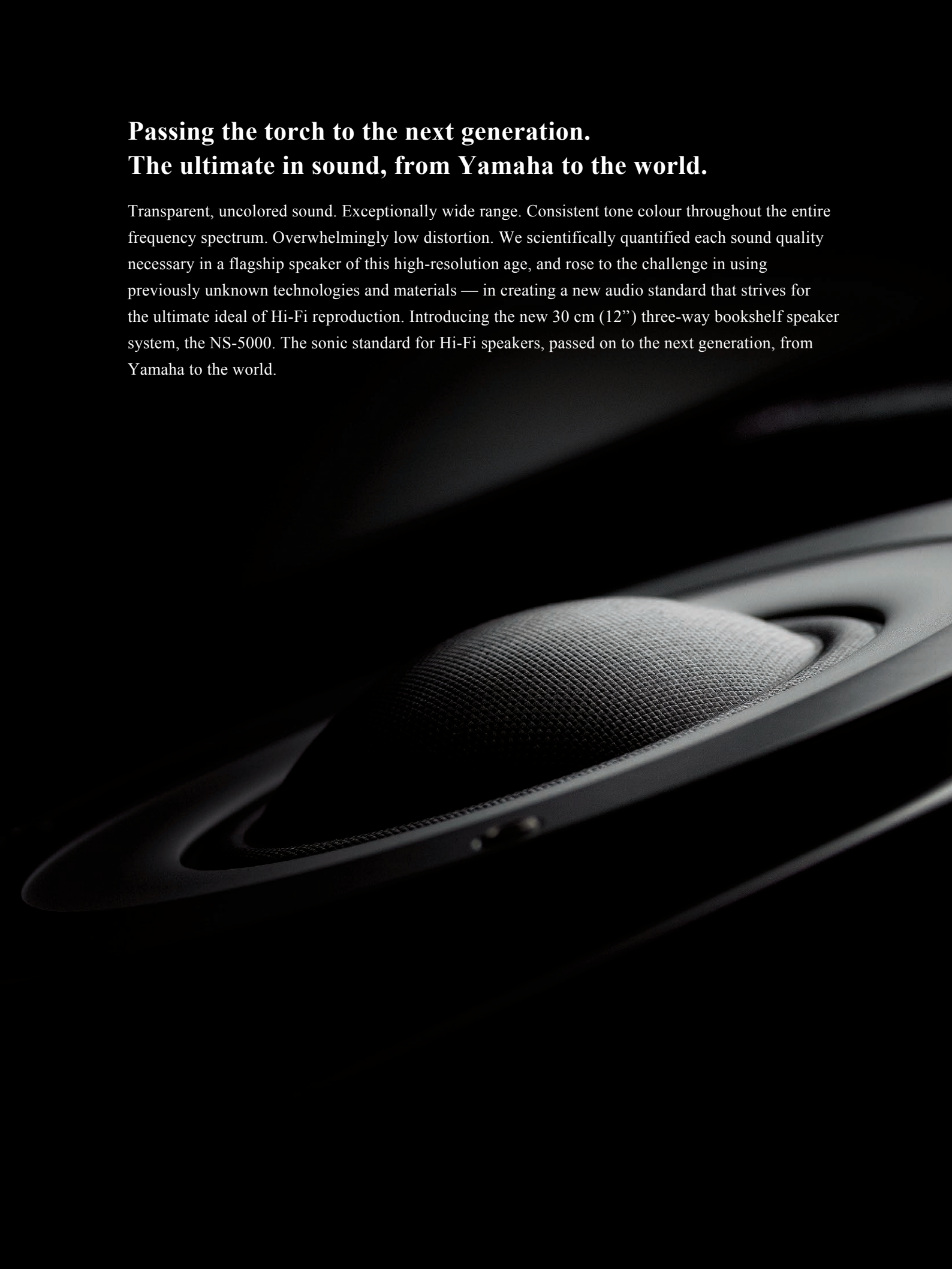
YAMAHA

NS-5000 Premium Speakers /
SPS-5000 Speaker Stand

Powered by music

Passing the torch to the next generation.
The ultimate in sound, from Yamaha to the world.

Transparent, uncolored sound. Exceptionally wide range. Consistent tone colour throughout the entire frequency spectrum. Overwhelmingly low distortion. We scientifically quantified each sound quality necessary in a flagship speaker of this high-resolution age, and rose to the challenge in using previously unknown technologies and materials — in creating a new audio standard that strives for the ultimate ideal of Hi-Fi reproduction. Introducing the new 30 cm (12”) three-way bookshelf speaker system, the NS-5000. The sonic standard for Hi-Fi speakers, passed on to the next generation, from Yamaha to the world.



