Alpha 4-8 Eight Driver Sealed Column-Array Design

By Jerry McNutt, Eminence Speaker LLC
440 watts, F3 at 143 Hz. Run 4" woofers 200 Hz and up for speech.
Run 4" woofers 200Hz-5.0kHz and add a CD tweeter for PA or DJ use.

Box Properties
--Description--
Name: 
Type: Closed Box
Shape: Prism, square
--Box Parameters--
Vb = 0.534 cu.ft
V(total) = 0.58 cu.ft
Qtc = 0.905
QL = 20
F3 = 143.8 Hz
Fill = normal

Driver Properties
--Description--
Name: Alpha 4-8
Type: Standard one-way driver
Company: Eminence Speaker LLC
Comment: 4" woofer/midrange
--Configuration--
No. of Drivers = 8
Mounting = Standard
Wiring = Series-Parallel
Drivers sum coherently = Yes
--Mechanical Parameters--
Fs = 123.1 Hz
Qms = 6.83
Vas = 1.94 liters [15.52]
Cms = 0.42 mm/N [0.0525]
Mms = 3.96 g [31.68]
Rms = 0.45 kg/s [3.6]
Xmax = 2.6 mm
Xmech = 4.5 mm
P-Dia = 85.21 mm [241]
Sd = 57.72 sq.cm [461.8]
P-Vd = 0.0148 liters [0.119]
--Electrical Parameters--
Qes = 0.84
Re = 6.73 ohms [3.365]
Le = 0.28 mH [0.14]
Z = 8 ohms [4]
BL = 4.94 Tm [9.905]
Pe = 55 watts [440]
--Electromech. Parameters--
Qts = 0.75
no = 0.415 % [3.319]
1-W SPL = 88.33 dB [97.36]
2.83-V SPL = 89.08 dB [101.1]
Box Parts
Box Shape: Square Prism
1 Top, 1 Bottom: depth (c) = 5.869 in
   width (b) = 6.855, thickness = 0.75 in
1 Front, 1 Back: height (a) = 42.84 in
   width (d) = 5.355, thickness = 0.75 in
2 Sides: height (a) = 42.84 in
   depth (c) = 5.869, thickness = 0.75 in

--Driver Mounting--
Mounting: Flush
Aim: All drivers face same direction
Wiring Diagram

[Diagram of wiring connections]
Normalized Amplitude Response (dB-SPL/Hz)

Custom Amplitude Response (dB-SPL/Hz at 1 m) with 440 watts

Maximum Acoustic Power (dB-SPL/Hz at 1 m)
Alpha 4-8 Large Sealed Midrange Design
By Jerry McNutt, Eminence Speaker LLC
50 watts, F3 at 132 Hz. Best used above 180 Hz.

Box Properties
--Description--
Name: 
Type: Closed Box
Shape: Prism, square (optimum)
--Box Parameters--
Vb = 0.235 cu.ft
V(total) = 0.241 cu.ft
Qtc = 0.75
QL = 20
F3 = 131.5 Hz
Fill = normal

Driver Properties
--Description--
Name: Alpha 4-8
Type: Standard one-way driver
Company: Eminence Speaker LLC
Comment: 4" woofer/midrange
--Configuration--
No. of Drivers = 1
--Mechanical Parameters--
Fs = 123.1 Hz
Qms = 6.83
Vas = 1.94 liters
Cms = 0.42 mm/N
Mms = 3.96 g
Rms = 0.45 kg/s
Xmax = 2.6 mm
Xmech = 4.5 mm
P-Dia = 85.21 mm
Sd = 57.72 sq.cm
P-Vd = 0.0148 liters
--Electrical Parameters--
Qes = 0.84
Re = 6.73 ohms
Le = 0.28 mH
Z = 8 ohms
BL = 4.94 Tm
Pe = 55 watts
--Electromech. Parameters--
Qts = 0.75
no = 0.415 %
1-W SPL = 88.33 dB
2.83-V SPL = 89.08 dB
Box Parts
Box Shape: Optimum Square Prism
1 Top, 1 Bottom: depth (c) = 6.116 in
   width (b) = 8.969, thickness = 0.75 in
1 Front, 1 Back: height (a) = 12.08 in
   width (d) = 7.469, thickness = 0.75 in
2 Sides: height (a) = 12.08 in
   depth (c) = 6.116, thickness = 0.75 in

