

**BOSE 901**

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Direct/Reflecting<sup>®</sup>  
Speaker System

“If music is important in your life...  
sooner or later you will own the Bose 901.”

# What you will hear

to provide correct frequency balance based on the stringent Bose criterion for flat power radiation.

Ask your dealer to give you a demonstration of the Bose 901 with any speakers of your choosing — regardless of their size or price. The factors that will be immediately evident upon comparison are listed below, followed by the technical reasons for the superior performance that you will observe from the 901.

## Sense of Presence

The sound will surround you, yet seem to originate from a stage in front of you as at a live performance. The observation most often made by listeners is, "It's like passing through a door opening into the performance when the switch is thrown from conventional speakers to the Bose 901."

## A New Dimension in Stereo

The orchestra will seem to be uniformly distributed across the stage. The "hole in the middle" effect, so characteristic of conventional stereo, is absent in the Bose 901. You will also observe that on good recordings individual instruments will remain fixed in position when reproduced over the 901. Finally, by walking around you will encounter the new experience of enjoying these stereo advantages from almost any position in the room.



## Clarity and Definition of Instruments

A striking comparison can be made with conventional speakers by simply switching from any of them to the Bose 901 during a loud musical passage involving full orchestration. The clarity and definition of the 901 will be immediately observable. You will be able to clearly follow any one instrument through a complex passage without losing it in the background rumble characteristic of conventional speaker designs.

## Accurate Tonal Balance

On good recordings, you will immediately notice the accuracy with which the Bose 901 reproduces the correct timbre of each instrument; from the low notes of the organ, through the high ranges of the violins, to the full range of the percussion.

# Why the Bose 901 outperforms conventional speakers

## Correct Balance of Reflected and Direct Sound

The sound of music in a live performance is strongly dependent upon sound reflections from all surfaces of the room. Only a small portion of the sound reaches the listener by a direct path from the instrument; the vast majority of the sound arrives via reflections from the walls.

