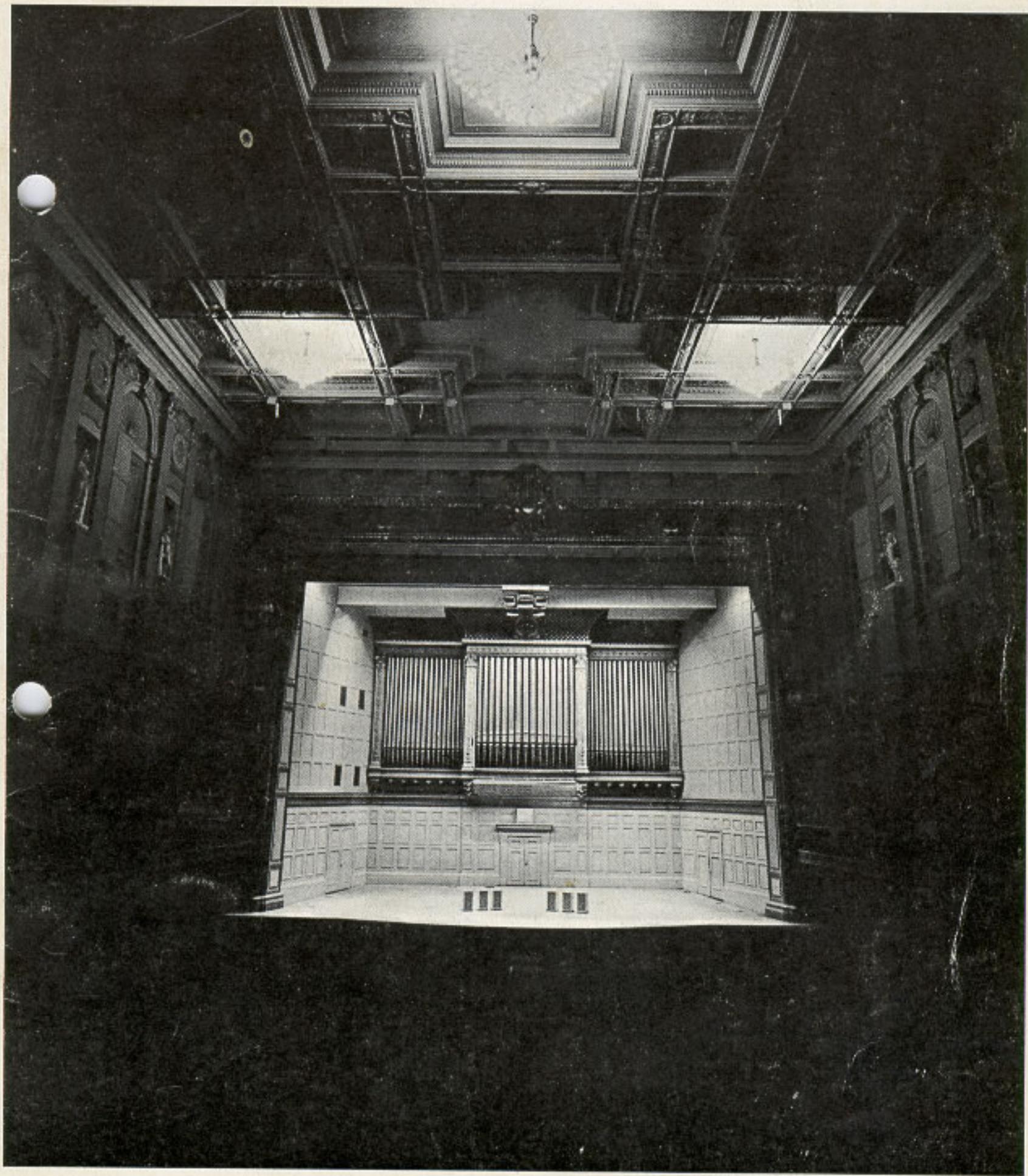


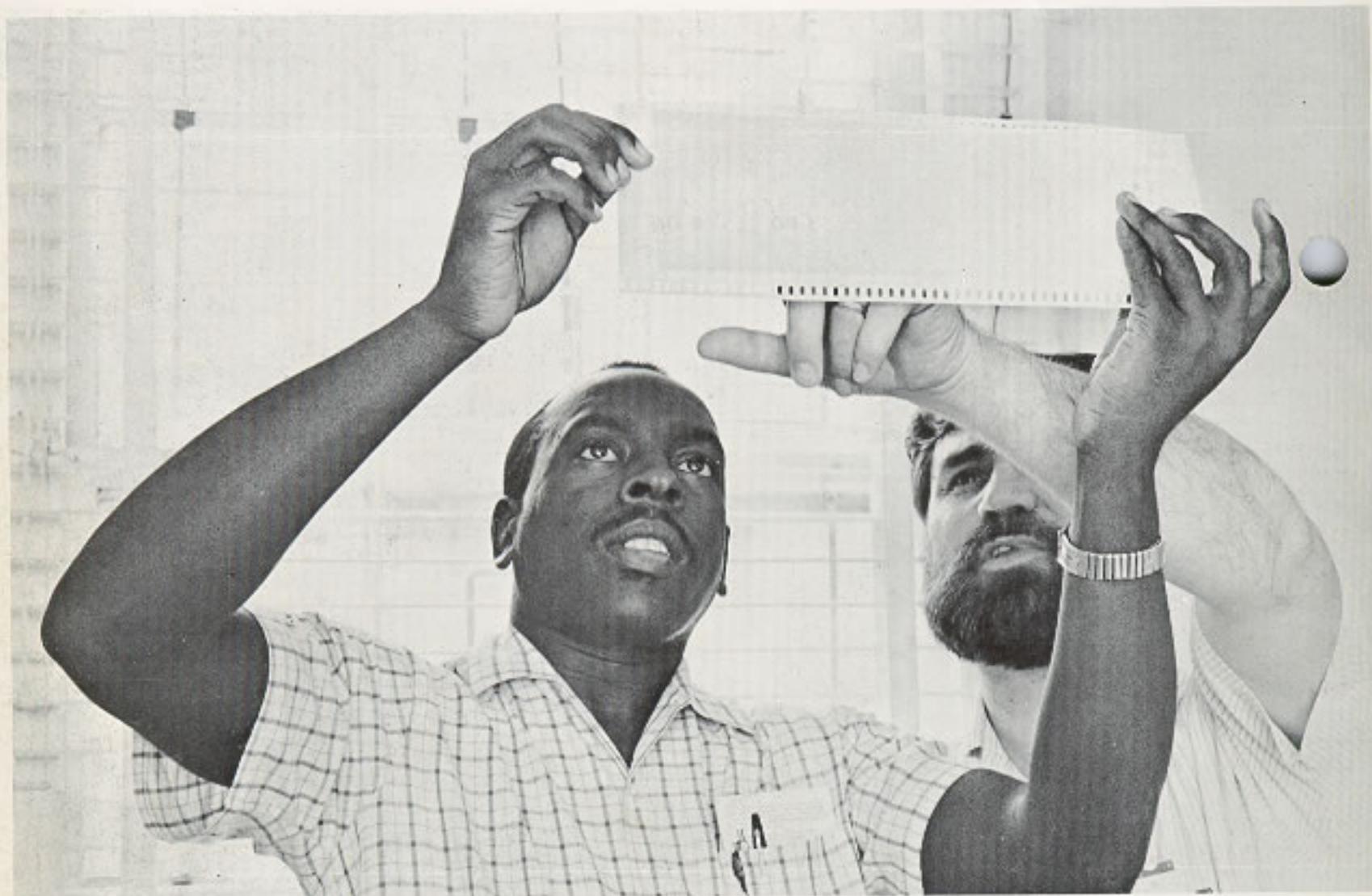
Acoustic Research International



High Fidelity Components



Front cover: AR-3a speaker systems in Symphony Hall, Boston, during tests prior to use in performance by the Boston Symphony of *Deserts* by Edgard Varese.



Joseph Green and John Gajduko of Acoustic Research study the frequency response curve of a new AR speaker system. Because high-fidelity speaker systems are the only type made at AR, accuracy is the most important criterion used in evaluation. Frequency response data is taken by automatic equipment which produces a machine-drawn graph of performance.