--Driver Mounting--
Mounting: Flush
Normalized Amplitude Response (dB-SPL/Hz)

Custom Amplitude Response (dB-SPL/Hz at 1 m) with 50 watts

Maximum Acoustic Power (dB-SPL/Hz at 1 m)
**Alpha 4-8 Large Vented Midbass Design**

By Jerry McNutt, Eminence Speaker LLC

55 watts, F3 at 105 Hz. Best used above 120 Hz.

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**Box Properties**

---Description---

Name: Alpha 4-8

Type: Vented Box

Shape: Prism, square (optimum)

---Box Parameters---

Vb = 0.1 cu.ft

V(total) = 0.111 cu.ft

Fb = 130 Hz

QL = 7

F3 = 105.4 Hz

Fill = normal

---Vents---

No. of Vents = 1

Vent shape = round

Vent ends = one flush

Dv = 2 in

Lv = 3.018 in

---External Dimensions---

A = 10.83 in

B = 7.267 in

C = 5.065 in

---Internal Dimensions---

A = 9.332 in

B = 5.767 in

C = 3.565 in

---Wall Thickness---

Front = 0.75 in

Side = 0.75 in

---Driver Properties---

---Description---

Name: Alpha 4-8

Type: Standard one-way driver

Company: Eminence Speaker LLC

Comment: 4" woofer/midrange

---Configuration---

No. of Drivers = 1

---Mechanical Parameters---

Fs = 123.1 Hz

Qms = 6.83

Vas = 1.94 liters

Cms = 0.42 mm/N

Mms = 3.96 g

Rms = 0.45 kg/s

Xmax = 2.6 mm

Xmech = 4.5 mm

P-Dia = 85.21 mm

Sd = 57.72 sq.cm

P-Vd = 0.0148 liters

---Electrical Parameters---

Qes = 0.84

Re = 6.73 ohms

Le = 0.28 mH

Z = 8 ohms

BL = 4.94 Tm

Pe = 55 watts

---Electromech. Parameters---

Qts = 0.75

no = 0.415 %

1-W SPL = 88.33 dB

2.83-V SPL = 89.08 dB
**Box Parts**

Box Shape: Optimum Square Prism
1 Top, 1 Bottom: depth (c) = 5.065 in
   width (b) = 7.267, thickness = 0.75 in
1 Front, 1 Back: height (a) = 9.332 in
   width (d) = 5.767, thickness = 0.75 in
2 Sides: height (a) = 9.332 in
   depth (c) = 5.065, thickness = 0.75 in

---Vent Parts---
1 Duct: outside diameter (e) = 2.25 in
   inside diameter (g) = 2 in
   length (h) = 3.018 in

---Driver Mounting---
Mounting: Flush
Alpha 4-8 Small Sealed Midrange Design
By Jerry McNutt, Eminence Speaker LLC
55 watts, F3 at 143 Hz.  Best used above 200 Hz.

Box Properties
--Description--
Name:
Type: Closed Box
Shape: Prism, square (optimum)
--Box Parameters--
Vb = 0.0667 cu.ft
V(total) = 0.0725 cu.ft
Qtc = 0.905
QL = 20
F3 = 143.5 Hz
Fill = normal

Driver Properties
--Description--
Name: Alpha 4-8
Type: Standard one-way driver
Company: Eminence Speaker LLC
Comment: 4" woofer/midrange
--Configuration--
No. of Drivers = 1
--Mechanical Parameters--
Fs = 123.1 Hz
Qms = 6.83
Vas = 1.94 liters
Cms = 0.42 mm/N
Mms = 3.96 g
Rms = 0.45 kg/s
Xmax = 2.6 mm
Xmech = 4.5 mm
P-Dia = 85.21 mm
Sd = 57.72 sq.cm
P-Vd = 0.0148 liters
--Electrical Parameters--
Qes = 0.84
Re = 6.73 ohms
Le = 0.28 mH
Z = 8 ohms
BL = 4.94 Tm
Pe = 55 watts
--Electromech. Parameters--
Qts = 0.75
no = 0.415 %
1-W SPL = 88.33 dB
2.83-V SPL = 89.08 dB

