Neat Momentum SX3i

IS THE SX3i REALLY LARGER INSIDE THAN OUT?
MARTIN COLLOMS POSES AND ANSWERS THE QUESTION

Neat's new *Momentum* series comprises three models, the stand mount £2,485 *SX3i* reviewed here, a metre-tall *SX5i* floorstander and the tower-like 'full size' *SX7i* which stands 1.2m off the ground.

Key features include a new type *SXT-A1* tweeter designed and made by Neat. This has a massive magnet driving a heavily black-anodised inverted 25mm aluminium dome radiator that's reminiscent of (but not derived from) Focal examples. A front-mounted 165mm Neat bass/midrange driver is built on a die-cast alloy frame, but although this model might look like a simple rear-ported two-way, in fact it incorporates a second 165mm driver, located behind the first, the two closely coupled acoustically isobaric style, and also bass reflex-loaded at the rear. These two drivers have pulp composition cones and are coated with a damping compound. The front magnet pole is left open and the pole itself carries an alloy phase correction plug to smooth upper range output. The internal panel for the second bass driver naturally reinforces the enclosure, which seems very rigid and well damped.

Our samples were excellently finished in real walnut veneer and were single wired with finely knurled gold plated brass terminals (though the knurl was too subtle and the spacing too close for easy tightening). BluTack 'peas' are suggested between the speaker's base and a rigid 42 - 46cm stand that does not have to be too heavy. This is advice with which we agree, but properly installed floor spiking is absolutely essential for optimal transient speed, focus and clarity.

Despite the large size of my room the *SX3i* has lots of bass (particularly upper bass), and needs to be positioned well out in free space for a satisfactory timbre. The auditioning process mainly used an Orelle *100* integrated amplifier with a Naim *NDS* streamer, and these were supplemented by a Townshend *Allegri* control unit with Naim *NAP300DR* and *NAC05* speaker cable.

Sound Quality

The treble tended to be a little prominent if the speakers were beamed straight at a listener, so a 10 degree toe-out was employed relative to the usual triangle layout, in order to calm the upper range subjectively. Even so there was more air and sparkle in the room than usual, as the midrange was a little recessed. And while the upper bass was also rather strong, it remained tuneful and quite fast.

Once the speaker was properly located, its character could be assessed. Here was a system that performed well beyond expectations based on its size: with the eyes closed it sounded like a much larger and more powerful model. The treble was open, sparkling, full of detail and notably transparent, supporting an airy and deep soundstage.

The midrange did indeed sound slightly recessed, though with some amplification this can be a positive advantage, by helping to maintain natural perspectives in the face of some tonal forwardness. Midrange sounds were also clear and well focused, with plenty of detail recovery.

Perhaps the big surprise was the remarkable bass extension, and the power in the lower bass that could rival much larger models, and which unequivocally demonstrated the benefit of the isobaric loading technique. The bass was quite fast and played tunes well, and even though the upper bass remained a tad rich and could occasionally be caught out by the odd track, it still timed pretty well.

Conclusions

This loudspeaker has many good qualities, including fine build quality and finish. It delivers a detailed crisp sound with very good stereo perspectives, very little midrange coloration, fast sounding transients, and lots of detail. The bass extension and power is remarkable for the size. It may be recommended, with the advice to try it for yourself, and if possible with the electronics it's likely to be used with too. Amplifiers in the 50-100W range will work well, but valve designs are likely to be less suitable.

Lab Report

Sensitivity was close to spec at an average of 85.5dB/W, while noting a lower than usual impedance and thus rather more demanding amplifier loading, with minimae of around 3.4ohms at 10, 40 and 150Hz. The effective isobaric reflex loading is tuned to a low 40Hz and the phase is well controlled.

The axial frequency response is tidy, especially in view of the low order network employed, and is

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basically uniform from 200Hz to 10kHz, albeit with a broad prominence of some 2dB in the upper-bass-to-lower-midrange, and also above 8kHz, the latter leading to a 9dB spike at 24kHz followed by a 7dB dip, leading to another spike at about 41kHz. The latter could well be associated with that touch of 'zinginess' that was occasionally audible in the high treble.

