

Building an effective, high performances, 2 way 15" loudspeaker system



Eighteen Sound

A division of A.E.B srl

Via dell'Industria 20 - 45025 Cavriago (Reggio Emilia)- Italy

2 way 15" kit

- An effective, high performance and easy to build, two way loudspeaker system for high performance in a relatively compact and portable enclosure.
- An "already optimized" passive crossover network greatly simplifies the system setup.
- The 15W700 woofer has been combined with the ND1460 Neodymium Compression Driver, mounted on a XT1464 horn in order to obtain a smooth frequency response, precision directivity control and high power handling.
- Unique 18 Sound Elliptical-Spheroidal waveguide technology assures constant coverage at mid and high frequency with precision and stability, and good array-ability if used in multiple units.
- A crossover frequency set in the 1.5kHz range, yields very good power handling and operation reliability while not sacrificing directivity control and mid-range sound quality.
- The 15ND830 woofer is the perfect option if equivalent sonic performances are required while greatly reducing system weight as well.



2 way 15" kit

15W700 15ND830



GENERAL SPECIFICATIONS			
NOMINAL DIAMETER	380 mm	(15 in)	380mm (15 in)
RATED IMPEDANCE	8 ohms		8 ohms
CONTINUOUS PINK NOISE (1)	450 W		450 W
SENSITIVITY (2)	99 dB		98 dB
FREQUENCY RANGE (3)	38 ÷ 5000 Hz		38 ÷ 5000 Hz
MAX RECOMM. FREQUENCY	2000 Hz		2000 Hz
RECOMM. ENCLOSURE VOLUME	80 ÷ 140 lt.	(2,82 ÷ 5 cuft)	80 ÷ 140 lt. (2,83 ÷ 4,95 cuft)
VOICE COIL DIAMETER	75 mm	(2,95 in)	75 mm (2,95 in)
NET WEIGHT	8,6 kg	(18,98 lb)	4,1 kg (9,05 lb)

THREE-SMALL PARAMETERS (4)			
Fs	38 Hz		39 Hz
Re	5,7 ohms		5,7 ohms
Sd	0,085 sq.mt.	(131,75 sq.in.)	0,085 sq.mt. (131,75 sq.in.)
Qms	3,80		3,90
Qes	0,33		0,35
Qts	0,30		0,32
Vas	217 lt.	(7,67 cuft)	213 lt. (7,5 cuft)
Mms	80 gr.	(0,18 lb)	80 gr. (0,18 lb)
BL	18,4 Tm		18 Tm
Linear Mathematical Xmax (5)	± 6,5 mm	(± 0,26 in)	± 6,5 mm (± 0,26 in)
Le (1kHz)	1,57 mH		1,54 mH
Ref. Efficiency 1W @ 1m (half space)	97,8 dB		97,5 dB

ND1460



GENERAL SPECIFICATIONS		
THROAT DIAMETER	35,5 mm	(1,4 in)
RATED IMPEDANCE	8 ohms	
D.C. RESISTANCE	6,2 ohms	
MINIMUM IMPEDANCE	8 ohms at 3500 Hz	
POWER HANDLING	(800 ÷ 20000 Hz)	
CONTINUOUS PINK NOISE (1)	80 W above 1,2 kHz	
CONTINUOUS PROGRAM (2)	160 W above 1,2 kHz	
SENSITIVITY (1W / 1m) (3)	109 dB	
FREQUENCY RANGE	500 Hz ÷ 20 kHz	
RECOMM. CROSS. FREQUENCY	above 800 Hz (12 dB /octave)	
DIAPHRAGM MATERIAL	Titanium	
VOICE COIL DIAMETER	74,6 mm	(3 in)
MAGNET MATERIAL	Neodymium	
FLUX DENSITY	1,9 T	
OVERALL DIAMETER	132 mm	(5,2 in)
TOTAL DEPTH	62 mm	(2,5 in)
NET WEIGHT	3,2 Kg	(7,1 lb)

