DIY kit

SEAS Aphel

A classic loudspeaker kit featuring SEAS Prestige drivers H1212-06 27TBFC/G and H1471-08 CA22RNY

This loudspeaker kit was made with the help of a local DIY enthusiast. It's an old school design with a wide baffle on a large box that is fitted with an 8" woofer and a 1" dome. The inspiration for the kit rests on SEAS kits from the 70's and classic designs from the likes of Snell. This is all about putting the music first and just pure enjoyment.

Drive units

The tweeter is the well proven 1" SEAS Prestige aluminium dome tweeter 27TBFC/G. The aluminium dome is produced in house to meet our strict demands for a consistent performance. It's made with ferrofluid in the air gap to provide good cooling and so that it can be used with a low crossover point. This is quite important when it's matched with a large woofer like it is in this kit.

The low end and midrange is taken care of by the classic SEAS Prestige coated paper cone woofer, CA22RNY. This has a large magnet system to boost the sensitivity, while the coated paper cone deilvers a smooth response all the way up through the midrange. That makes this driver easy to filter and enjoy.

The Enclosure

The enclosure was chosen to be a big 55L box with a wide baffle and a port tuned to 36Hz. This is larger than the traditional QB3 alignment used in many ported designs, but gives the loudspeaker a warm and full bodied bass.

The wider baffle helps to lower the baffle step frequency and to put some more presence into the lower midrange.

Inside the cabinet the walls are fitted with 4mm bitumen and then 10mm of wool felt. Above the lower brace the cabinet is loosely filled with polyester foam all the way to the top. There is no foam around the port, since this dulled the sound too much.

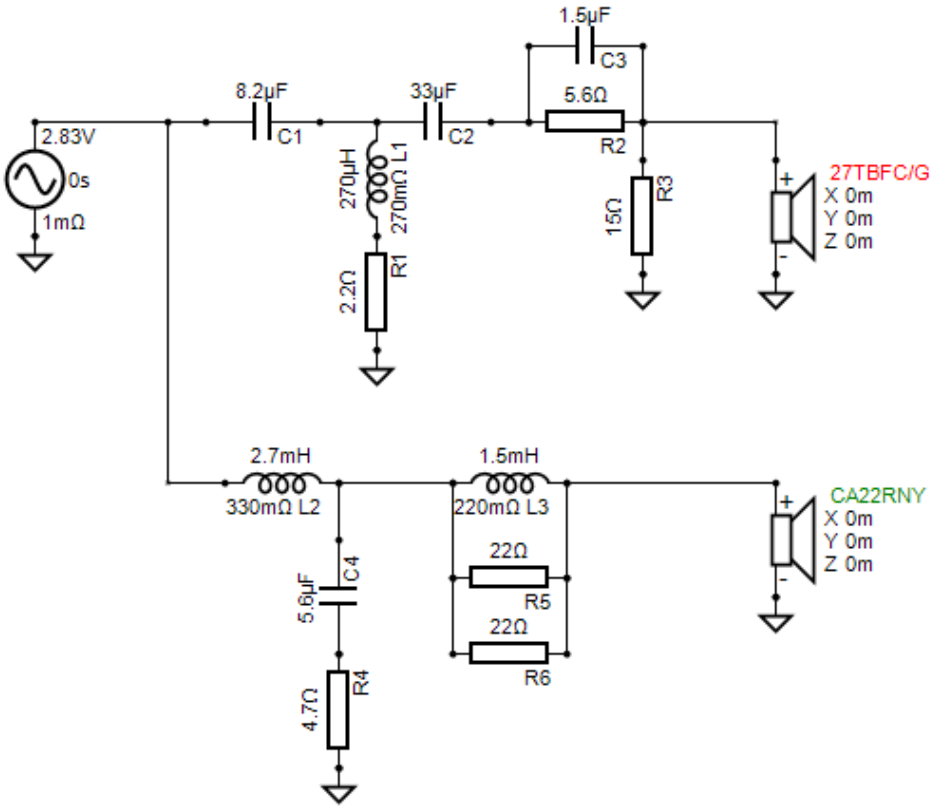
The port in the cabinet can be made longer when you first assemble the kit, and then shorten it after listening to find your optimum bass balance to fit the room and personal preference.

SEAS, 26.01.2026

The Crossover

Here we aimed for a slightly tilted response that is favoured by many listeners. This is achieved with a 3rd order filter on both drivers with some resistors to fine tune the slopes. The tweeter also has an L-pad to adjust the sensitivity. On the series resistor for the tweeter we've also put a small shorting capacitor to lift the very top end of the frequency response.

