

Closed Enclosure Design

Inputs for design

$$Q_{ts} := 0.720$$

Q of driver.

$$Q_{tc} := 1.017$$

Q of enclosure

$$F_s := 52\text{Hz}$$

Free air resonance of driver.

$$V_{as} := 16.57\text{liter}$$

Volume of air equal to driver compliance

$$X_{max} := 5.2\text{mm}$$

Max displacement in linear region.



Calculations

$$F_c := \frac{Q_{tc} \cdot F_s}{Q_{ts}} = 73.45\text{Hz}$$

$$F_3 := \left[\frac{\left(\frac{1}{Q_{tc}^2} - 2 \right) + \sqrt{\left(\frac{1}{Q_{tc}^2} - 2 \right)^2 + 4}}{2} \right]^{\frac{1}{2}} \cdot F_c$$

$$F_3 = 103.874\text{Hz}$$

$$V_b := \frac{V_{as}}{\left(\frac{Q_{tc}}{Q_{ts}} \right)^2} - 1L$$

$$V_b = 7.305\text{liter}$$