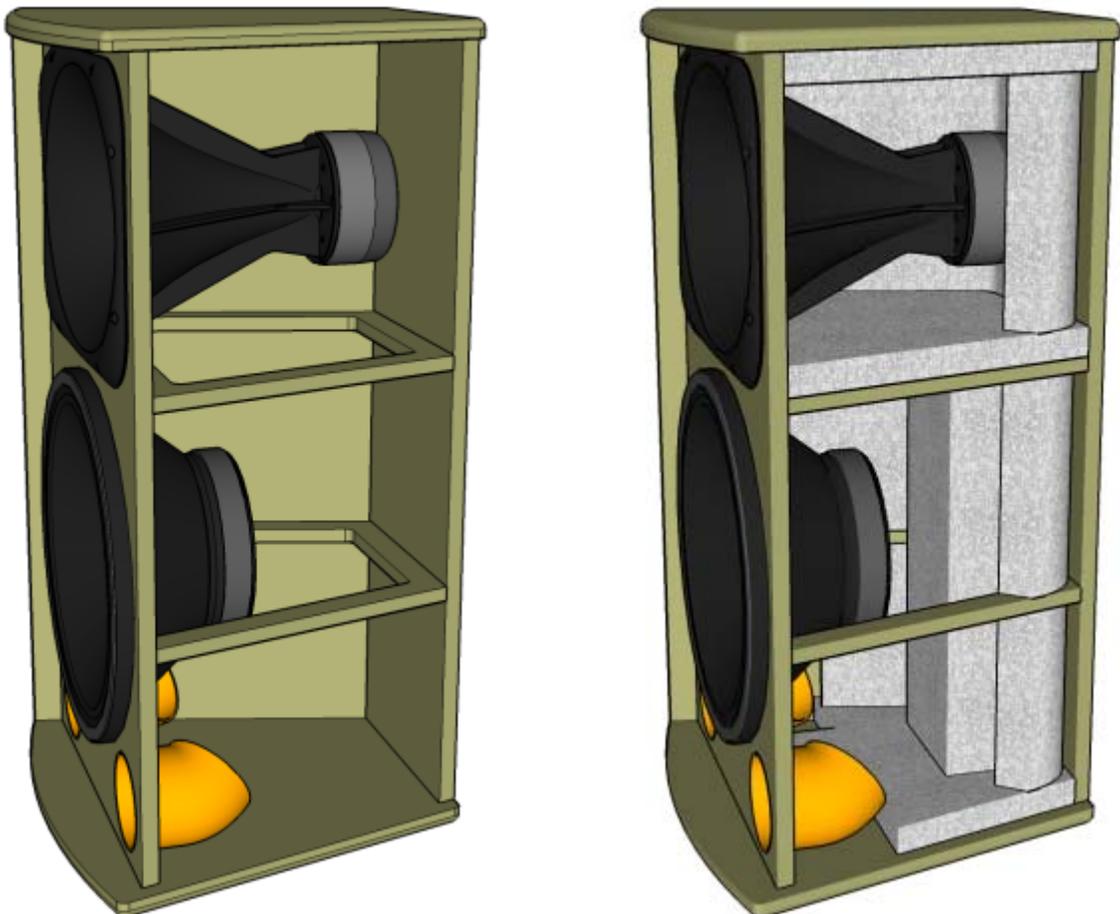
XT1464



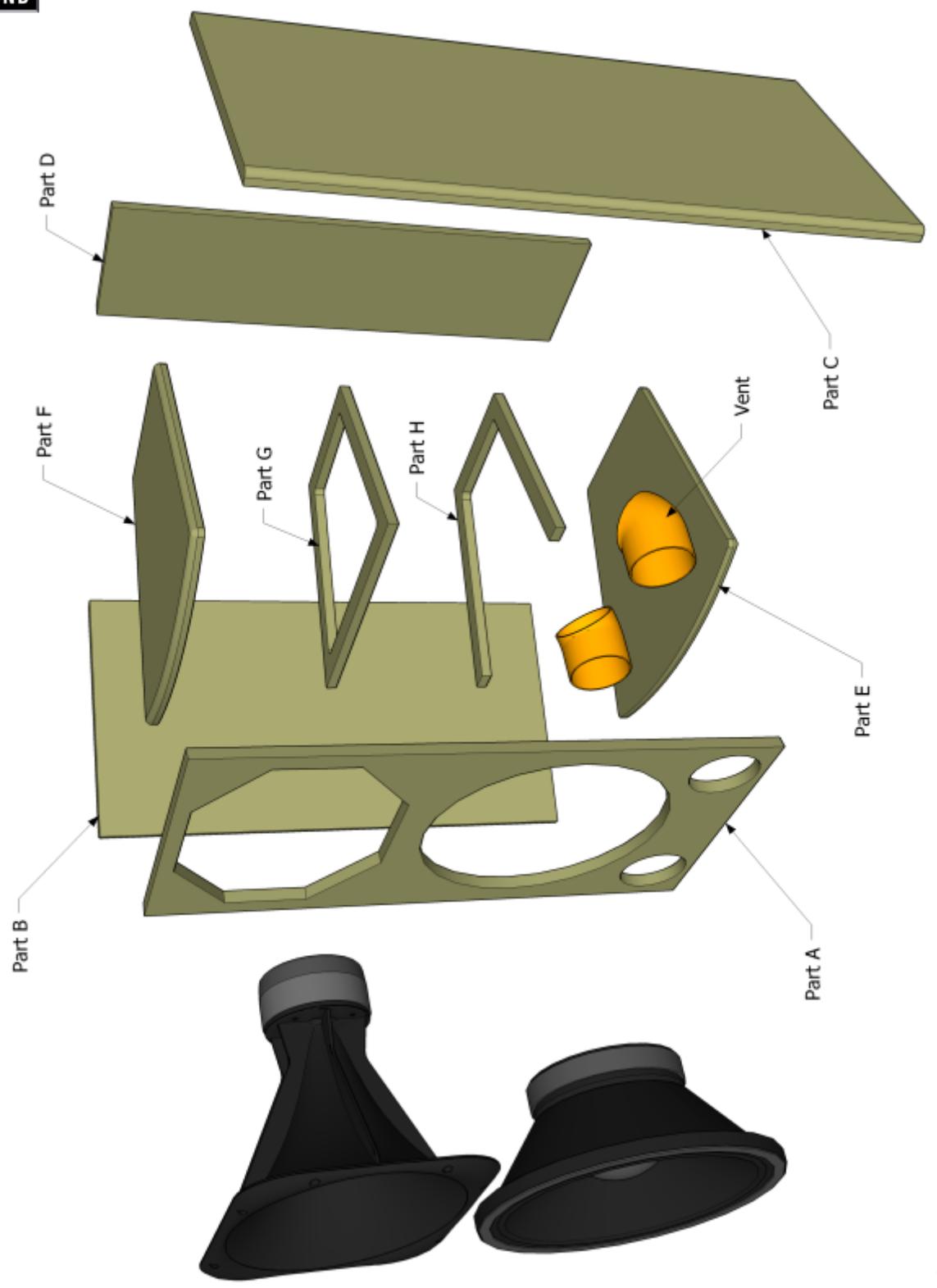
GENERAL SPECIFICATIONS		
THROAT DIAMETER	35,5 mm	(1,4 in)
HORIZONTAL COVERAGE (-6dB)	60° (+8, -12) average range (1,25KHz - 12,5KHz)	
VERTICAL COVERAGE (-6 dB)	50° (+15, -10) average range (1,25KHz - 12,5KHz)	
DIRECTIVITY INDEX	18 dB (+1,8 - 2,6) average range (1,25KHz - 12,5KHz)	
USABLE FREQUENCY RANGE	Above 500 Hz	
RECOMM. CROSS.FREQUENCY	800 Hz or more	
SENSITIVITY (ON AXIS)	110 dB (1)	
FREQUENCY RANGE	800 Hz - 18KHz	
MOUNTING INFORMATION		
OVERALL DIMENSIONS		
MOUTH HEIGHT	304 mm	(12 in)
MOUTH WIDTH	380 mm	(15in)
DEPTH	250 mm	(9,8 in)
MOUTH MOUNTING DIMENSIONS		
8 ø6 holes on the edge of rectangle		
REAR HEIGHT	355 mm	(14 in)
REAR WIDTH	280 mm	(11 in)
NET WEIGHT	1,3 Kg	(2,87 lb)

- The enclosure should be made out of Baltic birch plywood (15mm thick).
- The vents can be made with standard PVC plumbing pipe connections with internal diameter of 96mm, as described at page 13.
- All the used bolts should be the M5 type (5mm diameter), 35mm deep. "8.8" steel type or better is strongly suggested.
- M5 T-Nuts are recommended to be used in conjunction with M5 bolts.
- It's strictly necessary to provide for proper cabinet internal acoustical damping with absorptive material.
- High density damping material, such as Dacron or other synthetic fibers, is required for best performance.
- The following example image show the proper damping material disposition.

