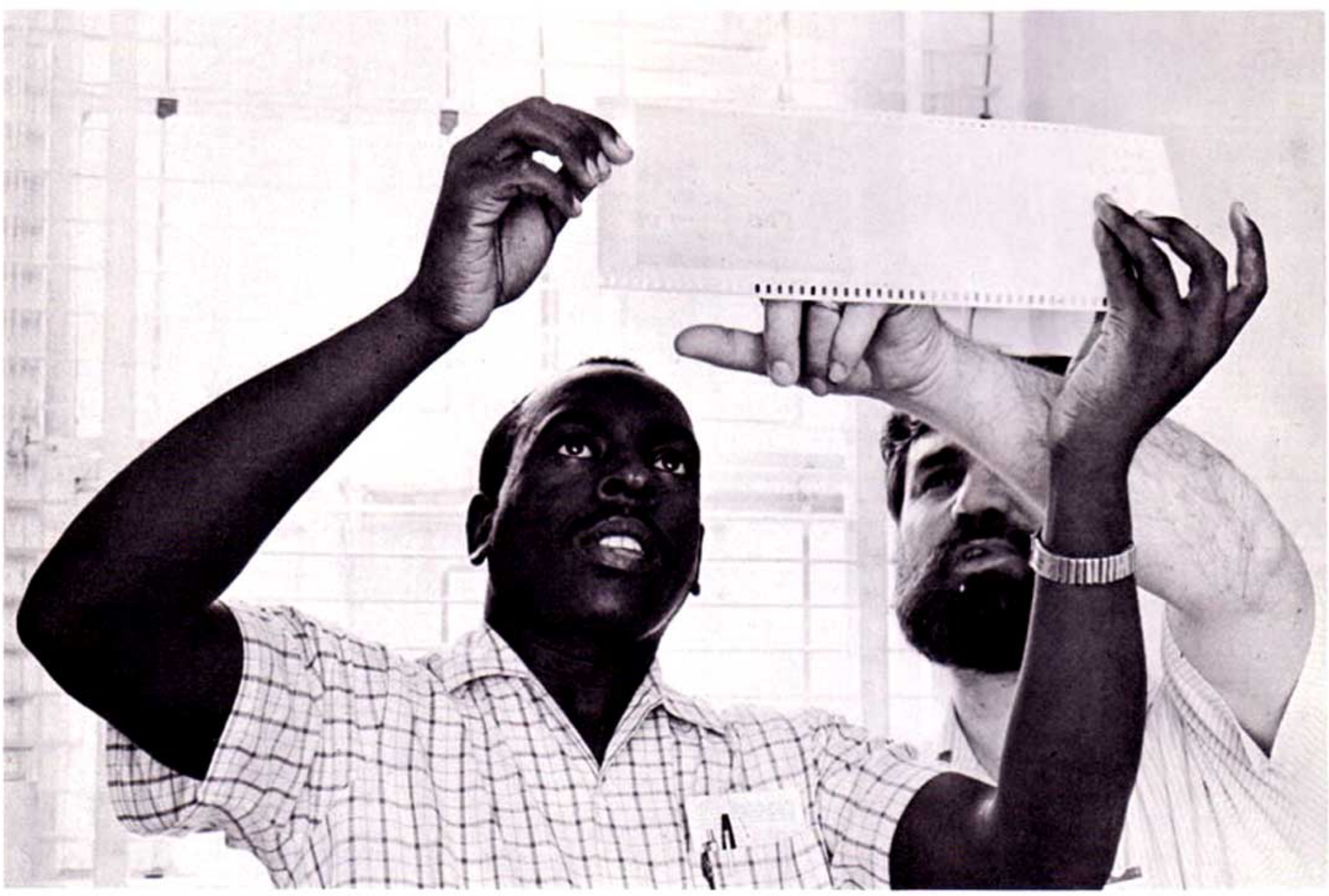
Acoustic Research High Fidelity Components

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



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.

Most companies assemble loudspeaker systems from commercially produced drivers. AR's seventeen years experience in designing, manufacturing and testing our own drivers permits us to guarantee the performance of each AR loudspeaker system. (See inside back cover.)

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.

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."

It is noteworthy that today, after 15 years of imitation by other manufacturers, the acoustic suspension system used in the original AR-1 (and currently in the AR-3a and AR-1W) 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.

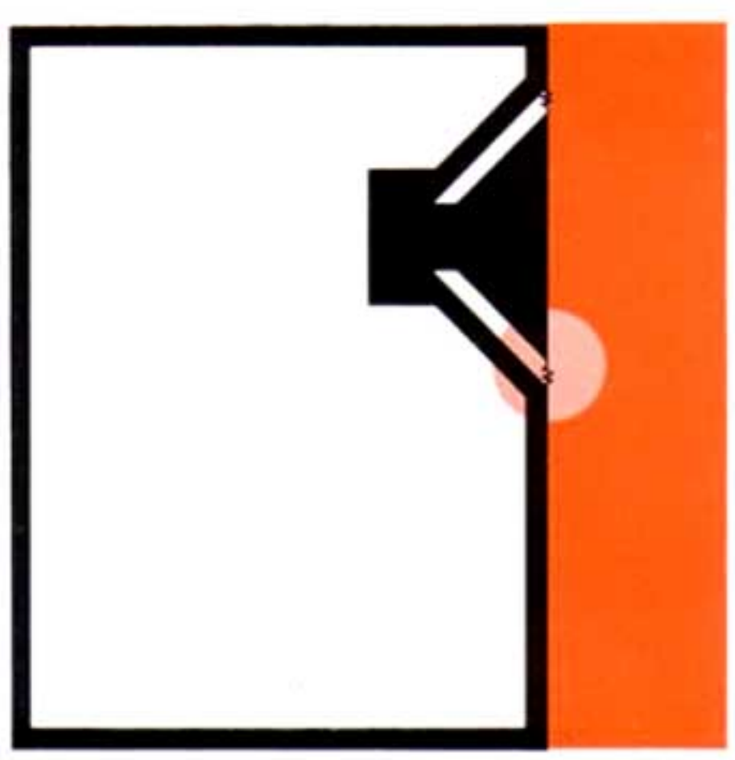
Acoustic Suspension

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 invented and patented by Edgar M. Villchur, founder of 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.



