

B&W 801

AUDIO / LOUD
SPEAKERS



B&W 801.

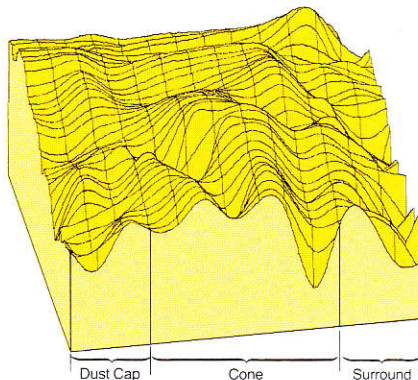
The design brief.

In characterizing the B&W 801 loudspeaker as the next step up, we have sought to not only describe its performance capabilities, but its design concept as well.

For, as far as is known, the B&W 801 represents the first commercial effort to develop and produce a loudspeaker that would reflect the highest standards attainable without regard to any of the so called "practical considerations" that inevitably compromise conventional designs.

No restrictions were imposed on the B&W design team other than that they create a loudspeaker capable of reproducing the full musical spectrum with unexamined accuracy, uncolored sound and very low distortion. In addition, the design brief specified that the 801 deliver sufficient acoustical output to recreate sound levels approaching those of a live performance.

Finally, it called for a design whose physical appearance would grace most listening environments.



Three dimensional representation of the variation with frequency of the amplitude of acceleration of a mid-range diaphragm. Measurements are made with a laser interferometer interfaced with a computer.

The drivers.

Central to any loudspeaker design are the drivers. Unless the individual units are precisely matched and integrated, the design will almost certainly be compromised.

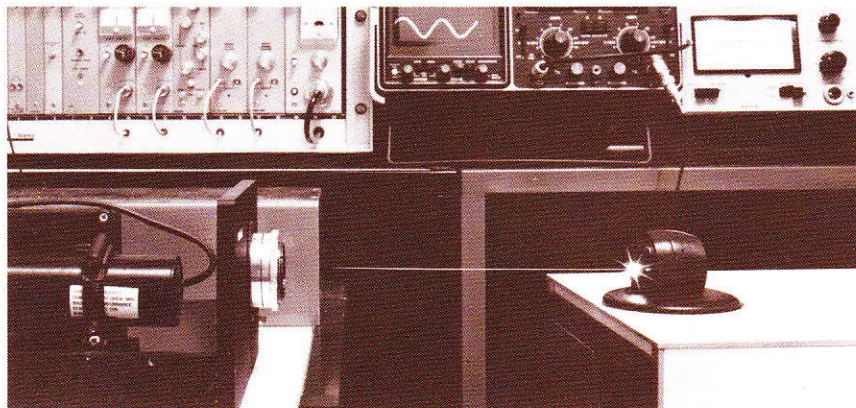
Fortunately, B&W is in a unique position to insure that this vital condition be met. We design and manufacture all of our own drive units. Moreover, unvarying quality standards are maintained thanks to advanced research, measurement and fabrication techniques.

For example, B&W has developed a unique facility to examine and

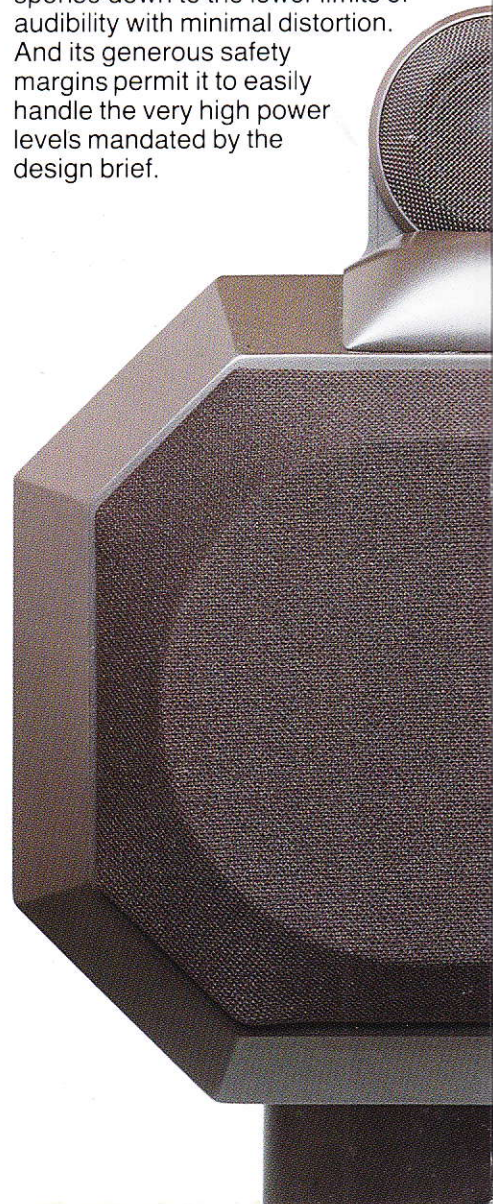
study the vibrational modes of a loudspeaker diaphragm employing laser interferometry. It permits the design team to precisely measure the motion at any point on the diaphragm surface. The data collected is, in turn, fed to a computer and stored for subsequent analysis and display. Thus anomalies in speaker function can be corrected and performance optimized.

The B&W 801 is a three-way acoustic suspension system. Each driver in the system was specifically developed for the 801.

The low frequency driver was designed to produce flat frequency response down to the lower limits of audibility with minimal distortion. And its generous safety margins permit it to easily handle the very high power levels mandated by the design brief.