AR and High Fidelity

The accurate reproduction of music is one of man's more benevolent technological gifts to himself. Long-playing records, FM broadcasts and high-fidelity components have helped to transform the enjoyment of great music from a diversion for few into an experience familiar to nearly everyone. Science and technology have given a kind of immortality to those dedicated musical performers who "serve the cause of Mozart".

Manufacturers of equipment designed to reproduce recorded and broadcast music have a wider cultural responsibility than that usually associated with manufacturers. For AR this means the design of equipment capable of reproducing music with the greatest possible accuracy, so that the work of the composer, performers and recording engineers is presented to the listener with the highest degree of precision possible. AR also develops equipment of lower cost embodying such compromises as will have the least effect upon the accuracy with which music is reproduced.

AR believes that manufacturers can best accomplish the design of high-fidelity components by the application of scientific methods in their testing and evaluation while maintaining the same objective standards in describing their products to the public. Accordingly, AR offers, free of charge, complete technical data on every AR product.

AR holds that the accuracy with which sound is reproduced can be measured objectively. This point of view is in opposition to that of the "golden ear", which suggests that only persons of exceptional sensitivity or taste are able to judge the fidelity of a recording or music system. AR also rejects the idea that high-fidelity equipment should sound "good"; we believe it should have no sound of its own. Its purpose is to reproduce as closely as possible the sound of the original performance.



AR welcomes comparison of live music to recordings played back through AR equipment, and frequently has conducted such comparisons publicly. If the function of high-fidelity equipment is to reproduce sound rather than to create its own sound, such a comparison is the ultimate test of loudspeaker quality.

It is noteworthy that today, after 15 years of imitation by other manufacturers, the acoustic suspension system used in the AR-1 is still considered by authorities to achieve the cleanest, least distorted bass response of all speaker systems. It is this kind of durability of accomplishment—rather than annual model change—at which AR's constant product research program is aimed.

The Fine Arts Quartet appeared as performers at public concerts which compared real music to its reproduction by AR speaker systems. Writing in *Audio*, Edward Tatnall Canby said, "We gave up trying to tell the difference . . .".

Acoustic Suspension

What is a loudspeaker?

In its simplest form, a loudspeaker consists of a metal frame with a cone of some softer material suspended from it. The frame also holds the electrical mechanism which moves the cone. When the cone is pushed forward and backward it produces waves in the air which we hear as sound waves. If the cone is made to move correctly, any sound may be produced or imitated exactly.

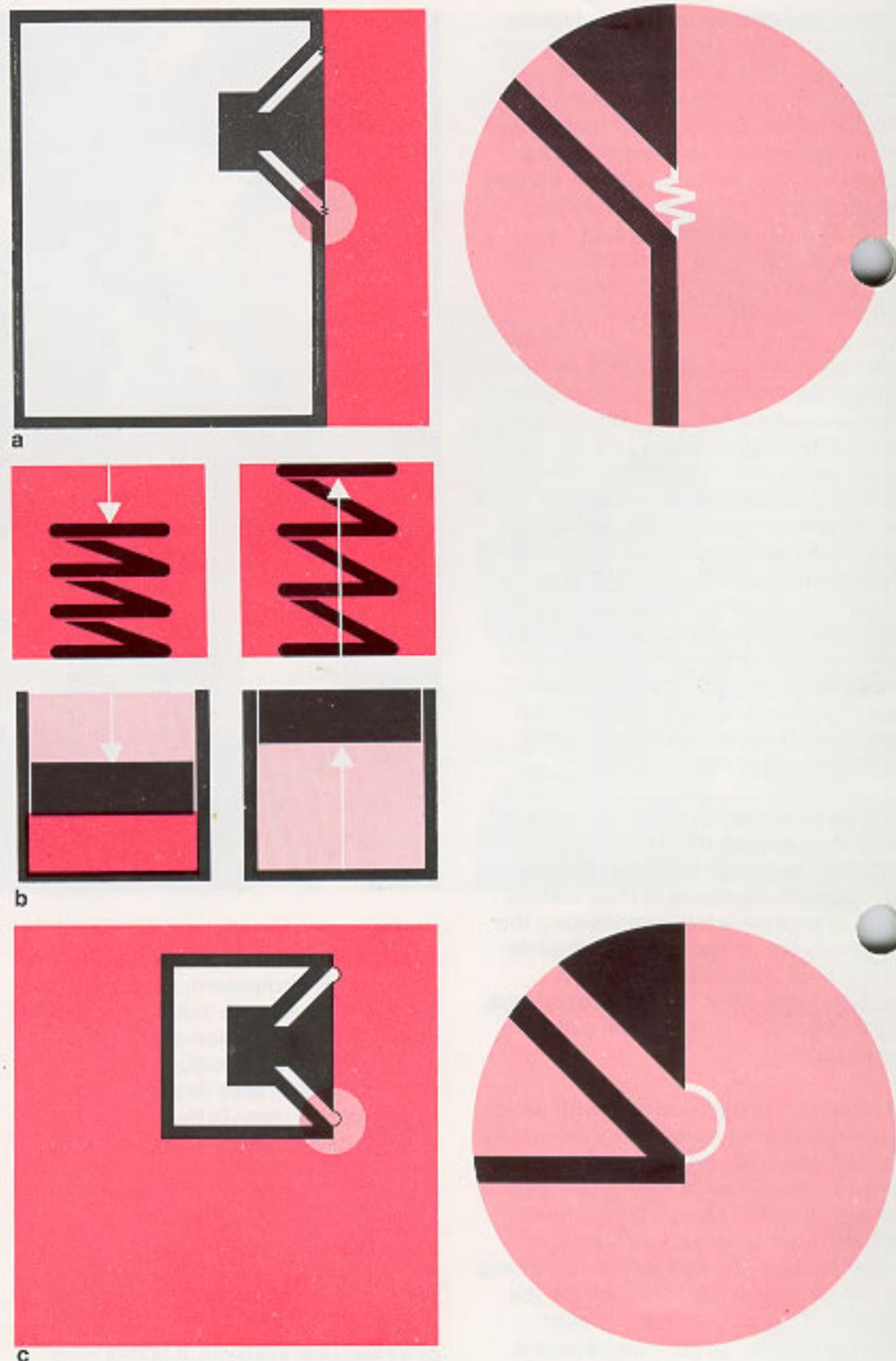
A major cause of distortion

There are limits to the accuracy with which a loudspeaker can be made to move, however. One of the most important limits of cone movement is the way it is attached to the frame. Since no mechanical suspension can stretch indefinitely, it restricts large movements of the cone and distorts the sounds these movements produce. Deep bass notes require the largest cone movements and it is these notes, if present at all, which are most distorted by conventional speaker systems. a

Applied physics; using air as a spring
The air in an enclosed space makes an almost perfect spring. It may be compressed to a small fraction of its normal volume; when the pressure is released, the air expands to fill this volume. In AR speaker systems, the suspension of the cone from the frame is made extremely loose; then the loudspeaker is mounted in a small, tightly sealed cabinet. The air in the cabinet, resting like a spring against the cone, makes a precise and nearly distortionless suspension. This design was originated by Acoustic Research in 1954 and named "acoustic suspension". b,c

Four advantages

The results of this technique are (a) very low distortion at low frequencies through acoustic rather than mechanical suspension; (b) extended bass response, essentially to the lower limit of human hearing; (c) conveniently small size because of the need for a small air volume behind the speaker cone; (d) simplicity and low cost.



Hemispherical Dome Speakers

Sounds are usually mixtures

Musical sounds are complex; a single note played on the violin, for example, consists of at least half a dozen notes of different pitch and loudness, all sounding together. To reproduce the sound of a violin accurately, all of its tonal ingredients must be reproduced in exactly the right proportion.