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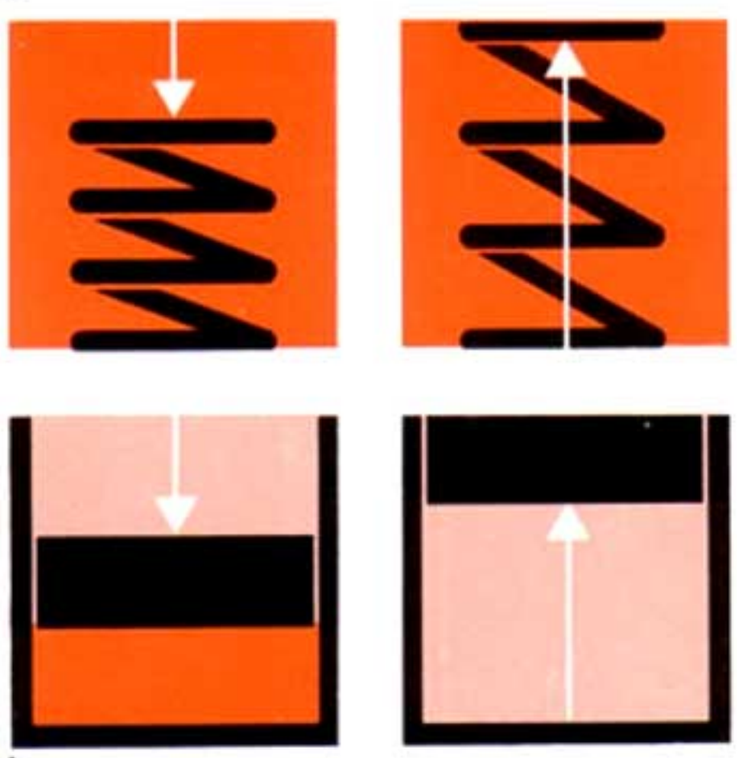

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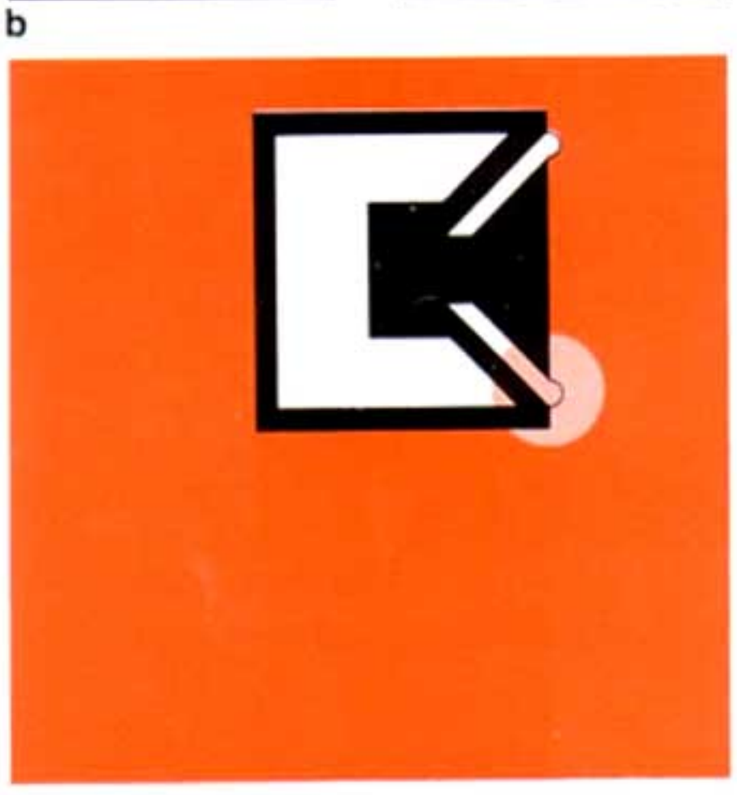

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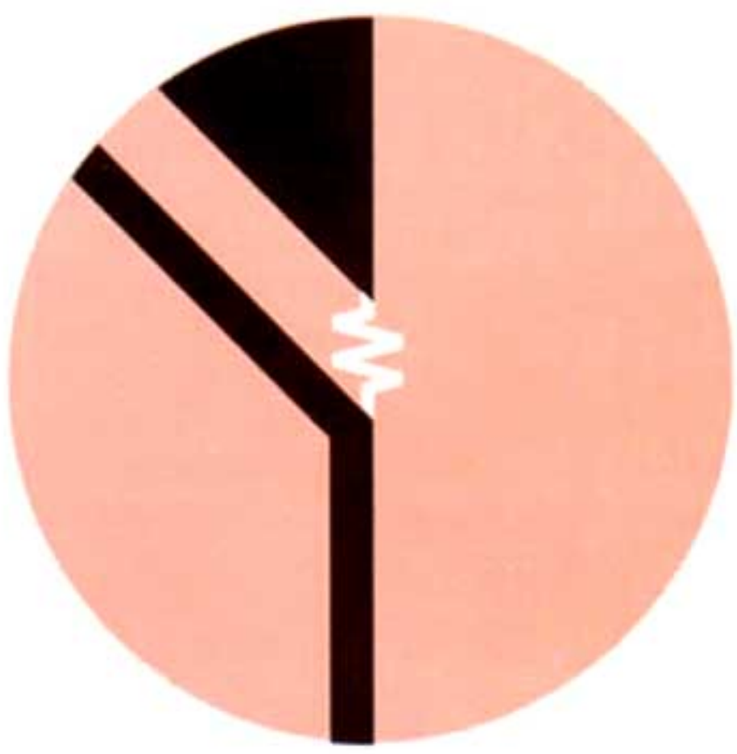
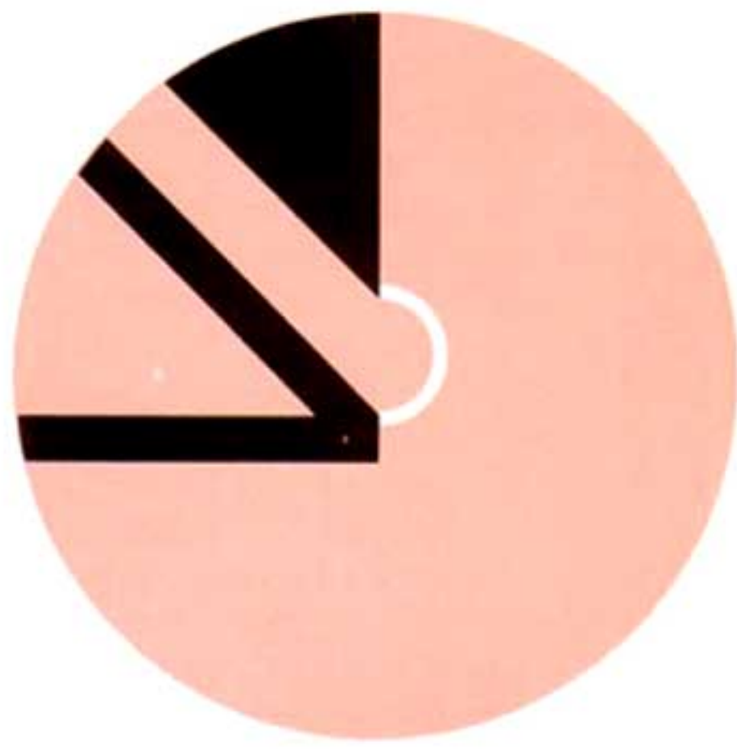