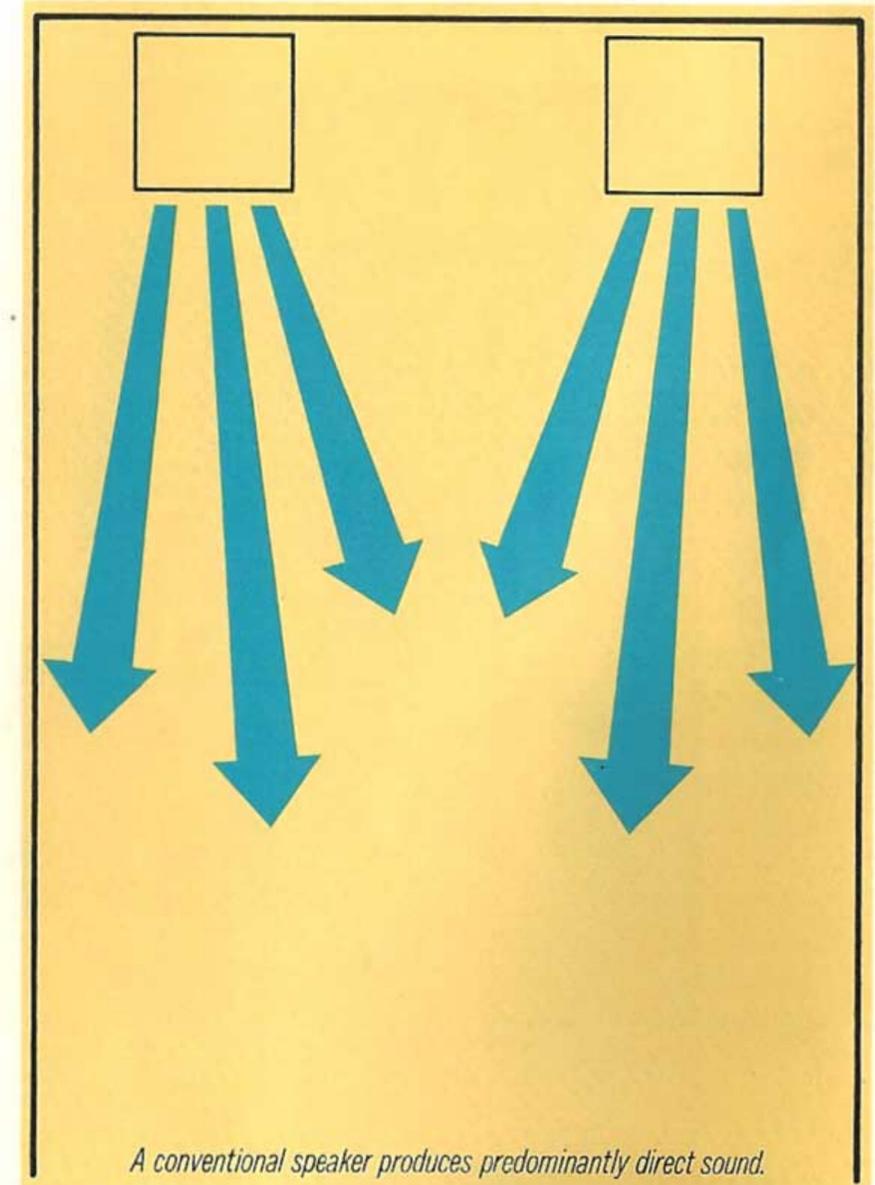


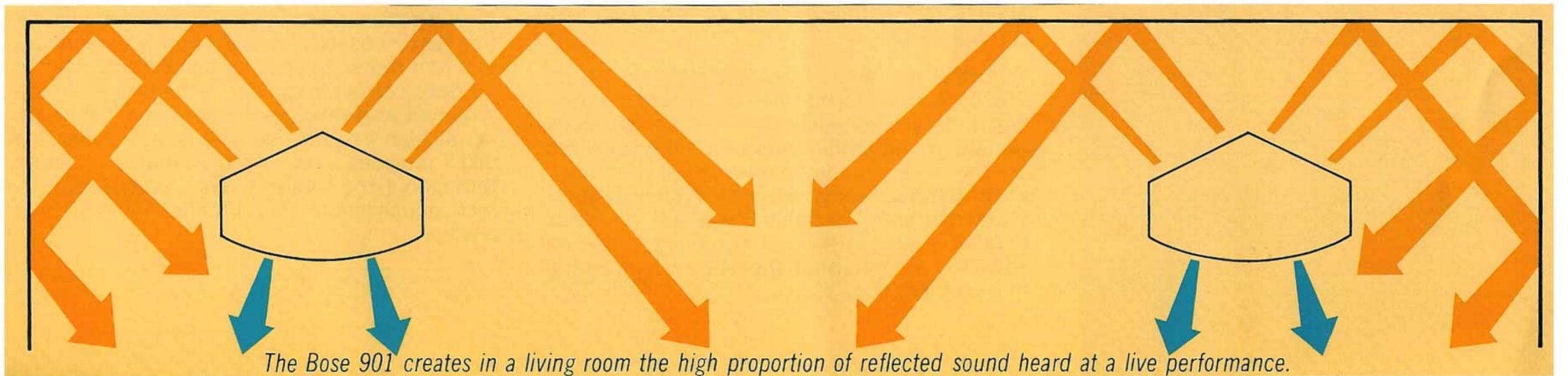
Traditional loudspeaker design provides only the direct component of sound. Conventional loudspeakers are generally constructed with a few drivers (typically a woofer, mid-range and tweeter) mounted on a flat baffle and aimed directly toward the listener. Although this direct component of sound from the loudspeaker eventually reflects from the walls, it is in a much higher proportion in the listening area than actually experienced in a live performance. The result is a "hi-fi sound" that has long been characterized by musicians as lacking in timbre and fullness and as possessing a harshness uncharacteristic of live performances.

The first attempts to reduce the problems associated with conventional loudspeakers led to the so-called omnidirectional speaker designs that radiated sound equally in all directions. This was a step in the right direction, but because the listener sits much closer to speakers in the home than he does to the instruments in the live performance, the sound of omnidirectional speakers still appears to come from small point sources and still has many of the problems associated with too much direct sound radiation.