Message from the NS-5000 Developer

As an engineer, I give concrete expression to the musical commitment of Yamaha — the famed musical instrument maker. This was, in fact, the major theme of the NS-5000 development. The sound of a musical instrument has the power to instantly fascinate people, open their hearts, and draw them into the music. I wanted listeners to feel, when they hear the NS-5000, an unchanged and powerful sense of reliving precious times and thrilling emotions through the music — and so I undertook the uncompromising challenge of transcending the existing concept of a speaker. The NS-5000 is really more a musical instrument than it is a speaker. I strove to remove any audio 'dramatisation' or staging, in order to project before the listener, as faithfully as possible, the true meaning that the performer — the expressive source — has put into the performance. I want this experience to exist and stand close to human life, and one that can forever be trusted.

NS-5000 Chief Engineer Okazaki Koji

Speaker

NS-5000

(BP) Piano Black

Concept

In Hi-Fi speaker systems, fiber, plastic, and metal used for diaphragms have their own inherent acoustic properties, which in turn give distinctive characteristics to drivers as well as to complete speakers. Over the years, relying on speaker engineers' experience and, intuition to fine-tune a unique acoustic characteristic derived from a material into an appealing sound coming from a complete speaker has been an established approach to making speakers; this balancing act continued to present an opportunity for speaker engineers to show off their mastery of speaker development. Departing from conventional wisdom, Yamaha has taken a novel approach to developing the NS-5000 — starting with selecting a diaphragm material. We have chosen textile made of 100% ZYLON® — a synthetic fiber of exceptionally high strength, having acoustic velocity as well as the ability to reproduce the finest details of audio equivalent to those of beryllium (an ideal diaphragm material valued for its hardness, light weight and stiffness) but without a sharp resonance peak inherent in a hard material — that has an acoustic characteristic markedly different from that of any other diaphragm material. This, rare material presented a perfect opportunity to create a truly 'Yamaha-esque' Hi-Fi speaker, fully capable of meeting the demands of the high-resolution era, and reproducing music in greater faithfulness to the original. To this end, Yamaha began in 2008 to develop a speaker diaphragm made of fiber containing 100% ZYLON®. And now, we have a set of three world's first drivers made of 100% ZYLON® — the JA-05K6 3 cm (1-1/4") soft-dome tweeter, the JA-08B5 8 cm (3-1/4") soft-dome midrange, and the JA-3132 30 cm (12") cone woofer.

Speaker Units

100% ZYLON® 8 cm (3-1/4") soft-dome midrange – the JA-08B5

The JA-08B5 8 cm (3-1/4") soft-dome midrange is made of 100% ZYLON®, molded seamlessly from the diaphragm to the surround (edge) thanks to our proprietary molding technology. The system design of the NS-5000 began with the crafting of this midrange driver. In order to take full advantage of impressive acoustic velocity and realistic acoustic density that the 100% ZYLON® diaphragm provides, we adopted a dome design — which shortens the distance from the voice coil to the diaphragm to a degree impossible with a cone design, resulting in less movement and a rich sound field, thanks to wide sound directivity — and we made its diameter 8 cm (3-1/4"), which is the largest feasible size that manufacturing yield allows. The high-pass crossover frequency was set at 750 Hz, optimum for bringing out the very best in this driver.

100% ZYLON® 3 cm (1-1/4") soft dome tweeter – the JA-05K6

Just as with the 8 cm (3-1/4") mid-range, the JA-05K6 3 cm (1-1/4") soft-dome tweeter is made of 100% ZYLON®, molded seamlessly from the diaphragm to the surround (edge). Since the woven material for the diaphragm was specially developed for the tweeter, differing from the mid-range in the number of threads and their thickness for the warp and woof, and since the yoke of the magnetic circuit features fully cutting-processed parts (avoiding stress deformities caused by machine pressing) and achieve higher magnetic performance, the system delivers smooth response up to the high-end frequencies, as well as superior S/N performance, high resolution, and increased audio information. The voice coil consists of a square copper wire with sectional shape identical to that of the mid-range and woofer, ensuring maximum efficiency of electro-acoustic conversion, and even finer, more accurate reproduction of audio information through high driver power — as well as achieving reduced transmission loss and lighter weight by directly linking the voice coil to the terminal board instead of another relay wire.

100% ZYLON® 30 cm (12") cone woofer — the JA-3132

The JA-3132 30 cm (12") woofer features a 100% ZYLON® cone without a centre cap. It was designed to offer a wide frequency range unprecedented for a 30 cm (12") woofer, in order to provide not only a flawless continuity in tone from the woofer to the midrange and to the tweeter as well as acoustic sharpness, both of which was made possible with, the use of the identical material for all drivers, but also optimum performance with the higher low-pass crossover frequency of 750 Hz. The woofer's aluminium die-cast frame achieves high rigidity while minimising air resistance at the rear, thanks to the state-of-the-art design based on rigorous FEM analysis of the frame mounted in a prototype enclosure.