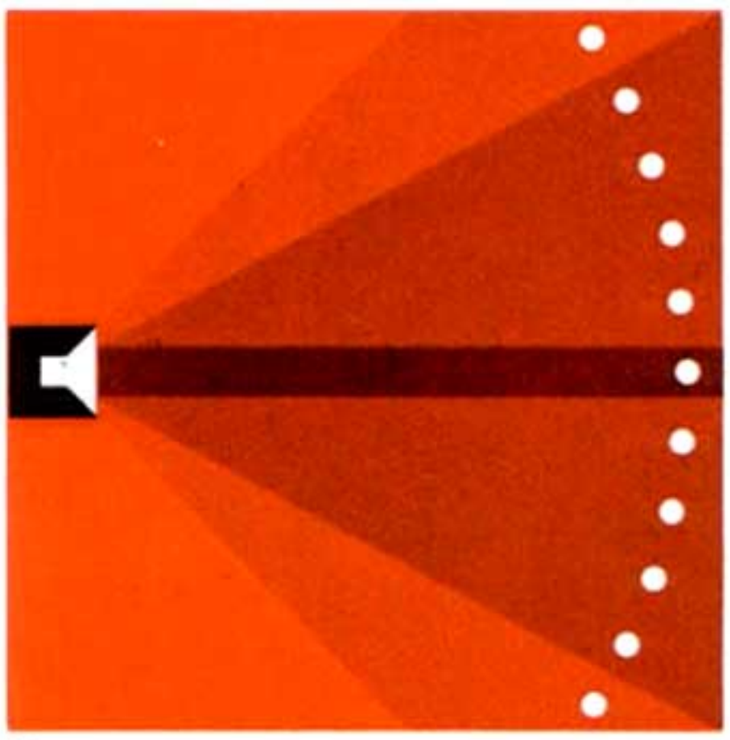
Hemispherical Dome Speakers

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, there is uneven distribution of sound energy in the room, and, except for locations close to and in front of the speaker, the high frequencies are weakened. 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**

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.



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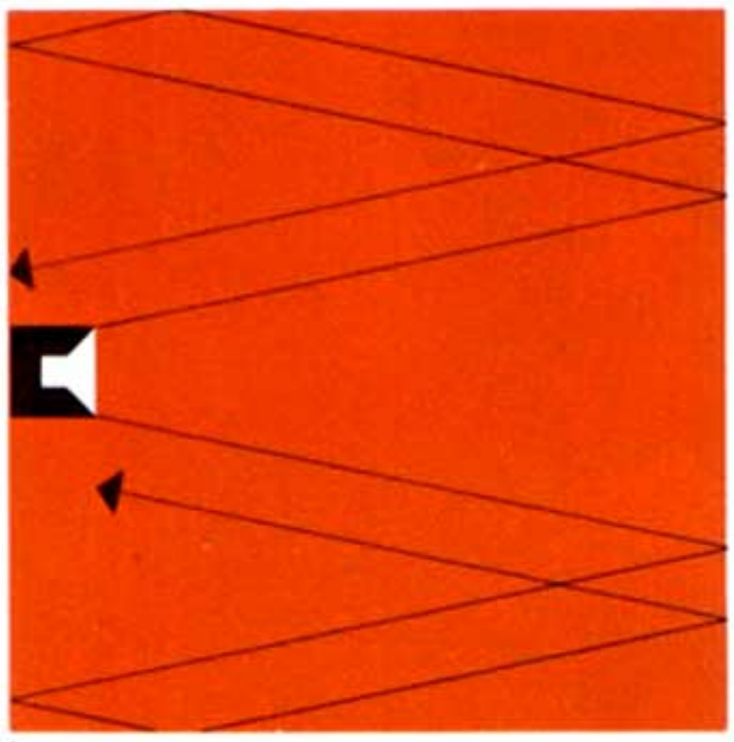

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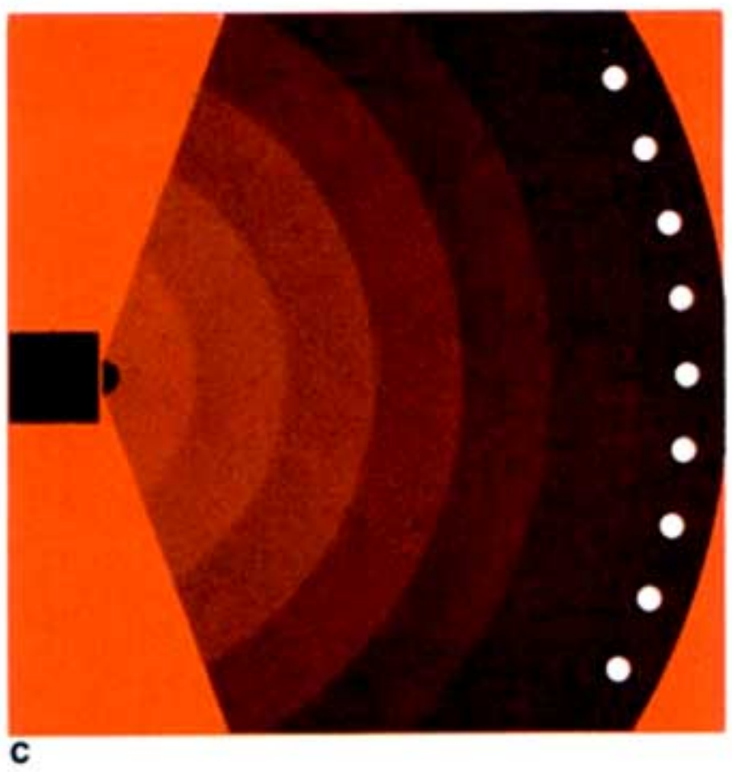


c

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 systems 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 ¾" 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 11⅜" deep.
Weight: 53 lbs (24 kg).
Recommended Amplifier:
25 watts r.m.s. per channel, minimum.
Impedance: 4 ohms.
Speaker Complement: 12" 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-3a is guaranteed for 5 years from date of purchase. See inside back cover for the AR guarantee.

