Eighteen Sound
a AEB S.r.l. Company

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Application Note #11:

Building an effective, high power, 18” subwoofer.

Eighteen Sound Technical Department
December, 2010

18” Subwoofer kit

•High performance 1 x 18” subwoofer system

•optimized for 18LW2400 or 18LW2400 transducer

•**18LW2400** subwoofer key features:

4” interleaved sandwich voice coil (ISV)

Double Silicon Spider (DSS)

Double Demodulating Rings (DDR)

1200W AES power handling

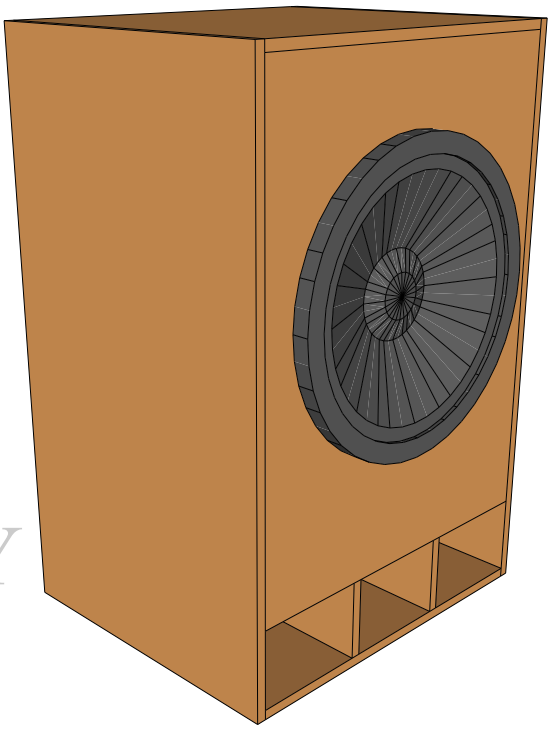
•**18LW1400** subwoofer key features:

4” interleaved sandwich voice coil (ISV)

Double Silicon Spider (DSS)

Double Demodulating Rings (DDR)

1000W AES power handling



PRELIMINARY

Rev. 1.0

18LW2400 Data

GENERAL SPECIFICATIONS

NOMINAL DIAMETER	460 mm (18 in)
RATED IMPEDANCE	8 Ohm
AES POWER	1200 W
PROGRAM POWER (1)	2400 W
PEAK POWER (2)	7000 W
SENSITIVITY (3)	98 dB
FREQUENCY RANGE (4)	31 - 2500 Hz
POWER COMPRESSION @-10DB (5)	0,7 dB
POWER COMPRESSION @-3DB	1,5 dB
POWER COMPRESSION @FULL POWER	2,2 dB
MAX RECOMM. FREQUENCY	500 Hz
RECOMM. ENCLOSURE VOLUME	130 ÷ 350 lt. (4,59 ÷ 12,36 cuft)
MINIMUM IMPEDANCE	6,3 Ohm at 25°C
MAX PEAK TO PEAK EXCURSION	50 mm (1,97 in)
VOICE COIL DIAMETER	100 mm (4 in)
VOICE COIL WINDING MATERIAL	copper
SUSPENSION	Triple roll, Polycotton
CONE	Straight Ribbed, Treated paper

THIELE SMALL PARAMETERS (6)

Fs	35 Hz
Re	5 Ohm
Sd	0,1225 sq. mt. (189,88 sq. in.)
Qms	7,2
Qes	0,32
Qts	0,31
Vas	230 lt. (8.12 cuft)
Mms	192 gr. (0,42 lb)
BL	25,6 Tm
Linear Mathematical Xmax (7)	± 9,5 mm (± 0,38 in)
Le (1kHz)	1,35 mH
Ref. Efficiency 1W@1m (half space)	96,7 dB

18LW1400 Data

GENERAL SPECIFICATIONS

NOMINAL DIAMETER	460 mm (18 in)
RATED IMPEDANCE	8 Ohm
AES POWER	1000 W
PROGRAM POWER (1)	1400 W
PEAK POWER (2)	7000 W
SENSITIVITY (3)	98 dB
FREQUENCY RANGE (4)	28 - 2500 Hz
POWER COMPRESSION @-10DB (5)	0,8 dB
POWER COMPRESSION @-3DB	2,1 dB
POWER COMPRESSION @FULL POWER	3,0 dB
MAX RECOMM. FREQUENCY	500 Hz
RECOMM. ENCLOSURE VOLUME	130 ÷ 350 lt. (4,59 ÷ 12,36 cuft)
MINIMUM IMPEDANCE	6,4 Ohm at 25°C
MAX PEAK TO PEAK EXCURSION	50 mm (1,97 in)
VOICE COIL DIAMETER	100 mm (4 in)
VOICE COIL WINDING MATERIAL	copper
SUSPENSION	Triple roll, Polycotton
CONE	Straight Ribbed, paper