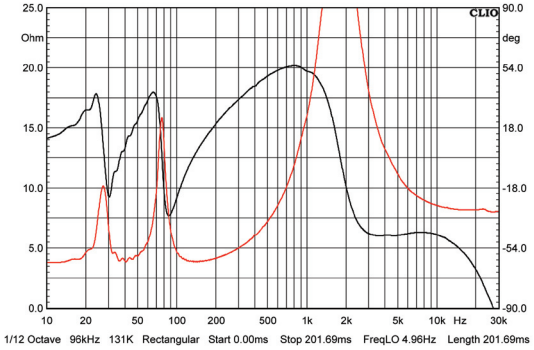
Once at the listening angle, the response settled down a lot and the 15degree lateral off-axis response (black) is tidy, if a little down in the presence range and up by a similar amount in the treble. The room averaged response (dashed brown) looks notably well integrated, even if the trends remained. This shows some lower frequency weight from 250 Hz, and an overall 5dB down-tilt from 150Hz to 15kHz that correlates well with the audibly weighty mid and upper bass. The bass here looks well extended to 30Hz under in-room conditions.

At about 86dBspl, second harmonic distortion was a quite low 0.25%, rising momentarily to a possibly audible 1% at 1kHz. Third harmonic was consistently low at typically 0.08%, which is a good result. It was naturally working harder at 100Hz and below, and second and third harmonics were at 1% and 1.5% respectively.

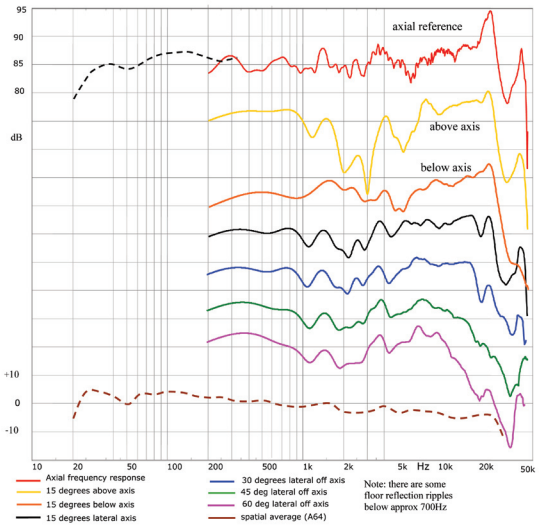
Low frequency distortion varied greatly with frequency, due to the complex acoustic loading from the inner driver, and this compact speaker accepted some 40W continuous at 35Hz without severe overload, which is a good result that correlates well with the listening report. By 50Hz it could take a massive 100W short term on sine wave. No grille was provided to interfere with the output, and pair matching was excellent at ±0.75dB from 50 Hz to 15kHz (1/3rd octave weighted) .

The resonance decay graph charted close to linear phase at the outset, with a fast early decay that correlated nicely with the crisp clean transients and the noted subjective transparency. Some rather longer decays are seen in the 5-8kHz range, possibly due to the slower rolloff of the bass/mid driver crossover.

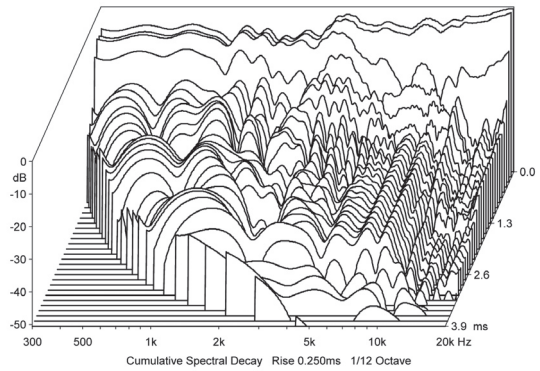
Neat SX3i: Load Impedance (red) and Phase



Neat SX3i: Frequency Responses (85.5bB/W sensitivity)



Neat SX3i: Waterfall display of energy decay with frequency and time



HIFICRITIC Loudspeaker laboratory measured test results, October 2015

Make	Neat Acoustics Ltd
Country	manufactured in UK
Model	Momentum SX3i: moving-coil, stand-mount, isobaric loaded
Price per pair (finishes)	£2,485 (black and also natural oak, American walnut, satin white)
Size (HxWxD) cm	37x22 x27
Weight	10kg (22lb)
Type: isobaric, reflex-loaded	2-way; 165mm custom pulp cone bass/mid + 165mm bass (internal) + 26mm aluminium inverted dome tweeter (22mm voice coil)
Sensitivity for 2.83V	85.5dB @1m (2.83V)
Amplifier loading	'average minus': 3.4ohms min (6ohms rated)
Frequency response, axial	33Hz to 20kHz ±3dB (listener axis, good tolerance)
Frequency response off- axis	Good plus: see graphs and in-room response
Bass extension	30Hz -6dB, (25Hz -6dB in-room): good extension
Max loudness, in-room	101dBA for a stereo pair
Power rating (max, min)	100W, 25W
Placement	Stand-mount, spike-coupled, free space

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