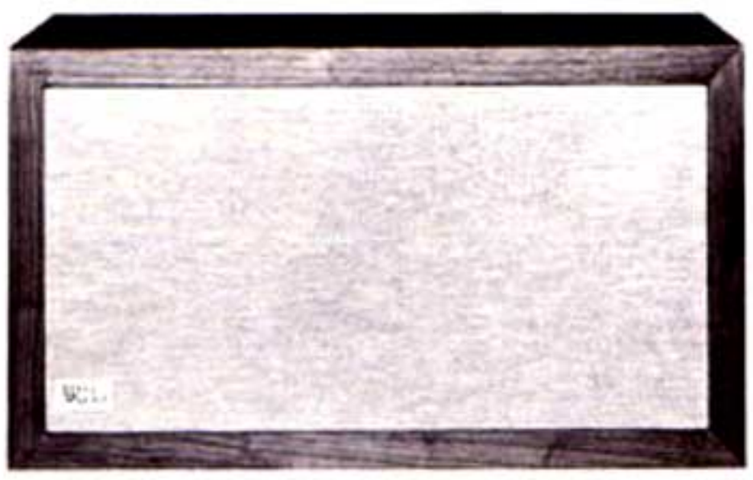
AR-3a

Glossy walnut, oiled walnut, cherry, oiled teak	$250
Mahogany, birch	$240
Unfinished pine (can be painted)	$225

5% higher in West and Deep South.

All prices in this catalog are subject to change without notice.

The AR-1W is the woofer section alone of the AR-3a; write for price and details. The AR-3 is the forerunner of the AR-3a and is listed 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." *Stereo Review*.

"... measured an extremely smooth frequency response from 30 cps to 17 kc. Its overall distortion was extremely low ... in our opinion, one of the two* finest speaker systems available today." *Consumer Guide*, November 1970.

"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*.

"Acoustic Research have achieved what they set out to do – a first class loudspeaker by any standards." *HiFi News* (England).

*the other is the KLH-12

AR-5
Speaker Systems

For over 40 years, Arthur Fiedler has been conductor of the Boston Pops Orchestra. His recordings with the Pops have made him known to music lovers all over the world. In his Brookline, Massachusetts, home, he auditions his latest Polydor recordings over an AR music system consisting of two AR-5 speakers, and an AR receiver and turntable.

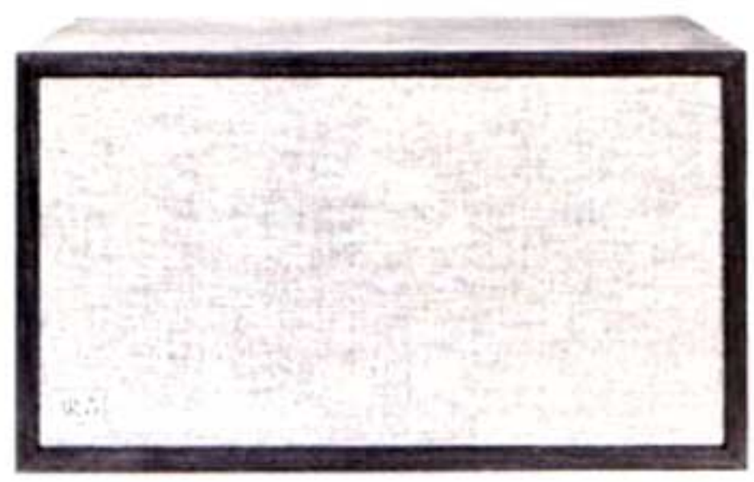
Description and Press Comment

"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*.

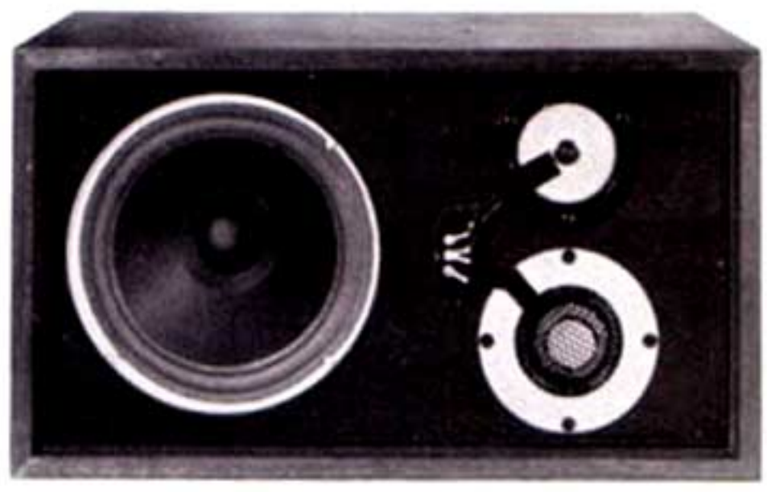
"Its sound was unquestionably "AR" – which is to say that it had very clean, extended, low bass, exceptional dispersion of the higher frequencies, and an effortless, undistorted overall sound . . . [With level controls adjusted to the reviewer's preference] the sound quality of the AR-5 could then only 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-3a and AR-5 find themselves up in the lonely heights of perfection as far as dispersion and lack of distortion are concerned." *Disc* (Holland).

Inside the AR-5 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 1/3-octave lower, and the price of the AR-5 is about $75 less.



The design of the AR-5 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 years of experience with the newest processes and materials.



Size: 13½" x 24" x 11½" deep.
Weight: 39 lbs (17.8 kg).
Recommended Amplifier:
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.

AR-5	
Glossy walnut, oiled walnut, cherry, oiled teak	$175
Mahogany, birch	$168
Unfinished pine (can be painted)	$156

5% higher in West and Deep South.

All prices in this catalog are subject to change without notice.

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. In each there is the same 10-inch woofer used in the AR-5 and a small high-dispersion cone speaker. In addition, the AR-2ax has a third speaker, a ¾-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: 13½" x 24" x 11½" deep.
Weight: AR-2x, 33 lbs (15 kg); AR-2ax, 36½ lbs (16.6 kg).
Recommended Amplifier:
20 watts r.m.s. per channel, minimum.
Impedance: 8 ohms.
Speaker Complement: 10" acoustic suspension woofer; AR-2x, 2½" mid/high-frequency unit; AR-2ax, 3½" mid-range, ¾" hemispherical tweeter.
Controls: AR-2ax, independent mid-range and high-frequency adjustments; 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.

Glossy walnut, oiled walnut, cherry, oiled teak	AR-2x $102	AR-2ax $128
Mahogany, birch	$96	$122
Unfinished pine (can be painted)	$89	$109

5% higher in West and Deep South.

