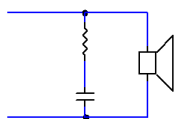


SPEAKERS:

Type	NAME	Imped (Ohm)	Factory Frequency (Hz)	Resonant Frequency Fs	Best between (Hz)	Power (W)	Sensitivity (Db)	Re (Ohm)	Le (mH)
Tweeter	Dayton Audio AMT1-4 Air Motion Transformer Tweeter	4	2500 - 30000	2566Hz	3000 - 20000	100	93	3.9	0
Mid Woofer	Dayton Audio PM220-8 8" Wideband Midbass Neo Driver	8	43 - 10000	43.1Hz	100 - 9000	40	95	6.3	0.85
Woofer	Dayton Audio PA310-8 12" Pro Woofer	8	44 - 4000	44.4Hz	50 - 3500	450	97.2	5.7	1.53
SubWoofer	Dayton Audio RSS390HF-4 15" Reference HF Subwoofer 4 Ohm	4	18 - 800	18Hz	40 - 1000	500	87	3.3	1

A. Flattening Impedance (AllenB - diyaudio)

A.1 Woofers



(Formula: $\text{Res} = \text{"Re"} * 1.25$ & $\text{Cap} = \text{Le} / \text{Res}^2$)

Mid → $\text{Re} = 6.3\text{Ohm}$, $\text{Le} = 0.85\text{mH}$

$\text{Res} = 6.3 * 1.25 = \mathbf{7.88\text{Ohm}}$

$\text{Cap} = 0.00085 / (7.88 * 7.88) = \mathbf{13.7\mu F}$

Woofer → $\text{Re} = 5.7\text{Ohm}$, $\text{Le} = 1.53\text{mH}$

$\text{Res} = 5.7 * 1.25 = \mathbf{7.13\text{Ohm}}$

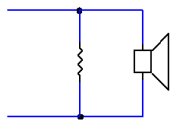
$\text{Cap} = 0.00153 / (7.13 * 7.13) = \mathbf{30.14\mu F}$

Subwoofer → $\text{Re} = 3.3\text{Ohm}$, $\text{Le} = 1$

$\text{Res} = 3.3 * 1.25 = \mathbf{4.13\text{Ohm}}$

$\text{Cap} = 0.001 / (4.13 * 4.13) = \mathbf{58.77\mu F}$

A.2 Tweeter



$\text{Res} = \mathbf{20\text{ Ohm}}$

New Impedance of the Tweeter = $(4 * 20) / (4 + 20) = \mathbf{3.33\text{ Ohm}}$

If $\text{Res} = 10\text{ Ohm}$, new $\text{Imp} = (4 * 10) / (4 + 10) = \mathbf{2.86}$

FOR THIS TWEETER THE IMPEDANCE CURVE IS.. FLAT, NO NEED TO FLATTEN MORE THEN 200hm!!!

B. Sensitivity Attenuation – LPad (<http://www.diyaudioandvideo.com/>)

Tweeter = 93 Db
Mid = 95 Db
Woofer = 97.2 Db
Subwoofer = 87 Db --> Separate Amp

Chosen sensitivity = 93 Db

Tweeter:

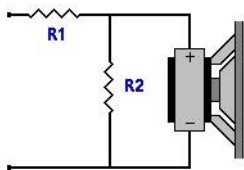
Nothing

Mid:

LPad (Driver Attenuation Circuit)

$$Z = 8 \text{ Ohms}$$

$$A = 2 \text{ db}$$



Parts List

Resistors

R1 = 1.65 Ohms 13.37 Watts
R2 = 30.9 Ohms 10.62 Watts

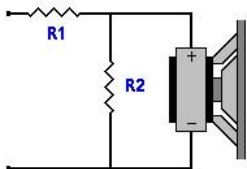
Speaker Power = 41.01 Watts

Woofer:

LPad (Driver Attenuation Circuit)

$$Z = 8 \text{ Ohms}$$

$$A = 4.2 \text{ db}$$



Parts List

Resistors

R1 = 3.07 Ohms 191.7 Watts
R2 = 12.87 Ohms 118.2 Watts

Speaker Power = 190.09 Watts

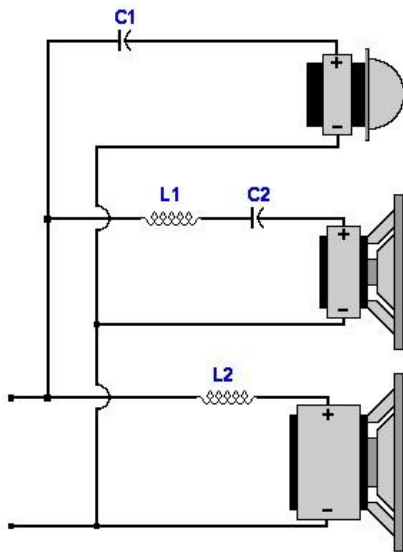
C. Crossover – 3 Way Butterworth

Tweeter = High Pass 10000 Hz
Mid = Band Pass 1000 / 10000 Hz
Woofer = Low Pass 1000 Hz
Subwoofer = Separate Amp / Circuit

1st Order Normal Polarity

10000 Hertz / 1000 Hertz

4 Ohm Tweeter / 8 Ohm Mid / 8 Ohm Woofer
0 db Bandpass Gain, Spread = 10 : 3.4 octaves



Parts List

Capacitors

C1 = 3.98 uF

C2 = 21.9 uF

Inductors

L1 = 0.12 mH

L2 = 1.27 mH

One flaw I must notice here: Mid woofer's L1 will cut at 10000Hz – which is too much! It'll be replaced with aprox. 0.30mH to cut around 4000 Hz

FINAL NETWORK:

