

epi loudspeakers

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Archiv Michael-Otto*



The Company

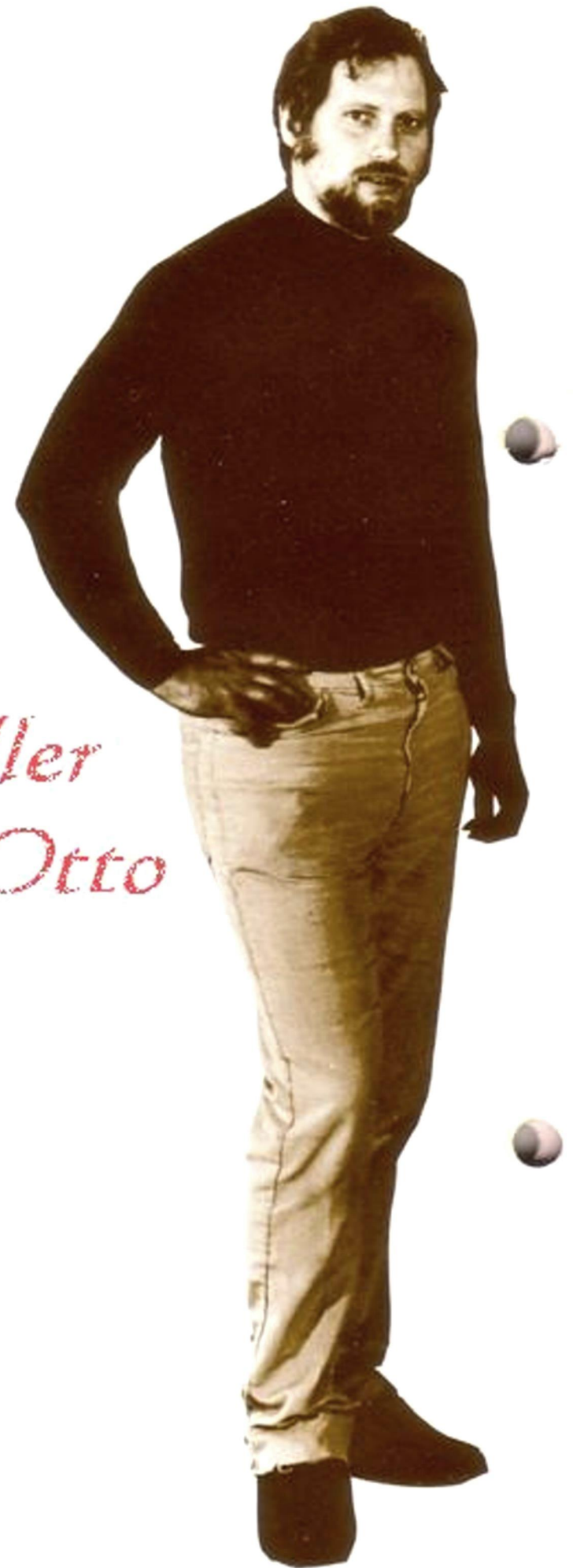
Epicure Products Inc. is a collective of audio experts and engineers who banded together in 1968 to form a progressively minded loudspeaker company. Many of us had previously played a significant role in loudspeaker design and production for other firms. I had most recently supervised production engineering and quality control at KLH, while perfecting loudspeaker design techniques. Prior to that, while at AR, I was responsible for engineering a considerable portion of the improvement of the AR 3 as well as the development of the AR 4X. It was our realization that the larger companies did not honestly want to offer linear loudspeakers to their customers which led us to the decision that a new company might successfully compete with the present day giants in producing speakers whose performance would not only be better, but whose cost would be less.

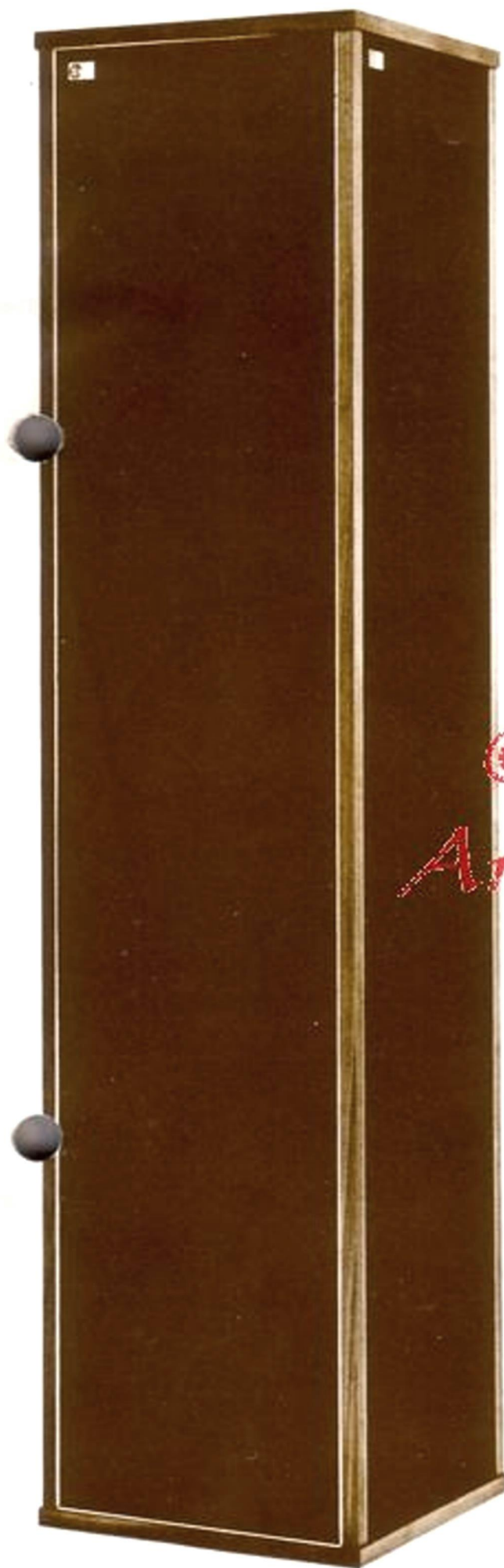
The initial period of operation was not easy for the company. Without advertising and marketing expertise we were, at first, unable to attain the nationwide product acceptance level that the performance of our first loudspeaker should have enjoyed. Fortunately, the enthusiasm of our New England dealers and customers brought us through our first three years and enabled us to expand our product line from the original bookshelf model to a total of eight different EPI linear loudspeakers.