The Bose 901 is the first loudspeaker designed to use the walls of your listening room to simulate the much larger stage wall behind the instruments in a live performance. The 901 accomplishes this by using 9 matched full range loudspeakers in each enclosure. Eight of these speakers are directed at selected angles toward the rear wall and one is directed into the listening area.

By reflecting most of the sound from the rear wall, the 901 is able to create, in the relatively small space of a living room, the proportion of reflected to direct sound that is experienced in the larger environment of a live performance. This design is responsible for the sense of spaciousness and presence that is immediately experienced when listening to the 901.





## Nine Speakers Operating Simultaneously Over the Entire Audio Frequency Range

To accurately reproduce the timbre of every instrument and of the human voice, a loudspeaker system must reproduce every portion of the frequency spectrum in exactly correct balance. However, every loudspeaker has many inherent resonances that cause its response in a portion of the frequency range to be reduced or accentuated. The 901 system utilizes a unique method for reducing the audibility of these resonances.



As a result of using 9 carefully selected and matched full range loudspeakers to cover the entire audible frequency range, two unusual physical phenomena come into play. We refer to these as “resonance splitting” and “response averaging.” Resonance splitting occurs as follows: since 9 speakers in each unit are located very close to each other, they are in effect “acoustically coupled.” This means that each speaker is affected by the acoustic output of every other speaker. It is a fundamental fact of physics that two coupled resonators cannot resonate at the same frequency; the coupling forces the resonances to “split” to different frequencies. The net effect is that no two speakers in the 901 system can have resonances at the same frequency, effectively smoothing the frequency response.

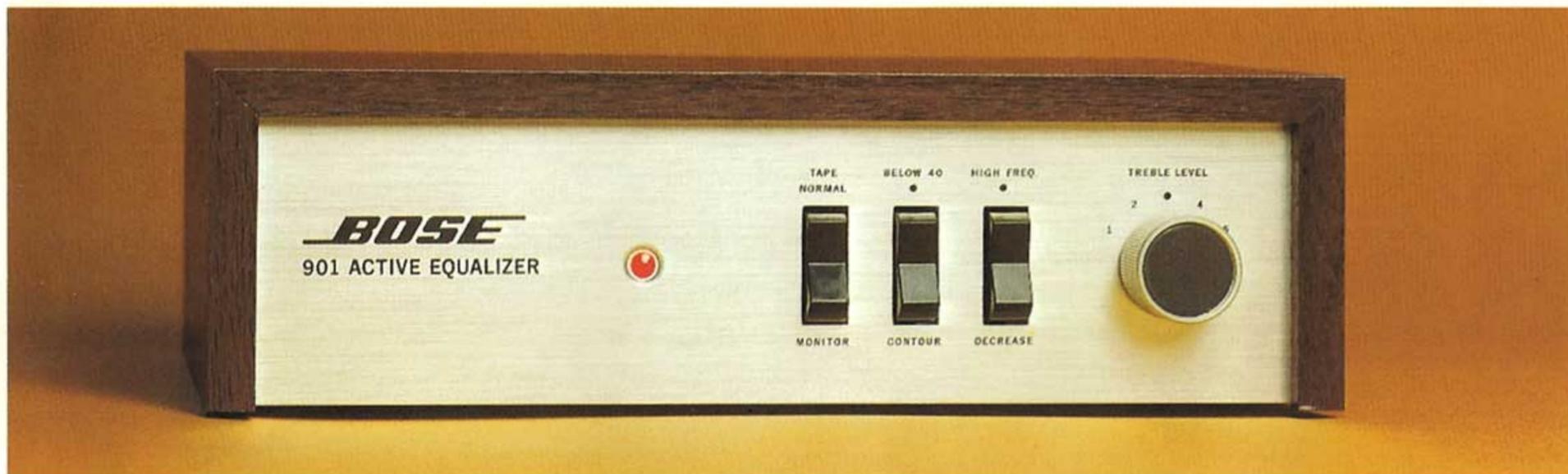
“Response averaging” refers to the fact that at any given frequency only one speaker will have a cone resonance or response irregularity. Since each speaker contributes only 1/9 of the total power, the audible effect of each speaker’s response irregularities is reduced to 1/9 of its individual level.