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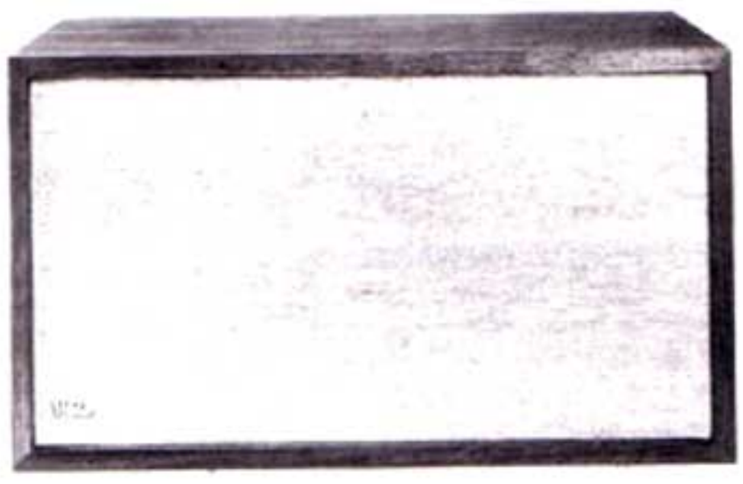
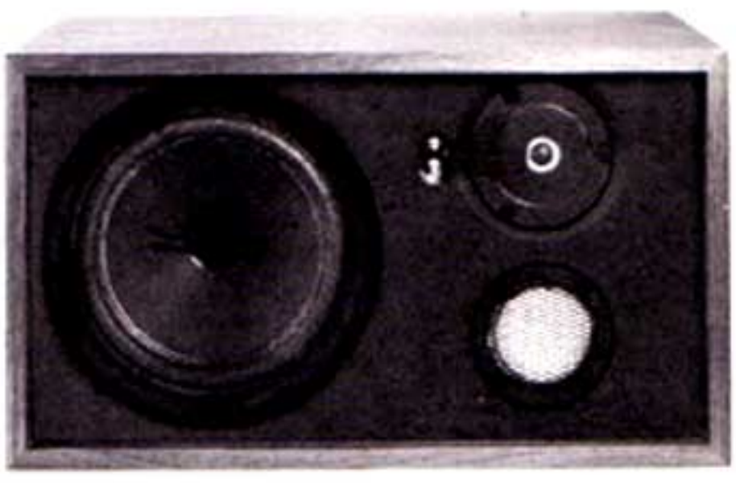
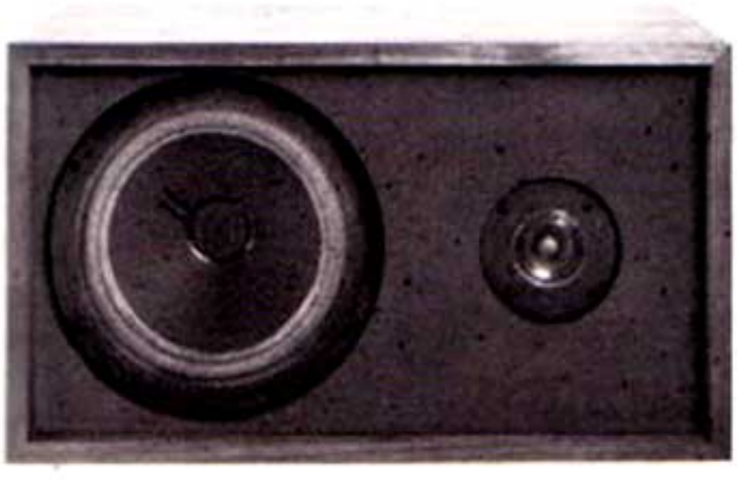
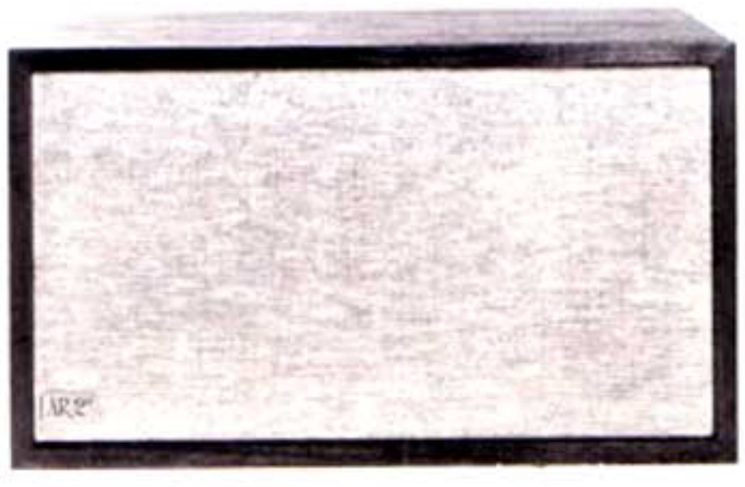
"... 1970 brings us a better-than-ever AR-2ax. And *I am nuts about it!* ... This new marriage of speaker drivers has produced a system that is as close to being perfectly balanced as any I have ever heard. ... No, the new AR-2ax is not the best speaker there is. But it is very, very close ... In fact, I will go so far as to say that you should not purchase *any* speaker under $200 without first listening to this one." *American Record Guide.*

"... here is an excellent new speaker system with all the clarity and open sound of its costlier namesakes, and very nearly all the clean bass power of the AR-5 or AR-3a too. It offers a smooth, well-balanced, uncolored, and amply dispersed response over the full musical range ... The AR-2ax is, in sum, an eminently honest, musical reproducer." *High Fidelity.*





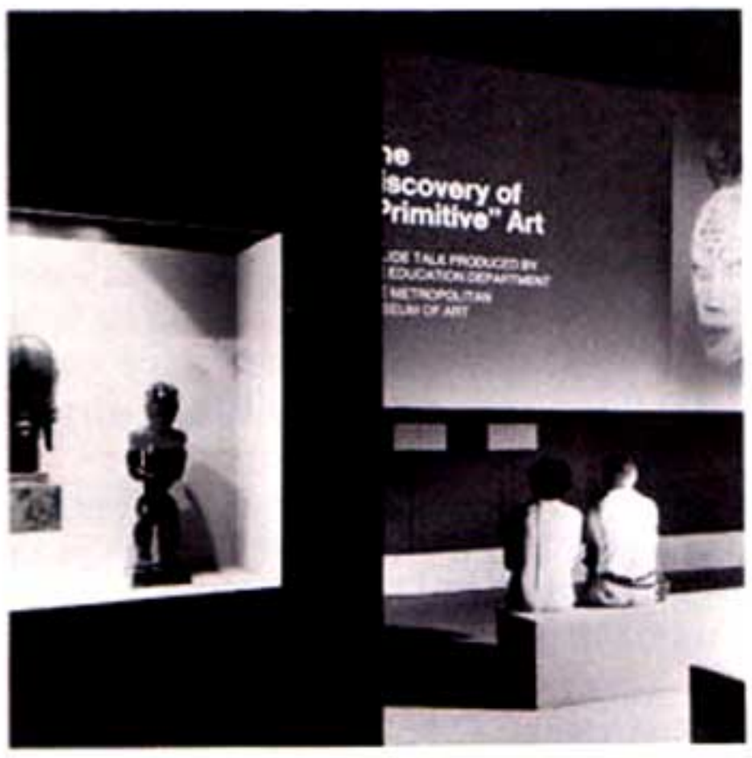




AR-4x
Speaker Systems

Singer Judy Collins's 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 is the least expensive speaker system offered by Acoustic Research. 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:
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.

