YAMAHA NS-590

Natural Sound 3-Way 3-Speaker System

Lightweight, Hard Beryllium Diaphragm for Extremely Linear Treble Response

30cm (12") Cone Woofer for Powerful Bass

12cm (4-3/4") Cone Midrange for Natural Middle Frequencies

Precision Level Controls

Yamaha: Dedication to Musical Excellence

We have many unique advantages in the audio world. Our wide range of technology, from electronics to metallurgy, enables us to develop for ourselves even the basic raw materials required for advanced hi-fi circuit designs. Another advantage is our musical heritage: Yamaha is founded on a dedication to music in all its forms. Our long experience as a leading manufacturer of musical instruments has made sensitivity to musical sound a habit hard to break. Our uniqueness gives rise to the originality clearly reflected in the reliable Natural Sound performance of every Yamaha high fidelity product. In a word, we pride ourselves on a creative blend of musical artistry, science and craftsmanship. Our Natural Sound fidelity is the result of an enduring relationship between musicians and audio engineers. Our designers and engineers are encouraged to create the kind of high fidelity products they want for themselves. With the result, at all times, being a total Dedication to Musical Excellence.

The Beryllium Tweeter: A Light Rigid Metal for an Ideal Diaphragm

The ideal speaker diaphragm must provide equally faithful movement for all signal inputs from low frequencies to very high. But at high frequencies, a diaphragm tends to move unevenly over its surface, thus giving rise to the phenomenon of "split vibration" which seriously affects transient response and distortion rates. Of course, split vibration can be prevented by the use of a harder, stronger material. But since a diaphragm must respond faithfully to input up to 20kHz—that is, a frequency of 20,000 vibrations per second—increasing the mass by thickening the material effectively cripples the diaphragm and renders it useless for high-frequency response. In other words, the ideal speaker diaphragm must satisfy the two contradictory but absolutely vital conditions of being feather-light and rock-hard. One material satisfies these conditions: beryllium. Its 1.84g/cm$_3$ density is two-thirds that of aluminum, two-fifths that of titanium. Yet its elasticity factor is four times that of aluminum, and two-and-a-half times titanium. And, in strength, it surpasses even tungsten, which makes it the strongest metal of all.

Beryllium's light weight, hardness and high rate of diffusion (twice that of aluminum and titanium) make it perfect for audio use, even though its extreme hardness makes it a difficult material to deal with effectively. But new Yamaha technology has enhanced its workability. Yamaha's completely new process for beryllium manufacture applies electric beam vapor deposition techniques developed for semiconductor fabrication. Vacuum evaporation makes possible the construction of a dome with a much greater depth than would be obtained from pressing or other methods.

The Yamaha NS-590: The Wide Dispersion, Low Distortion, Natural Sound Speaker System

And since a very powerful vacuum is used with this process, the beryllium has the amazing purity of 99.9%!

Beryllium Tweeter for Superb Linearity up to the Ultra-Highs

Even at frequencies as high as 20,000Hz, accurate, faithful vibrations are produced by Yamaha's use of beryllium for the tweeter diaphragm. It has been shaped into a 23mm (29/32")ø dome supported with a tangential edge made of a special fiber coated with two kinds of resin, one resilient, the other thermo-setting. The diaphragm is directly connected to a voice coil made of aluminum wire which is treated to resist heat build-up. The magnetic circuitry employs a powerful ferrite magnet, providing 14,500gauss magnetic flux density and 20,950 Maxwells overall magnetic flux. Highs are fresh and crisp, completely flat across the assigned frequency range with almost no distortion.