THIELE SMALL PARAMETERS (6)

Fs	31 Hz
Re	5 Ohm
Sd	0,1225 sq. mt. (189,88 sq. in.)
Qms	7,2
Qes	0,31
Qts	0,29
Vas	297 lt. (10,49 cuft)
Mms	190 gr. (0,42 lb)
BL	24,7 Tm
Linear Mathematical Xmax (7)	± 9 mm (± 0,35 in)
Le (1kHz)	2,3 mH
Ref. Efficiency 1W@1m (half space)	96,5 dB

18” Subwoofer kit

•The enclosure should be made of Baltic birch plywood (15mm thickness)

•Bolts are M6x35mm

•M6 T-Nuts are recommended

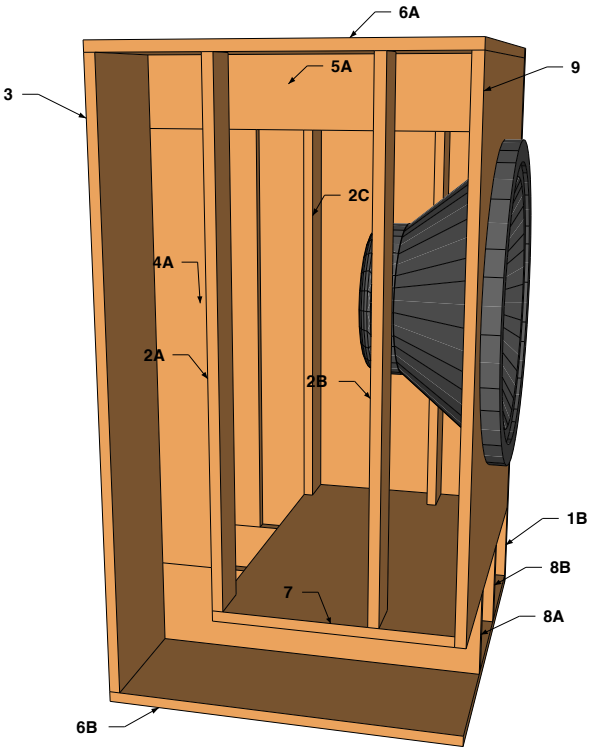
•Handling, rigging and connectors are user’s choice

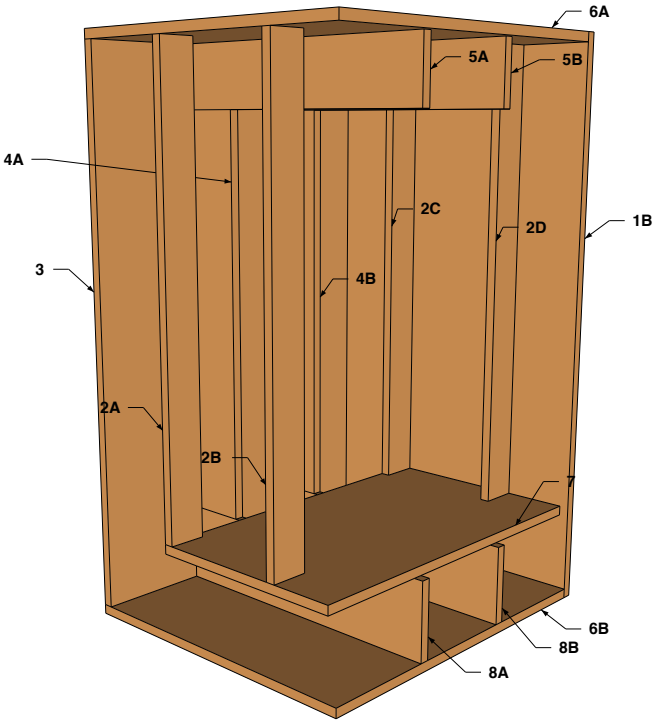
•It’s recommended to well damping the cabinet interior

•You should see an example of the required dampening on the image on the next page

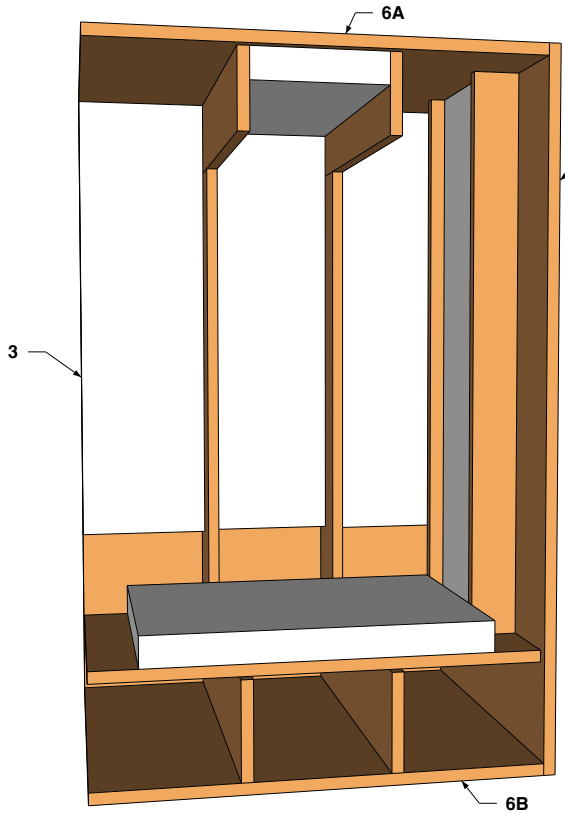
•An high density dampening material, such as Dacron or other synthetic fibers, is required for better performance

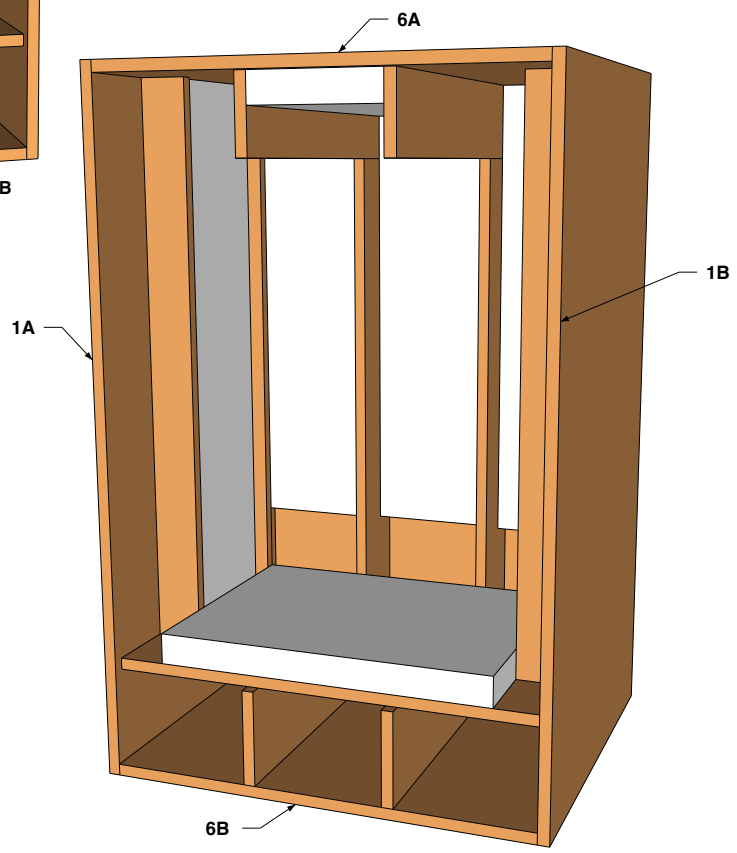
Internal view





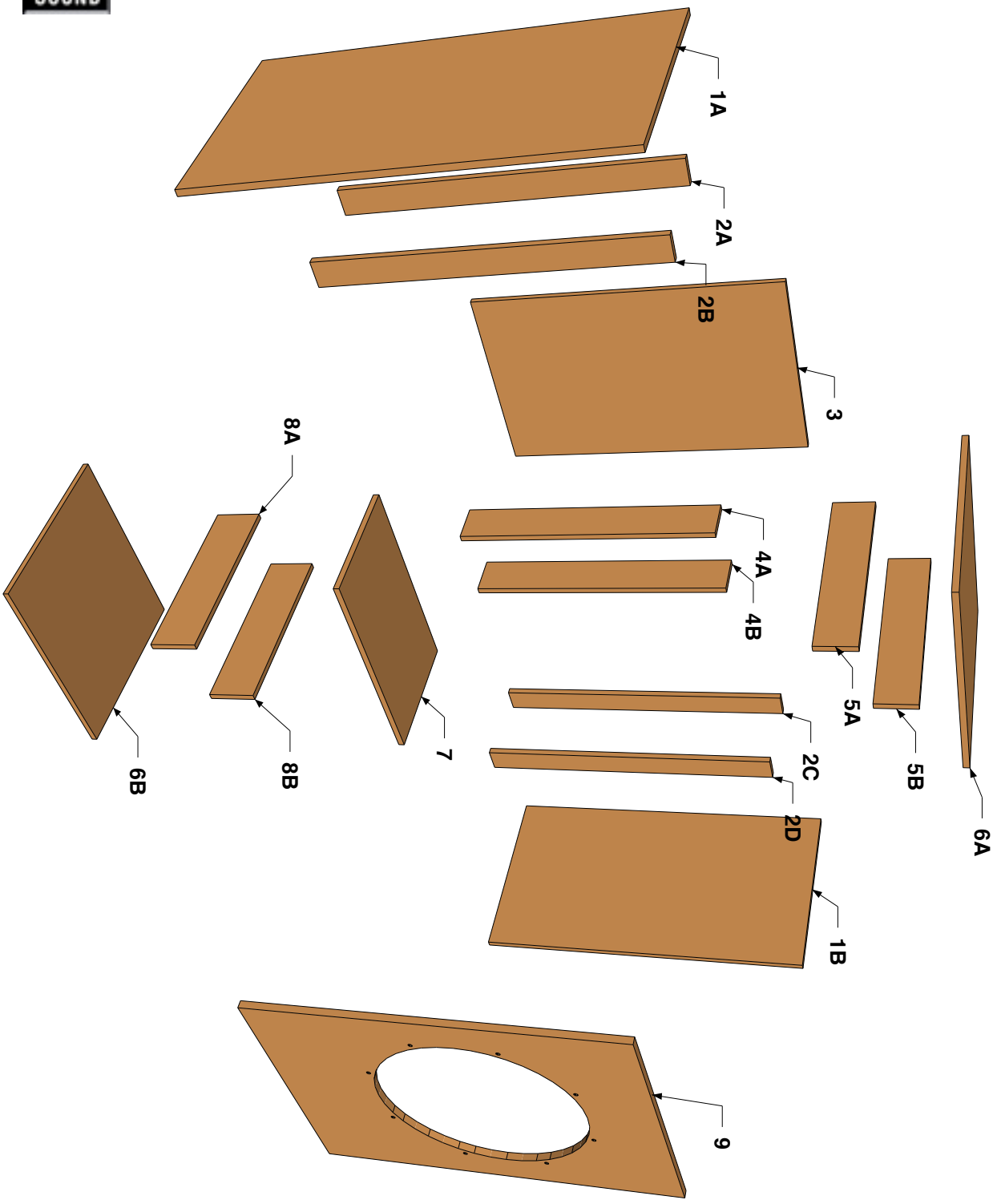
Internal view and damping material





18” Subwoofer kit