Our continued growth is the best evidence of the hi-fi consumers' greater appreciation and requirement for the highest level of performance obtainable for the dollar value. I would like to personally thank all the people who made our success possible and welcome our new speaker purchasers to the EPI family.



Winslow N. Burhoe
EPI Founder





The Product

EPI makes eight loudspeaker systems. Each in its own way attempts to provide what they believe to be the best possible sound reproduction in its price class.

Before we go on to describe these loudspeaker systems in detail, we would like to make a few basic comments about the performance characteristics of all EPI products. No matter what size or price, all EPI speakers have a technically unbiased sound. That is to say they are designed to reproduce the musical signal exactly as it is when it arrives at the loudspeaker terminals—without coloration, tone compensation, or added presence. EPI linear loudspeakers are different from other speakers in that most others do alter the signal.

EPI's transparent sound offers the following benefits:

NATURALNESS—All musical instruments can be easily recognized and identified, even during full orchestral passages.

CLARITY—The distinct advantage of allowing an EPI listener the enjoyment of each instrument's unique acoustical properties.

CLEAN BASS—Individual bass notes now have well defined tones and dynamic transients which are lower in response and more exact in harmonic structure, than a steady one note boom.

LACK OF LISTENING FATIGUE—Accurate harmonics, low distortion, omnidirectional radiant energy, and flawless transient response make EPI speakers a never tiring experience.

We honestly believe that EPI linear loudspeakers produce some of the best sound in the world. In order to take full advantage of this sophistication, certain requirements must be met in the way of associated equipment, recorded material and room placement. Let us explain . . .

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SPEAKERS FOR PEOPLE WHO WANT THE BEST . . .

ASSOCIATED EQUIPMENT

To obtain maximum benefit from EPI linear loudspeakers it is suggested that special care be taken to choose only the best associated equipment. EPI speakers need to be driven by amplifiers or receivers which remain clean and accurate, most especially at high and low frequencies. Turntables should have low tracking error and rumble as well as adequate suspension from acoustic feedback. Cartridges must have a linear response and be free from distortion, particularly in the high frequency range. Your EPI dealer can help you choose equipment which will enable you to enjoy the maximum benefits from your EPI loudspeakers.

POWER RECOMMENDATIONS

"Recommended RMS Power Range" as detailed on separate model specification pages, to follow, refers to various conditions. These are established according to: room size, room acoustics ("live" or "dull"), and the listening level required. The minimum figure pertains to a small room with "live" acoustics where only average levels are desired. The maximum figure refers to the power handling ability of the speaker system when in use with amplifier sections capable of delivering the given amount of distortion free power, and use of the speaker in a large listening room with "dull" acoustics where higher than average levels of sound are desired.

PROGRAM MATERIAL

In the process of faithfully reproducing all musical material, EPI speakers also duplicate with equal clarity any noises in a stereo system (the hums, hisses, pops, and scratches). A speaker that mutes these noises also eliminates high frequency overtones and struc-

tural harmonic accuracies which form the real life and definition of any musical performance. A record or tape collection chosen wisely and maintained carefully will not only lack the distraction of noise but will also allow for the enjoyment of a more complete musical experience.