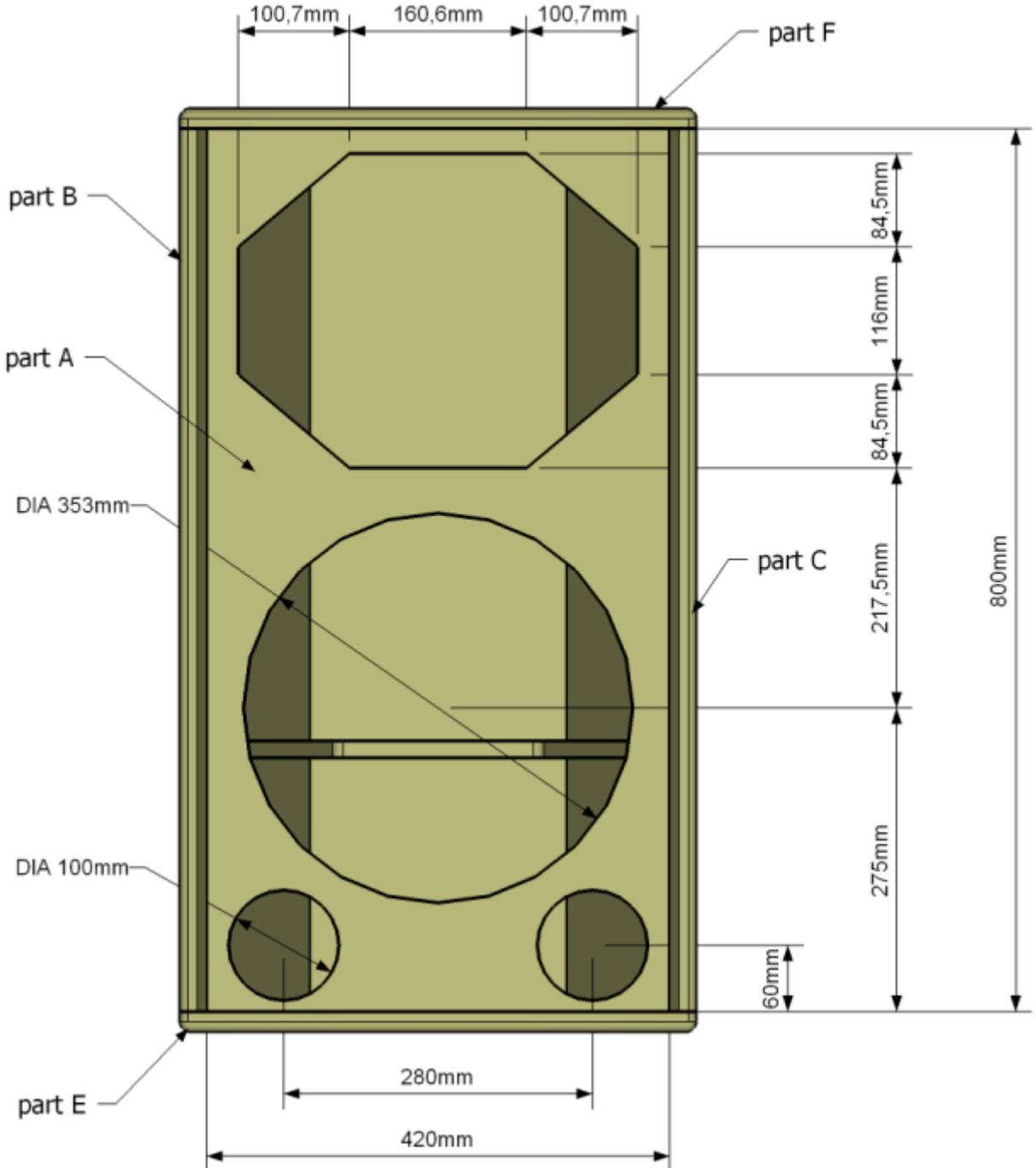
Internal view and damping disposition



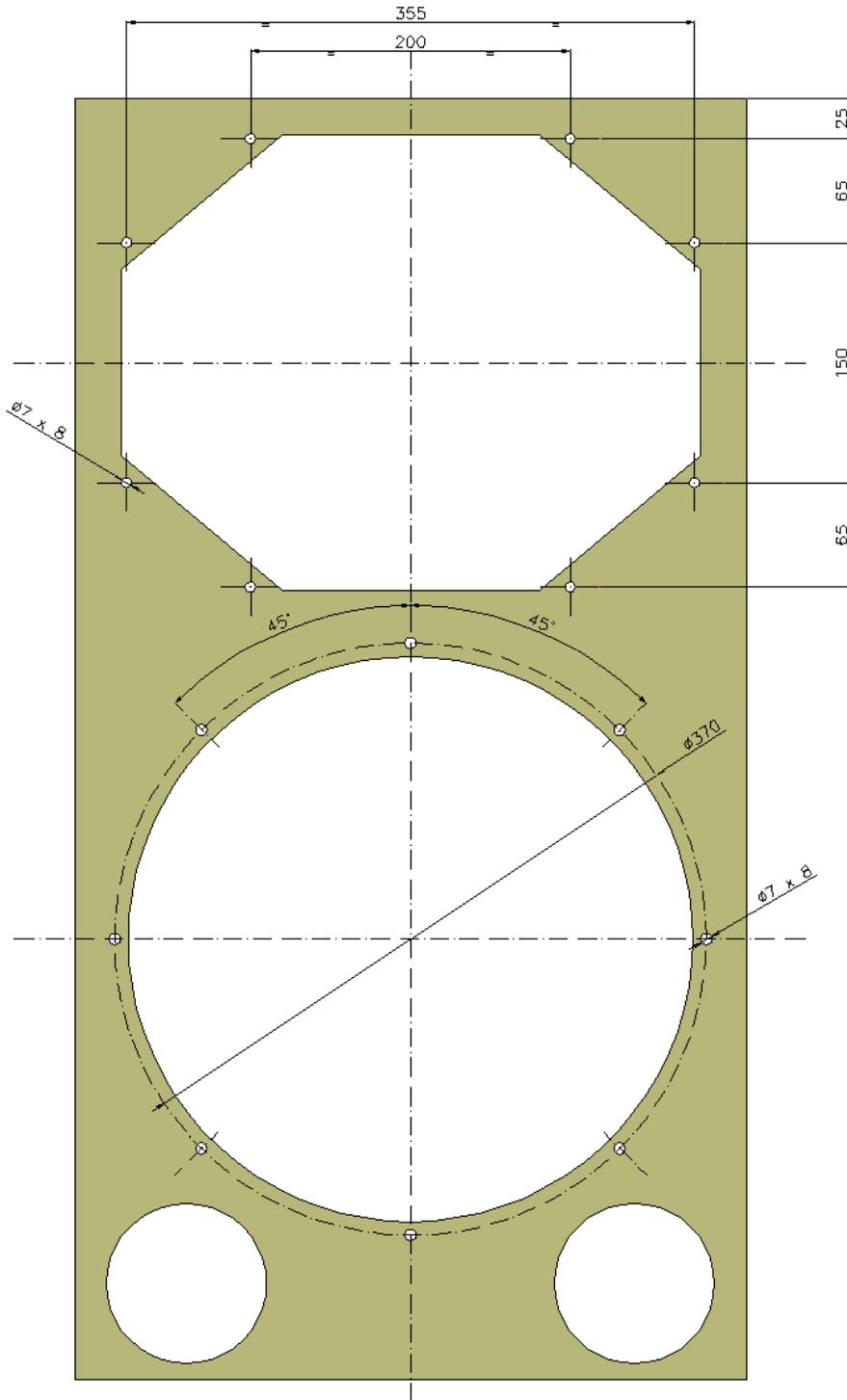
Exploded view