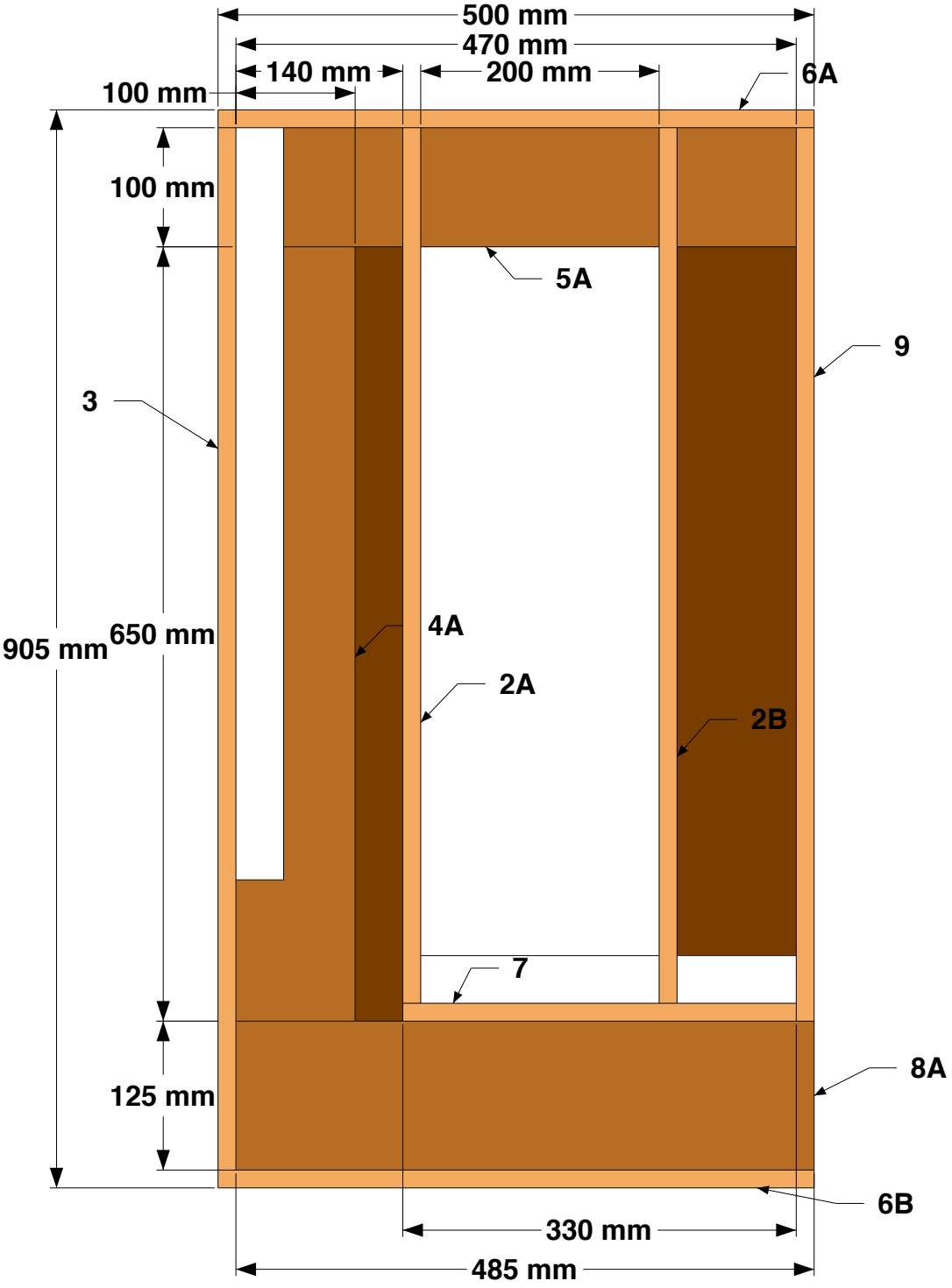
Exploded view



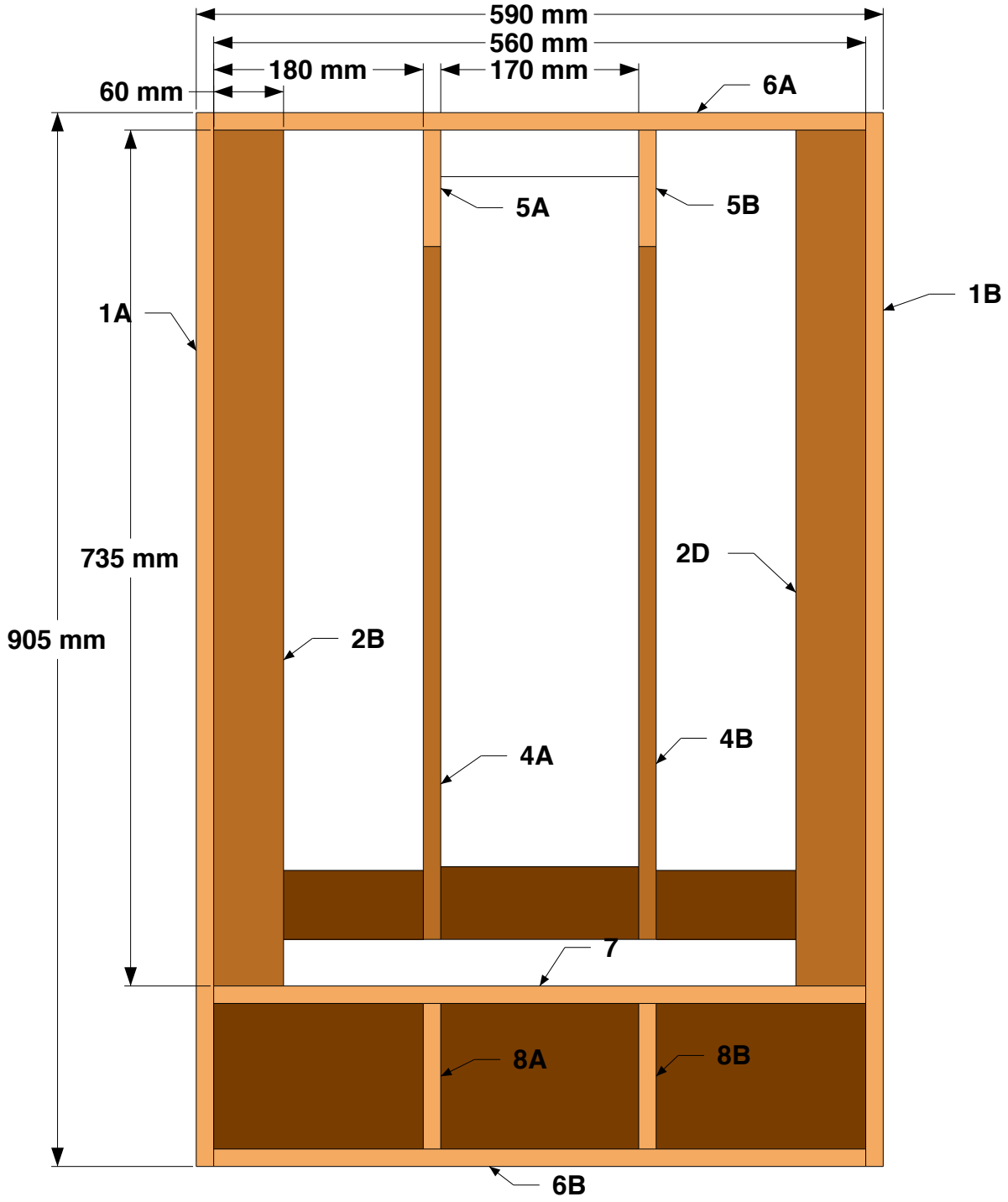
PRELIMINARY

Rev. 1.0

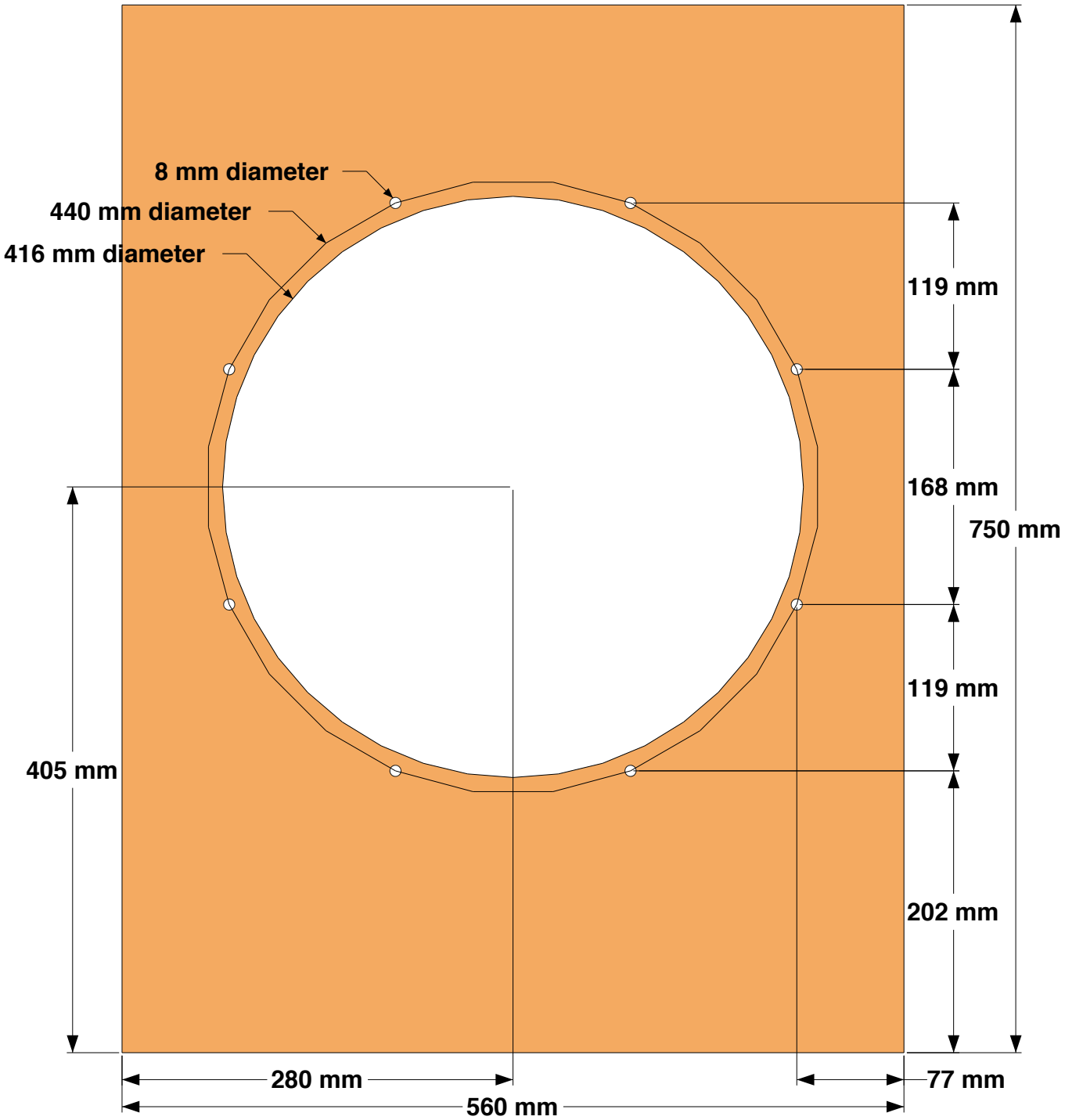
Side wiew



Front wiew

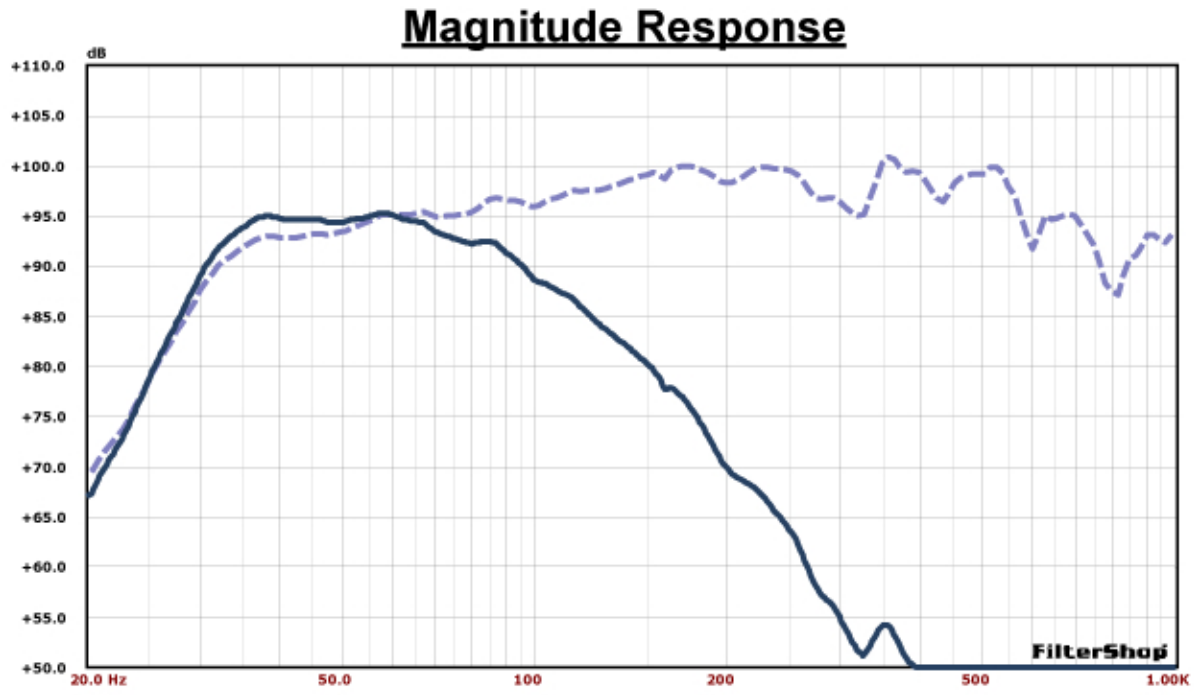


Woofer details

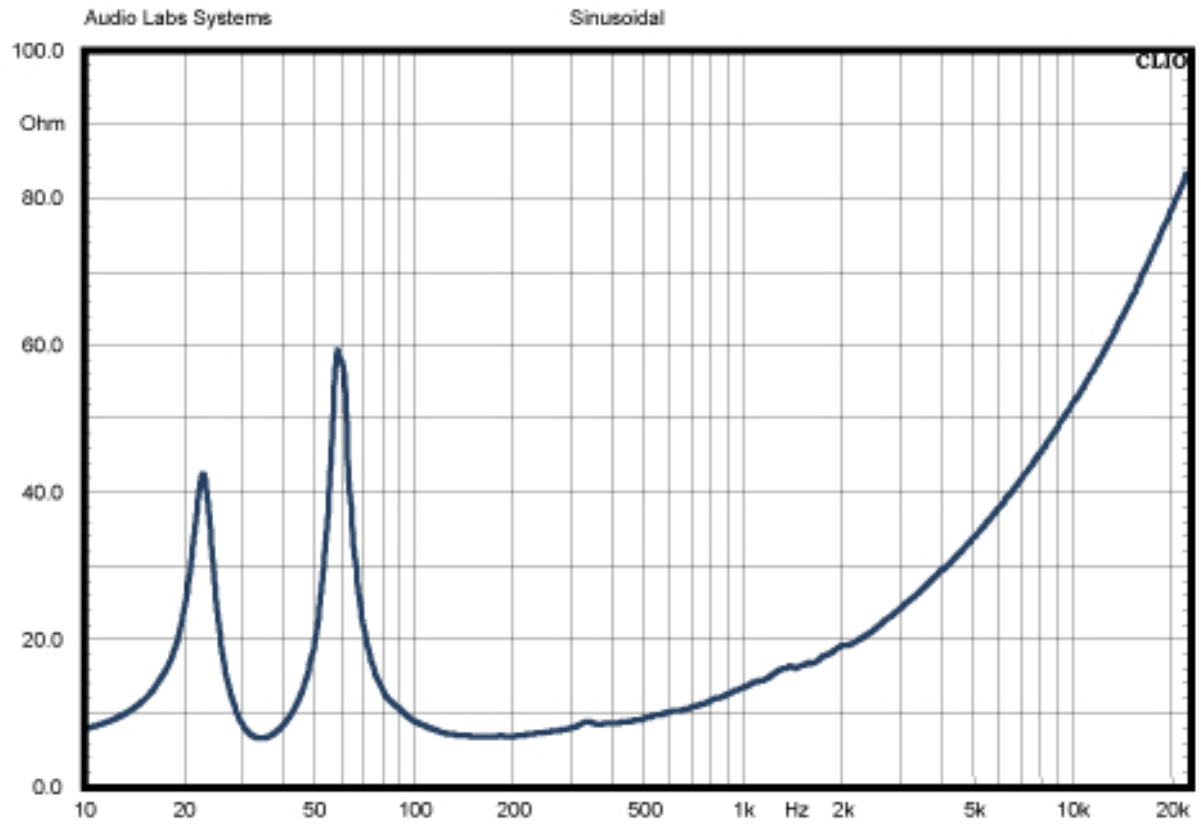


