sound.The tube is closed at one end and open at the other end.A loudspeaker connected to Signal Generator is placed near the open end of the tube as shown



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

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

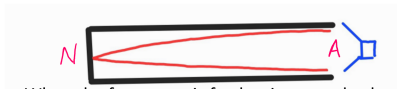
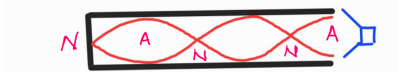


diagram (1)
fundamental

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

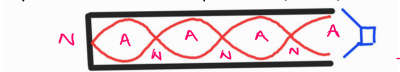
diag (2)
first overtone

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 Overtones.