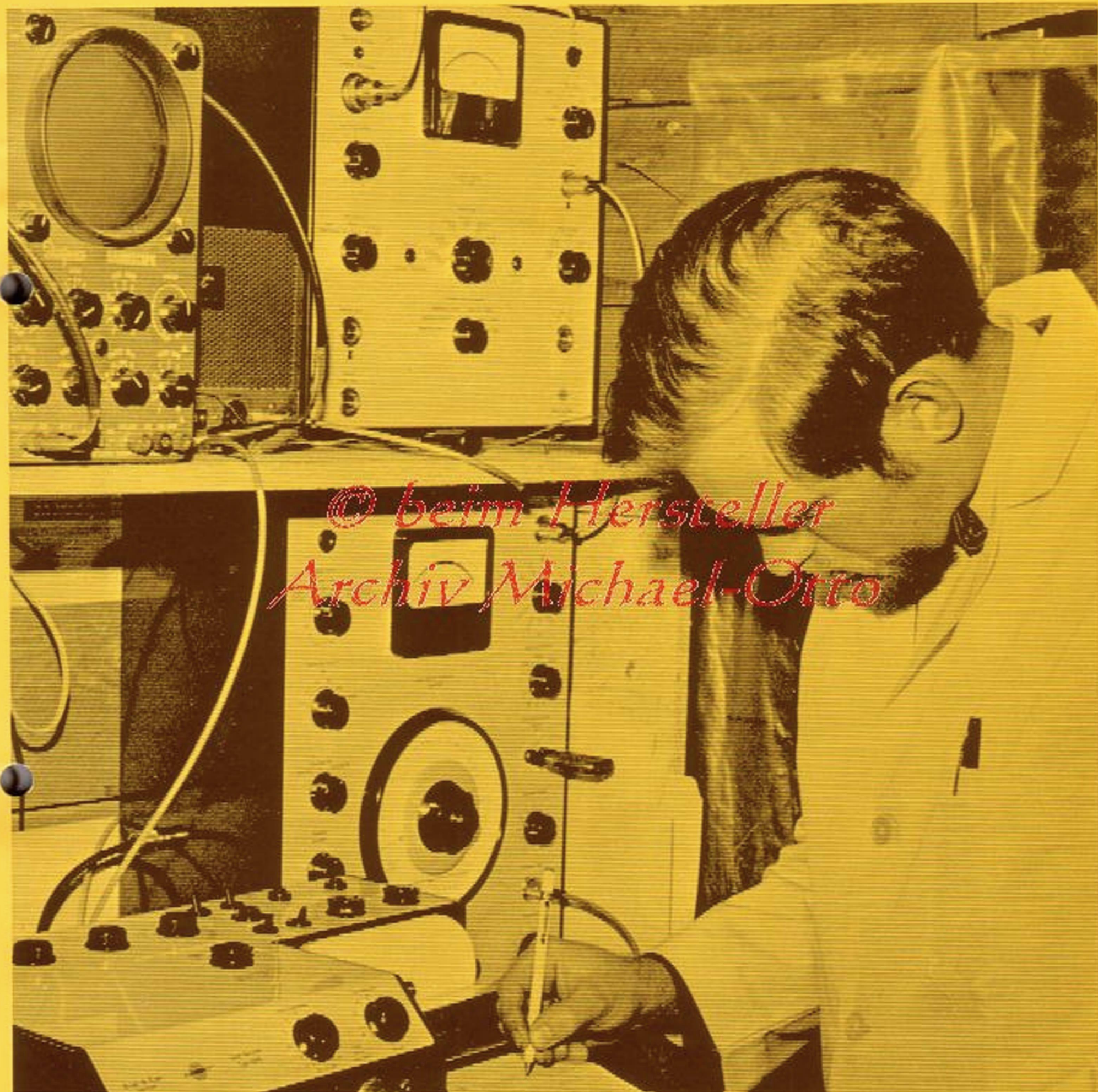
ROOM PLACEMENT

The major considerations in placing an EPI speaker in any listening environment are twofold: bass coupling, the increase effect that a speaker's proximity to room surfaces has on its low frequency acoustical output; and high frequency reverberant field effect, the delay and output ratio of indirect to direct sound perceived by the listener as the high frequency energy is reflected off room surfaces. The unusually low system resonance and high dispersive ability of all EPI speakers permit acoustical advantages through specific room placement that are impossible with most other speakers.

Examples of placement considerations for each model are individually detailed on separate model specification pages which follow later in the brochure.

SOUND FOR THE DOLLAR

EPI loudspeakers are available in eight different models, each of which is not just a further extension of a six-sided box. The variety of radiating planes alone forced EPI designers to have a long hard look at enclosure stylings. Any suggestion to have a wide selection of period furniture was rejected in favor of a more low-cost plan to produce attractive contemporary stylings. These classic designs, enhanced through careful workmanship, have resulted in a bold and yet subtle appearance that should compliment every listening room regardless of individual tastes.



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the finer points

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BASIC CONCEPTS

All EPI loudspeakers make use of a 2-way module to reproduce the entire range of musical sounds. What they do is match a separate tweeter and woofer so that their cutoff points (the highest note produced by the woofer and the lowest note produced by the tweeter) are at the same frequency. They also match the efficiency of the woofer and tweeter (so that they put out equally loud sounds). A small "crossover network" is added, and these three elements are mounted in a correctly sized enclosure.

The theory is simple, but getting the elements to respond in this ideal way is the secret to EPI's success.

THE TWEETER

There are a number of vital considerations which must be taken into account in designing an ideal woofer and tweeter. The first of these is that both loudspeakers have satisfactory dispersion over the range of frequencies they reproduce. Since dispersion is primarily a function of cone size, this means that the tweeter can be no larger than one inch in diameter in order to spread the highest



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notes of musical interest throughout the room. On the other hand, it is tremendously desirable that the tweeter go as low as possible in frequency response in order to allow the use of a reasonable sized woofer (woofer dispersion is also a function of cone size). The frequency limits for the ideal tweeter figure out to be 1800 hz to 18,000 hz, and since this is excessively large, a unique acoustic suspension tweeter had to be made. The top of the magnet structure is hollowed out to form a tiny cavity, and a hard concave cone is fitted over this cavity with a quarter inch of air cushion behind it. For strength, the voice coil and tweeter cone are interlocked in a rigid lightweight mechanical structure, which is terminated at the edges of the cone by an entirely different material (rubber impregnated cloth) in order to break up short wavelength reflections and to increase the over-all freedom of motion.

The EPI tweeter is in our opinion the very best high-frequency speaker element being produced by any speaker manufacturer. It reproduces tones over an extremely wide range with absolute linearity, low distortion, and considerable power handling capacity.

All EPI loudspeakers from the tiny Mite to the huge Tower use the same EPI tweeter, and they share the same silky smooth high end.

THE WOOFER

The ideal woofer had to be non-directional up to 1800 hz (the bottom limit of the tweeter), and this restricted its cone size to 8 inches. It also had to exactly match the tweeter in efficiency (so that the lows and highs would be balanced). Finally, it needed to provide full bass, linear response up to the point where the tweeter took over, and low distortion over its entire range. That's a long list of requirements, but EPI met them all by constructing a driver element with a 16 gram voice coil, .750 inches long and a magnetic gap .250 inches long. This represents an overhang of 200% and allows a linear motion of over a half an inch. (Most 8 inch woofers have 1/100 this excursion.)

A single woofer has a free air resonance of 18 hz, and mounted in a sealed enclosure produces a flat, non-directional response from 1800 hz down to below 40 hz. By combining multiples of these woofers in the same cabinet a flat response down to 22 hz is possible.

THE CROSSOVER

One of the more complex problems in designing an accurate sound reproducer is that of matching woofer and tweeter performance. This is normally done with

the assistance of an electrical crossover which presumably properly divides, attenuates and apportions the electrical energy from the amplifier into the respective woofer and tweeter. The important considerations are that the slope of the frequency response at the crossover frequency be very steep and exactly reciprocal, so that both woofer and tweeter are producing power at half the normal rate at the crossover point. When they are added together, flat frequency response is then maintained. These objectives are achieved in the EPI basic module by a combination of mechanical and acoustic principles.

Putting it another way, the woofer stops working at the same point where the tweeter starts—all by itself, without any help from external electronic elements. Since woofer and tweeter are perfectly matched in efficiency, all that is needed in the way of electrical crossover elements is a small capacitor. This is certainly the most economical solution (some crossover networks run as high as \$50), but it is also the one which produces the best performance - by eliminating phase shift problems around the crossover frequency caused by complex inductive and capacitive networks.

THE EPI LOUDSPEAKER MODULE

Mounting all three basic elements — the tweeter, the woofer, and the capacitor into a fully sealed enclosure produces a perfectly linear loudspeaker. Its response is ± 3 dB : 45—18,000 HZ on axis, (directly in front of the speaker), and it is flat up to 13,500 HZ at 60 degrees off axis. Total harmonic distortion is less than 5% at all these frequencies. This module was, and still is, our basic Model 100, "The Standard", designed to satisfy the most stringent of applications.

THE SMALLER EPI MODULE

From the very beginning we felt the need for an even smaller module to be used in enclosures of minimum dimensions. This was accomplished by combining the EPI tweeter with a 6" woofer which became the astonishing Model 50, "The Mite". Its response is ± 3 dB : 50—18,000 HZ. The 6" woofer uses the same voice coil and magnet assembly as the 8" woofer.

It is inherent in man's nature that he not stay in the same place forever, and although EPI had produced two ideal speakers for most applications, they could not resist the urge to improve the sound even further. The Standard, The Mite and their successors are detailed on the following pages.



MODEL 50 "THE MITE"

Specifications

Size:	10 x 13 x 8
Weight:	15 LBS
Frequency Response:	50 to 18 KHZ \pm 3 dB
Recommended RMS Power Range:	10 to 35 Watts
Crossover Frequency:	1800 HZ
Drivers:	1—1" Tweeter 1—6" Woofer
Impedance:	8 Ohms
Tweeter Level Control:	None

EPI's least expensive speaker of the line was one of the most difficult to be developed. The EPI design staff were convinced they could produce a smaller,

less expensive speaker than the already popular Model 100, but knew that this product had to be able to compete successfully in the already most highly contested price bracket of hi-fi, without sacrificing the company's ideals of linear sound. The resultant development of the smaller EPI module, a tiny walnut cabinet, no rheostat control, and packaging in pairs for shipping ease, lowered the cost significantly enough to produce the Model 50.

EPI's method of avoiding the compromises of sound purity generally accepted for speakers in this range was to put their finest and most expensive tweeter along with their highly damped, low resonant 6" woofer in a very small enclosure. In this way these quality components could become perfectly linear by taking advantage of specific room placements to increase bass response many times. By placing the EPI 50 in, or close to, the corners (floor or ceiling) of the listening room, the sides of the room become an extension of the cabinet structure and, in doing so, transform the tiny cabinet of "The Mite" into a massive system.

"The response extends from 45 to 16,000 HZ \pm 3 dB, and dispersion was also excellent... In our listening tests, the Model 50's transient response stood out and we found we could feed the unit a lot of power before it would break up. An open sound with clear highs and solid bass is characteristic of this stereo pair."

Audio Magazine, November 1971

The important stereo phasing and accurate reverberant field characteristics of such a highly dispersive speaker make it well suited for front or rear channel operation regardless of size or price considerations. No other speaker we know of in this price range can come close to the performance of the EPI Model 50.



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MODEL 100 "THE STANDARD"

Specifications:

Size:	9 x 11 x 21
Weight:	25 LBS
Frequency Response:	45 to 18 KHZ \pm 3 dB
Recommended RMS Power Range:	12 to 50 Watts
Crossover Frequency:	1800 HZ
Drivers:	1—1" Tweeter 1—8" Woofer
Impedance:	8 Ohms
Tweeter Level Control:	Rheostat



The Model 100 was EPI's first and most popular speaker. Winslow Burhoe designed it as the ultimate bookshelf loudspeaker. As an acoustical engineer, his technical criteria for performance was extended frequency response, (the ability of the speaker to reproduce the very lowest and very highest musical frequencies); extreme linearity, (the speaker's ability to reproduce any signal fed to it accurately with no exaggeration or deterioration); excellent dispersion, (filling any listening room with equal musical energy over the whole range of the speaker); minimum distortion, both harmonic and intermodulation, (to eliminate listening fatigue); and a cabinet compact enough to fit on any bookshelf.

The fact that Winslow Burhoe achieved all his goals in a speaker selling at a modest price is proof of his status as one of the foremost speaker designers in the audio industry. The Model 100's accurate tonal balance combined with exceptional dispersion makes it an ideal speaker for people who really enjoy live music. Whether you are listening to a full symphony, thunderous rock or progressive jazz, the Model 100 almost disappears, leaving only the music; an accomplishment very few speakers, regardless of price, can equal.

"The sound quality of the EPI 100 was very natural and 'easy'. The more we listened to it, the better we liked it, and it was one of the most faithful reproducers we have had the pleasure of hearing. —the EPI 100 is comparable in most respects to some of the best—and most expensive speaker systems we have tested..."

Stereo Review, May 1970

Its compact size allows it to be placed almost anywhere in the listening room. However, EPI strongly recommends, for optimum performance, locating this speaker in any two sided plane (on the floor or ceiling against a wall or in a bookshelf, closest to either side wall). Hand rubbed walnut cabinets and rich black grills give this stereo pair a handsome, contemporary appearance that should blend well with any decor. The Model 100's extremely high power handling ability enables it to fill even the largest of listening rooms with surprising ease.

As proof of each Model 100's performance, EPI packs an individual frequency response graph with each speaker, showing the extension of its frequency response and its linearity. No other speaker manufacturer that we know of does this.



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MODEL 150

Specifications

Size:	11 x 15 x 25
Weight:	30 LBS.
Frequency Response:	35 to 18 KHZ \pm 3 dB
Recommended RMS Power Range:	15 to 60 Watts
Crossover Frequency:	1800 HZ
Drivers:	1—1" Tweeter 1—8" Woofer
Impedance:	8 Ohms
Tweeter Level Control:	Rheostat

The Model 150 offers all the musical benefits of the two smaller EPI models in an attractive, more easily positioned cabinet styling. Using the same great EPI 8" module, this cabinet attains a system resonance of 35 cycles. This allows linear woofer operation down to the primary octave of all musical material even when positioned in a free standing location away from the walls in the centre of a room, or similarly in the centre of a large bookshelf. Depending on the size of the room a two wall positioning may be preferable.

New construction and design principles are utilized in the Model 150 to provide an optimum combination of high performance and decorative cabinetry appearance. Functional in this design are the four anodized metal extrusions in each side which first joined to solid walnut corner pieces are then attached mechanically to top and bottom caps (both one inch thick) where the walnut plugs are accented by circular brass inserts.

As a finished piece of furniture, the Model 150 is a handsome creation of gleaming brass, rich solid walnut and dark warm grill cloth. In a vertical position its 25" height makes an attractive end table. An 11" depth and beautiful symmetry permit its use as a magnificent bookshelf system as well.



MODEL 201 "THE QUARTET"

Specifications

Size:	11 x 18 x 28
Weight:	40 LBS
Frequency Reponse:	30 to 18 KHZ \pm 3 dB
Recommended RMS Power Range:	20 to 100 Watts
Crossover Frequency:	1800 HZ
Drivers:	2—1" Tweeters 2—8" Woofers
Impedance:	4 or 16 Ohms
Tweeter Level Control:	Rheostat

The EPI Quartet is a high fidelity loudspeaker of unmatched quality and convenience. It is characterized by a linear, nondirectional frequency response over the entire audio bandwidth. At the same time, The Quartet offers extremely flexible room placement through a new and functional cabinet design.

Each EPI woofer and tweeter complement, or "module", provides a full range of undistorted sound reproduction. In the interest of improving power handling and dispersion, The Quartet utilizes two of these modules.