AR-4x	
Oiled walnut	$63
Unfinished birch	$63
Unfinished pine (can be painted)	$57

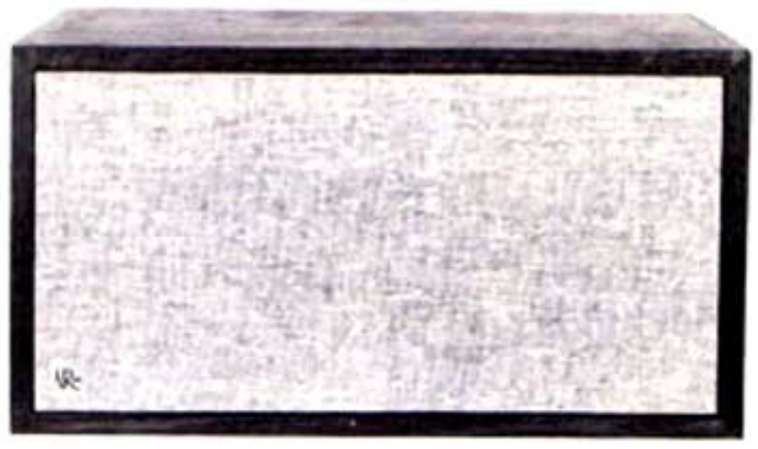
5% higher in West and Deep South.

All prices in this catalog are subject to change without notice.

"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* (Belgium).

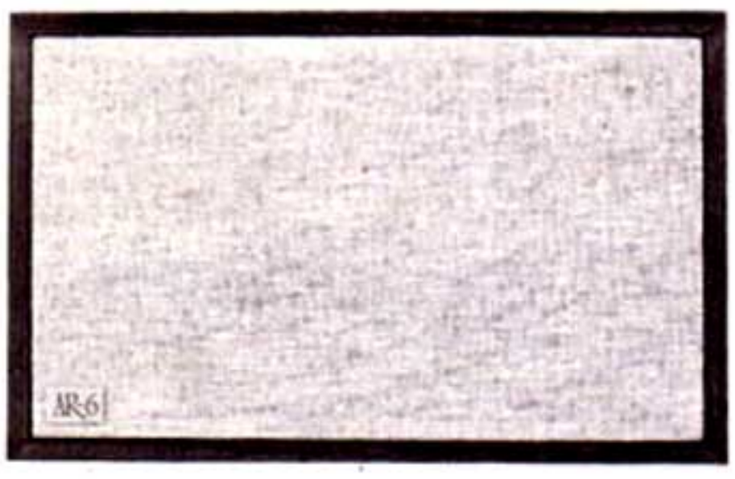
"This [frequency response] would be remarkable for any speaker, and in our experience is unique for any speaker in the price class of the AR-4x . . . We know of no competitively priced speaker that can compare with it." *Stereo Review.*

"excellent performance . . . a steady frequency response which many more expensive systems would find it difficult to equal . . . this unit, measured objectively, confirmed fully what I expected to find after listening to it with a wide range of programme material. The AR-4x is a loudspeaker of very high quality, made and designed to high technical standards. It is not very often that one finds such a completely successful enterprise as this." *Records & Recording* (England).



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 used 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.

The seven-inch depth of the AR-6 adapts it ideally to shelf placement, or it may be mounted directly on a wall with the fittings supplied with each speaker system.

Size: 12" x 19½" x 7" deep.
Weight: 20 lbs (9.09 kg).
Recommended Amplifier:
20 watts r.m.s. per channel, minimum.
Impedance: 8 ohms.
Speaker Complement: 8" acoustic suspension woofer, 1½" 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.

AR-6	
Oiled walnut	$81
Unfinished pine	$72

5% higher in the West and Deep South.

All prices in this catalog are subject to change without notice.

"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*.

"Another great bookshelf speaker from AR . . . a really terrific performer. The AR-6 has a clean, uncolored, well-balanced response that delivers some of the most natural musical sound yet heard from anything in its size/price class, and which indeed rivals that heard from some speakers costing significantly more . . .

"The response curves taken at CBS Labs tell a good part of the story. Note that across the largest portion of the audio spectrum and especially through the midrange the AR-6 responds almost like an amplifier . . ."
High Fidelity.

AR Electronics

The same rational approach to product design that is characteristic of its loudspeakers and turntables is to be found in AR's receiver, tuner, and amplifier. With each unit, AR offers high performance at modest prices and an absence of frills, in combination with AR's unique two year guarantee (see inside back cover).

Acoustic Research engineers have used the most advanced solid state devices in the design of their electronic products. Integrated circuits, FET's, phase-linear IF filters, and all-silicon transistors are used to make AR units as sensitive, precise and powerful as is ever likely to be needed in the home. While the electronic circuitry is complex, the operation is simple. As with the best professional equipment, control functions have been limited to those which are actually needed. The most rigorous manufacturing and inspection techniques we know are used in the assembly of these products.

The AR receiver combines the features of the AR tuner and AR amplifier in one compact unit. If you want FM reception with your stereo system, the advantage of purchasing a receiver lies in its compactness and lower cost compared to purchasing the separate tuner and amplifier. If there is no significant FM broadcasting in your area, or if you want to purchase a system in stages, the amplifier can be bought first. The tuner can be added later.

The amplifier circuitry used in AR's amplifier and receiver will provide any speaker system with an accurate and powerful signal.

The tuner section of the AR receiver and AR tuner has been designed to provide accurate reception of both mono and stereo broadcasts. AR's tuner circuitry is guaranteed to meet its stringent distortion specifications with either type of transmission. The AR tuner can be used with either the AR amplifier or with any other well made unit.

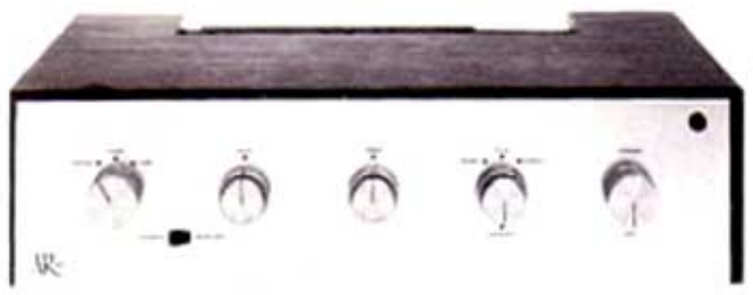
"The AR's FM tuner section was the finest CONSUMER GUIDE has ever reviewed." *Consumer Guide*, November 1970.

"Our laboratory tests showed that the AR amplifier is rated with great conservatism . . . Into 4-ohm loads, the AR amplifier delivered a staggering 110 watts per channel at the clipping point (about 0.5% distortion) . . . In short, the AR tuner section is, in a number of areas, simply better than we can measure . . . We have yet to find a component tuner at anywhere near that price that can compare to the tuner section in the AR receiver." *Stereo Review*.