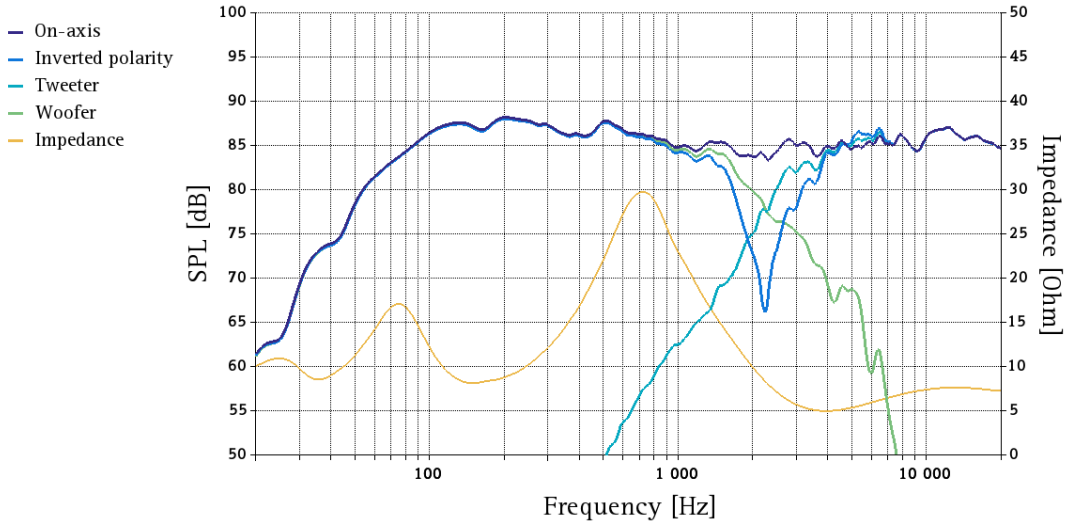
The R3 resistor can be adjusted between 10 Ω and 22 Ω to adjust the tweeter level.



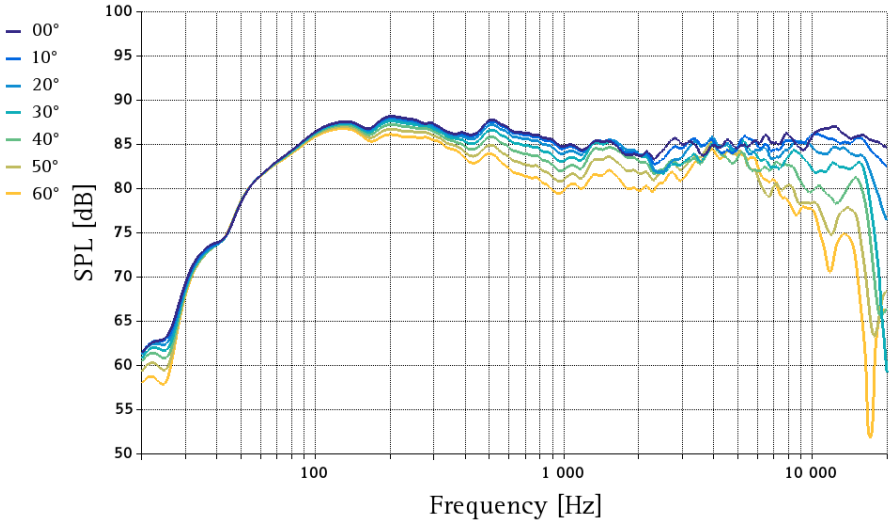
Parts List			
Part	Value	Dcr	Type
C1	8.2 uF		Polypropylene
C2	33 uF		Polypropylene
C3	1.5 uF		Polypropylene
C4	5.6 uF		Polypropylene
L1	0.27 mH	0.27 Ω	Air core
L2	2.7 mH	0.33 Ω	Iron core
L3	1.5 mH	0.22 Ω	Iron core
R1	2.2 Ω		MOX 10Watt
R2	5.6 Ω		MOX 10Watt
R3	15 Ω		MOX 10Watt
R4	4.7 Ω		MOX 10Watt
R5	22 Ω		MOX 10Watt
R6	22 Ω		MOX 10Watt

Measurement Results

The on-axis measurement of the SEAS Aphel kit, including the individual drivers and a measurement with the tweeter polarity inverted, is shown below. The crossover frequency is at 2240Hz. From the inverted tweeter polarity measurement we see that it gives a deep cancellation that tells us that the drivers are in phase.