Newly developed R.S. (Resonance Suppression) Chambers suppress unwanted resonance in the mid and high ranges

Suppressing unnecessary acoustic radiation from the back surfaces of the tweeter and the midrange has been a challenge to many speaker engineers. They have taken a variety of approaches to addressing the challenge, including adding a small back chamber packed with sound absorbing materials. However, almost all conventional methods required a large amount of sound-absorbing materials to eliminate strong resonance inside

[1] Allowing full transmission of the sound and providing a beautiful appearance, the protective magnetic attachment can be firmly secured to the front surface by a single touch. [2
diaphragm and surround, and the 100% ZYLON® JA-05K6 3 cm (1-1/4") soft-dome tweeter (front). [3] The 100% ZYLON® JA-3132 30 cm (12") diameter concave woofer, designe
the tweeter, and delivering optimum performance at the low pass frequency of 750Hz. [4] Newly developed R.S. Chamber negates the resonance created inside the centre of the mai
tweeter. [5] Simulation and comparison of the R.S. Chamber (right) and the straight-type resonance tube (left). In contrast to straight tubes, which cause significant fluctuation in res
the enclosure. [7] Simulation and comparison with the Acoustic Absorber installed (right) and without (left), showing how these compact devices selectively and efficiently negate s

the chamber. With the NS-5000, we have taken a radically different approach; we equipped the backs of the 100% ZYLON® 8 cm (3-1/4”) midrange and 3 cm (1-1/4”) tweeter with the newly developed R.S. Chambers (patent pending). Each of the R.S. Chambers uses two resonance tubes of different lengths to cancel out the resonance peak produced in the main chamber in the middle, thus eliminating the need for sound-absorbing materials inside the chamber that would degrade the sound. The result is that each driver can retain its native flat frequency characteristics and that delicate nuances of music can be reproduced with exceptional detail and articulation.

Enclosure

30 cm (12”) 3-way bookshelf design draws on the tradition of the legendary NS-1000M

As a result of meticulous research on a variety of enclosure designs during the development of the NS-5000, we chose a bookshelf design as a successor to the continuing legacy of the NS-1000M (released in 1974), the pinnacle of Yamaha monitor speakers. This bass-reflex enclosure with an internal volume of 65 liters — the smallest possible size for a 30 cm (12”) 3-way configuration — is solidly assembled with the 3-way mitered joint construction technique and other traditional crafting methods. Reinforcing crosspieces inside the enclosure, based on FEM analysis, suppress “box ringing” caused by delayed vibration from the six surfaces of the enclosure. In addition, a twisted flare port prevents port noise (wind noise produced at each end of a bass reflex port) inherent in the bass reflex design, and improves resolution in the low frequency range while also enhancing signal-to-noise performance.

Carefully crafted laminated plywood enclosure made of Japanese white birch from the island of Hokkaido

In selecting a material for the enclosure of the NS-5000, we carried out comprehensive studies of mechanical strength and acoustic properties of various materials, as well as the quality of domestic wood processed by painstakingly removing every knot and hole from the lumber and ensuring the durability necessary to withstand long use; we settled on laminated plywood made of white birch from the island of Hokkaido. Moreover, the birch wood is harvested with ecoforestry techniques, extracting timber from ecologically protective forest thinning, for environmental considerations. The front baffle is 29.5 mm (1-1/8”) thick and the other five sides of the enclosure 20 mm (3/4”) (in all cases, omitting paint primer layer and paint thickness), ensuring ideal rigidity of the entire enclosure.

Newly developed Acoustic Absorber eliminates sound — absorbing material to revive the original presence of the music

The cuboid enclosure unifies internal standing waves at a specified frequency, which are cancelled by a newly developed Acoustic Absorber (patent pending). This, technology eliminates the previous need for the huge amount of sound-absorbing material inside the enclosure. The result is the virtual elimination of standing waves with amazing efficiency and pin-point accuracy — to energetically revive the essential presence of music, formerly lost by sound absorption.

