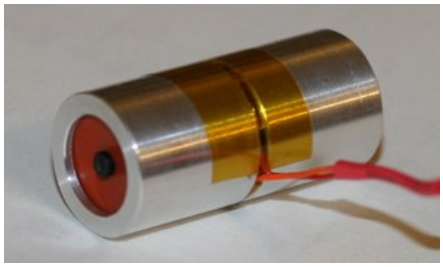
Haptuator - High-Bandwidth Vibrotactile Transducer

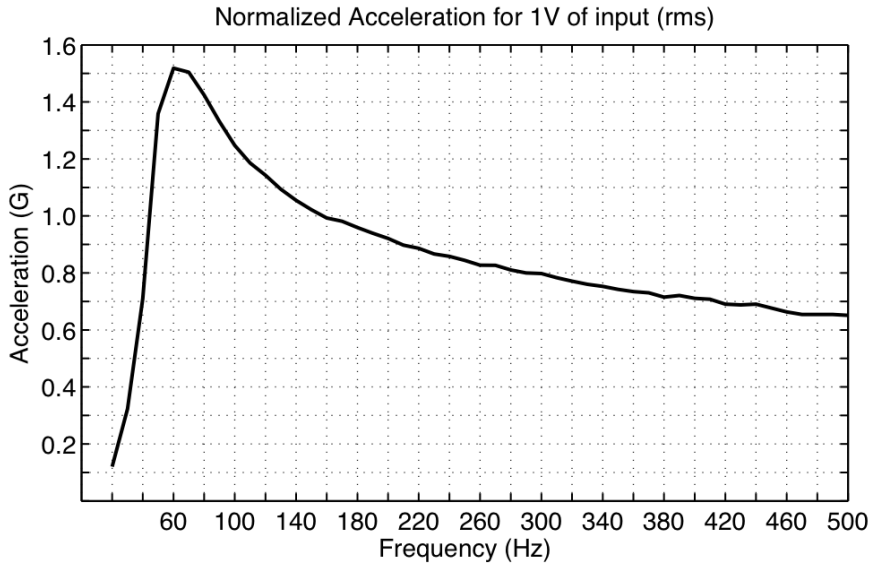
The *Haptuator* is a vibrotactile transducer with a bandwidth of 50-500 Hz capable of producing up to 3G of acceleration. It can be driven as a common loudspeaker and is compatible with most audio amplifiers.

Model Number	TL002-14-A	
Outer Dimension (diameter x length)	14 x 29	mm
Net Weight	15	grams
Acceleration @ 3V input, 125 Hz with a 15g load	3.0 29.4	G m/s^2
Rated Bandwidth	50 - 500	Hz
Typical Impedance	6.0	Ω
Maximum Input Voltage	3.0	V
Maximum Input Current	0.5	A



TL002-14-A

Output Acceleration



To calculated the output acceleration for a given input voltage of ***Vi*** (rms):

1. For the desired operating frequency, find the normalized acceleration value ***An*** from the above figure. For example, at 300 Hz, ***An*** = 0.8;

2. Perform the following calculation:

$$Acceleration(G) = Vi \times An$$

Notes:

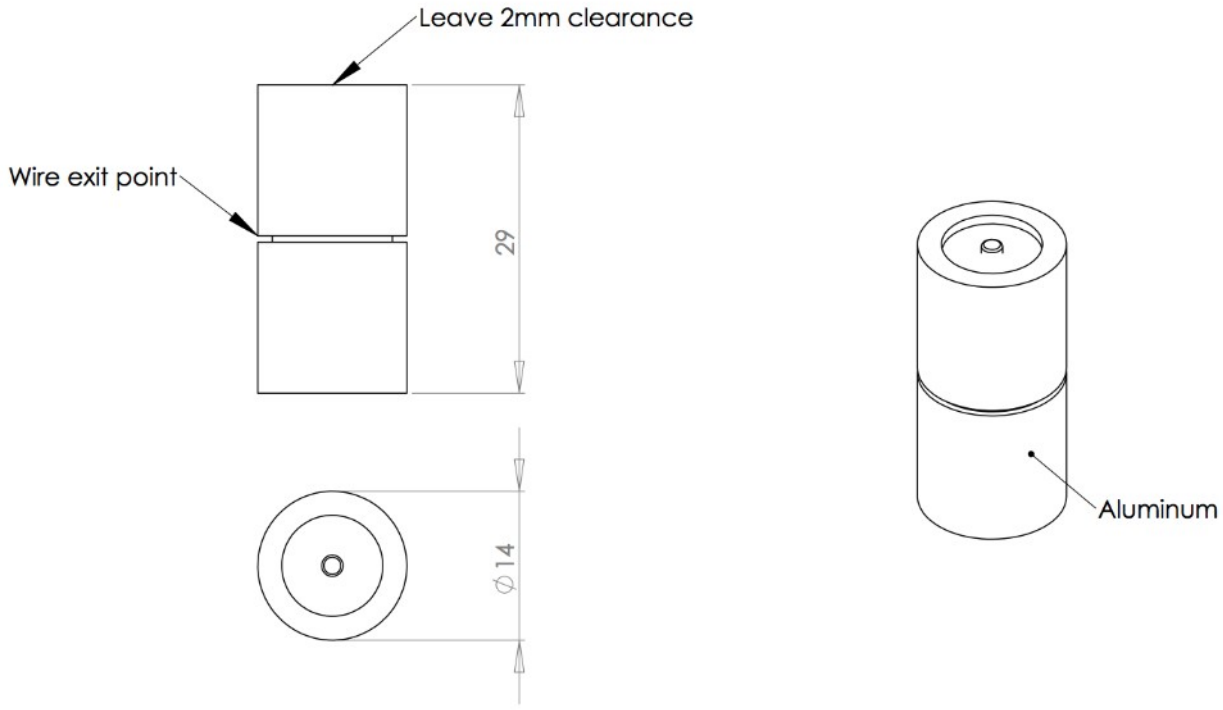
1. The Haptuator can be driven as a 4-8 Ω loudspeaker by most audio amplifiers if the input current and voltage are within the recommended operating conditions. The Haptuator should be AC-coupled to avoid driving a DC current into the unit.

2. At around 60 Hz (the resonance frequency), for an input close to the maximum allowable level, one of the magnet holder's pins may detach itself from the rubber membrane. Should this happen, use a small-tip tool to press gently around the hole of the membrane while pushing the pin forward form the other side. The pin should reattach to the membrane easily.

3. It is not recommended to drive the Haptuator under 50Hz: the output acceleration would not be optimal. Driving at a minimum of 10 Hz or above 500 Hz should not damage the actuator. However, for frequencies above 500 Hz, the signal output becomes audible, hence not as optimal for haptic applications.

Mechanical Dimensions

As illustrated below, it is recommended to leave a 2mm clearance at both end of the Haptuator unit due to the movement of the internal assembly. If the unit is clamped down, it is recommended to clamp both halves of the shell.



Lead wire length : Min. 100 mm