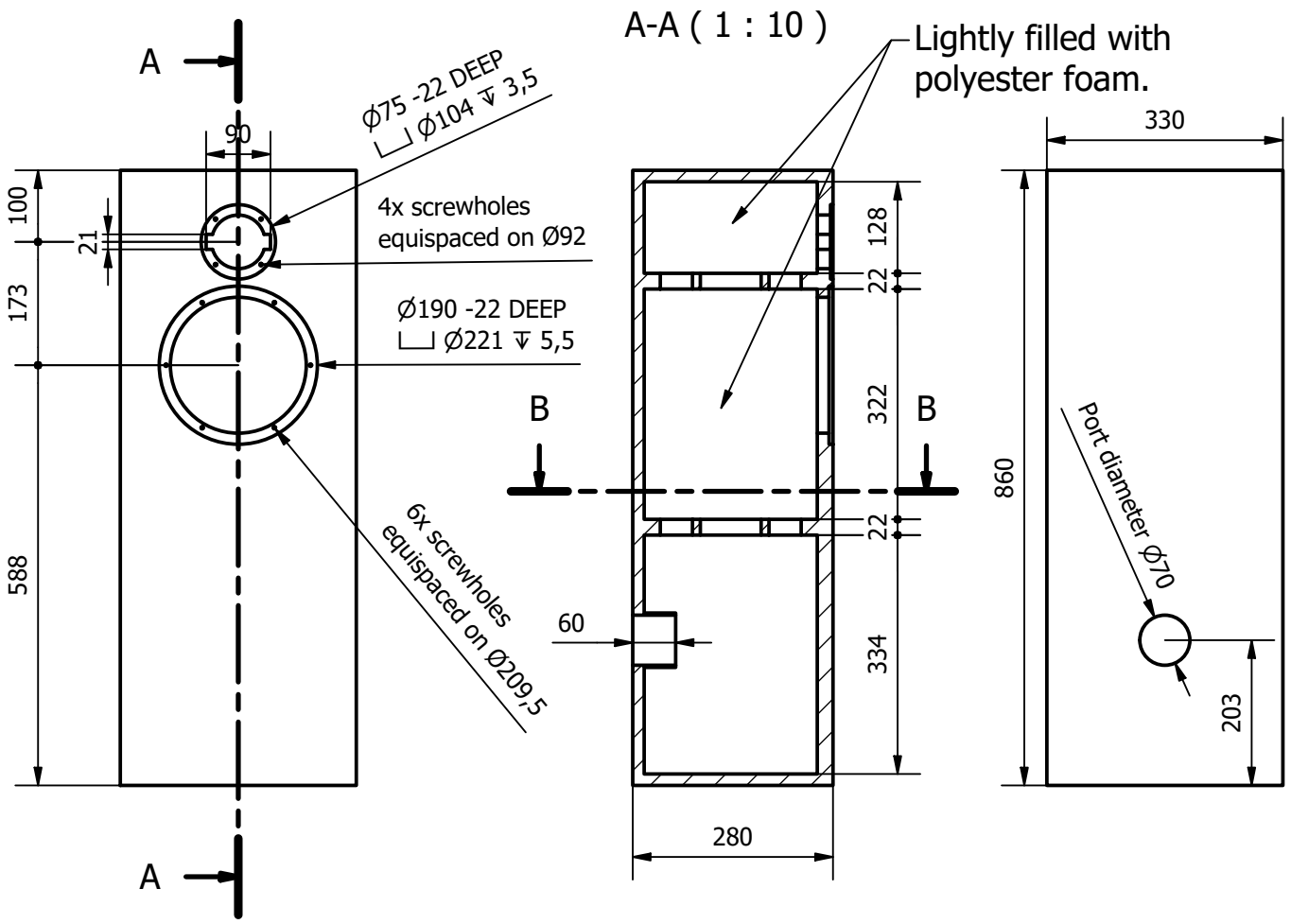
The next graph shows the off-axis response. We aimed for a power response as smooth as possible, but you can see there is som variation in the dispersion around the crossover due to the difference in size of the woofer and tweeter.

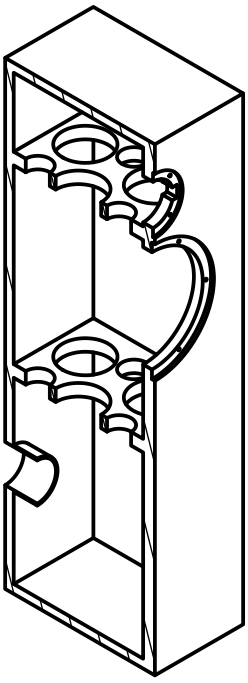


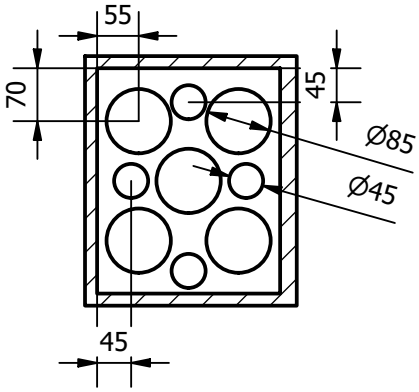
Listening Room and Placement

Some experimentation is recommended in order to find cabinet positions and toe-in which result in a good tonal balance and defined sound stage in your listening room.

It is also advised to test a small stand or a tilted base to direct the tweeter axis closer to the ear level of your listening sweet spot.







Dimensions are in mm.

Material: 16mm MDF,
front baffle and braces are 22mm MDF

All internal walls apart from baffle are fitted
with 4mm Bitumen and then 10mm wool felt.

Designed by	Checked by	Approved by	Date		Date	
haavard					08.03.2024	

SEAS The Art of Sound Perfection

SEAS_Aphel_cab | Edition | Scale