

## Behind the scenes of the VSS5 Vertical Split System

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### Norwegian design, Norwegian production

- with the quality and perfection this entails. Here you will not find any quick solutions which causes variations, margins for error nor approximations. It is solid craftsmanship true and true a technological masterpiece - no box which causes compressions, standing waves of phase shifts. The dipolar design delivers an icepick sharp impulse response all over the register. Magneto static elements in the top of the dipole gives an open, transparent and intimate sound experience.

Forsman VSS5 will pay justice to any recording. With an intricate level of details seldom experienced. Dipole speakers play with the acoustics of the room, without adding own resonances or colorations. The crossover is phase correct and clear.

The organic form of the gap models a realistic soundscape over the whole frequency range. Without edge resonances and standing waves. VSS5 is especially suited to reproducing realistic and complex soundscapes in large rooms.

### VSS Acoustical Baffle Equivalent

For a dipole to be able to play well it is necessary with a certain amount of length on the baffle, or the centreplate as it is also called. The ideal shape of a dipolar baffle is an ellipsis. By folding two ellipses into a cylinder a design which is first class is achieved and at the same time the ideal acoustics are more than handled.

Ideally a speaker should have the same acoustical extend as that of a microphone. This is

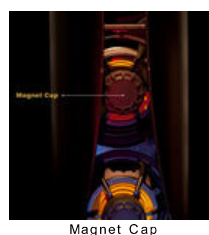
### The sound of perfection

Based on our patented Vertical Split System, we have researched, drawn and listened to a result which is our new top model taking over from the VSS Ultima. Just like the car industry and Formula One, our aim was to achieve perfection first, then we took some new discoveries and transformed these in the models VSS4 and D2.

However, back to VSS5: Staves made from the finest furniture quality wood are glued together in an interlocking manner, then it is carved by a CRT drill to achieve its final form in a 5 axis datadriven drill. This results in a light and sounddead construction.

The elements are mounted on a laser cut centerplate in solid aluminium. The cabinet is handpolished and lacquered 10 times with a two-component lightresistive varnish.

The interior and furniture designer Anne Cecilie Hopstock is responsible for the visual design. With its timeless appearance this speaker is easy to place in any home. Having both functionality and good looks on its side, it is a pure joy for the eye.

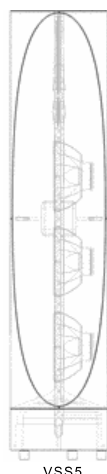


Magnet Cap

### Magnet Cap

The magnet is protected by a rubber-cover which prohibits airflow in creating a "whistling" sound around the magnet. The rounded edges and forms adds to reducing the last bit of margin for error. Even the tiniest little details have been scrutinised and

considered in great detail.

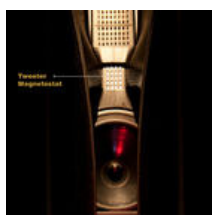


VSS5

not possible due to physics. Only few other than Forsman has worked on this. It is of enormous advantage to reduce the horizontal extent of elements. The stereo perspective gains more detail, the positioning and pin-point presicions are increased dramatically. This is the effect which makes it possible to point exactly to where the musicians stand in the room. At that moment the speakers "dissapear" in the soundscape and the music is simply present in the room. This is what is known as listening free of the box.

When measuring the distance from any point on a membrane around the speaker and onto the same point on the rear, we get the acoustical membrane lenght. On Forsmans speakers the acoustical horizontal lenght is less than 30 mm!

This means all basic frequencies emanates from the same spot, and you believe you are at a concert.

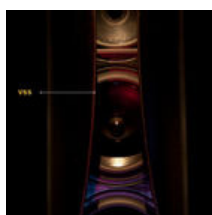


Magnetostatic Tweeter

## Magnetostat tweeter

We will not spill all the beans, but in line with the magnetostatic elements in the midrange tweeter, the dipolar magnetostat delivers an ultra clear reproduction. The crystal clear but still realistic reproduction topps the soundscape and leaves the same

feeling like when you have been at a really great concert. You just want to hear more.

