

Leak "Sandwich" Speaker System



AT A GLANCE: Designed by Harold J. Leak, of British amplifier fame, the "Sandwich" speaker system is a compact, high quality, full-range reproducer. It employs a woofer of new design that is housed, together with a tweeter and crossover network, within a handsome walnut cabinet measuring 26 inches by 15 inches by 12 inches. The cabinet may be positioned horizontally or vertically, as preferred. Nominal impedance is 15 ohms. Although it is a relatively high efficiency system, the Sandwich may be used with high- and low-powered amplifiers. Price is \$199. Manufacturer: H. J. Leak & Co., Ltd., London, W.3, England. American distributor: Ercona Corp., 16 West 46th St., New York 17, N.Y.

IN DETAIL: The Leak Sandwich made its debut in March 1961 at the Paris *Festival International du Son*, and the following month at the International Audio Festival and Fair held in London. The first demonstration model was received favorably but with equal parts of curiosity and speculation. Subsequently, production-line models appeared and British and French reviewers outdid each other in praising the new speaker, hailing it as a significant step forward in reproducer design. The Sandwich next turned up in Canada last winter, where it met with similar approval. Finally, it has arrived here, and judging from what we have heard over our test pair, the new system should do mighty well for itself in the U.S.A. as an excellent speaker in the compact class.

The Sandwich is a two-way system, divided at about 1,200 cycles between a 13-inch woofer and a 3½-inch tweeter. The woofer is a new design, employing a diaphragm made of a section of expanded polystyrene foam that is sandwiched between two thin layers of aluminum sheeting. This material is designed to provide a cone that is no heavier than the conventional paper cone, yet is stronger and stiffer, and thus more capable of achieving the true piston action required for linear response in a speaker. This cone is loosely, but securely, suspended in its outer frame and is capable of very wide front-to-back excursions, so necessary for bass output. The combination of cone material and suspension make for a very clean output, with no audible hints of break-up distortion.

The woofer is mounted on a baffle directly behind the grille cloth that covers the front panel. The tweeter is installed on the front panel itself, so that when the panel is in place, the complete system performs as a direct radiator. Design attempts to control response and provide correct loading on both drivers are evident from the special sealed compartment behind the tweeter, and the over-all cabinet itself, which is completely sealed and rock-solid. Its inner walls are lined with a thick bituminous coating that adds rigidity and assures against cabinet resonances. A liberal amount of sound-absorbent material also surrounds the rear of the woofer. Essentially, then, the system is a compact "infinite baffle" type, in which reduction in size is enabled by the specially designed woofer.

The response of the Sandwich is smooth and clean

throughout its range, which is from just below 30 cps to beyond audibility. The bass begins to roll off gradually below 50 cps, but is clean and obvious for the better part of an octave below that point. The speaker, in fact, can produce a steady 20-cps note—more of a feeling than an actual sound. The woofer seems to be quite efficient in that it produces a good deal of sound from relatively small amounts of clean amplifier power, yet it can take higher power in stride, and doubling did not become apparent until we approached the maximum output limit of our generator. Throughout the upper bass and midrange, response continues very smoothly; the only irregularity observed was a small peak at about 300 cps. At the high end, response extends to beyond audibility, with the least hint of a dip, or less intensity, at about 12.5 kc.

As with most speakers, the highs seemed moderately directive when heard close up; they became less directive and more subtle as one stepped back a few feet. This same effect was observed on white noise, which became smoother and softer as the listener moved back from the Sandwich. On axis from the speaker, the white noise pattern was fairly soft, but did suggest the least degree of midrange preëmphasis, itself a characteristic of many speaker systems.

On a wide variety of program material, the Sandwich performed with a quality of ease and clarity that was admirable. Instrumental music had a high order of definition, and the individual timbre of specific instruments could be clearly perceived. Female voices sounded natural enough; the male voice, by comparison, often had a crisp, almost dramatic quality.

The sound in general is somewhat projected away from the actual spot occupied by the speaker. On full orchestral music and grand opera, this quality lends a good deal of "space" to the sound, giving it a bigger acoustic aspect than one would expect from a compact system. This quality implies an interesting side benefit: being physically compact, the Leak Sandwich can be enjoyed fairly close-up as would be required, say, in a small room or as part of a personal system in a study or den. Yet, because of its "spread" quality, plus its ability to handle fairly huge amounts of amplifier power (the sound simply gets louder and "bigger"), the same speaker would be no slouch in oversize rooms, possibly even auditoriums. In this sense, the Sandwich assumes a happy kind of independence of just where it is placed in a room; it will sound good in virtually any spot and whether standing upright or lying horizontal. The grandest sound we obtained from the pair was by placing their backs to the wall and listening from about sixteen feet away. The resultant aural effect was eminently satisfying. On mono, the sound was nicely focused in the general area between the pair; on stereo, there was a good sense of breadth and depth.

All told, the new speaker from Leak is a very worthy entry in its size and price class, and one which should interest a good many fussy listeners. This Sandwich, in a word, is not hard to digest.