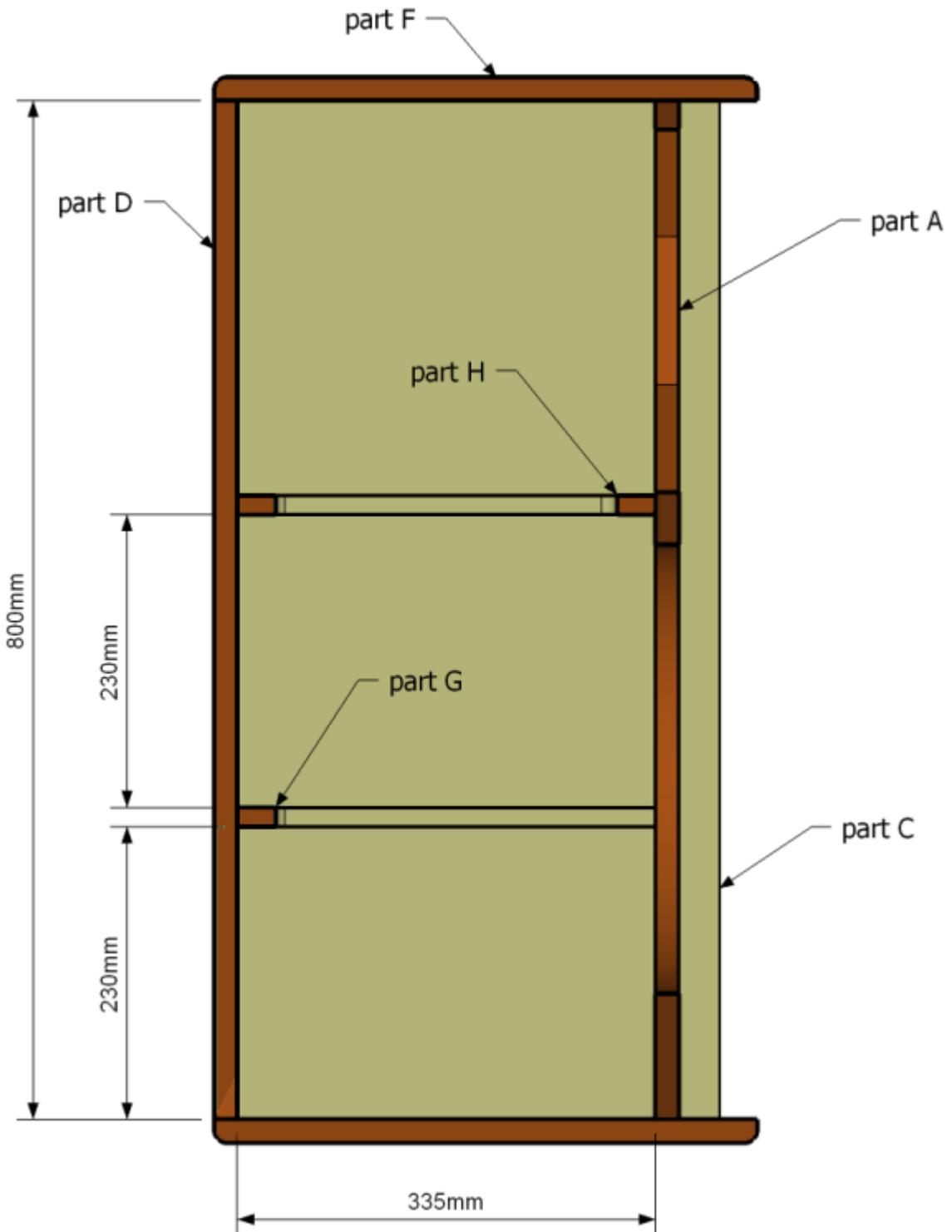
Front view



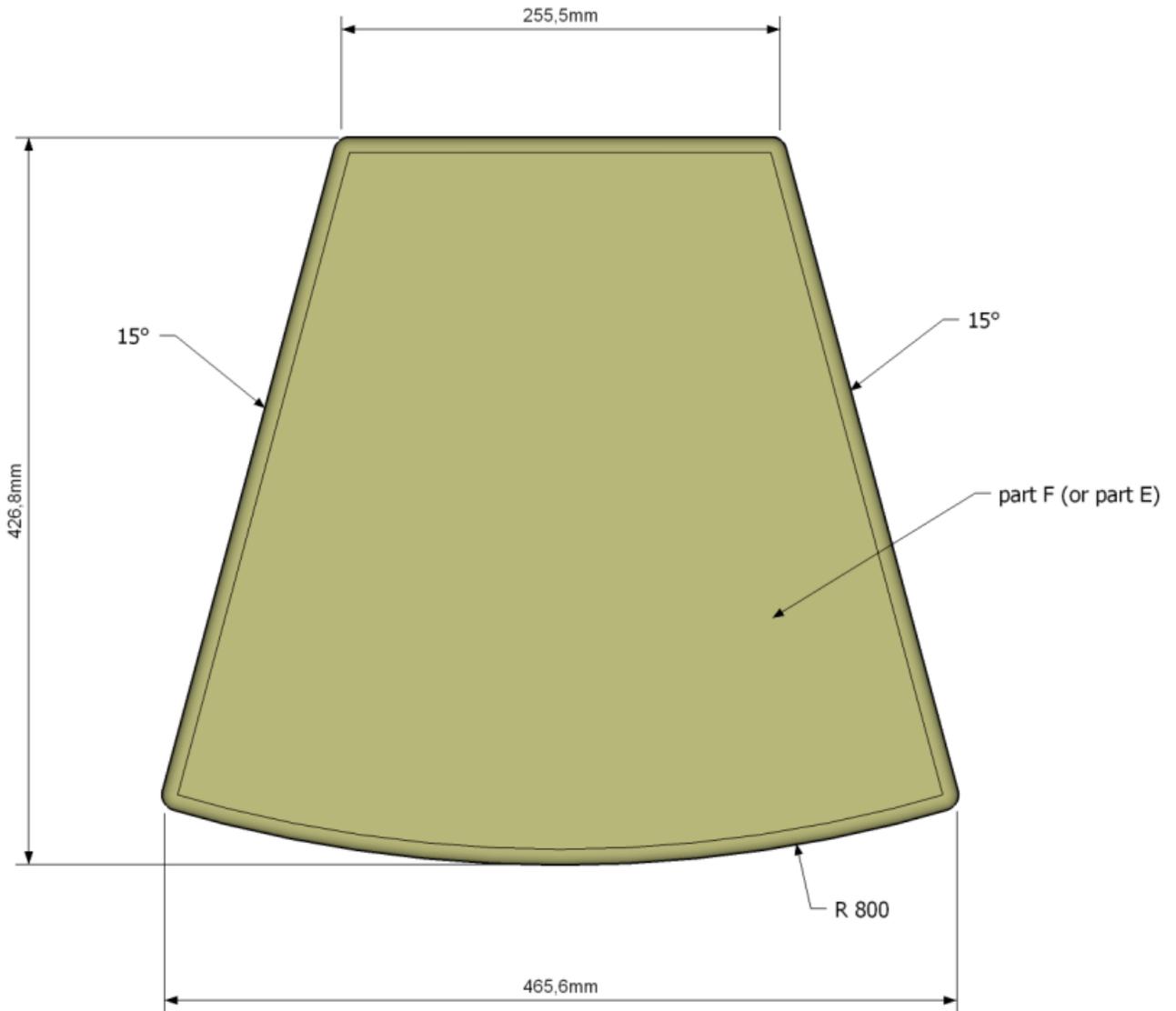
Front panel: bolts holes



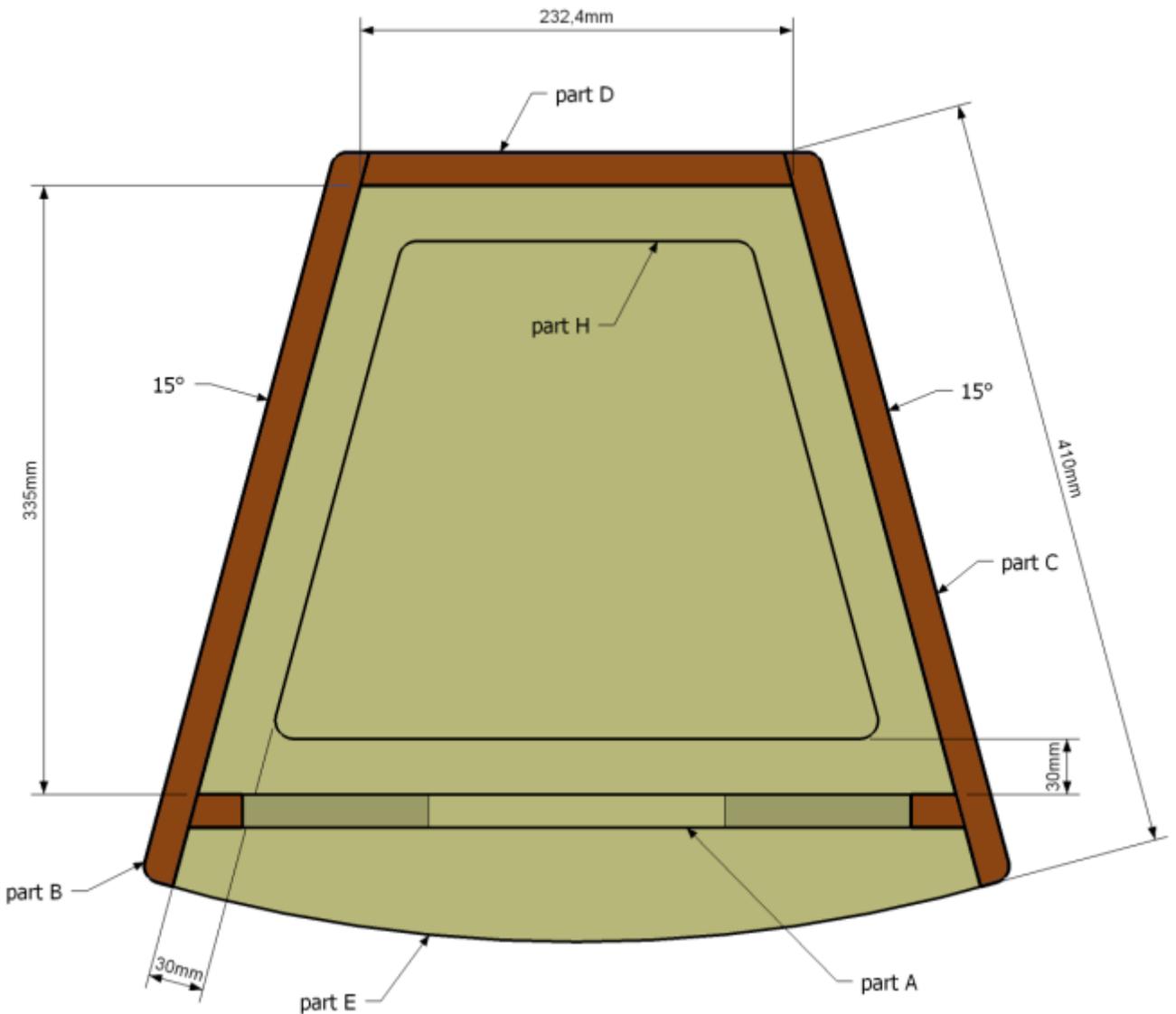
Side view