System Measurements and Suggested Settings with 18LW2400 and 18LW1400

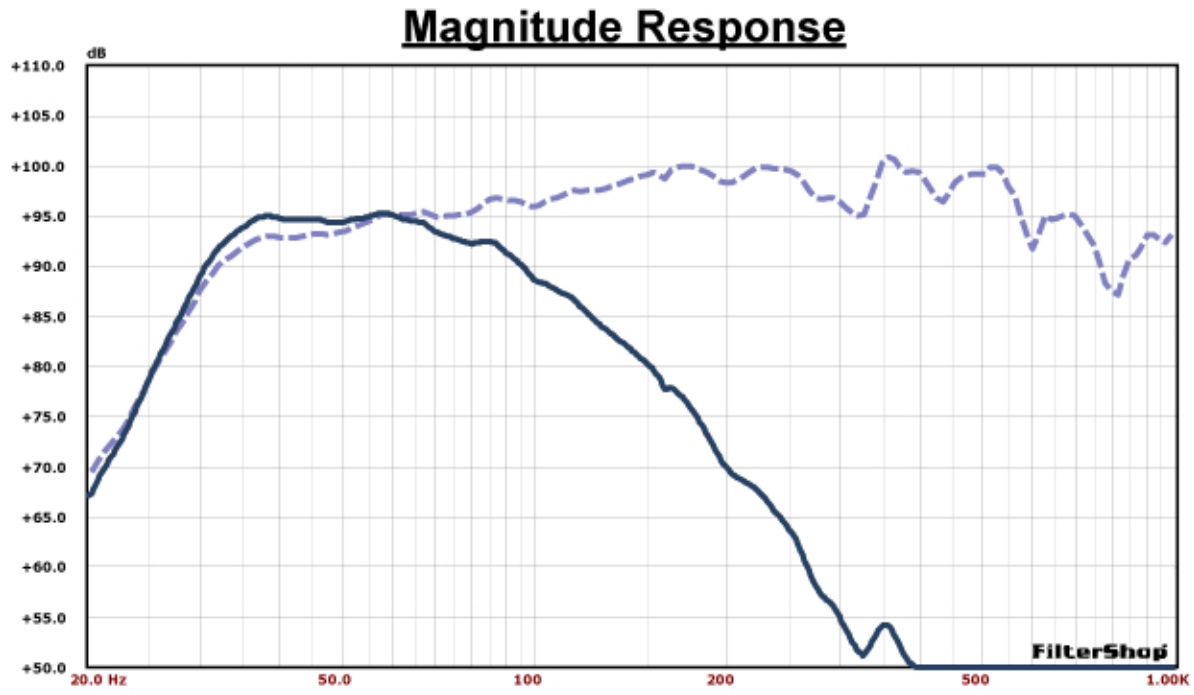
Unfiltered Magnitude Response, 2.83V/1m and relative Phase Response with 18LW2400



Impedance with 18LW2400



Unfiltered Magnitude Response, 2.83V/1m and relative Phase Response with 18LW1400



Impedance with 18LW1400