As in all loudspeaker systems devoted to high fidelity performance, the cabinet design is an integral part of The Quartet's performance. The multifacet design of The Quartet cabinet permits placement of the two modules in different planes. One of the modules is positioned in an upward plane to minimize sound absorption from rugs and to increase the dispersion. The other module is mounted in the front facing plane.

As a byproduct, the optimum positioning of the speaker is remarkably easy to achieve in any room due to the location of each module in the cabinet. When the speaker is placed at the point where any two surfaces meet, (on the floor against a back wall), the correct balance in acoustical output between woofer and tweeter is maintained. Additional benefits of the highly desirable effect of reverberant field are achieved when the speaker is placed adjacent to an additional reflective surface, for example a side wall.



The Quartet is a pleasant contrast to other speakers which provide sound reproduction from only one radiating source. The Quartet's omnidirectional bi-module concept may be placed upright, on its side, or on its back, near the floor or ceiling, with no degradation to sound quality. Its dispersion is so wide and so uniform that stereo definition is unaffected, regardless of speaker and listener positioning.

The sound of the EPI Quartet is completely open and natural. All tones and instruments are reproduced with superb accuracy. The lower register is clean and authoritative, extending to cover the lowest transients below the range of audibility. The upper portions of the frequency spectrum come alive in a very special way.

Ask any EPI listener, they'll tell you what we mean. 13

MODEL 202

Specifications

Size :	15 x 15 x 25
Weight :	40 LBS
Frequency Response :	35 to 18 KHZ \pm 3 dB
Recommended RMS Power Range :	20 to 100 Watts
Crossover Frequency :	1800 HZ
Drivers :	2—1" Tweeters 2—8" Woofers
Impedance :	4 or 16 Ohms
Tweeter Level Control :	Rheostat

The Model 202 was designed to satisfy the aesthetic tastes of EPI's customers who wanted the advantages of the Bi-Module concept, but were unable to accept the radical approach to speaker cabinet design used in The Quartet. The 202 uses exactly the same components as The Quartet; but because the woofers are mounted lower to the floor, it produces slightly heavier bass. This has two advantages:

If you position the speaker in a corner location, the low frequency response will be phenomenal, as both modules take advantage of the three sided location to produce sound pressure levels that make the speakers seem many times their size. For people who like window-rattling bass, this is an excellent consideration.

However, move the 202 out of the corner and the bass response lessens to provide the uniform tonal balance characteristic of all EPI Loudspeakers. Now you have a speaker that will sound perfectly balanced in acoustical positions that are usually unacceptable, for example: in the centre of a large room on either side of a sofa.



MODEL 400 "THE MINITOWER"

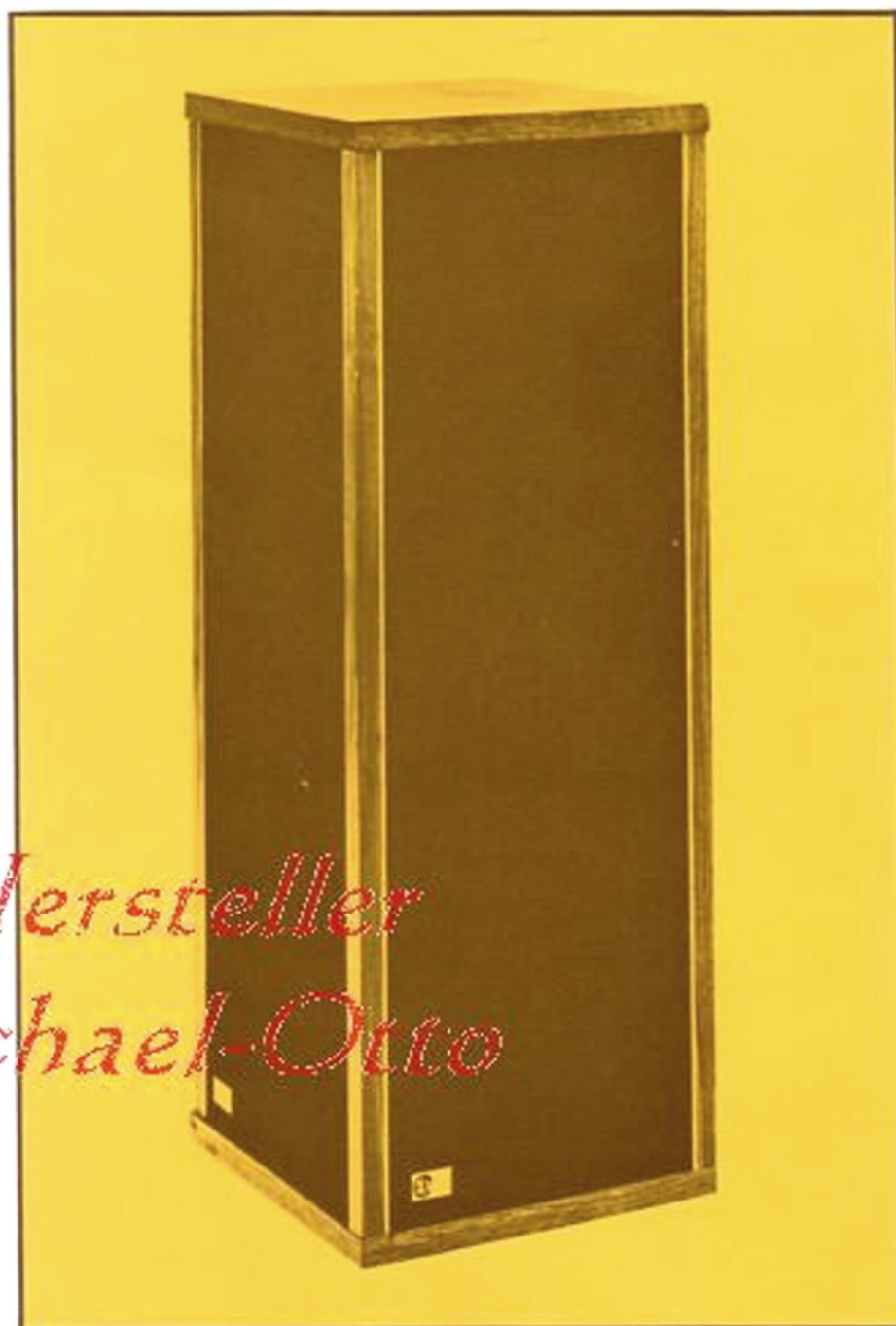
Specifications

Size:	14 x 14 x 38
Weight:	90 LBS
Frequency Response:	28 to 18 KHZ \pm 3 dB
Recommended RMS Power Range:	30 to 200 Watts
Crossover Frequency:	1800 HZ
Drivers:	4—1" Tweeters 4—6" Woofers
Impedance:	8 Ohms
Tweeter Level Control:	Toggle Switch