Top view

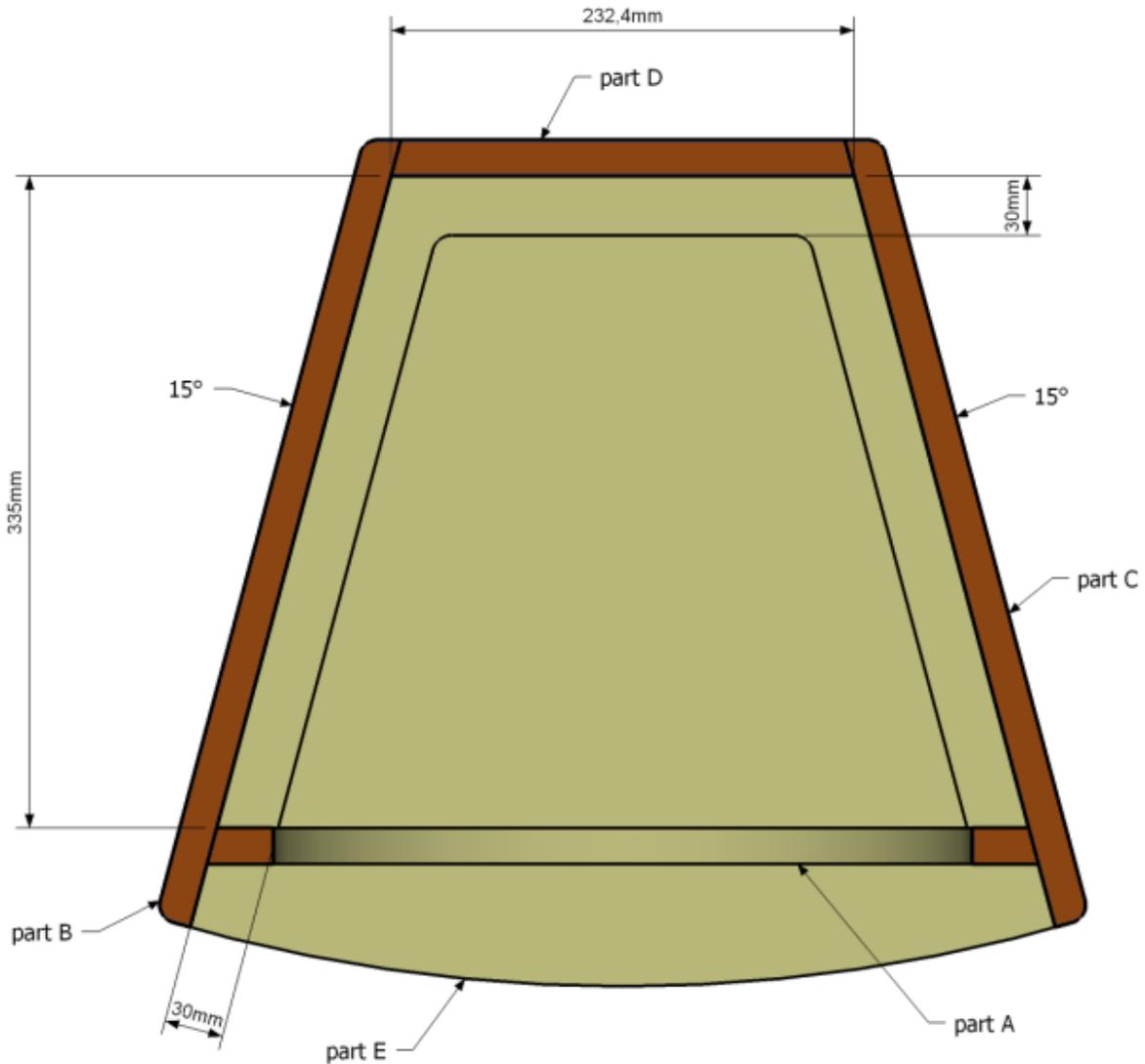


Top view section



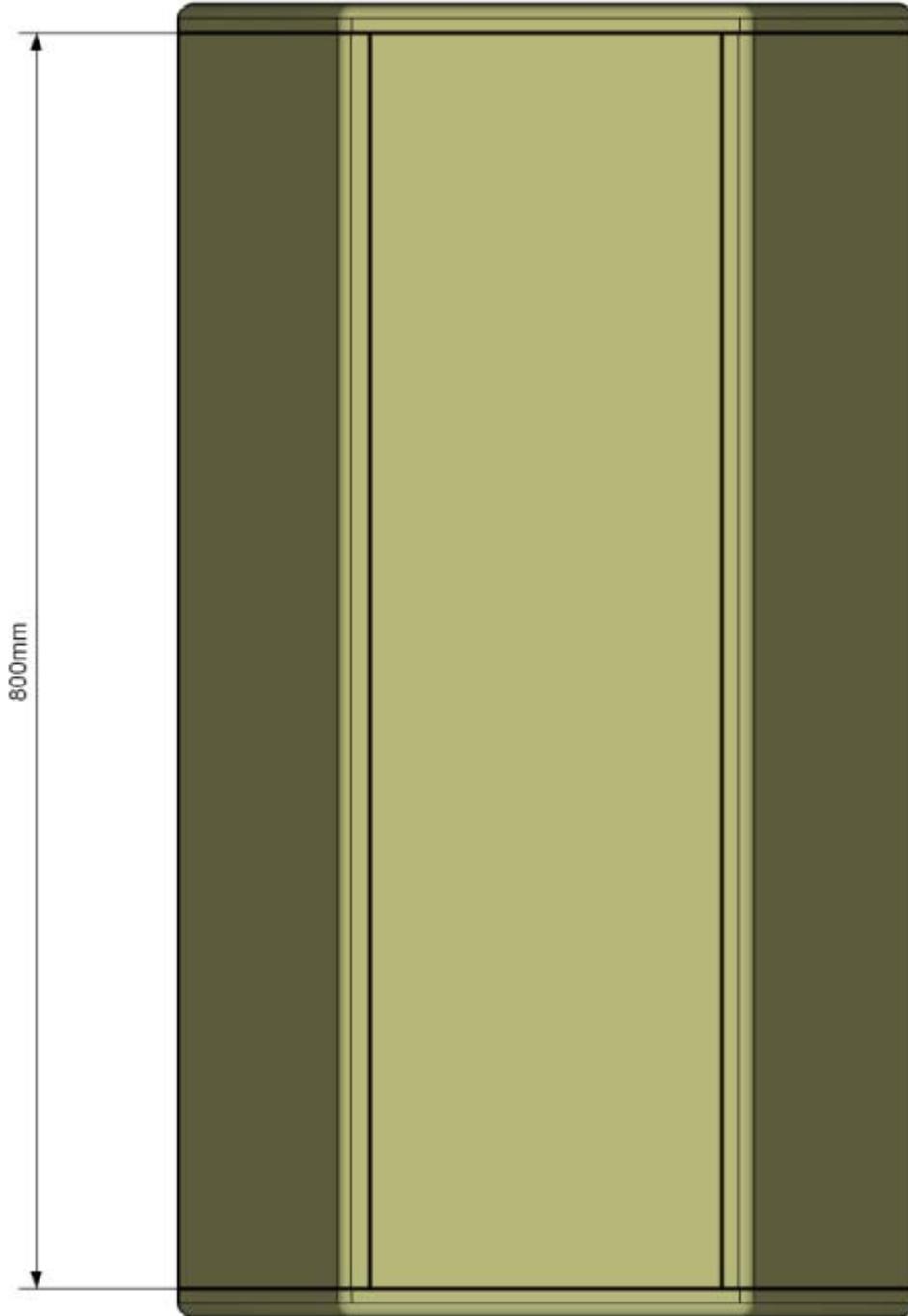
Horn height section

Top view section