To further guarantee inaudible resonances, the 901 enclosure has no sides parallel to the drivers. If a speaker enclosure has any surfaces parallel to the baffle upon which the speakers are mounted, standing waves result which can affect the frequency response, even with fiberglass damping. Because there are no sides parallel to any baffle on which any of the nine speakers are mounted, the 901 system avoids this problem.

Thus, the multi-speaker, pentagonally shaped 901 provides increased definition and clarity when compared with other speaker systems.

## Active Equalization — Precise Control of Frequency Response

It is a technical fact that the performance of any speaker system, regardless of type or design, can be improved by the use of properly designed equalization networks. Such networks electronically correct for deviations in the frequency response caused by mechanical design constraints in the speaker. However, the full potential inherent in the concept of electrical equalization can only be realized in speaker systems utilizing a multiplicity of small full range loudspeakers. This follows from two considerations. First, it is impractical from the point of view of complexity and stability to attempt equalization for the many individual resonances present in the response of conventional speakers. The 901 eliminates these resonances by “response averaging” and “resonance splitting” as discussed above. Second, a conventional direct radiating speaker can be equalized to produce correct frequency response in only one direction as a result of the “beaming” of tweeters at high frequencies. The Direct/Reflecting 901® provides a uniform distribution of sound throughout the listening room, permitting correct equalization for virtually any listening position.



The accuracy of the equalization network is also of major importance. The 901 active equalizer contains over one hundred components to accurately equalize the stereo response for the effects of radiation impedance, speaker characteristics, enclosure dimensions, and even for the presence of the grille cloth. All of this equalization is achieved with the introduction of absolutely no audible distortion on any music or speech signals.

In addition to the equalization that produces the flat power response of the radiated sound, the active equalizer in the Bose 901 system provides a choice of nineteen additional equalization contours that can be selected from the front panel. This gives the listener the flexibility to exercise his own taste in compensating for recording techniques and listening room characteristics.

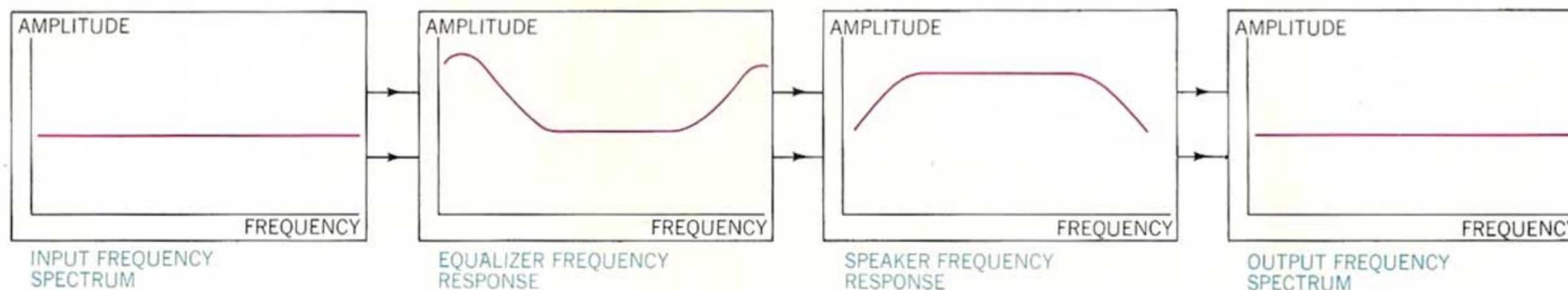
## A New Criterion for Frequency Balance — Flat Power Radiation

Conventional measurements of the frequency response of a loudspeaker are made in special echo-free rooms called “anechoic” chambers. Since anechoic chambers are free of reflections, these measurements do not accurately represent how a speaker will sound in an actual listening room.