File: Alpha4-8SmallSealedMidrange55Watts.bb6
Box Parts
Box Shape: Optimum Square Prism
1 Top, 1 Bottom: depth (c) = 4.593 in
   width (b) = 6.504, thickness = 0.75 in
1 Front, 1 Back: height (a) = 8.096 in
   width (d) = 5.004, thickness = 0.75 in
2 Sides: height (a) = 8.096 in
   depth (c) = 4.593, thickness = 0.75 in

--Driver Mounting--
Mounting: Flush
Normalized Amplitude Response (dB-SPL/Hz)

Custom Amplitude Response (dB-SPL/Hz at 1 m) with 55 watts

Maximum Acoustic Power (dB-SPL/Hz at 1 m)
Maximum Electric Input Power (W/Hz)

Cone Displacement (mm/Hz) with 55 watts

System Impedance (ohms/Hz)
Alpha 4-8 Small Vented Midbass Design
By Jerry McNutt, Eminence Speaker LLC
55 watts, F3 at 118 Hz.  Best used above 130 Hz.

Box Properties
--Description--
Name:
Type: Vented Box
Shape: Prism, square (optimum)
--Box Parameters--
Vb = 0.0843 cu.ft
V(total) = 0.0941 cu.ft
Fb = 150 Hz
QL = 7
F3 = 118.3 Hz
Fill = normal
--Vents--
No. of Vents = 1
Vent shape = round
Vent ends = one flush
Dv = 2 in
Lv = 2.472 in

Driver Properties
--Description--
Name: Alpha 4-8
Type: Standard one-way driver
Company: Eminence Speaker LLC
Comment: 4" woofer/midrange
--Configuration--
No. of Drivers = 1
--Mechanical Parameters--
Fs = 123.1 Hz
Qms = 6.83
Vas = 1.94 liters
Cms = 0.42 mm/N
Mms = 3.96 g
Rms = 0.45 kg/s
Xmax = 2.6 mm
Xmech = 4.5 mm
P-Dia = 85.21 mm
Sd = 57.72 sq.cm
P-Vd = 0.0148 liters
--Electrical Parameters--
Qes = 0.84
Re = 6.73 ohms
Le = 0.28 mH
Z = 8 ohms
BL = 4.94 Tm
Pf = 55 watts
--Electromech. Parameters--
Qts = 0.75
n0 = 0.415 %
1-W SPL = 88.33 dB
2.83-V SPL = 89.08 dB

--External Dimensions--
A = 10.33 in
B = 6.957 in
C = 4.873 in

--Internal Dimensions--
A = 8.83 in
B = 5.457 in
C = 3.373 in

--Wall Thickness--
Front = 0.75 in
Side = 0.75 in
**Box Parts**

Box Shape: Optimum Square Prism
1 Top, 1 Bottom: depth (c) = 4.873 in
   width (b) = 6.957, thickness = 0.75 in
1 Front, 1 Back: height (a) = 8.83 in
   width (d) = 5.457, thickness = 0.75 in
2 Sides: height (a) = 8.83 in
   depth (c) = 4.873, thickness = 0.75 in

--Vent Parts--
1 Duct: outside diameter (e) = 2.25 in
   inside diameter (g) = 2 in
   length (h) = 2.472 in

--Driver Mounting--
Mounting: Flush
Normalized Amplitude Response (dB-SPL/Hz)

Custom Amplitude Response (dB-SPL/Hz at 1 m) with 55 watts

Maximum Acoustic Power (dB-SPL/Hz at 1 m)
**Maximum Electric Input Power (W/Hz)**

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**Cone Displacement (mm/Hz) with 55 watts**

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**Vent Air Velocity (m/sec/Hz) with 55 watts**

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