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Passive Crossovers Theories & Practice Reference Guide was written by Paul D. Vogt

## IMPORTANT EQUATIONS

### EQUATION FOR CAPACITIVE REACTANCE

$$X_c = \frac{1}{2\pi F_c R} \times 1,000,000$$

$X_c$  = The value of capacitor required

$\pi$  = 3.14

$F_c$  = Your chosen crossover frequency

$R$  = The impedance of the speaker

### EQUATION FOR INDUCTIVE REACTANCE

$$X_L = \frac{R}{(2\pi F_c)} \times 1,000$$

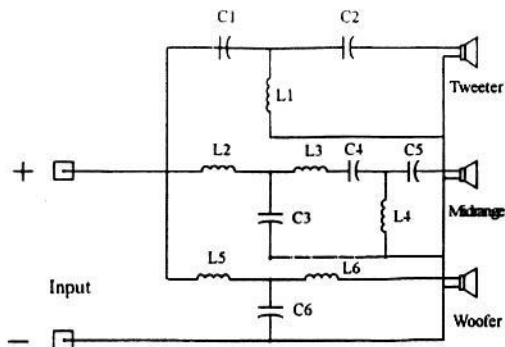
$X_L$  = The value of inductor required

$\pi$  = 3.14

$F_c$  = Your chosen crossover frequency

$R$  = The impedance of the speaker

## Third order 3-way schematic



$$C_1 = \frac{.1158}{R_H \times F_H} \times 1,000,000 \quad L_1 = \frac{.1189 \times R}{F_H} \times 1,000$$

$$C_2 = \frac{.2927}{R_H \times F_H} \times 1,000,000 \quad L_2 = \frac{.0634 \times R}{F_M} \times 1,000$$

$$C_3 = \frac{.0884}{R_M \times F_M} \times 1,000,000 \quad L_3 = \frac{.0284 \times R}{F_M} \times 1,000$$

$$C_4 = \frac{.3112}{R_M \times F_M} \times 1,000,000 \quad L_4 = \frac{.3395 \times R}{F_M} \times 1,000$$

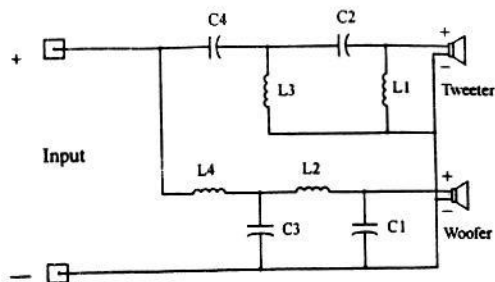
$$C_5 = \frac{.9667}{R_M \times F_M} \times 1,000,000 \quad L_5 = \frac{.2187 \times R}{F_L} \times 1,000$$

$$C_6 = \frac{.2130}{R_L \times F_L} \times 1,000,000 \quad L_6 = \frac{.0866 \times R}{F_L} \times 1,000$$

C = capacitor, L = coil,  $R_H$  = tweeter impedance,  
 $R_M$  = midrange impedance,  $R_L$  = woofer impedance,

$F_H$  = the upper crossover frequency,  $F_L$  = the lower crossover frequency,  $F_M$  = square root of ( $F_H \times F_L$ )

## Fourth order 2-way schematic



$$C_1 = \frac{.1040}{R_H(F \times 1.13)} \times 1,000,000 \quad L_1 = \frac{.1009 \times R_H}{F \times 1.13} \times 1,000$$

$$C_2 = \frac{.1470}{R_H(F \times 1.13)} \times 1,000,000 \quad L_2 = \frac{.4159 \times R_H}{F \times 1.13} \times 1,000$$

$$C_3 = \frac{.2509}{R_L(F/1.13)} \times 1,000,000 \quad L_3 = \frac{.2437 \times R_L}{F/1.13} \times 1,000$$

$$C_4 = \frac{.0609}{R_L(F/1.13)} \times 1,000,000 \quad L_4 = \frac{.1723 \times R_L}{F/1.13} \times 1,000$$

C = capacitor, L = coil  
 $R_H$  = tweeter impedance  
 $R_L$  = woofer impedance  
 F = your chosen crossover frequency