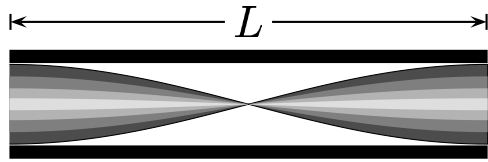
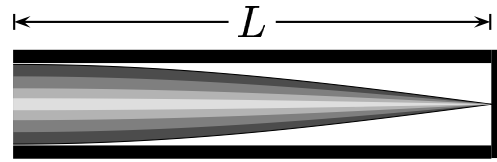


The wave patterns of the fundamental modes for the open-open and open-close organ pipes are shown above.



open – open



open – closed

The wavelengths of the fundamental modes are

- A) open-open  $L$                       open-closed  $2L$ .
- B) open-open  $L$                       open-closed  $4L$ .
- C) open-open  $2L$                      open-closed  $2L$ .
- D) open-open  $2L$                      open-closed  $4L$ .

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Notice that the standing wave pattern for a full wavelength contains two loops.

For the open-open case, it corresponds to the length of one loop, so  $L = \frac{\lambda}{2}$ , or  $\lambda = 2L$ .

For the open-closed case,  $L = \frac{\lambda}{4}$ , or  $\lambda = 4L$ .

Answer **D**