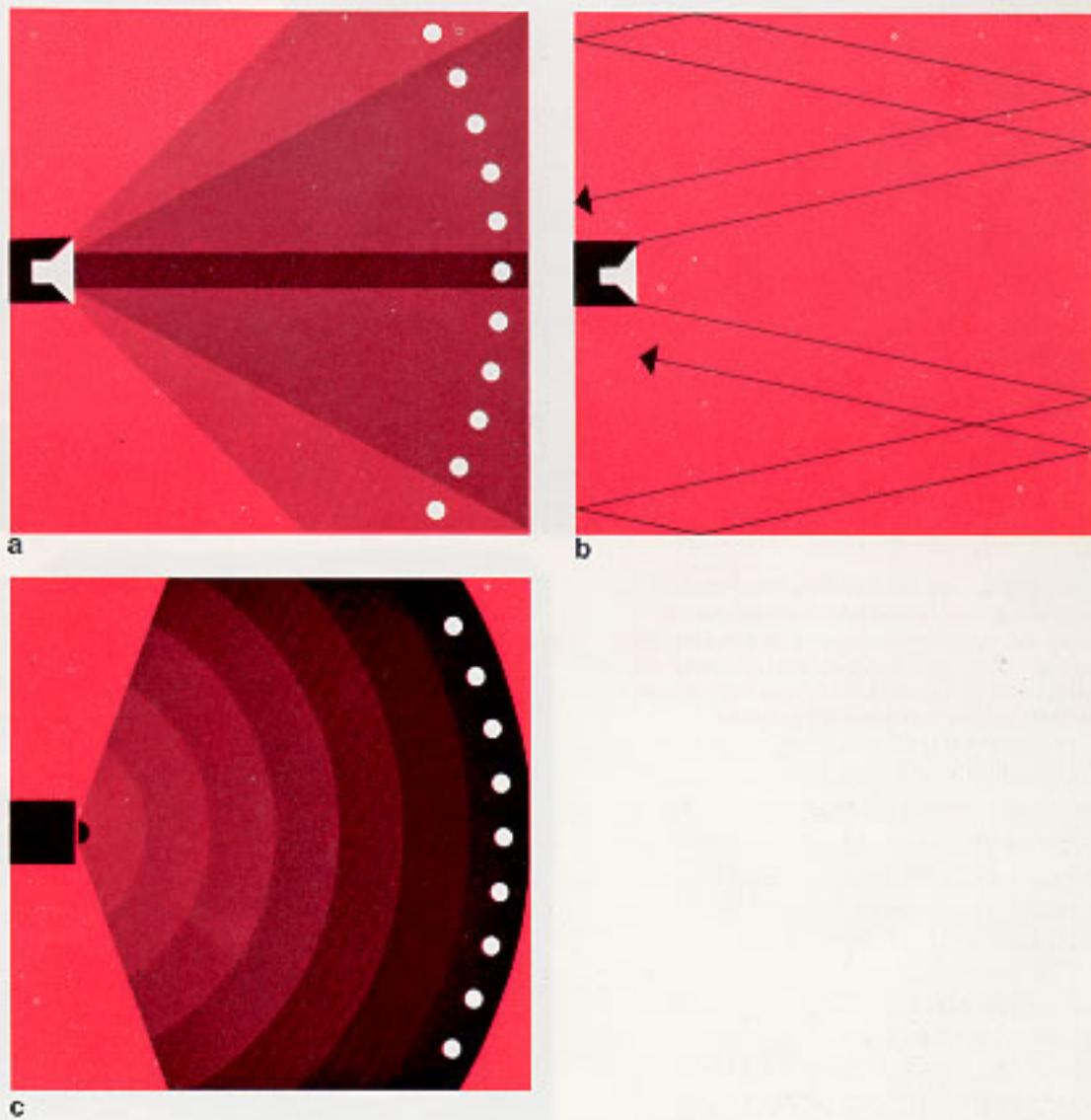
Uneven distribution causes unnatural sound

Most loudspeakers radiate tones of different pitch into the room in different patterns. Generally, the higher the frequency of the tone, the more narrowly it is beamed forward. As a result, only part of the sound is heard in most of the room and often, in addition, the sound directly in front of the speaker is strident and harsh. Reflecting the sound from the walls helps such speakers somewhat, but also reduces high frequencies further by absorption. This defect, made even worse by the natural tendency of loudspeakers to decrease in output at very high frequencies, can only be corrected by the use of electronic equalization (fixed, built-in tone controls in the amplifier or in a separate circuit assembly). Such designs are severely dependent on the reflective characteristics of the listening room, in any case, which can hardly be anticipated by the manufacturer. a,b

A new kind of miniature loudspeaker
The narrowing beam of high frequencies is not a result of speaker design, as such, but rather follows from the size of the speaker and certain fundamental physical laws. An important innovation in AR speaker systems is the replacement of the conventional speaker cone by a tiny hemispherical dome in those speakers which are used for high-frequency reproduction. These domes, although smaller than the little loudspeakers

used in transistor radios, are driven by magnetic structures weighing as much as several pounds. Because of their small size and hemispherical shape, these units give even sound coverage at all audible frequencies in all directions, not only from side to side, but vertically as well. AR speaker systems sound the same standing on an end or on a side, whether heard directly in front or at an appreciable angle off-axis. c

Readers are invited to write to Acoustic Research for any technical or design information they wish to have. The design of AR speaker systems, in addition to descriptions in the patent literature, has been documented in numerous technical journals. Some of these papers are available as reprints from Acoustic Research, free upon request.



AR-3a Speaker Systems



Few musicians have achieved the international fame of conductor Herbert von Karajan. He has directed the major symphony orchestras and opera companies of the world in their own concert halls. At home in St. Moritz, and in his New York apartment he listens with AR speaker systems.



Don Ellis is well-known for his inventive and imaginative jazz compositions, having received many awards for his work. At home in his own studio, he uses a variety of high-quality electronic components, including an AR amplifier and turntable; his only speaker systems are AR-3as.

Description and Press Comment

The AR-3a is the best speaker system we know how to make.

It has been designed to reproduce music as accurately as present-day knowledge of acoustics and electronics permits. In addition to incorporating the 12-inch bass driver with which AR introduced its acoustic suspension system to home listeners, the AR-3a was the first speaker system to use two miniature hemispherical speakers developed by AR to give better mid-range and high frequency response. The new miniature speakers offer an unprecedented degree of accuracy in their respective ranges.

The design of such small speakers—one is only $\frac{3}{4}$ " in diameter—although technically difficult, allows the laws of physics to operate to the listener's advantage. While larger speakers must beam high frequencies straight forward, AR's hemispheres instead spread these frequencies through a wide angle, considerably improving the realism of music reproduction for listeners in all parts of the room.

Size: 14" x 25" x 11 $\frac{1}{2}$ " deep.

Weight: 53 lbs (24 kg).

Recommended Amplifier Power: 25 watts r.m.s. per channel, minimum.

Impedance: 4 ohms.

Speaker Complement: 12" acoustic suspension woofer, 1 $\frac{1}{2}$ " mid-range hemispherical dome, $\frac{3}{4}$ " high-frequency hemispherical dome.

Controls: Independent mid-range and high-frequency driver level controls. A technical data sheet is available.

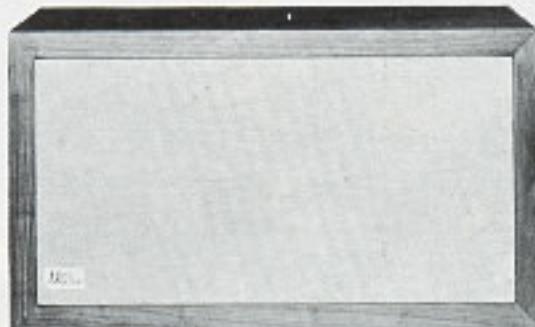
The AR-3a is guaranteed for 5 years from date of purchase. See inside back cover for the AR guarantee. Available wood finishes are listed on page 20.

The AR-1W is the bass (woofer) section alone of the AR-3a, and the AR-3 was the forerunner of the AR-3a. Both systems are listed in the table on page 20.

"... the best speaker frequency response curve we have ever measured using our present test set-up ... virtually perfect dispersion at all frequencies ... AR speakers set new standards for low-distortion, low-frequency reproduction, and in our view have never been surpassed in this respect." *HiFi/Stereo Review*.