All design measurements for Bose loudspeakers are made in special rooms that include the reflected sound in the measurements. In accordance with these measurements, the 901 speakers and equalizer are designed so that the total energy radiated into the room (not just the energy radiated from the front of the speaker) is in correct balance at every frequency. This new “flat power radiation” design criterion results in more accurate reproduction of instrumental timbre in the listening room.

## Syncom™ II — Computerized Speaker Testing

The sophisticated design of the Bose 901 would be to no avail without equally advanced techniques for quality control on the production line. The Syncom II speaker testing computer was developed by Bose to measure loudspeakers using techniques similar to those employed during the design process. The Syncom computer selects and matches the individual speakers to provide maximum uniformity from system to system, providing a degree of quality control unmatched in the high fidelity industry.



The concept of active equalization

# Components and Specifications

Since its inception, it has been the goal of Bose Corporation to provide excellence in design and manufacture that is a standard for the industry. Every decision in the design process is made in a manner that provides the maximum value in the finished product. In particular, the 901 system contains many costly components and materials whose design has been painstakingly evolved over a period of years to provide the maximum performance, consistency, reliability and value.

The heart of the 901 system is an exclusive 4½" full range speaker. Although basically similar to the design used in the original 901, this speaker has been improved in power handling, frequency response, and low frequency output capability through improvements in cone material, suspension, adhesives and particularly by refinements in the construction and testing process. Each individual speaker is tested, selected and matched by our unique Syncom™ II computer. This exceptional quality control makes the Bose 4½" speaker unquestionably one of the most consistent high performance speakers ever manufactured.

In the active equalizer many of the components are high precision frequency contouring elements not usually found in consumer products. A military grade printed circuit board is used to insure durability and consistency. The transistors are chosen to provide the lowest possible noise and the maximum stability of frequency response. And finally, each equalizer is tested by automatic equipment in a 37 step procedure to insure exact conformance to stringent Bose quality standards.

The walnut veneer speaker enclosures are constructed to high quality furniture standards and 100% tested for air tightness utilizing high power sub-sonic test signals. The grille cloth is hand assembled and bonded to the baffle board to prevent sagging and to insure perfect alignment of the weave. To complete the process, every finished speaker is tested to specifications that assure the highest level of performance in even the most demanding professional applications.

## FULL FIVE YEAR WARRANTY

Each Bose 901 speaker and active equalizer is warranted to be free of defects in workmanship and material for five years from the date of purchase. During that period any defect that occurs in normal use will be repaired with no charge for parts or labor.

## SPECIFICATIONS

### SPEAKER (each enclosure)

**Spatial Characteristics** 8 speakers reflecting sound at 30° angles from the wall behind the speaker. One speaker directed into the listening area to provide the optimum ratio of reflected to direct sound and the proper angles of the reflected sound incident upon the listener.

**Speaker Complement** 9 high-compliance full-range speakers with high energy magnets to allow large excursions without audible distortion and to provide high efficiency for operation with moderate power amplifiers. Ceramic magnet material prevents demagnetization that is possible with conventional alnico magnets.

**Total Magnet Weight** 5.4 lbs.

**Effective Radiating Area** Equivalent to 12" woofer

**Recommended Amplifier Power** Minimum: 20 watts continuous; Maximum: 270 watts continuous. Note: The quality of the reproduction will be the same over this power range — only the maximum volume level will increase with amplifier power.

**Impedance** 8 ohms

**Dimensions** 12 3/4" high, 20 9/16" wide, 12 7/8" deep (standard enclosure)  
12 5/8" high, 20 1/2" wide, 12 5/16" deep (Continental enclosure)

**Shipping Weight** 38 lbs.

**Cabinet Construction** Walnut veneer on particle board.

### ACTIVE EQUALIZER (both channels)

**Below 40 Contour Control** 2 position, 8 dB shelf decrease below 40 Hz.

**Treble Level Control** (normal mode) 5 position shelving control, approximately 2 dB per step for frequencies over 3 kHz.

**Treble Level Control** (decrease mode) 5 position high frequency attenuator with variable break frequency.

**Tape Monitor Switch** Replaces tape monitor switch on receiver or amplifier when equalizer is connected in tape monitor circuit.