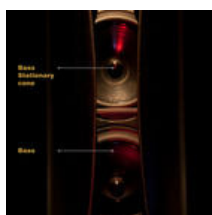


VSS

## Turbulence And Edgeresonances

Just at the edge of the vertical split it is shaped with a sharp angle. Unlike a normal loudspeaker design where it is often a right angle, at best the edges have been rounded a bit. When the sound pushes through Forsmans

Vertical Split, the sound pressure will drag the air from the outside of the speaker. These two air streams meet in the sharp transition and melt together much like the air leaving the edge of an airplane wing. There will be no turbulence or noise and breathing sounds. The same happens when the diaphragm pulls back, the air is split at the sharp edge and divide without turbulence and noise.

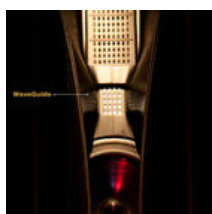


Stationary cone

## Stationary Phase Plug

All bass elements have a phase plug in the center that is stuck in the drive of the bass elements. This phase plug eliminates air from the center of the bass elements passing through the magnet. This removes the cause of

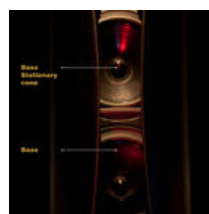
airflow noises you can get from traditional elements when the air is forced through a center hole of the magnet and is blown out like that what happens in a bass port. Again, the gain is detailed, crystal clear, accurate reproduction without distracting airflow sounds.



WaveGuide

## WaveGuiding

The inside of the vertical split of VSS5 is a masterpiece in itself. All surfaces are organic and designed for maximum adaption of the frequency distribution areas. The curves are smoothing out the extent of the



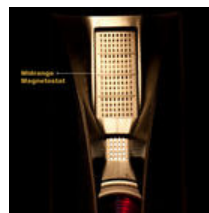
Bass woofers

## Bass Woofers

Every Forsman speaker has several bass elements. VSS5 3 x 10 inch, VSS4 3 x 8 inch, D2/8 2 x 8 inch og D2/10 2 x 10 inch. Right from the beginning Forsman have been using elements produced on a larger scale.

In todays products you will find

elements which all have been produced to Forsmans unique design and specifications. The production of the elements is taking place at world-rekknowned [SEAS](#), which coincidentally is just on the other side of the fjord. In [SEAS](#) Forsman has found an exceptional partner - a working relation and development on par with in-house production.

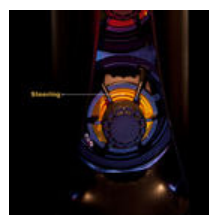


Magnetostatic Midrange

## Magnetostatic element for the midrange.

Forsman uses tried and tested magnetostat elements. These elements reproduce the impulses clearly and with a sence of air. With

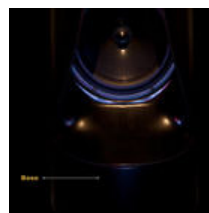
these the reproduction of artists song sounds as if the tones emenates directly from the vocal cords. Acoustical instruments are so close to being realistic that the listener feels he can almost touch them.



Steering

## Spider

The elements has a spider (the yellow kevlar outer membrane) which guides the coil correctly in relation to the magnet. This ensures that the main membrane moves safely, freely and gently in tandem with the signalpulses it has to disseminate.



Base

## Crossover in the speaker-base

The crossover in Forsmans speakers are especially designed for dipole speakers. We have developed a unique expertise around crossover theory and dipoles, which we use in all our speakers.

The crossovers are designed in a manner so the end result is homogenic rolloff, timing and correct phase transitions and homogenic spreading of resulting sound impression. The last part is extremely important for the listening experience. It does not help anything if the elements are in phase at the crossover at -6db, they also have to be in phase 1 octave above and 1 octave below, measured in the real listeningposition.

Every component is measured to satisfy the demand to linearity in the specific frequencyranges for which they are utilized.

Impedance matching is done for the bass elements with a proprietary primary inductance with three parallel conductors. The circuit board on which the crossover is mounted is of double thickness and fasteners have been situated so that they dampen the resonances the most. Terminal connections go right into the crossover without wires or other connection points inbetween.

## Decoupling feet

Forsmans speakers stand surefooted on feet we developed ourselves. They consist of several individual parts. The main housing is cut from POM in the shape of a cylinder together with

speaker elements and provides a seamless integration of all frequencies. The resulting ultra-high-resolution velocity through the frequency spectrum is unique and provides a listening experience that is almost unheard of.

the piston which is in contact with the floor. Between the housing and the piston, there are several layers of rubber seals and a specially developed substance which prohibits transference of sound and vibrations.

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