"On any material we fed to them, our pair of AR-3as responded neutrally, lending no coloration of their own to the sound ... the speakers sounded magnificent, filling the place with a lot of clean, musical sound and an excellent stereo image ... Our tests of the AR-3a simply confirm the manufacturer's design aims and claims for this system." *High Fidelity*.

"The harmonic distortion at bass frequencies was outstandingly low ... The high-frequency dispersion is the widest of any speaker we have tested ... a new high standard of performance at what must be considered a bargain price." *Audio*.



AR-5 Speaker Systems



Description and Press Comment

"I was immediately struck by its superb mid-range to high-end smoothness and broad dispersion . . . the AR-5's bass line is solid and supremely clean, very deep . . . had a room-filling size to it; this is, of course, a function of the excellent high-frequency dispersion characteristics . . . if you like your music loud, you will doubly appreciate the AR-5. It is downright cheerful about accepting large amounts of power." Larry Zide in *American Record Guide*.

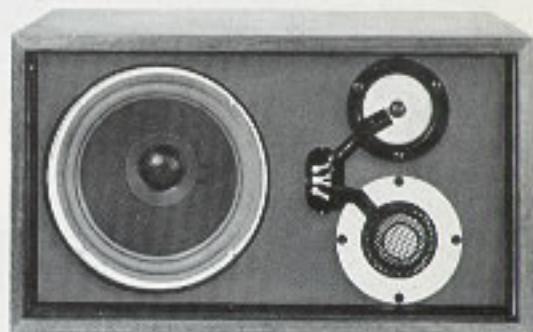
"Its sound was unquestionably "AR" — which is to say that it had very clean, extended, low bass, exceptional dispersion of the higher frequencies, and an effortless, undistorted overall sound . . . [With level controls adjusted to the reviewer's preference] the sound quality of the AR-5 could then only be described as superb. We doubt that one could spot the differences between the AR-3a and the AR-5 on most program material." Julian Hirsch in *Stereo Review*.

The AR-5 is the newest of the AR acoustic suspension speaker systems. Inside it are the two hemispherical speakers of the AR-3a, which provide uniquely accurate mid-range and high-frequency reproduction, and a completely new 10-inch woofer. The main differences between the AR-3a and the AR-5 are that the bass response of the AR-3a extends approximately $\frac{1}{2}$ -octave lower, and the price of the AR-5 is less.

The design of the AR-5, completed in 1968, incorporates several interesting advances in materials technology which help to make its performance possible. The cone of the woofer, for example, is molded by a new low-vacuum process developed for AR, which greatly reduces the tendency to coloration heard in conventional cones of paper or polystyrene. At the cone's outer edge is a new suspension of urethane polymer, which helps to achieve very low distortion at low frequencies. The AR-5, in fact, is one of today's most advanced speaker systems, combining AR's 15 years of experience with the newest processes and materials.

Size: 13½" x 24" x 11½" deep.
Weight: 39 lbs (17.8 kg).
Recommended Amplifier Power:
20 watts r.m.s. per channel, minimum.
Impedance: 8 ohms
Speaker Complement: 10" acoustic
suspension woofer; 1½" mid-range
hemispherical dome, ¾" high-
frequency hemispherical dome.
Controls: Independent mid-range and
high-frequency driver level controls.
A technical data sheet is available.

The AR-5 is guaranteed for 5 years from date of purchase. See inside back cover for the AR guarantee. Available wood finishes are listed on page 20.



AR-2x and AR-2ax Speaker Systems



Office of the General Manager, WABC-FM (New York City). AR-2ax speaker systems and AR turntables are used throughout the offices to monitor broadcasts and check recordings.

Description and Press Comment

The AR-2x and AR-2ax are lower cost versions of our basic acoustic suspension design. Each has a 10-inch bass speaker, mounted in an acoustically sealed enclosure filled with glass wool, and, in addition, a small, high-dispersion cone speaker. In the AR-2ax there is a third speaker, a $\frac{3}{4}$ -inch hemisphere for very high frequencies, the same unit as is used for this purpose in the AR-3a. Separate controls on the back of the AR-2x and AR-2ax permit independent adjustment of the level of the mid-range and high-frequency speakers.

The performance standard in the design of the AR-2x and AR-2ax was the same as that for the AR-3a; natural reproduction of music without exaggeration or artificiality of sound. But where quality in the case of the AR-3a has been limited only by the state of the art and our own engineering skill, here price is also a consideration.

Unless otherwise noted, specifications apply to both the AR-2x and the AR-2ax.

Size: 13 $\frac{1}{2}$ " x 24" x 11 $\frac{1}{2}$ " deep.

Weight: AR-2x, 33 lbs (15 kg); AR-2ax, 36 $\frac{1}{2}$ lbs (16.6 kg).

Recommended Amplifier Power: 20 watts r.m.s. per channel, minimum.

Impedance: 8 ohms.

Speaker Complement: 10" acoustic suspension woofer; AR-2x, 2 $\frac{1}{2}$ " mid/high frequency unit; AR-2ax, 3 $\frac{1}{2}$ " midrange, $\frac{3}{4}$ " hemispherical tweeter.

Controls: AR-2ax, independent mid-

range and high-frequency adjust-

ments; AR-2x, high-frequency

adjustment.

A technical data sheet is available.

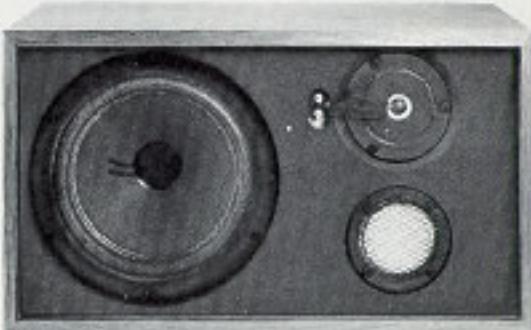
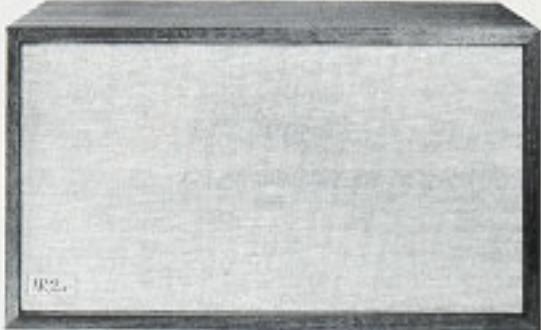
The AR-2x and AR-2ax are guaranteed for 5 years from date of purchase.

See inside back cover for the AR guarantee. Available wood finishes are listed on page 20.

