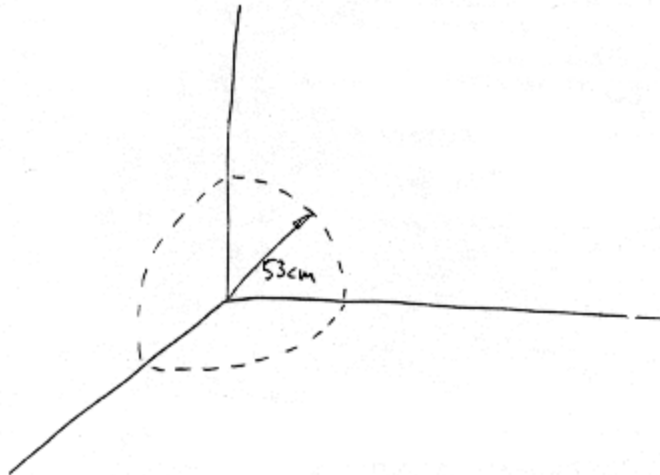


LOUDSPEAKER PLACEMENT – INTERFERENCE AND RESONANCE

There are two phenomena to consider when you chose a place for a subwoofer, one is interferences, which in this case means that the direct radiation from the subwoofer is mixed with reflections from adjacent surfaces (especially floor, rear wall and side wall), in or out of phase. What is coming in phase with the direct radiation will reinforce the sound and what is coming out of phase will weaken or cancel the sound.

A good starting point is to try to get as many reflections as possible in phase (preferably all three; floor, rear wall and side wall), to arrive in phase with the direct radiation for the entire working range of the subwoofer (typically 20 - 80 Hz). This means that no path via a reflecting surface should be more than a quarter of a wavelength longer than the direct path. In practice, this means that no adjacent surface should be at a longer distance than 1/8 of a wavelength from the driver in the subwoofer. (Since the sound then will travel a quarter of a wavelength to go there and back). The wavelength at 80 Hz is $340/80 = 4,25$ meters, and 1/8 of a wavelength becomes 53 cm.



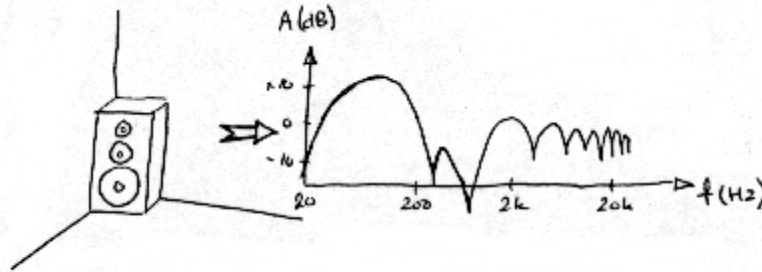
The subwoofer driver should be placed within this 1/8 wavelength sphere.

A subwoofer can be considered corner placed for the entire working range if the driver is placed less than 53 cm from the corner.

For a difference of sound paths of 1/3 of a wavelength (i.e. a placement 1/6 wavelength from a wall, 71cm) the intersection between reinforcement and canceling, i.e. the sound pressure from the driver together with the reflected sound is no stronger than the sound pressure from the driver itself. We have no support from the wall, but no weakening or cancellation either. For distances greater than 71 cm the summed sound pressure driver +- wall reflection becomes weaker than from the driver alone. All applies for the frequency of 80Hz. For lower frequencies the walls will give support at inversely proportional longer distances from the surfaces.

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The second phenomena to consider are room resonances. The "best" way to excite room resonances is to place the loudspeaker close to a corner. Corner placement may initially appear the worst possible place considering room resonances, but this is to jump to conclusions. By choosing a corner placement you excite all existing resonances in the room and the frequency response will not become appreciable inferior compared to a completely free placement. The share of "true" direct radiation versus stored energy in the room resonances will in fact remain in the same magnitude as for a properly freely placed loudspeaker, but it really takes that the subwoofer is close to the corner in the entire working range, because when the reflexes from the corner begin to arrive in opposite phase at higher frequencies, the sound will be immensely distorted. A full range speaker should never be placed in a corner.



A full range loudspeaker placed in a corner generally sounds terrible.

Courtesy: By Ingvar Öhman.