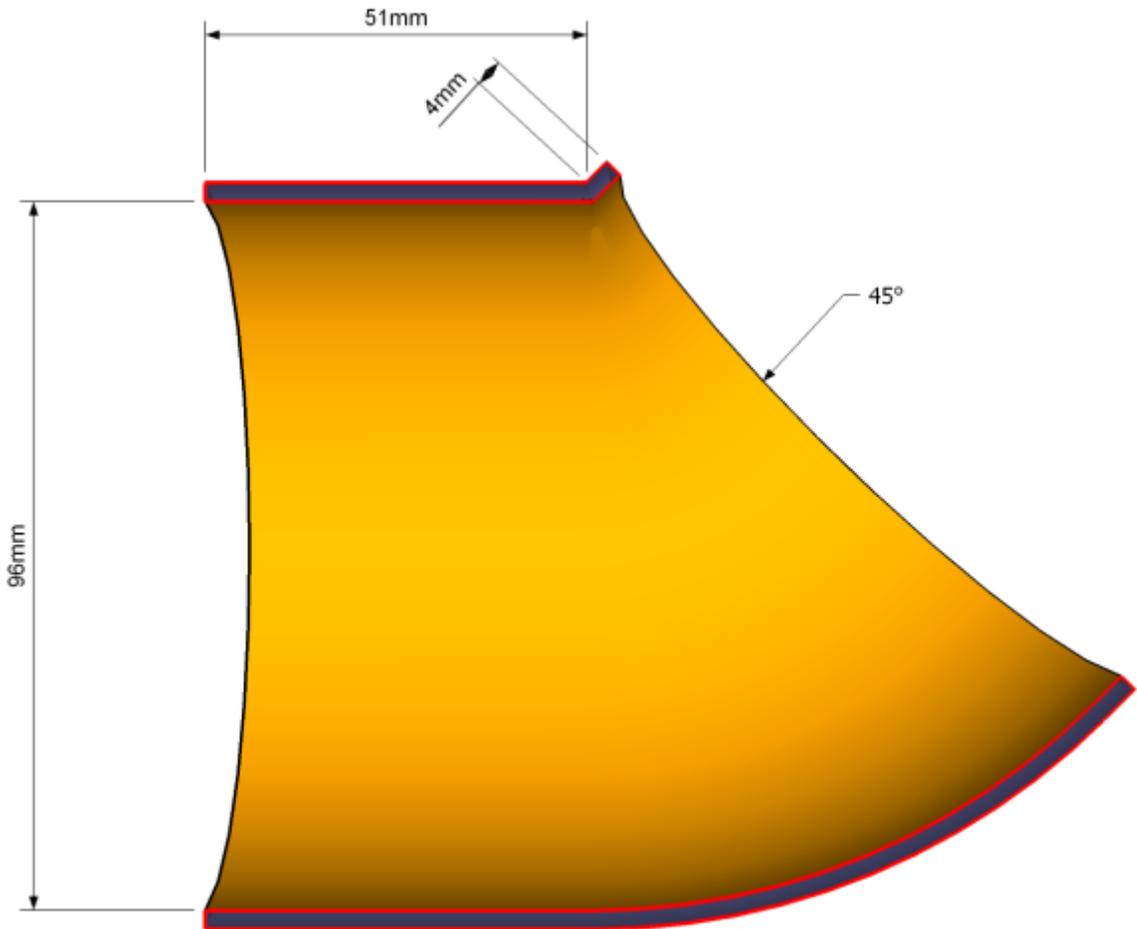


Woofer height section

Back view

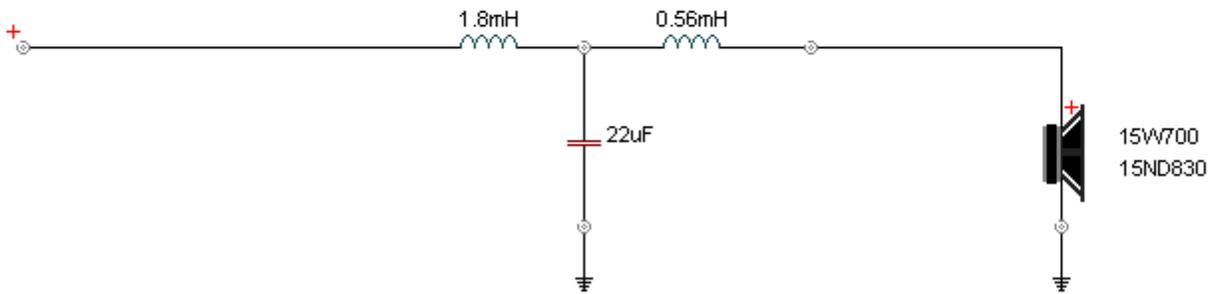
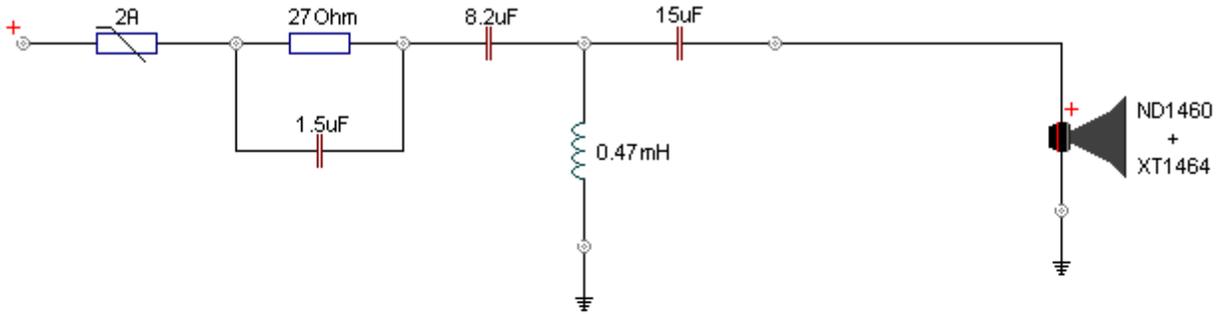


