Contemporary Laboratory Series

A BOOKSHELF/FLOOR SPEAKER SYSTEM

Rectilinear 5

A BOOKSHELF/FLOOR SPEAKER SYSTEM OF MONITOR QUALITY

Basic Configuration

The Rectilinear 5 is a four-way speaker system utilizing a woofer, a special upper-bass/midrange driver, an upper-midrange/tweeter dome and a super tweeter dome. All four drivers are of the moving-coil principle and face forward from the front panel of the speaker. The cabinet is completely enclosed; its dimensions are comparable to those of the largest bookshelf speakers, but it may also be placed upright on a specially designed floor base.

Design Goals

The Rectilinear 5 was designed to close the engineering gap that has existed between accurate speakers and efficient speakers. Totally uncolored sound reproduction was sought, and at the same time very high sound pressure levels with a moderate power input were specified. The peaky, fatiguing sound that characterizes nearly all high-efficiency speakers was to be avoided at all cost. Particular emphasis was placed on the purity of the upper bass and the lower midrange, an almost universal weak spot. Cost, as such, was a secondary consideration, although it was desired to keep the speaker out of the exotic category and to make it affordable to serious audio enthusiasts. To achieve these goals, a number of state-of-the-art developments became necessary.

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Rectilinear® 5

Woofer

This driver is a sophisticated unit capable of handling enormous power input at low distortion. The cone mass is 32 grams coupled to a half roll foam surround and terminated in a soft, long throw spider for long linear travel. The 2-inch voice coil bobbin is high temperature aluminum, vented for cooling. Epoxy and other special adhesives are used in the construction to insure that no joints will separate or melt under high heat (power) levels. The magnet is 38 oz. of ceramic, while the total magnetic structure is 7 lb. There is a recessed back plate to allow for extreme excursions. The free air resonance is 16 Hz. The acoustic suspension system resonance is 41 Hz.

Upper-Bass/Midrange Driver

In this specially designed 7" unit with butyl surround, the whizzer cone is designed to slightly extend the top response but mostly to tilt the response downward and smooth out irregularities. The final design element is that the dust cap is glued in such a manner, that it is decoupled permanently and damps out the last few peaks and dips. The 1-in. voice coil bobbin is aluminum and includes the same high temperature construction elements as the 12" woofer. Free air resonance is 45 Hz. Resonance in the chamber is 110 Hz. The 7" woofer is isolated from the back wave of the 12" woofer by mounting it in a 0.7 liter tubular chamber filled with long haired lambs wool (a damping material of unique characteristics). Final response is 200 Hz. to 5000 Hz.

Upper Midrange/Tweeter Driver

This unique driver is a heavy duty 1½" mylar dome, with a free air resonance of 500 Hz. This unit has an operating range of 1000 Hz to 14,000 Hz., exhibiting a gentle roll-off starting at 11,000 Hz. The cavity between the dome and the pole tip of the magnet is damped with cotton to smooth out unwanted resonances. Final response is 1,800 Hz. to 11,000 Hz.

Super Tweeter

Extended-range 1" polycarbonate dome. This unit has a normal operating range of 4000 Hz. to 20,000 Hz. In order to achieve maximum power handling and low distortion, the final operating range is from 10,000 Hz. to 20,000 Hz. Just one final clean octave!

Filter Network

No crossovers as such are used in the Rectilinear 5. The 7" driver, which is the heart of the system, is driven wide open from 200 Hz up. The 1½" dome is driven wide open from 1800 Hz up. The 1" dome is driven wide open from 10,000 Hz up. At these frequencies the low-end response of these drivers is rolled off at the rate of 12 dB per octave. The only driver whose top-end output is restricted is the 12" woofer, which has a 2.3 mH choke in series with it. By designing the three smaller drivers with very smooth, listenable high-frequency response and allowing them to be heard through their entire upper range, it is felt that great progress has been made in transient response and overall transparency of sound.

Cabinet

Completely enclosed, 25" by 15" by 14½" deep. Made of a high-density fibrous material never before used in speaker cabinets, with dramatically superior damping characteristics.

An ideal material for an enclosure would be concrete, to permit the sound to be produced by only the loudspeakers, and not the enclosure singing along. This new material comes about as close to concrete as practical (a little easier to ship than a concrete enclosure also!). The main cavity of the enclosure is filled with a combination of 4" thick Fibreglass and "Long Haired Lambs Wool".

Optional Base

Newly designed Rectilinear Dispersion Base (patent pending). This Rectilinear development allows the speaker to be placed on the floor with optimum results. The speaker is raised slightly off the floor and tilted back 10° to avoid reflections from parallel surfaces while retaining direct-radiating benefits. The base also acts as an acoustic shock absorber to prevent direct feedback to the turntable.

Controls

No controls whatever are provided with which the user can change the frequency response of the Rectilinear 5. The filter network is correctly set at the factory for uniform energy output from the speaker. Rather than risk inexpert adjustment in showrooms and homes, Rectilinear is now committed to this design philosophy and recommends the use of amplifier tone controls to those who wish to alter the output of the speaker.

SUMMARY OF SPECIFICATIONS:

Size: 25" x 15" x 14½" deep (635mm x 381mm x 368mm)

Drivers: 12" woofer, 7" upper bass/midrange driver, 1½" upper midrange/tweeter mylar dome, 1" super tweeter polycarbonate dome

Filter Frequencies: 200 Hz, 1,800 Hz, 10,000 Hz

Nominal Impedance: 6 ohms

Minimum Power Requirements: 30 watts RMS

Maximum Power Handling Capacity: 250 watts RMS*

Frequency Response: 32 Hz to 20,000 Hz ± 2 dB

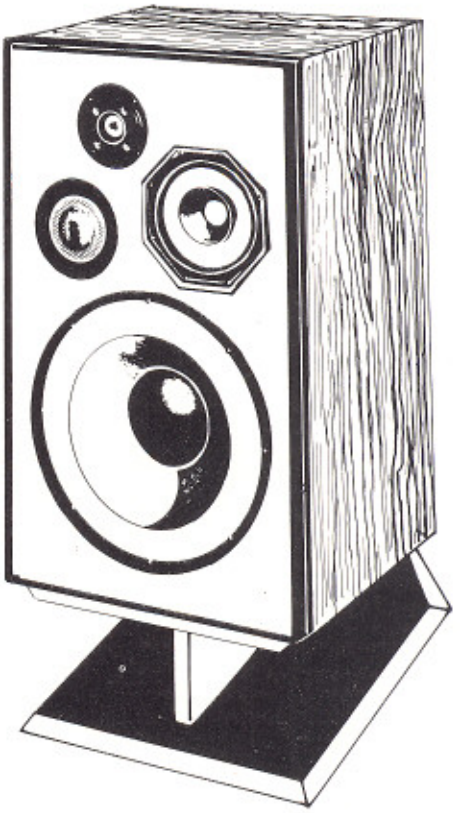
Fuse: AGC 3 (standard fast blow)

Connection to Amplifier: Binding Posts

Cabinet: Oiled walnut

Shipping Weight: 72 lb. (32.7 kg)

* For reproduction of music, the Rectilinear 5 may be used safely with amplifiers rated up to 250 watts RMS per channel. For information regarding sine wave testing, please contact our engineering department.



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