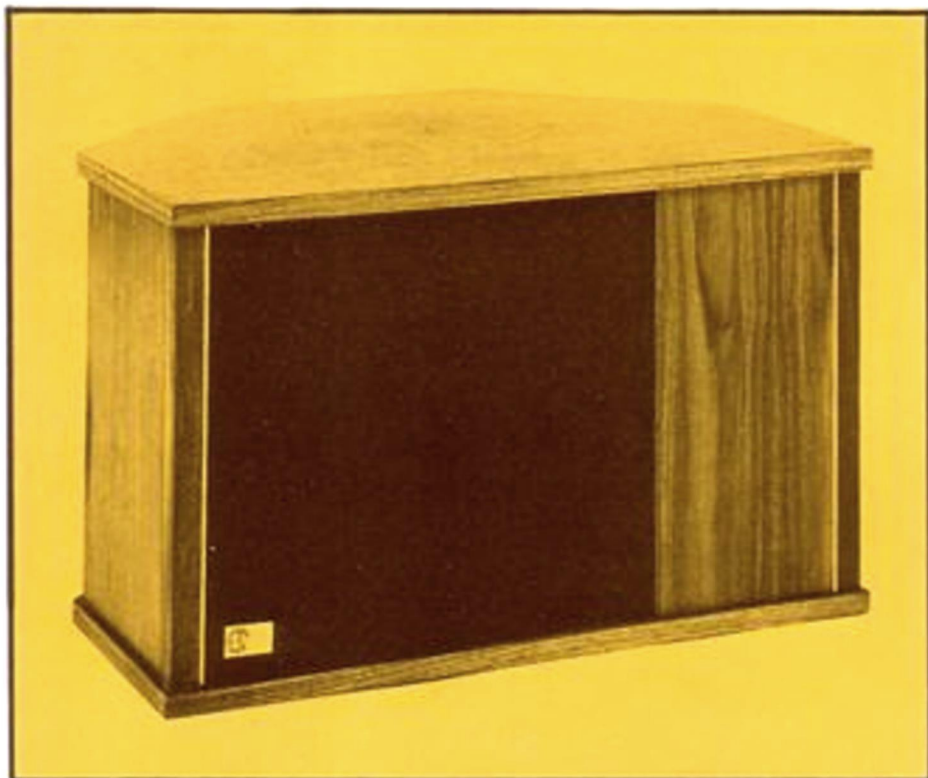
The Minitower follows the consistent development of the well established design principles of the full-size Tower.

Use of four 6" modules, mounted equally on all four sides, allows for a reduction in size and permits the production of a spherical sound source, which is perhaps one of our most strikingly beautiful designs. Physically, it is a slim column, measuring 14" on a side and 38" high. Its pedestal-like appearance is a refreshing departure from the conventional; black grill cloth is framed by four corner posts of rich solid walnut, each accented by brass extrusions.

In addition to possessing all of the characteristics of excellence in a loudspeaker, the Minitower contains the unique property of true omnidirectionality. This means that sound spreads equally in all directions at all frequencies. It is no longer necessary to consider one's relationship to a speaker as that of a target. The Minitower fills a room with a dynamic reverberant field of sound, the realism of which is equalled only by the original performance. The stereo image is clear and distinct no matter how speaker or listener positions are arranged, provided only that there be a direct line of sight path between the listener and the stereo pair of Minitowers.



The Minitower should be placed in the listening room in a position which allows for a maximum of reflected sound to fill the area. A minimum distance from a maximum number of reflective surfaces, (i.e., corner of room), has the effect of increasing the size of the sound over the full frequency range. A maximum distance from a minimum number of reflective surfaces, (i.e., centre of room or side wall), has the effect of enlarging the reverberant field which varies the concert hall effect. With a little experimentation, the listener will be easily able to determine one of the many optimum room positions made possible by the placement flexibility of this speaker.



MODEL 602

Specifications

Size:	16 x 24 x 6
Weight:	60 LBS
Frequency Response:	35 to 18 KHZ \pm 3dB
Recommended RMS Power Range:	30 to 150 Watts
Crossover Frequency:	1800HZ
Drivers:	3—1" Tweeters 2—8" Woofers 1—6" Woofer
Impedance:	4 Ohms
Tweeter Level Control:	2 Rheostats

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characteristic can be used to create more realism in a home listening environment. Instead of beaming all of the sound from a loudspeaker directly at the listener, much of the sound can be bounced off the back walls as well. "Indirect" sound such as this eliminates the localization of each signal by creating a very pleasing width and depth of sound. The more indirect the sound a speaker can bring to its listener the more natural and transparent its reproduction will become.

The model 602 reproduces distortion free sound from the lowest note on a double bass to the shimmering high of a triangle without any "intentional coloration". Through the use of 3 EPI modules, two angled 8" modules facing the rear and one 6" module facing the front, the model 602 reflects most of the sound off the rear and side walls of the room. The delay effect caused by this longer path of sound radiation recreates the true staging of a concert hall in any listening room. The high dispersion of the speaker elements used in the model 602 allows it a wide band of positioning flexibility. The minimum positioning from any wall yields the highest acoustical output in the bass range. The maximum positioning from any wall yields the highest return from the effects of the indirect, reflected sound. The spacing between the rear of the speaker and the back wall may vary from 12" to tight against the wall. The distance from the side wall to the speaker should be between 15"-30". The height from the floor can vary from right on the floor to up to 40" in height. With a little experimentation, the owner will be able to determine the most satisfying results.