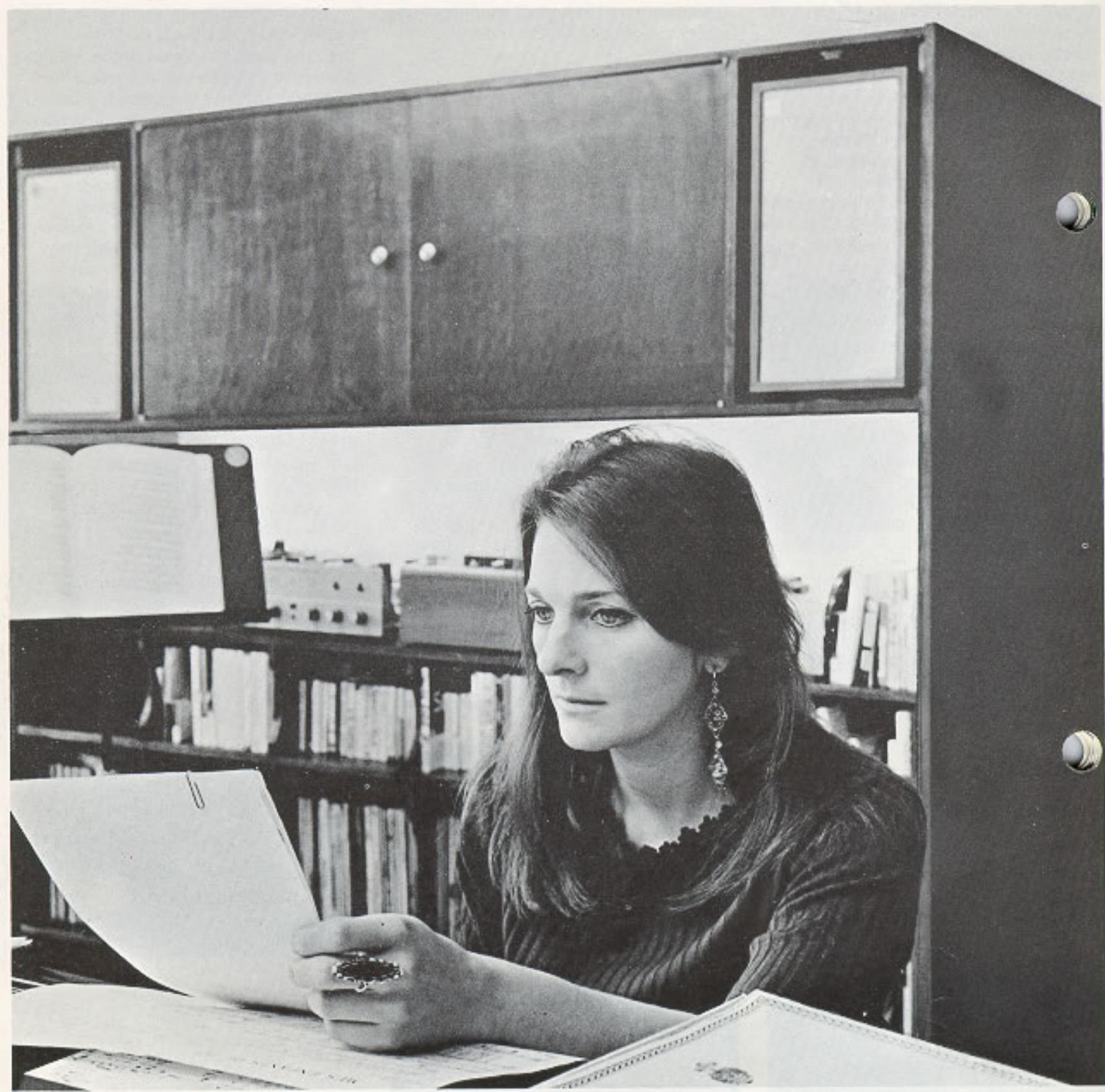
"...the low-frequency speaker has exceptionally low bass distortion... the tone burst response of the AR-2ax gave further evidence of its excellent quality... comes remarkably close to matching the AR-3." Julian Hirsch in *HiFi/Stereo Review*.

"Clean, balanced and wide range... from under 50 cycles to beyond audibility this speaker will reproduce what is fed to it with clarity and with honesty... Its strengths lie in an unusual smoothness and lack of any harshness whatsoever." *American Record Guide*.

"The bass line is, as we have come to expect from AR, exemplary: well-defined and clean. The highs are quite open... strong fundamental bass to just below 40 Hz... Response upward from here is uniform, smooth and remarkably well dispersed all about the speaker." *High Fidelity*.

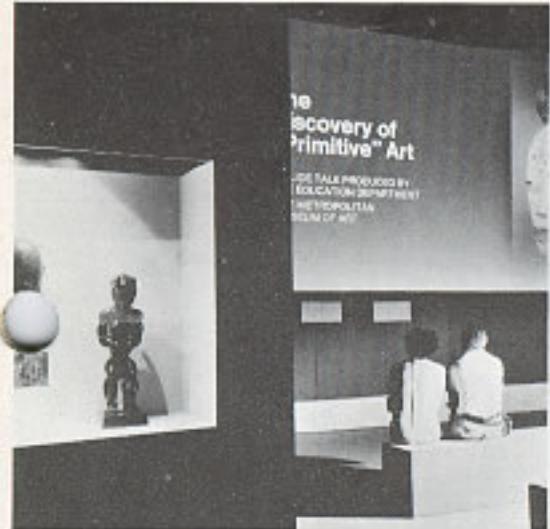


AR-4x Speaker Systems



Singer Judy Collins' performances in concert and on Elektra Records are widely known and highly praised. The cabinet in the background contains her AR-4x speaker systems.

Description and Press Comment



At the Metropolitan Museum of Art, AR speaker systems and amplifiers have been used in various exhibitions.

The AR-4x embodies the best performance per dollar that we have been able to build into a speaker system. Inside the AR-4x are an acoustic suspension woofer (a scaled-down version of the woofer used in other AR speaker systems) and a wide-dispersion cone tweeter for high frequencies. The speakers, enclosure and crossover network inside the AR-4x are built and tested to the same strict standards of craftsmanship and accuracy as apply to other AR speaker systems.

The AR-4x does not have as wide a frequency range as our other speakers, but in smoothness and uncolored musical quality it holds its own with any of them.

Size: 10" x 19" x 9" deep.
Weight: 18½ lbs (8.4 kg).
Recommended Amplifier Power:
15 watts r.m.s. per channel, minimum.
Impedance: 8 ohms.
Speaker Complements: 8" acoustic suspension woofer; 2½" wide-dispersion cone tweeter.
Controls: High-frequency adjustment.
A technical data sheet is available.

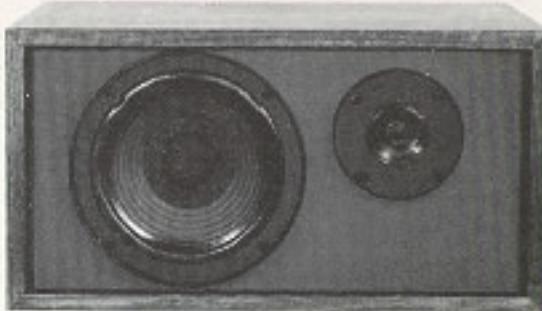
The AR-4x is guaranteed for 5 years from date of purchase. See inside back cover for the AR guarantee. Available wood finishes are listed on page 20.

"There has been nothing like it, and the least I can write is that this speaker is astonishing . . . a model speaker in its class." *La Revue des Disques*.

"This [frequency response] would be remarkable for any speaker, and in our experience is unique for any speaker in the price class of the AR-4x . . . We know of no competitively priced speaker that can compare with it." *HiFi/Stereo Review*.

"To say that the AR-4 [forerunner of the AR-4x] is the best of this class would be to presume too much in the way of individual listener preference; it would perhaps be more to the point to say that we have heard nothing better, so far at least in this price class." *High Fidelity*.

"All in all, it is difficult to see how AR has achieved this performance at the price." *Modern Hi-Fi & Stereo Guide*.



The AR Turntable



Executive conference room at the main U.S. Office of Angel Records.

First pressings of new releases are checked with a system which includes an AR turntable, amplifier, and speaker systems.



Description and Press Comment

Since its introduction, the AR turntable has had a profound effect upon both design and performance standards of home record-playing equipment, yet it remains alone in the field in the degree to which it combines broadcast equipment performance, completeness and convenience, simplicity of operation and low cost.

AR turntable meets all NAB specifications for broadcast studio turntables on wow, flutter, rumble and speed accuracy. Its miniature synchronous motor and belt drive make the AR turntable inaudible during operation.

The stability of the AR turntable is unusual; the top-plate may even be struck by vertical hammer blows without interrupting the music being played. The AR turntable is insensitive to floor vibrations or acoustic feedback. This gives its owners maximum freedom in placing the turntable where it will be most convenient, even close to the loudspeakers, if necessary.

AR turntables are supplied less cartridge.

Size: 12 $\frac{3}{4}$ " x 16 $\frac{3}{4}$ " x 5 $\frac{1}{4}$ " high.
Weight: 13 $\frac{1}{2}$ lbs (6.1 kg).

The AR turntable is guaranteed, as a condition of sale, to meet or exceed the specifications of the National Association of Broadcasters for broadcast equipment for wow, flutter, rumble and speed accuracy. A technical data sheet is available.

The AR turntable is guaranteed for 3 years from date of purchase. See inside back cover for complete description of the AR guarantee.

AR turntable for 110-120 volts, 60 cycles:

33 $\frac{1}{3}$ rpm

33 $\frac{1}{3}$ and 45 rpm

For 110/220 volts, 50/60 Hz

33 $\frac{1}{3}$ and 45 rpm

Listed by Underwriters' Laboratories Inc.