Vent



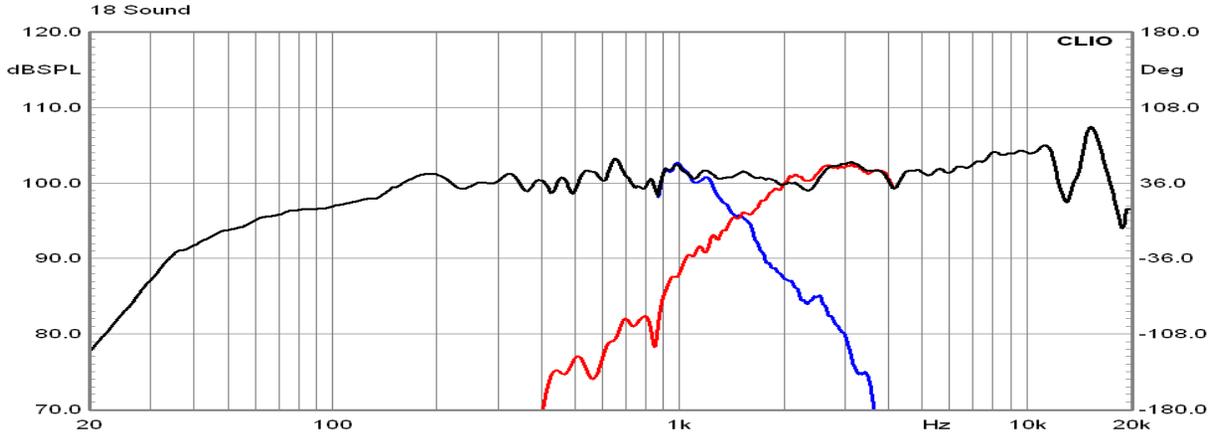
Plumbing pipe, 90° connection

Crossover schematics

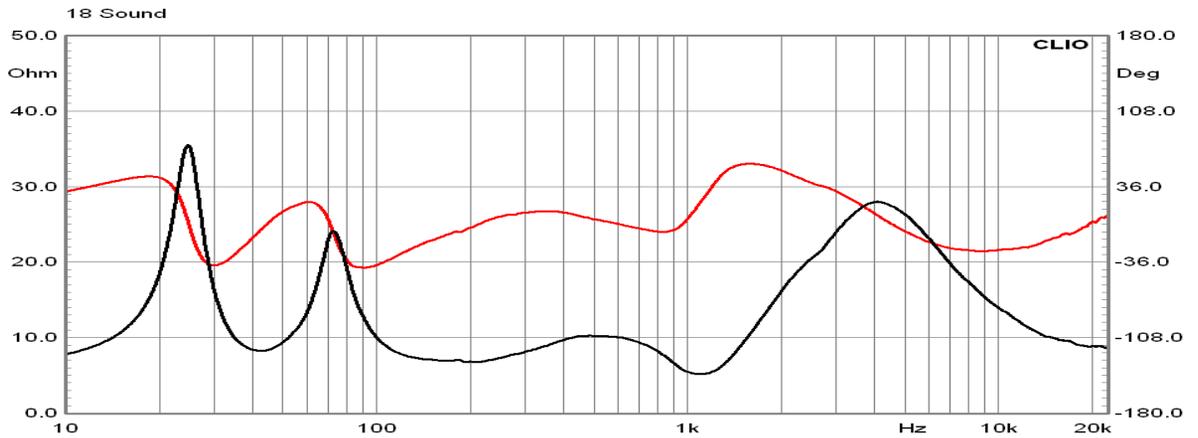


Components list		
Type	Value	Note
Resistor	27 Ohm	>20W
Capacitor	1.5uF	5% - >250V
Capacitor	8.2uF	5% - >250V
Inductor	0.47mH	<0.4 Ohm
Capacitor	15uF	5% - >250V
Inductor	1.8mH	<1.4 Ohm
Capacitor	22uF	5% - >250V
Inductor	0.56mH	<0.6 Ohm
PTC	2A	

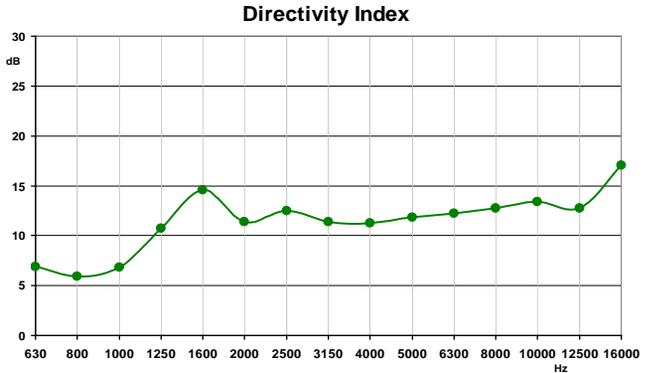
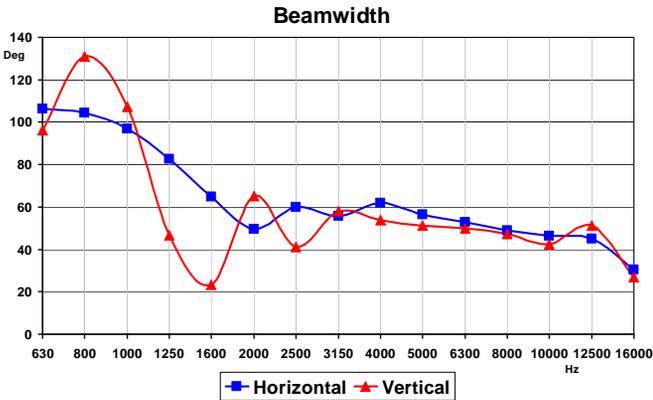
Measurements: 15W700 + ND1460/XT1464



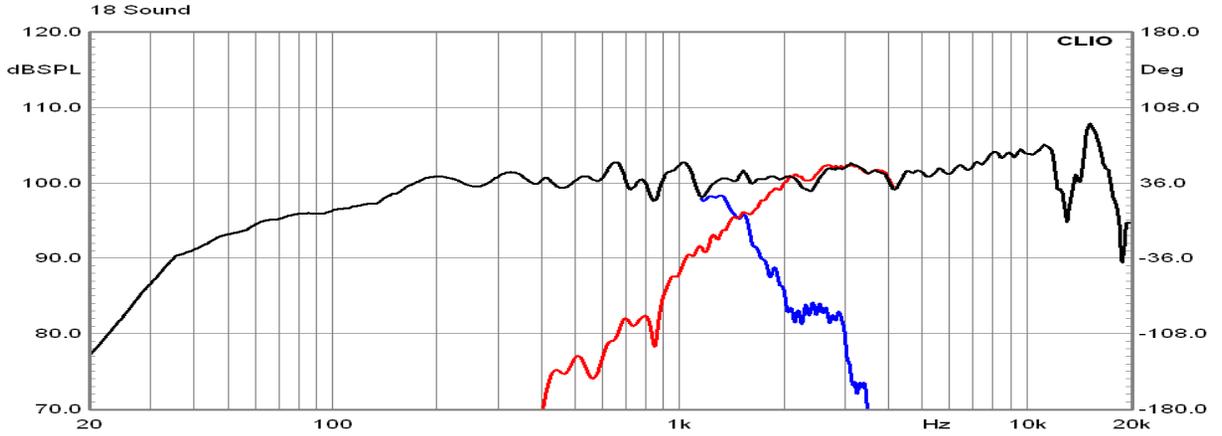
Frequency response 2.83Vrms@1m - blue: woofer, red: HF driver, black: overall