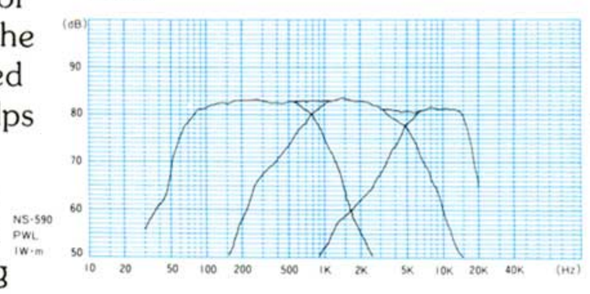
12cm (4-3/4") Cone Midrange for Room-Encompassing Dispersion

The lightweight paper used for the 12cm (4-3/4") cone midrange has been carefully selected after extensive listening tests to deliver the finest tonal quality and widest dispersion. The copper wire voice coil has been treated to be heat-resistant and ensure stability against excessive inputs. A large ferrite magnet with a magnetic flux density of 14,000gauss and an overall magnetic flux of 75,000 maxwells guarantees high-speed response to even the most pulsive of inputs and room-filling dispersion of lively, full-bodied mid-frequency sound.

Large 30cm (12") Cone Woofer for Powerful Bass with Superb Resolution

Yamaha know-how has contributed in a variety of ways to the perfection of the pulp.used in the conical, corrugated woofer, which helps in a myriad of ways to suppress split vibration and deliver a satisfying level of rich bass.

PWL



The long, edgewise-wound voice coil using special heatresistant adhesive prevents saturation and deterioration at high input and ensures strict linearity. The 120mm (4-23/32")ø, 12,000 gauss, 140,900 Maxwell ferrite magnet ensures abundant power at all times. Finally, reproduction of 3rd harmonics distortion is suppressed by the use of a copper centerpole cap.

Effective Crossover Network and Precision Level Controls

With its famed attention to detail, Yamaha has determined crossover frequencies and network construction through time-consuming listening checks in addition to exhaustive electronic tests. In this way we have ensured the best performance for each speaker system component as well as the smoothest possible crossovers.

Cut-away Model

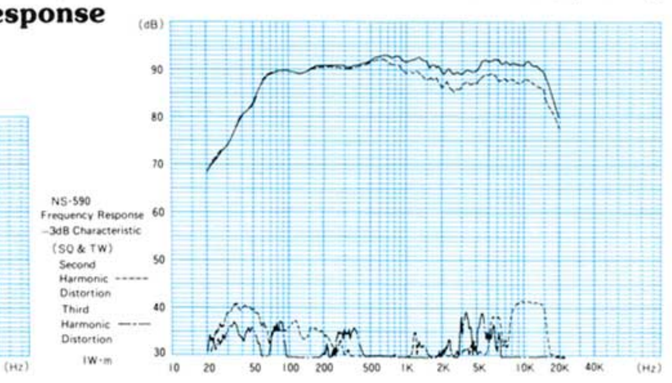
Crossover frequencies are 700Hz and 6kHz with a 12dB curve.

The tweeter and midrange feature continuously variable level controls for fine accurate adjustments of sound quality. Unobtrusive front panel placement helps to facilitate ease of operation.

Dense, Strong Particleboard in Polished Oak Enclosure

Good looks on the outside and music-enhancing materials like dense, ultra-hard particle-board, solid die-cast aluminum speaker frames and abundant acoustic absorbent are featured in the NS-590 enclosure.

Harmonic Distortion Characteristic & Frequency Response



SPECIFICATIONS

Type:	3-way, 3-speaker, air-tight enclosure type
Speakers	
Woofer:	JA-3064; 30cm (12") cone type
Midrange:	JA-1204; 12cm (4 3/4") cone type
Tweeter:	JA-0522; 3cm (1 3/16") beryllium dome type
Maximum Input Power:	70 watts
Rated Input:	35 watts
Sensitivity:	91dB/1m·1W
Frequency Range:	40Hz–20kHz
Lowest Resonance Frequency:	45Hz
Impedance:	8 ohms
Crossover Frequencies:	700Hz; 6kHz (12dB/oct.)
Level Controls:	Continuously variable type for Midrange & Tweeter
Enclosure:	Particle board
Exterior Finish:	Polished Oak
Dimensions:	665(H) x 370(W) x 315.5(D)mm
	(26-3/16" x 14-9/16" x 12-7/16")
Weight:	23.5kg/(51 lbs. 13 oz.)

Specifications subject to change without notice.

For details please contact:

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