It is a well-known fact that in listening to a live concert, one really hears a combination of direct sound from the performers' instruments and indirect sound from the walls and ceiling of the concert hall. This same



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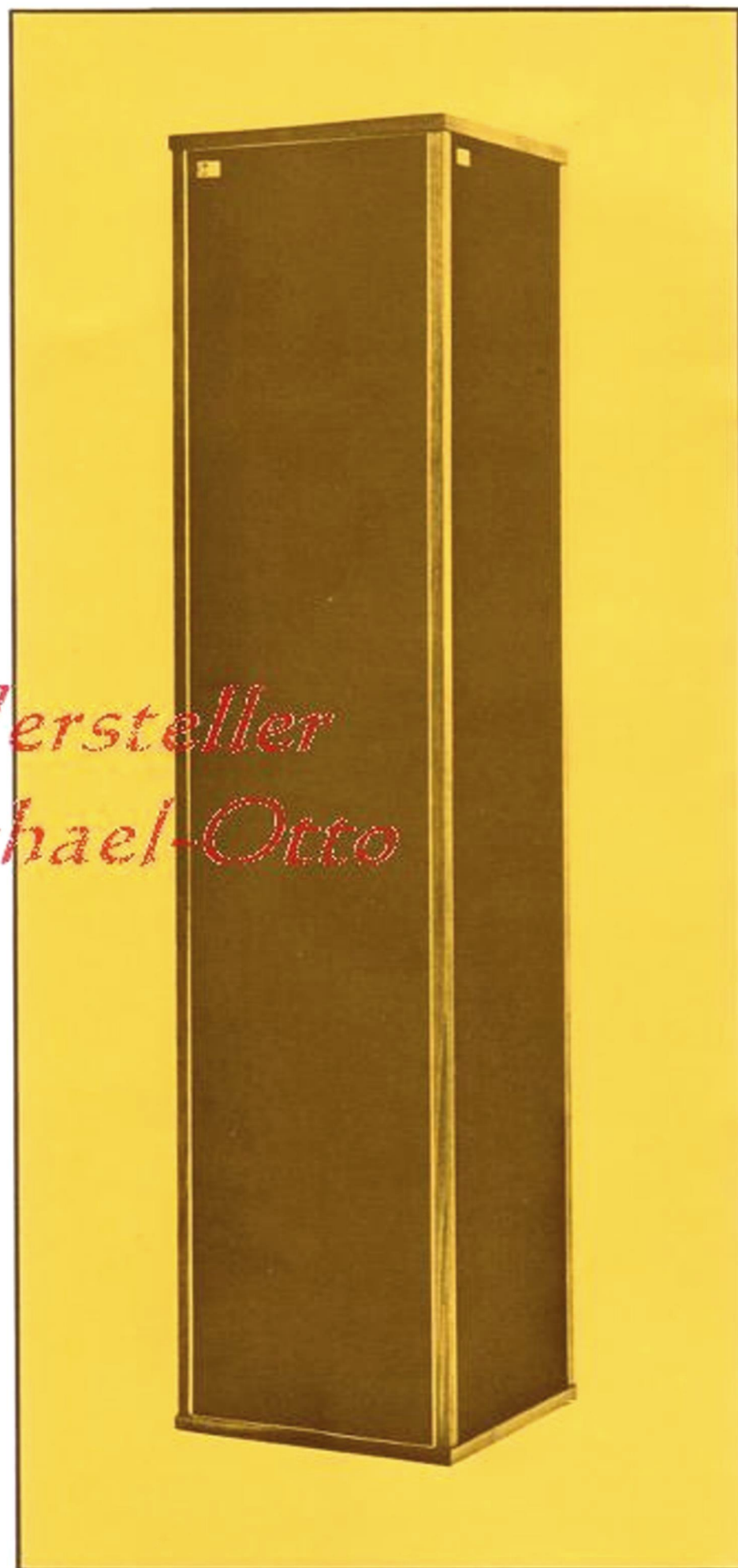
MODEL 1000 "THE TOWER"

Specifications

Size :	18 x 18 x 75
Weight :	180 LBS
Frequency Response :	22 to 18 KHZ \pm 3 dB
Recommended RMS Power Range :	60 to 250 Watts
Crossover Frequency :	1800 HZ
Drivers :	4—1" Tweeters 4—8" Woofers
Impedance :	8 Ohms
Tweeter Level Control :	None

The model 1000 represents the ultimate extension of all the design principles and inherent advantages of EPI loudspeakers. Its four full-sided woofer-tweeter modules reproduce all audible tones with a realism unequalled by any other speaker system, and radiates them in all directions equally. With a stereo pair, two acoustic fields are created providing unequalled stereo realism from two invisible sound sources. Ideally located, there is no way to detect by listening where the sound is coming from.

The EPI Tower produces the ultimate in sound quality, but at 6½ feet tall, 180 pounds and one thousand dollars each, the majestic columns are out of reach of all but the most devoted and enthusiastic music lovers. We produce it more for the joy of making the very best loudspeaker we are capable of manufacturing than with any serious intention of selling many of them.



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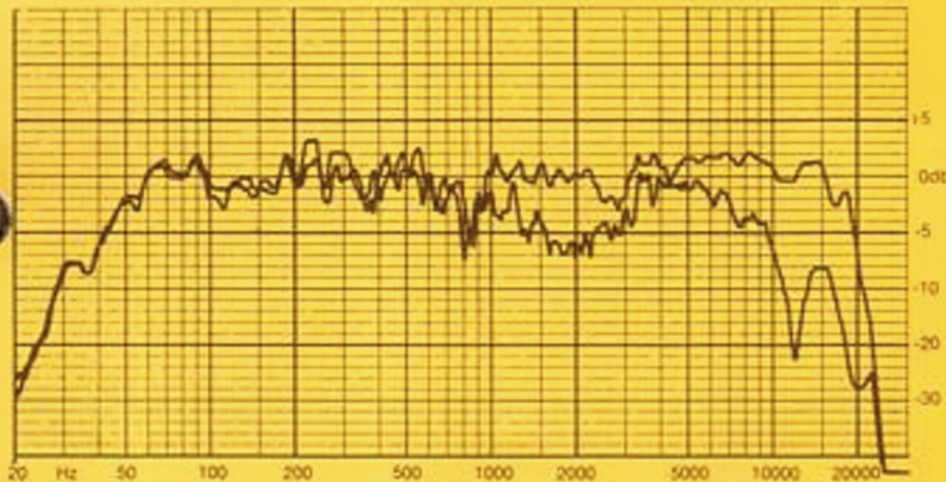
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FREQUENCY RESPONSE

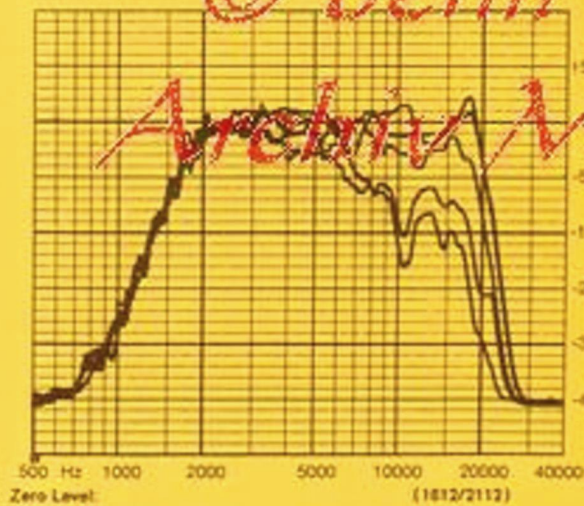
In the ideal speaker all tones would be reproduced with equal loudness. Measurement of a speaker's "flatness" of response is an important judge of the naturalness of the sound being reproduced by the loudspeaker.