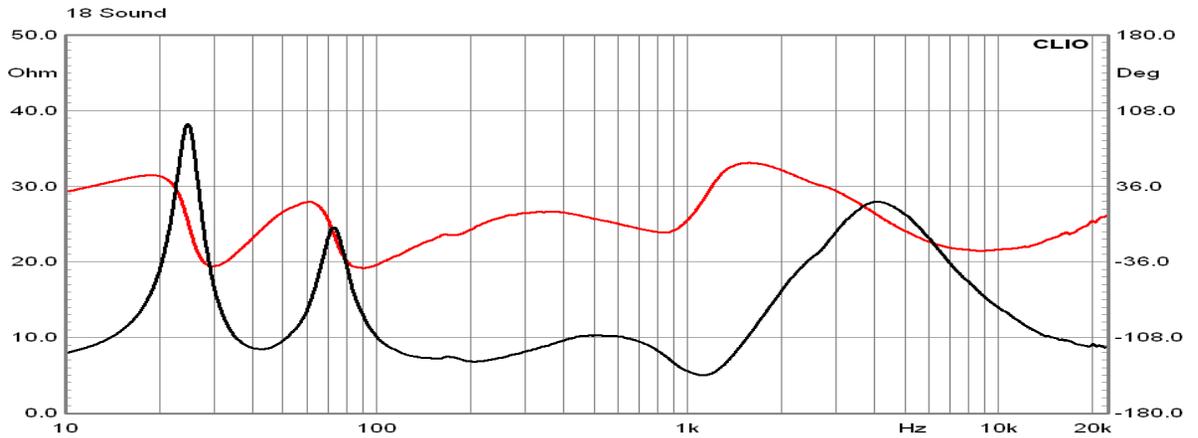
System impedance



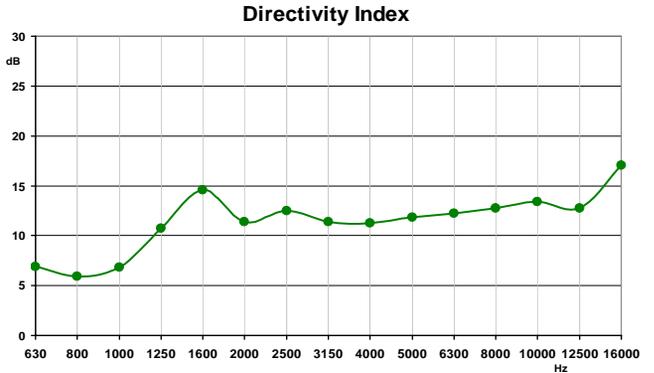
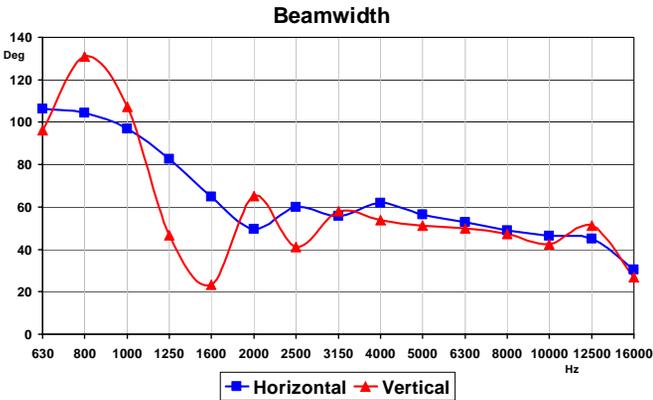
Measurements: 15ND830 + ND1460/XT1464



Frequency response 2.83Vrms@1m - blu: woofer, red: HF driver, black: overall

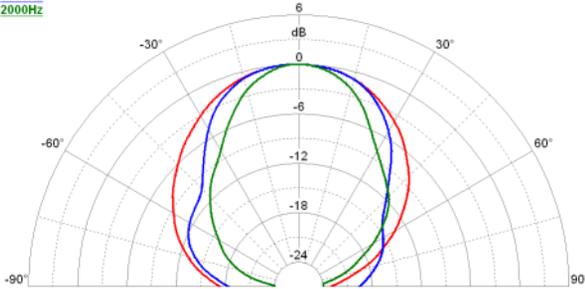


System impedance

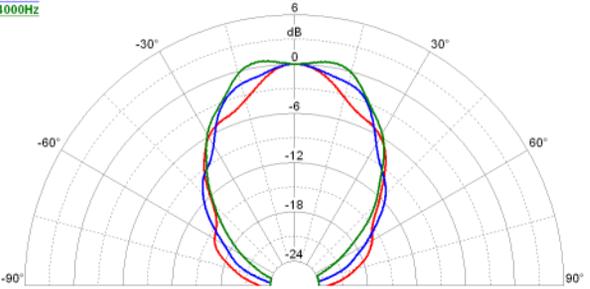


Horizontal polar response

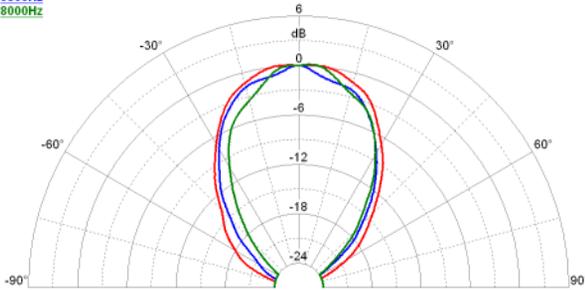
1250Hz
1600Hz
2000Hz



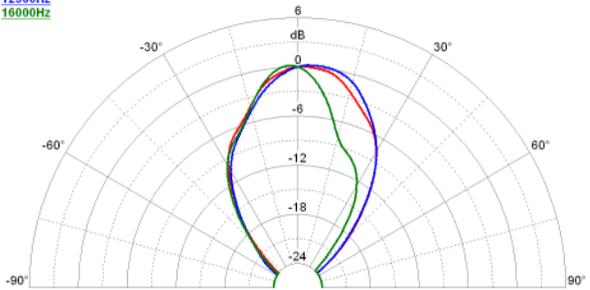
2500Hz
3150Hz
4000Hz



5000Hz
6300Hz
8000Hz

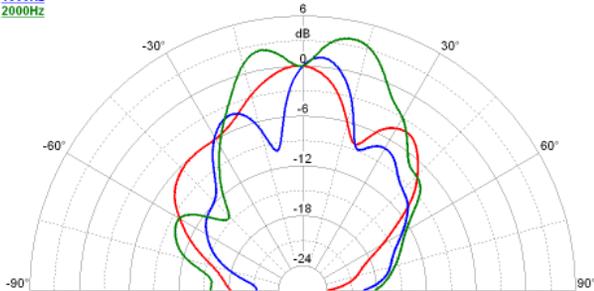


10000Hz
12500Hz
16000Hz

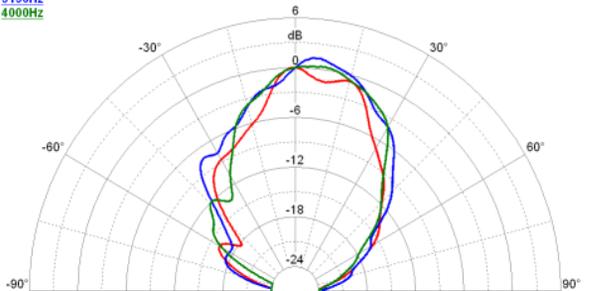


Vertical polar response

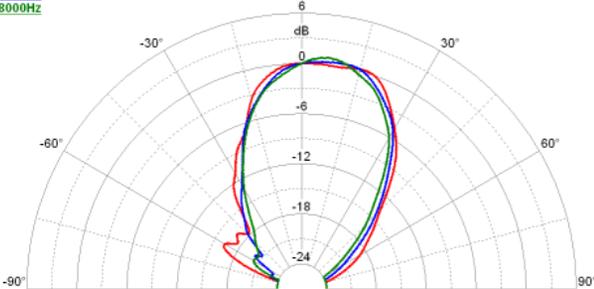
1250Hz
1600Hz
2000Hz



2500Hz
3150Hz
4000Hz



5000Hz
6300Hz
8000Hz



10000Hz
12500Hz
16000Hz