"Harmonic distortion was among the lowest ever measured, almost non-measurable across most of the audio band. The IM characteristics must be counted as the best we've ever seen; again, almost non-measurable up to high power levels, and – into a 4-ohm load – still running below a mere 0.2 per cent at 100 watts output [per channel] . . . this is one of the quietest amplifiers yet encountered." *High Fidelity*.

Thomas Stewart and Evelyn Lear are not only leading artists of the Metropolitan Opera Company, they are also husband and wife. In their New York apartment, they use AR-3a speakers with the AR receiver and turntable to listen to their many Deutsche Grammophon recordings

Specifications



FM Section (Applies to both the tuner and receiver)
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.

FM Circuit Features:
FET front end with 4-section variable capacitor; multisection phase-linear 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 Section (Applies to both the amplifier and receiver)
Note: AR rates its equipment according to the most stringent professional standards. This can present some difficulties when comparing our specifications with those methods designed to provide inflated figures. We state RMS (or continuous) power – not IHF power, music power, peak power, dynamic power, or other non-scientific, less rigorous specifications. AR power figures are stated for *one* stereo channel (not the sum of the two) but the measurements are made with both channels operating simultaneously – not just on one channel alone. We state the power over a range from 20 to 20,000 Hz, not just at some mid-band frequency. (At 1000 Hz, for example, the 4-ohm RMS power per channel of an AR amplifier is typically *100 watts or more*). AR's distortion measurements include the pre-amplifier stage, not just the amplifier section. Finally, remember that all specifications are *guaranteed minimum figures.*

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.

Amplifier Circuit Features:
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.

Comparative Specifications

	AMPLIFIER	TUNER	RECEIVER
Dimensions (not including knobs) without optional wood cover W x H x D	15⅛" x 4 5/16" x 10"	15⅛" x 4 5/16" x 10"	16⅝" x 5 11/16" x 11⅛"
Dimensions (not including knobs) with optional wood cover W x H x D	15¾" x 4½" x 10"	15¾" x 4½" x 10"	17¼" x 6" x 11⅛"
Weight	19 lbs (8.64 kg)	7 lbs 10 oz (3.4 kg)	23 lbs (10.5 kg)
Inputs	magnetic phono; tuner; tape playback	300 ohm balanced antenna input	300 ohm bal antenna; magnetic phono; tape playback; extra high level (special)
Outputs	4-16 ohm speakers; tape recorder	one pair to amplifier, one pair to tape recorder (identical)	tape recorder; 4-16 ohm loudspeaker; headphone jack (front panel); center channel preamp.
Front Panel Controls	Input selector switch; tape monitor; individual bass and treble for each channel; balance; mode switch; on/off/volume	tuning knob: stereo/ mono; hush on/off; power on/off	FM tuning knob; input selector; tape monitor; individual bass and treble for each channel; balance; mode switch (stereo, null, mono); on/off/vol; speaker/ headphones; hush on/off
Rear Panel Controls	individual phono input level	output level [0.7 volt RMS Minimum (100% modulation) control at max]	phono input level
AC Power Input Regular Model	110-120 volts AC 60 Hz, 125 w. average (500 w. max.)	110-120 volts AC, 60 Hz, 12 w.	110-120 volts AC 60 Hz, 125 w. average (500 w. maximum)
AC Power Input Universal Model	100, 120, 220, 240 volts AC, 50/60 Hz. 125 w. ave. (500 w. max.)	120,220 volts AC (switchable), 50/60 Hz, 12 w.	120, 220 volts AC (switchable), 50/60 Hz, 125 w. ave. (500 w. max.)
Suggested Selling Price with black aluminum cover Regular Model	$250*	$210*	$420*
Suggested Selling Price with black aluminum cover Universal Model[1]	$250*	$225*	$435*
Optional Oiled Walnut Cover	$15*	$15*	$20*

(AR electronic units have U.L. approval) *5% higher, West Coast and Deep South

(1) The universal models of the tuner and receiver include a switchable de-emphasis network permitting the unit to be adjusted for accurate FM response anywhere in the world.

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. The 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: 12¾" x 16¾" x 5¼" high.
Weight: 13½ 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:	
33⅓ rpm	$84
33⅓ and 45 rpm	$87
For 110/220 volts, 50/60 Hz 33⅓ and 45 rpm	$87

5% higher in West and Deep South.

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 *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. Dartevelle 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*.

Accessories and spare parts:

Needle Force Gauge	$1
Cartridge Shell	$2
Turntable Pad	$2
Dust Cover	$3

One of each is supplied with the turntable; these prices are for additional parts bought separately.

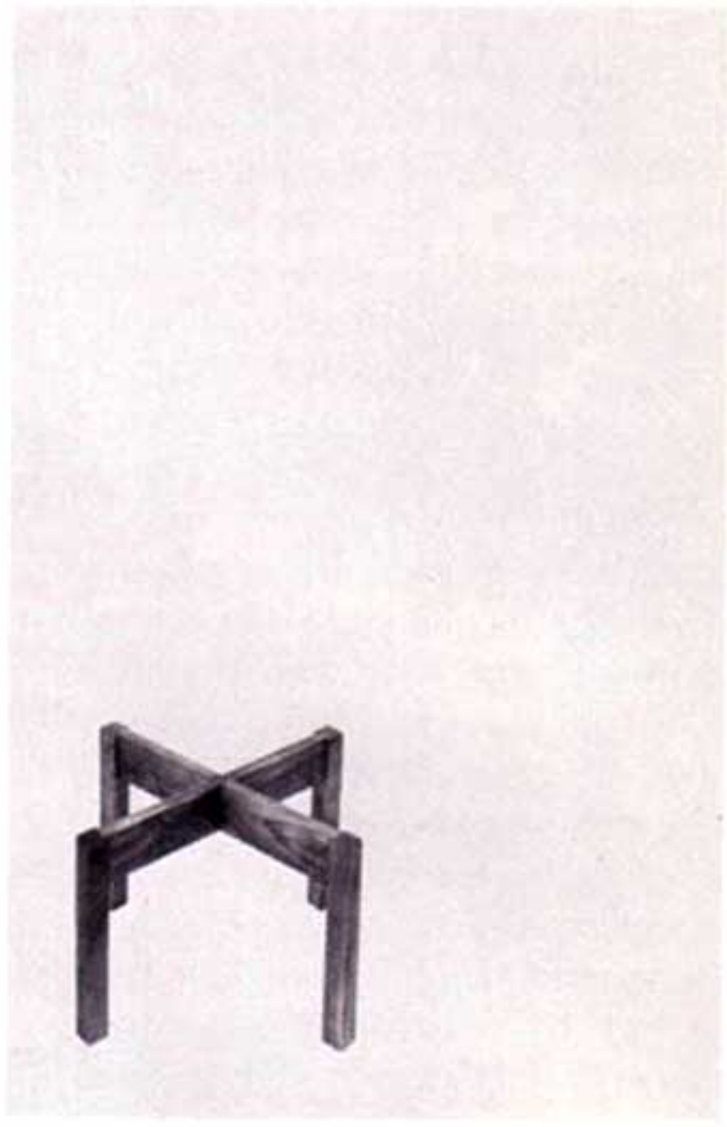
All prices in this catalog are subject to change without notice.