Each AR turntable is supplied already mounted on an oiled walnut base, complete with transparent plastic dust cover, plug-in cartridge shell, cartridge mounting hardware and instructions, stylus pressure gauge, overhang adjustment guide, lubricating oil, color coded connecting cables for amplifier, screwdriver for tone arm counterbalance setting and cartridge installation, tone arm with internal adjustable viscous damping and 45 rpm center-hole adapter (2-speed versions only).

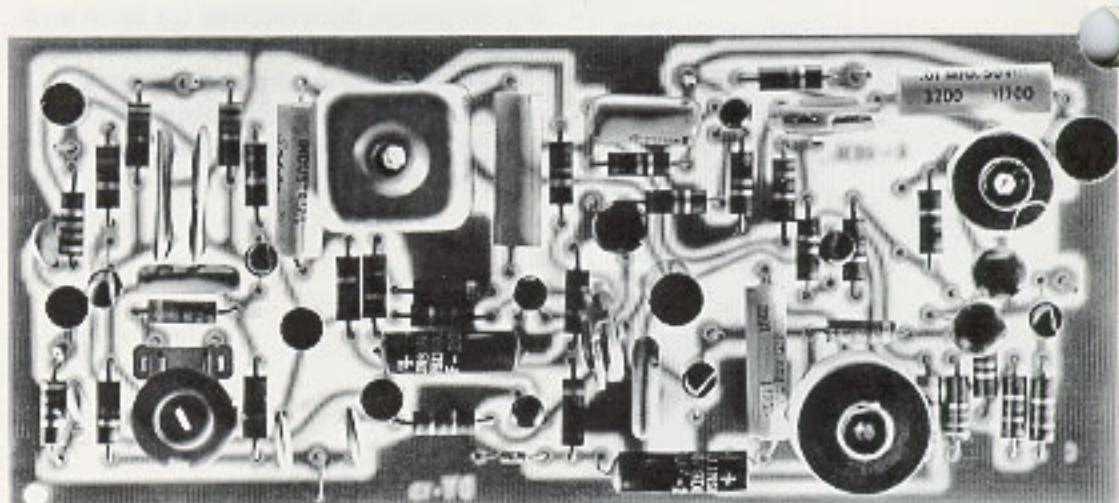
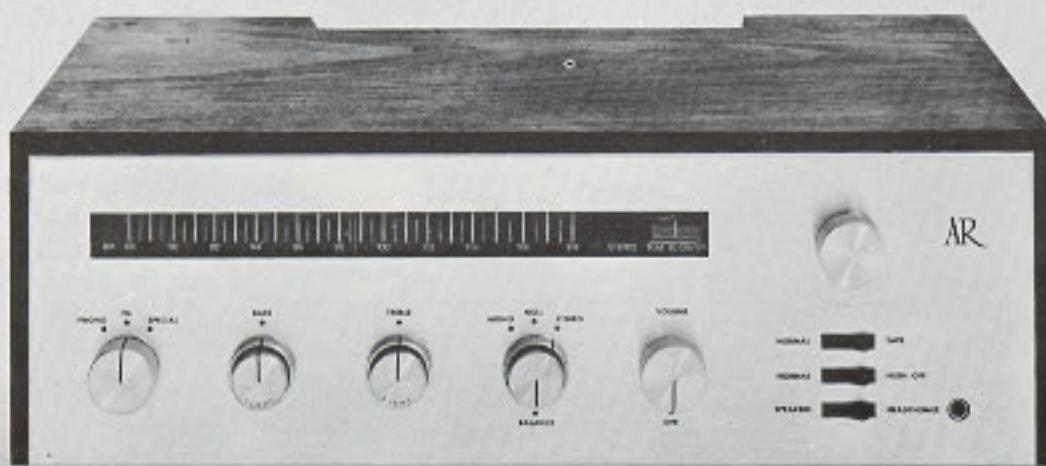
"The three-year guarantee [like that for other AR products] . . . attests to the basic reliability of this turntable, whose performance is unsurpassed and is, at best, equaled by only two or three much higher-priced record players." Julian Hirsch in *HiFi/Stereo Review*.

"the lowest speed error . . . encountered in [fixed speed] turntables . . . no hint of rumble . . . silent and accurate operation." *High Fidelity*.

"It seems to me that once again they [AR] have executed a master stroke in putting on the market a turntable that we do not hesitate to describe as—the word is not too strong—revolutionary." C. Darteville in *Toute L'Electronique*.

"I have, in fact, only one criticism of the AR turntable and arm: it is greatly underpriced." Percy Wilson in *The Gramophone*.

The AR Receiver



The multiplex decoder section of the AR receiver. One of the outstanding characteristics of the receiver is its unusually low distortion during stereo broadcast reception.

The earliest high-fidelity components were designed during the vacuum-tube era, and generally followed broadcasting practice in separating tuner, power amplifier, preamplifier and power supply, each circuit section on its own chassis. The characteristics of transistors, primarily their small size, cool operation and infinite service life, permit the consolidation of all of the electronic circuitry needed in a high-fidelity system into one component, the receiver.

The AR Receiver was under development for some time. When the amplifier section was completed, several years ago, it was offered to the public as a separate component. *High Fidelity*, citing test reports from CBS Laboratories, stated, "It is, in our view, an unqualified success, a truly excellent and unimpeachable amplifier... [at 20% more than its rated power] it either met or exceeded its specifications... the IM [distortion] characteristics must be counted as the best we've ever seen..." *Stereo Review* called the amplifier's power "staggering", and added, "it ranks among the very best available."

The receiver has now been completed with the addition of the circuitry required for stereo FM broadcast reception which is in every respect the counterpart of the performance of the amplifier. The receiver circuit is all-silicon solid state; the most rigorous manufacturing and inspection techniques we know are used in its assembly. The receiver is guaranteed for 2 years; see the full AR guarantee on the inside back cover.

While no compromise is made with optimum performance, the AR receiver is lower in price than might be expected. This is because of the rational approach taken in its design. The AR Receiver is as sensitive, precise and powerful a unit as is ever likely to be needed in the home. In addition, it is one of the simplest to operate; as in the best of professional equipment, control functions have been limited to those which are actually needed.

Applicable IHF test standards are used for the following guaranteed performance specifications.

FM Section

Sensitivity: 2.0 microvolts or better (hush control "off"). Signal to noise ratio: 65 db, ASA "C" weighting (flat). Distortion: less than 0.5% IM or THD, mono or stereo. Frequency Response: 20 to 15,000 Hz, ± 1 db, mono or stereo. Capture Ratio: 2 db or less. Separation: 35 db minimum at 50 Hz; 40 db minimum at 400 Hz; 30 db minimum at 10,000 Hz.

Control Amplifier Section

Power output (measured with both channels driven): 60 watts per channel RMS, 4Ω ; 50 watts per channel RMS, 8Ω ; 30 watts per channel RMS, 16Ω . Distortion (at any level up to and including full rated power): IM (60 and 7,000 Hz, 4:1), less than 0.25%; harmonic distortion, less than 0.5% from 20 Hz to 20,000 Hz. Distortion figures include preamplifier stages.

Dimensions (not including control knobs): with optional wood cover, $17\frac{1}{4}$ in wide, 6 in. high, $11\frac{1}{8}$ in. deep; without cover, $16\frac{1}{8}$ in. wide, $5\frac{1}{16}$ in. high, $11\frac{1}{8}$ in. deep.

Switched input circuits: magnetic phono; tape playback; extra high-level input pair ("Special").

Outputs: tape record; 4- 16Ω speakers; headphone jack on front panel; output to amplifier for center-channel or mono extension speakers.

Circuit Characteristics:

(FM) FET front end with 4-section variable capacitor; multisection crystal IF filter; IC (integrated circuit) IF amplifiers; automatic interstation noise suppression with defeat switch for very weak stations; automatic mono/stereo FM switching with stereo indicator light; low-distortion shunt multiplex detector; tuning meter. (Amplifier) DC driver clamping for clean overload recovery; idling power supply eliminates turn-on transient noises; bass and treble separately controlled for each channel; differential loudness compensation curves in bass control circuit; special null circuit permits exact balancing of stereo source material; stable under short-circuit of output terminals; line fuse, speaker fuses and self-resetting circuit breakers for full protection.