First published in "Musik och Ljudteknik", no.1, 1997, Sweden.



Audience 42 SAT

The all-new Dynaudio Audience 42 SAT expands the possibilities in its ability to bridge the demands of modern living with the desire for superb audio performance and delivers the enjoyment of a full-fledged loudspeaker system without the requirements of much physical space.

Mated to a subwoofer such as the Dynaudio SUB 250, it forms a most formidable yet compact stereo system taking up virtually no floorspace while delivering floor standing speaker performance. It mounts to the wall via a single screw, allowing one to create either stereo or multi-channel home theatre system with the unrivalled Dynaudio sound quality.

For reproducing even the most complex musical signals with a striking grade of accuracy, Dynaudio utilizes a 28 mm diameter, precisely coated soft dome tweeter. The pure aluminum voice coil is cooled via a special magnetic fluid. The tweeter's sealed rear chamber guarantees high sound pressure levels without audible distortion.



The lower frequencies are handled by a 15 cm diameter woofer that features Dynaudio's proprietary magnesium silicate polymer (MSP) cone diaphragm. With its large 75 mm pure aluminium voice coil, the woofer is able to perfectly reproduce the musical signal. The driver complement serves to deliver pure musicality and – of course – authentic fidelity.

The Dynaudio Audience 42 SAT model has been specifically designed for on-wall placement. A keyhole fixture is integrated into the rear panel to facilitate easy mounting. The applications are fully versatile: they can be used as front, center, or rear channels in multi-channel systems, or they can be employed in a traditional Sub/Sat system.

The Audience 42 SAT features an inverted driver array with a slightly angled sloped baffle to position the loudspeaker for proper directivity in relation to the listening position. The Audience 42 SAT is also magnetically shielded, thus enabling use in close proximity to video displays. The required wiring can be hidden via the integrated canals on the back of the speaker.

The Dynaudio Audience 42 SAT model has been specifically designed for on-wall placement. A keyhole fixture is integrated into the rear panel to facilitate easy mounting. For further installation flexibility where angling the speakers may be required, it is possible to install the 42 SAT with the optional Dynaudio wall-mount bracket.

Wall Mount



The Dynaudio Wall Mount Bracket was designed to work particularly well with the Dynaudio compact monitors, providing such with a very rigid and extremely stable support. It allows the speakers to perform at optimum levels in a wide variety of positions when it is required that they be positioned on the wall, thus enabling proper sound dispersion and offering the ability to minimize room reflections.

The unique curved shape adds strength to the bracket's mounting assembly, while the resulting swivel joint offers the flexibility of both vertical and horizontal adjustment capabilities, enabling the speakers to be precisely angled to obtain the optimum listening axis in any room.

The Wall Mount Bracket was primarily intended for use with the Audience 42, 42 C, 42 W, and 52 models and aids considerably in completing side or rear speaker installations in multi-channel system setups.



Sub 250 SAT

The Sub 250 SAT is a powered subwoofer with extremely flexible adjustment capabilities. The variable highpass-filter can be set to Flat, 60 Hz or 80 Hz and assures a perfectly matched harmonic response to the 42 SAT.

Due to its slight dimensions, the Sub 250 SAT can easily be positioned in any room, yet is still equipped with a 24 cm (9.5 inch) diameter, one-piece MSP (Magnesium Silicate Polymer) woofer powered by a 200 Watt integrated amplifier.



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SOUND LIVING

Phase and low-pass filters can be adjusted at the back panel as well. The result is a complete, balanced, dynamic, and natural sounding system ideal for either stereo or surround sound. For the highest performance, even at the lowest frequency registers, and a perfectly balanced bass response in any room, multiple Sub 250 SAT subwoofers can be daisy-chained via the advanced master/slave function. The Sub 250 SAT subwoofer is exclusively available in the same Graphite lacquer finish as the Audience 42 SAT loudspeaker.

Stunning sound quality and a perfect integration into every room: the compact design of the Audience 42 SAT loudspeaker answers the demand for authentic music and sound reproduction in contemporary living rooms.



Experience the precision, clarity, accuracy and detail of the legendary Dynaudio sound quality in your own space: sound living.

For any enquiries you can reach The Soundsmiths at: info@thesoundsmiths.com or call

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