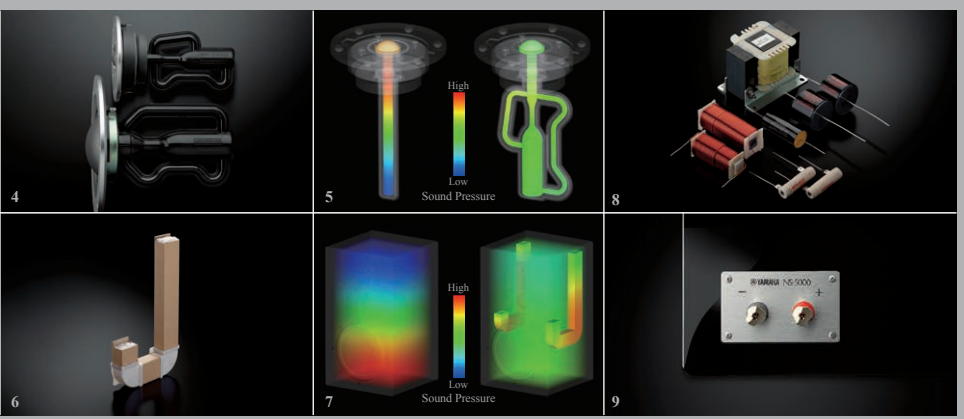
Glossy black piano finish provides improved signal-to-noise performance — and adds to the luxurious joy of ownership

All six external surfaces of the enclosure have a glossy black piano finish created using the same dedicated paint, primer, and polishing processes used for Yamaha’s renowned grand pianos. The uniform and hard membrane further increases the overall rigidity of the enclosure, and at the same time it suppresses fine vibrations, contributing to the bright sound and significantly enhanced signal-to-noise performance.

Crossover Network

Network circuitry with positive phase drive and single wiring for all drivers — for natural, enjoyable audio

All drivers in the NS-5000 are connected in positive phase with single wiring to deliver a natural, pleasing listening experience. Components of its crossover network are mounted on a double-sided printed circuit board with extra-thick copper traces of 140 µ in thickness; a shorter signal path on the circuit board minimises the loss of sound data during transmission. Moreover, in order to minimise signal loss, we used for the network handpicked parts of only the highest quality, such as the MCap SUPREME EVO audio capacitor, which is made by Mundorf of Germany and renowned as the pinnacle of audio-use capacitor, Mundorf’s MResist SUPREME attenuator, and a woofer coil that weighs as much as 1.6 kg (3.52 lbs.).



] The world’s first 100% ZYLON® speaker, the JA-08B5 8 cm (3-1/4”) soft-dome midrange (rear), with seamlessly molded d for exceptionally wide frequency range — providing flawless continuity in tone from the woofer to the midrange and to n chamber, featuring two resonance tubes of different left/right lengths installed on the back surfaces of the mid-range and onance pressure, R.S. Chambers have almost uniform pressure. [6] Newly developed Acoustic Absorber installed inside tationary waves. [8] Group of parts constituting the network circuitry. [9] Brass-cut single speaker terminal.

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NS-5000 Main Specifications

Type	3-way bookshelf, bass-reflex system
Frequency response	26 Hz - 40 kHz (-10 dB), - 100 kHz (-30 dB)
Normal input power	200 W
Maximum input power	600 W
Sensitivity	88 dB/2.83 V/1 m
Nominal Impedance	6 Ω (minimum 3.5 Ω)
Crossover frequencies	750 Hz, 4.5 kHz
Diaphragm	ZYLON®
Voice coil	Square copper wire
Tweeter	3 cm (1-1/4”), ferrite, non-magnetically shielded
Midrange	8 cm (3-1/4”), ferrite, non-magnetically shielded
Woofer	30 cm (12”), ferrite, non-magnetically shielded
Dimensions (W × H × D)	395 × 690 × 381 mm
	395 × 690 × 422 mm (including speaker terminals)
	15-1/2” × 27-1/8” × 15”
	15-1/2” × 27-1/8” × 16-5/8” (including speaker terminals)
Weight	35 kg; 77.2 lbs.
Accessories	Separate protectors (for tweeter, midrange and woofer), port plug, owner’s manual *Speaker cables are not included

SPS-5000 Main Specifications

Material	Aluminium (four legs are solid aluminium); Steel (top plate, spikes, spacers)
Dimensions (W × H × D)	393 × 304 × 376 mm; 15-1/2” x 12” x 14-3/4” (with spikes)
	393 × 285 × 376 mm; 15-1/2” x 11-1/4” x 14-3/4” (without spikes)
Weight	8 kg; 17.6 lbs.
Accessories	Speaker fixing screws, owner’s manual

Speaker Stand

SPS-5000

(B) Black

The SPS-5000 is a speaker stand especially designed for the NS-5000. In order to design a stand that solidly supports the NS-5000 without emanating any undesired sound, the four legs are composed of solid aluminium. The legs have smooth curved surfaces and are all installed at an angle of 42° to the baffle surface so as to minimise the effect of the reflection of sound from the speaker. In addition, in order that the height of a seated listener’s ears matches the height of the tweeter of the NS-5000, the stand is set to a height of 304 mm (12”) (including spikes) — higher than that of a normal 30 cm (12”) bookshelf speaker, so that reflections from the floor surface are minimised. The legs are equipped with spikes that can be attached or detached as desired, allowing fine height adjustment.