The AR receiver is guaranteed for 2 years from date of purchase. See inside back cover for the AR guarantee.

AR Receiver in metal case

110-120 volts, 60 Hz
120-220 volts, 50/60 Hz

Oiled walnut wood cover

The AR Amplifier

The AR amplifier will provide any speaker system with a signal source as accurate and powerful as is ever likely to be needed in the home. In addition, the AR amplifier offers the reliability and moderate price which are the objectives of every AR design. The result is a unit which uses advanced silicon transistor technology and manufacturing and testing techniques developed by AR to achieve a level of performance comparable to, or exceeding, that of the best professional recording or broadcast equipment of its type. This is shown in the technical data sheet published by AR, corroborated by independent tests such as that by CBS Laboratories published in *High Fidelity*, and guaranteed by AR to remain correct (see inside back cover).

AR publishes a non-technical guide for consumers who want to know the basic facts about amplifiers, what they do and how they differ from each other. It is entitled, "You Don't Have To Be An Engineer", and is available free on request.

Size: Without cover, 4 $\frac{5}{16}$ " x 15 $\frac{1}{8}$ " x 10"
deep; with wood cover, 4 $\frac{1}{2}$ " x 15 $\frac{3}{4}$ " x
10" deep.

Weight: 19 lbs. (8.64 kg).

Switched Input Circuits: magnetic phono, tuner, tape playback.

Outputs: tape record; 4-16 of speakers

Safety Features: line fuse; speaker fuses; circuit breakers (self-resetting). **Circuit Characteristics:** DC driver clamping for clean overload recovery; idling power supply eliminates turn-on transient noises; bass and treble separately controlled for each channel; differential loudness compensation curves in bass control circuit; special null circuit permits exact balancing of stereo source material; stable under short-circuit of speaker terminals.



The AR amplifier is guaranteed for 2 years from date of purchase. See inside back cover for the AR guarantee.

AR Amplifier in metal case

Above, for 100, 120, 220, 240
volts, 50/60 Hz (universal)

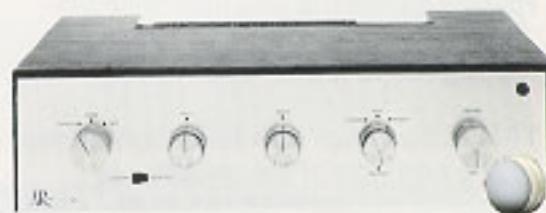
Oiled walnut wood cover

Listed by Underwriters' Laboratories Inc.

A technical data sheet and schematic diagram are available upon request.

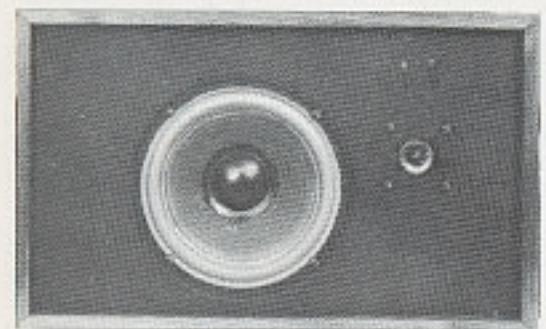
Power Output: 60 watts per channel r.m.s., 4 ohms; 50 watts per channel r.m.s., 8 ohms; 30 watts per channel r.m.s., 16 ohms. Rated with both channels running at full output at 0.5% THD or less, at any frequency between 20 and 20,000 Hz. IM Distortion (60 & 7,000 Hz, 4:1): less than 0.25% at any listening level to full power.

Research on the directional hearing mechanisms of the ear and brain is carried out at Columbia University using AR-3a speaker systems and AR amplifiers.



AR-6 Speaker Systems

Description and Press Comment



The AR-6 is a new AR speaker system designed to achieve the maximum performance available in a unit of its size and cost. A measure of the success of the design is the unusually accurate bass response and lack of coloration of the AR-6, even when compared to systems which are more costly.

The most unusual characteristic of the AR-6 is the woofer, which has optimized the parameters of voice coil size and length, magnetic circuit, diaphragm weight, and suspension to yield maximum theoretical performance. This technique permits the manufacture of a bass speaker with extended response and power-handling ability which occupies no more space than a conventional 8-inch speaker.

The high-frequency speaker in the AR-6 is a new 1½-inch design built especially for the AR-6. Its small size provides outstanding dispersion even at very high frequencies.

Size: 12" x 19½" x 7" deep.
Weight: 20 lbs (9.09 kg)
Recommended Amplifier Power:
20 watts r.m.s. per channel, minimum.
Impedance: 8 ohms.
Speaker Complement: 8" acoustic
suspension woofer, 1½" wide dispersion
cone tweeter.
Controls: High-frequency level adjustment.
A technical data sheet is available.

The AR-6 is guaranteed for 5 years from date of purchase. See inside back cover for the AR guarantee. Available wood finishes are listed on page 20.

"It is noteworthy that the bass response measured for the AR-6 was almost identical to that we measured for the AR-5... This is exceptional performance for a speaker of this size and price... As we have mentioned, the AR-6's polar response was very good—appreciably better than that of the AR-4x and apparently quite similar to that of the more expensive AR speaker systems. The tone-burst response was good at all frequencies, with no significant ringing or other anomalies at any frequency..."

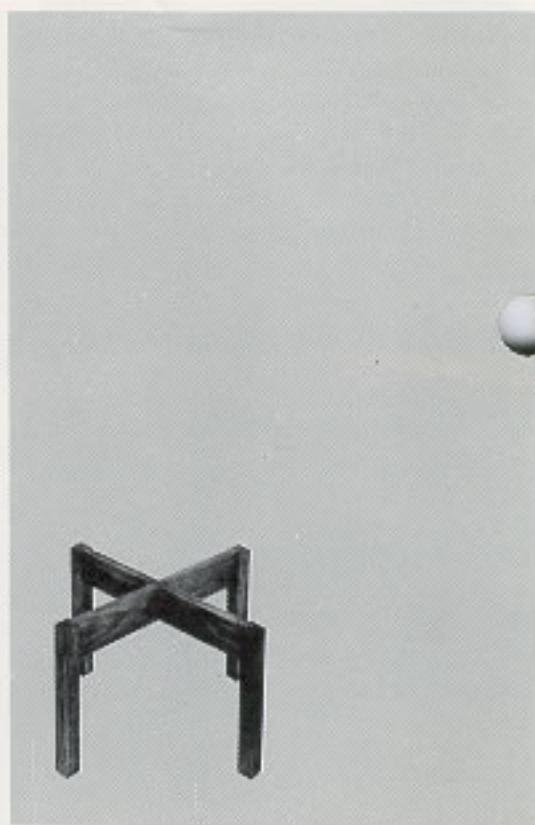
"All in all, the AR-6 acquitted itself very well in our tests. It was not quite the equal of the much more expensive AR models, whose sound it nevertheless resembles to an amazing degree, but on the other hand it out-performed a number of considerably larger and far more expensive systems we have tested in the same way. Incidentally, the AR-6 shares the AR characteristic of not delivering any bass output unless the program material calls for it. If at first hearing it seems to sound 'thin' (because it lacks false-bass resonances), play something with real bass content and convince yourself otherwise. We don't know of many speakers with as good a balance in overall response, and nothing in its size or price class has as good a bass end."

Stereo Review



Although designed for home use, AR speaker systems are often chosen for technical or professional applications because of their accuracy. They are used as monitors in the nation's leading FM broadcasting studios. Among recording companies which use AR speaker systems for auditing or monitoring are Angel Records, Connoisseur Society, Nonesuch Records, Vox Records, MGM Records, Polydor Records, Deutsche Grammophon and Vanguard Records. In addition to their obvious application in psychoacoustic studies, AR speaker systems have been used in physics laboratories studying Mössbauer effect, in computer laboratories to generate new types of displays, as adjuncts to sound synthesizers in electronic music centers, in environmental simulation studies and installations, and many other unusual uses. The AR staff welcomes inquiries regarding specialized use of AR speaker systems and other components.