The graph on the left shows the response of the EPI 100 loudspeaker. Note that the average response remains within ± 5 db from 45 to 15,000 Hz.*

**On axis and 90° off axis.*



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DISPERSION



We have mentioned that one of the more important characteristics of a good loudspeaker is its ability to radiate sound evenly in all directions. In this series of tests, we measured the sound output with the test microphone directly in front of the tweeter and then in four other positions, each one 22½° further off axis.

(The final position was in the same plane as the tweeter or 90° off axis.)

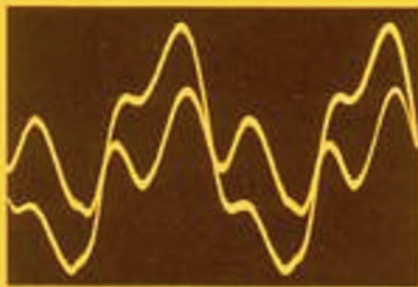


fig. 1

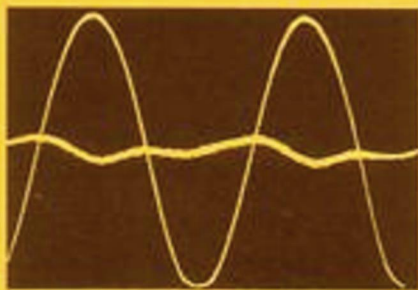


fig. 2

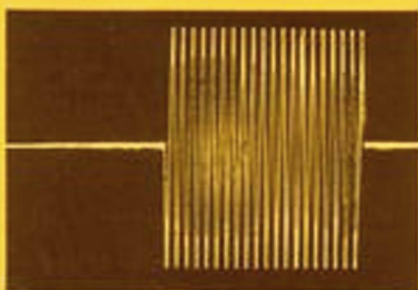


fig. 3

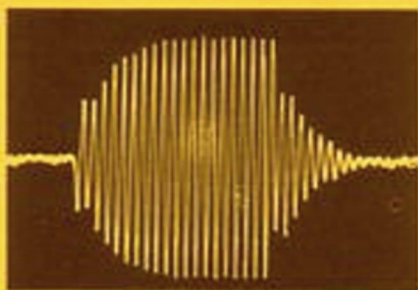


fig. 4

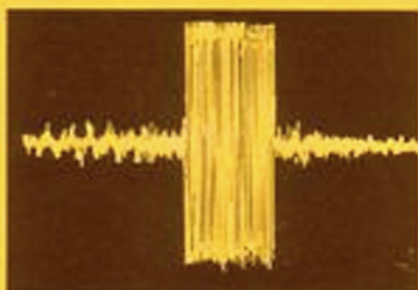


fig. 5

DISTORTION

The goal, of course, is for every part of a stereo system to have as little distortion as possible. High quality amplifiers typically exhibit distortion levels of less than $\frac{1}{2}$ of 1%. Unfortunately, most speakers do not come close to this figure. It is not uncommon to see distortion levels of over 10%, and in the case of speakers using numerous small speaker arrays, up to 40% distortion has been measured.

In figure 1, we show what happens when you feed a 38 Hz sine wave at 50 watts into an expensive multiple array speaker system. The two oscilloscope traces in the photo show both the input signal and its harmonic distortion component. Note that the frequency of the distortion is three times that of the frequency being used to drive the speaker. This is called 3rd harmonic distortion, and it has the effect of making the bass seem louder while adding a discordant tone to the music.

Figure 2 shows the same measurement on the EPI Model 602.

TRANSIENT RESPONSE

If a sine wave at a particular frequency is turned on and off at regular intervals, it will produce an oscilloscope trace which looks like figure 3. It is the turn on and turn off points which are difficult for a speaker to follow exactly. Since a speaker has some mass, it is difficult to get it started moving. For the same reason, it is hard to stop it exactly where you want it to. If there are parts of the speaker which are not rigidly attached to the voice coil, there will be an additional time lag in the motion of these parts.

Figure 4 shows a speaker in difficulty at high frequency (7500 Hz). This difficulty is caused because the speaker size is so much larger than the wavelength of the signal that the outside parts of the cone are moving somewhat independently of the voice coil. EPI avoids this difficulty (figure 5) by using driver elements which are small in comparison to wavelength.

A FINAL NOTE

It is clear that EPI has not produced the universal loudspeaker for all people. EPI speakers are for people who can appreciate the technical advantages of their design, music lovers who can hear these subtle improvements, and stereo purchasers who want the very best from their stereo investment. We hope that this brochure has given you some of the information you need about EPI products. However, the final test of any speaker is how it sounds, so we recommend that you spend some time carefully listening in your EPI dealer's showroom before you decide which model is right for you.

EPI the guarantee

Epicure Products Inc. warrants every EPI high fidelity acoustic suspension speaker system purchased from an authorized EPI dealer against defects in materials and workmanship. This warranty is good for five years from the date of original purchase except in the case of the Model 50, for which the warranty period is two years.

Under this warranty, EPI will repair or replace any defective part and correct any defect in workmanship free of any charge for labor or materials if the speaker is delivered, postage or freight prepaid, to the EPI factory.

This warranty is effective only if the accompanying warranty registration card is mailed to EPI within one week of the date of purchase.

This warranty does not cover abuse, neglect, or accidental damage and is void if the EPI speaker has been taken apart, repaired, or altered by anyone other than personnel authorized by EPI.

EPI is a small, independent speaker company in competition with many corporate giants. As such, it cannot possibly compete on the basis of expensive advertising campaigns, nationwide promotions and all of the other techniques used by big business. What they have done is to select a small number of expert audio dealers throughout the country (at last count, less than 10% of the hi-fi stores have met their standards) and ask them to take the time to demonstrate their equipment - *before* they have become a household word.

We feel that these stores have the knowledge and integrity to give recommendations on the best components to go with EPI speakers. We hope you will take the time to let them demonstrate an EPI Speaker System for you.

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