**Input Impedance** 150 k ohms

**Minimum Load Impedance** 5 k ohms

**Maximum Output Voltage** 4.0 volts rms (minimum)

**Noise** (A weighted) 80 dB below 4 volts

**Harmonic Distortion** Less than .05% (1 volt output, 1 kHz)

**Installation** Conveniently connected to any preamplifier, amplifier or receiver using cables supplied.

**Dimensions** 2 13/16" high, 9 1/4" wide, 6 3/4" deep.



# The Critics Speak

The ultimate test of a loudspeaker design resides, after all, in listening. All the theory and all the research are of only academic interest unless the end product reproduces music with a significantly increased dimension of realism.

Here is what the most respected music and equipment critics around the world are saying about the Bose 901.

**U.S.A.: e/e High Fidelity** — “The Bose 901 speaker system delivers the most natural stereo sound, creating the illusion of being in a concert hall, with a uniformity of frequency response and freedom from distortion that is unbelievable... It is our opinion that this is the speaker system to own, regardless of price, if one wants the ultimate in listening pleasure.”

**High Fidelity** — **Norman Eisenberg** — “In its midrange and highs—for clarity, full range, wide dispersion, open and natural sound—it is unsurpassed by anything I’ve heard... if your own response to it is like ours, you’ll be reluctant to turn it off and go to bed.”

**Stereo Review** — **Hirsch-Houk Laboratories** — “...I must say that I have never heard a speaker system in my own home which could surpass, or even equal, the Bose 901 for overall ‘realism’ of sound.”

**Audio** — **Bert Whyte** — “To hear a thunderous ‘low C’ organ pedal..., or a clean, weighty impact of a bass drum is truly impressive... There is no doubt that the much abused and overworked term ‘break-through’ applies to the Bose 901 and its bold new concepts.”

**Saturday Review** — **Irving Kolodin** — “... After a time trial measured in months rather than weeks, this one can definitely proclaim Bose is best, big or small, high or low.”

**American Record Guide** — **Larry Zide** — “I urge that you listen for yourself. I think you will have to agree that Bose has, in a single giant step, produced one of the finest speaker systems ever made.”

**Downbeat** — **Chuck Lishon** — “The Bose have replaced forever our bulky studio speakers with compact, handsome units. The only trouble is — our studio is beginning to look like a living room!”

**Stereo & Hi Fi Times** — “A stereo pair fills the wall with stereo, yet each instrument has its prescribed space—and it stays there... these speakers provide a quality that is not to be matched.”

**Hi-Fi Buyer’s Guide** — “The 901 is very possibly the only speaker to date to actually pour forth in true concert hall fashion.”

**GERMANY: Der Spiegel** — “Full sound and clean lows... usually expected only from huge supersized loudspeakers emerges... the stereo effect is effective at literally every point in the room.”

**BELGIUM: La Revue des Disques de la Haute-Fidelite** — **Jaques Dewevre** — “It is grand! It is no longer recorded music... the orchestra is there in front; and the atmosphere of the concert hall, all around!”

**DENMARK: Hobby bladet + Lyd & Tone** — **Claus Sorensen** — “The 901 can produce lower notes than any speaker I have ever listened to... the class is elite...”

**HOLLAND: Disk** — **Jan de Kruif** — “The BOSE speakers belong to the small group of the best and most valuable speakers we know. Without doubt, for some it will be the very best.”

**FRANCE: Revue du Son** — **Jean-Marie Marcel und Pierre Lucarain** — “... 901 with (its) equalizer system is absolutely tops... sets new standards for loudspeaker music reproduction.”

*Shown opposite—left to right: Standard 901’s with ebony, walnut, and grassweave grilles; 901 Continentals with walnut and white cabinets. Pedestals optional.*





"For the first time the critics all over the world are unanimous in (their) verdict on a loudspeaker...BOSE contains more technical innovations than any other speaker of the last 20 years."

**AUSTRIA: Oberösterreichische — Nachrichten Linz**

***BOSE***<sup>®</sup>

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