At one of the world's leading medical schools, living heart sounds, amplified by an AR amplifier, are effectively reproduced for the class in a large lecture hall by four AR speaker systems. Almost all of the heartbeat signal is below 40 Hz.



AR speaker bases can be used where space limitations require mounting near the floor. Speakers standing directly on the floor tend to "boom"; the base raises an AR speaker system 11 inches above floor level, which helps to eliminate this problem. Bases are available either in unfinished birch, ready for staining, or solid walnut with oil finish; each base consists of two U-shaped pieces which fit together without screws. The bases are too large to be used with the AR-4x.

The Acoustic Research Contemporary Music Project

Advisers: Milton Babbitt, Elliott Carter, Aaron Copland, Gunther Schuller and Roger Sessions.

Director: David Epstein.

Beginning early in 1970, music by living American composers, many of whom have never before had their work broadcast or recorded, will be presented to listeners in a series of weekly broadcasts on many FM stations. The broadcasts, with commentary by Leo Treitler and informal interviews with many of the composers, will be produced by Acoustic Research and provided to the broadcast stations free of program charges. The records from which the music in the broadcasts is taken will be made available at a time to be announced, and will be manufactured in Europe especially for the project by Deutsche Grammophon GmbH. The cooperation of DG with the project makes possible sale of the records in the United States and Canada at \$2 each, and at a comparable price in other countries. After an initial period of distribution by AR, those recordings in greatest demand will be placed in the Deutsche Grammophon catalog for world-wide distribution.

A list of works to be performed during the first season, together with a list of those FM stations which have already asked to receive the transcriptions, is available by writing to ARCP, 24 Thorndike St., Cambridge, Massachusetts 02141. Records will also be obtainable from the office of the new AR factory in Europe: Acoustic Research International n.v., Radiumweg 7, Amersfoort, Holland.



Comparative AR Speaker System Specifications

	AR-4x	AR-6	AR-2x	AR-2ax	AR-5	AR-3	AR-3a
Size, height, width, depth (inches)	10 x 19 x 9	12 x 19½ x 7	13½ x 24 x 11½	13½ x 24 x 11½	13½ x 24 x 11½	14 x 25 x 11½	14 x 25 x 11½
Weight, pounds	18½	20	33	36½	39	52	53
Weight, kilograms	8.4	9.09	15	16.6	17.8	23.6	24
Recommended amplifier power (watts RMS/channel)	15	20	20	20	20	25	25
Impedance	8	8	8	8	8	4	4
Speaker complement	woofer	8"	8"	10"	10"	12"	12"
	midrange	—	—	—	3½" cone	1½" dome	2" dome
	tweeter	2½" cone	1½"	2½" cone	¾" dome	¾" dome	¾" dome
Crossover frequencies	1200 Hz	1500 Hz	1200 Hz	1400 Hz 5000 Hz	650 Hz 5000 Hz	1000 Hz 7500 Hz	575 Hz 5000 Hz
Controls	High	High	High	High, Mid	High, Mid	High, Mid	High, Mid
Finishes	unfinished pine	•	•	•	•	•	•
	mahogany	NA	NA	•	•	•	•
	birch	•**	NA	•	•	•	•
	oiled walnut	•	•	•	•	•	•
	glossy walnut	NA	NA	•	•	•	•
	oiled teak	NA	•	•	•	•	•
	cherry	NA	NA	•	•	•	•
	soft white*	•	•	•	•	NA	•
rosewood* (palisander)	•	•	•	•	•	NA	•

*Soft white and rosewood, available from Amersfoort, Holland only.

**AB-4x only: birch is unfinished.

● Available.

NA: Not available.

The AR Guarantee

The Economics of High Fidelity

IF YOU UNDERSTAND THE EXCELLENCE OF AR SPEAKERS YOU DESERVE TO HAVE ONE

The AR philosophy: "the design of equipment capable of reproducing music with the greatest possible accuracy, so that the work of the composer, performers and recording engineers is presented to the listener with the highest degree of precision possible."

Speakers created by Acoustic Research

Inc. range from the modestly priced to highly complex engineering achievements. And the same care and expertise is carried throughout the range: when AR develops equipment of lower cost, it embodies only such compromises as will have least effect on the accuracy with which the music is reproduced.

AR 3A

Long considered the reference standard loudspeaker the AR 3A uses a 12" woofer and two hemispherical domes for mid and high range. "Stereo Review" said of it . . . "The best speaker frequency response we have ever measured using our present test setup . . . virtually perfect dispersion at all frequencies."

Highly detailed data available.

\$839 pair*

AR 2AX

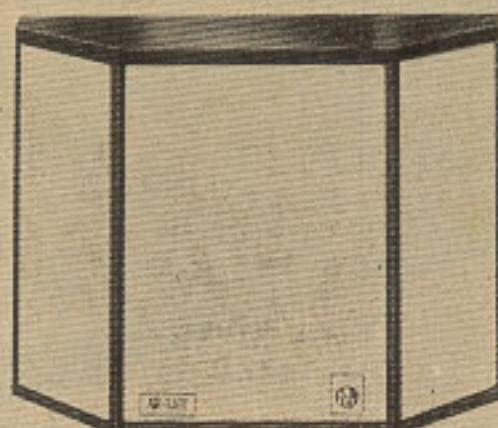
The performance standard in the design of the AR 2AX was the same as that for the 3A: natural reproduction of music without exaggeration or artificiality of sound. But where quality in the case of the AR 3A had been limited only by the state of the art and our own engineering skill, for the 2AX price was also a consideration. "American Record Guide" said "1970 brings us a better than ever 2AX and I am nuts about it".

\$469 pair*

AR 5

The AR 5 is only different to the AR 3A inasmuch as it uses a 10" woofer and a slightly different crossover. As always the standard of accuracy is the comparison to live music. At AR the best response curve for a speaker system, like that for a microphone or amplifier, is the one that most closely matches the input. The specifications of the AR 5 are obtained, as in all models, from production units, not prototypes.

\$599 pair*



AR-LST

The "Laboratory Standard Transducer" was designed for professional applications. It offers the recording engineer a quantitative standard for the monitoring of recording and mix down operations. It is also used in scientific applications where the accuracy and repeatability of acoustical measurement is a prime requirement. It is also available for individuals who want such a precision instrument in their homes.

Highly detailed data available.

\$1795 pair*

AR 7

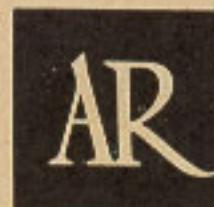
This speaker is very small (248 x 400 x 150 mm) and therefore particularly suitable for 4 channel use where space is at a premium. It uses a tweeter essentially the same as that used in the renowned AR 6. The smooth and well dispersed energy output of this speaker is well balanced by a newly designed woofer which offers a standard of low distortion bass exceeding that of speakers of much greater size and cost.

\$189 pair*

AR 6

In the three years or so that the AR 6 has been available it has already become the speaker that all others are compared to in its price range. It employs the very best technology in its cone woofer and tweeter that the state of the art permits and stands comparison with the most expensive AR systems. Also available in unfinished pine.

\$289 pair*



GUARANTEE:

The workmanship and performance in normal use of AR products are guaranteed from the date of purchase: 5 years for speaker systems, 3 years for turntables, 2 years for electronics.

AR 4XA

A new addition to the AR range and bringing you a third AR loudspeaker under \$300 a pair is the AR 4XA. A successor to the AR 4X the AR 4XA uses the same woofer and cabinet as its predecessor but utilises the AR 6 tweeter and a modified crossover. An audition of the AR 7, AR 4XA or AR 6 will show even the most critical listener that the differences are subtle yet obvious.

\$239 pair*

Acoustic Research Inc.

24 Thorndike Street
Cambridge, Massachusetts, 02141, USA
European Office:
Radiumweg 7
Amersfoort, Holland

A concert by a rock group in the sculpture garden at the
Museum of Modern Art. The twelve AR-5 speaker
systems owned by the museum are used for sound
reinforcement during these summer concerts.

December 1970