Special Applications

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 Mossbauer 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.

Speaker Bases



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 or AR-6.

AR Speaker Base $10.00 each

Postpaid from AR.

All prices in this catalog are subject to change without notice.

The AR Music Rooms

AR maintains two music rooms at which visitors are welcome to listen to their choice among new record releases and some selections AR has made, played on AR equipment. No sales are made at the music rooms, but AR personnel are there to answer any questions that visitors may have about AR equipment or music reproduction in general.

In New York City, a music room is located conveniently on the west balcony of Grand Central Station, off Vanderbilt Ave. at 43rd St. It is open from 10:00 a.m. to 6:30 p.m. on weekdays, 11:30 a.m. to 5:30 p.m. on Saturdays and Sundays.

In Cambridge, Massachusetts, there is a music room at 52 Brattle St., a short walk from Harvard Square. It is open from 4:00 p.m. to 10:00 p.m. on Monday, 12:00 noon to 10:00 p.m. Tuesday through Friday, and 10:00 a.m. to 10:00 p.m. on Saturday.

The Acoustic Research Contemporary Music Project

Advisors: Milton Babbitt, Elliott Carter, Aaron Copland, Gunther Schuller, Roger Sessions
Program Committee: David Epstein Director; Earl Kim, Donald Martino, Seymour Shifrin

In 1970, leading FM stations in the United States and Canada began a weekly series of broadcasts featuring music by living American composers, many of whom had never had their works broadcasted or recorded before. The programs, produced by Acoustic Research with commentary by noted musicologist Leo Treitler, were made available to the FM stations free of charge.

The records from which the music on the broadcasts was taken are now available. They have been 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 ($12 for the complete set of six records), and at a comparable price in other countries.

Detailed information including a list of records with ordering procedure is available by writing to ARCMP, 24 Thorndike Street, Cambridge, Massachusetts 02141.

"One splendid new effort has been made, not by one of the giants of the electronic industry, but by one of the smaller, and I dare say better, of the lot: Acoustic Research, Inc., of Cambridge, Massachusetts. The result has been mind-blowing, indeed . . . The plan is a magnificent one, and Acoustic Research must be commended for its vision and courage." Oliver Daniel in *Saturday Review*.

"Anticipation is fulfilled in the first and most essential respect: There is not an inept or sloppily executed piece in the group. Invariably one finds intelligence and craft and almost invariably a firm insistence on rationality." *New York Times*.

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	9.1	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"	10"	12"	12"
	midrange	–	–	–	3½" cone	1½" dome	2" dome	1½" dome
	tweeter	2½" cone	1½" cone	2½" cone	¾" dome	¾" dome	1⅜" 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
Price	unfinished pine	$57	$72	$89	$109	$156	$203	$225
	mahogany	–	–	$96	$122	$168	$216	$240
	birch	$63**	–	$96	$122	$168	$216	$240
	oiled walnut	$63	$81	$102	$128	$175	$225	$250
	glossy walnut	–	–	$102	$128	$175	$225	$250
	oiled teak	–	–	$102	$128	$175	$225	$250
	cherry	–	–	$102	$128	$175	$225	$250

*All prices are subject to change without notice. All prices are 5% higher in the West and Deep South.

**AR-4x only; birch is unfinished.

AR's unique five-year guarantee is made possible by an unusually rigorous testing program. Each driver unit is individually tested in an anechoic chamber for distortion, frequency response, and mechanical stability. After the drivers have been mounted in the cabinet, the complete system is once again tested in the chamber. The extremely close tolerances established by AR's Quality Control cause a significant number to be rejected, but this insures that finished units meet or exceed our published specifications.

The AR Guarantee

AR Product Guarantee: the workmanship and performance in normal use of AR products are guaranteed from the date of purchase; 5 years for speakers, 3 years for turntables, and 2 years for electronics. These guarantees cover parts, repair labor, and freight costs to and from the factory or nearest authorized service station. New packaging if needed is also free.

This means no cost for parts, no cost for labor, no cost for "service charges," and no cost for freight whether to and from the nearest authorized service station or the factory. New cartons, if needed, are free. The only cost is inconvenience, which we greatly regret, and try to minimize.

On occasion, consumers have reason to complain about a product they have bought. If you buy an AR product and are dissatisfied for some reason we want to know about it. You may write to
Customer Service Department
Acoustic Research, Inc.
24 Thorndike Street, Cambridge,
Massachusetts 02141, U.S.A.

The Economics of High Fidelity

Consumers are urged to read guarantees covering high-fidelity equipment in which they are interested. The AR guarantee expresses our confidence in the performance of AR equipment, and our conviction that the consumer should not have to pay if the manufacturer is to blame for a fault in the product, but rather that he should get what he expects the first time: a product that works as he has been told it will work, for the price he is asked to pay.

To make the guarantee of performance meaningful, AR offers complete, detailed technical data on every AR product free upon request. AR owners can then find out exactly what we guarantee.

How much does a high-fidelity system cost? The answer depends, of course, upon the quality of the components chosen and the facilities which the system is to provide. In general, AR believes, the consumer should buy the best components he can afford, at the lowest price available to him. This is not as easy as it sounds because quality is not always directly related to price.

1
Get as much objective information as you can about the components in which you are interested. Write to each manufacturer for full specifications.

2
Find out exactly what is guaranteed, for how long, and especially what costs are not covered by the guarantee. A written AR guarantee accompanies every AR product.

3
Listen carefully and at some length to the components you are considering. The demonstration should consist of a varied musical program. Quick demonstrations with gimmick records do not provide a proper basis for evaluation.

4
When comparing speakers and amplifiers, make sure that their controls are set in comparable operating positions; otherwise, the comparisons will be meaningless. The sound of any speaker system can be changed considerably by adjustment of its controls.

5
We believe the term "high fidelity" means fidelity to the original source material. If you agree, then your basic comparison should not be whether speaker A sounds "better" than speaker B, but rather which speaker reproduces the sound of live music, the original record, tape, or broadcast most accurately.

Acoustic Research Inc.

24 Thorndike Street
Cambridge, Massachusetts
02141, U.S.A.

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.

February 1971

Printed in U.S.A.

Part No. L-1601