Laser interferometry is used to measure the vibrational modes of speaker diaphragms and enclosures. Another example of technical innovation pioneered by B&W.



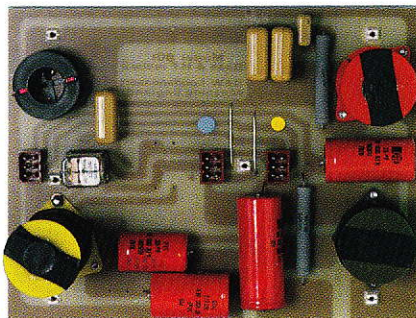
The next step up.

The all important mid frequency driver, which reproduces the greater part of the music signal spectrum was the subject of one of the most intensive efforts in the entire development program. Numerous prototypes were designed employing a variety of materials and fabrication techniques. Exhaustive testing of operational characteristics such as sound pressure response and non-linear motion were conducted. And in the end, a driver of exceptional accuracy, superb transient response and outstanding reliability emerged.

The high frequency driver used in the Model 801 employs a dome shaped diaphragm made up of woven polyester filaments. It is extremely linear, extending frequency response to beyond the limits of audibility with excellent dispersion, very low distortion and a thermal power rating fully in keeping with the design brief.

The crossover network.

The 4th-order crossover network developed for the B&W 801 is one of the most sophisticated designs to be found in a commercial loudspeaker.



It is the outgrowth of a design technique pioneered by B&W called numerical optimization which permits our engineers to synthesize, via computer, a virtually limitless number of crossover models.

By measuring and comparing a working model of the crossover network with the computer model and, if necessary, making appropriate corrections, we are able to achieve a very high order of correspondence between ideal and real world function.

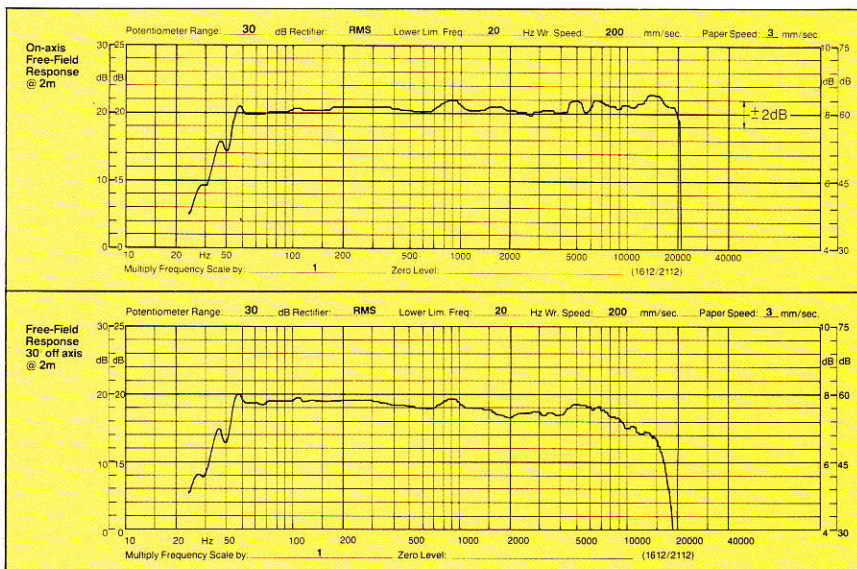
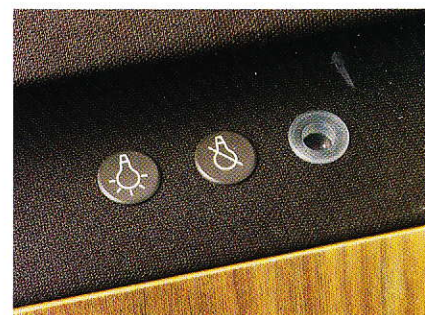
In consequence, the B&W 801 maintains an exceptionally uniform sound

pressure/frequency response, correct phase relationships, more symmetrical vertical polar response and desirable impedance characteristics.

Overload protection.

Because of the very high output levels attainable with the 801, B&W has designed a unique overload protection circuit to prevent thermal damage to the drivers.

The device consists of an electronic circuit which monitors the voltages applied to each of the drivers. If safe operating levels are exceeded, this "fail safe" circuit cuts off power to the loudspeaker. Once the overload condition has been removed, a convenient reset button restores operation.



Typical response curves of B&W 801 taken on axis and 30 degrees off axis. Each B&W 801 comes with its own proof of performance chart recording.

Enclosure design.

The distinctive appearance of the B&W 801 is a direct expression of the design philosophy. For it was determined early on that a two part enclosure would yield the best sonic results.



Environmental controls permit adjustment of mid and high frequency response levels to compensate for variations in room acoustics.

The lower section houses the low frequency driver, while the mid and high frequency units are mounted in a separate head assembly. A staggered, in-line driver configuration insures wide horizontal dispersion and the time-arrival correction necessary for a coherent wave front. In order to keep cabinet resonances to an absolute minimum and reduce coloration, the choice of materials and construction for the low frequency enclosure were determined by vibration measurements taken at a number of points on the enclosure surface. Additionally, the low frequency driver incorporates isolated mountings to reduce the transmission of driver vibration into the enclosure. The head assembly is comprised of individually optimized enclosures

for the mid and high frequency units. It is isolated from the low frequency enclosure by a circular rubber mounting. The entire assembly can be rotated relative to the low frequency enclosure if desired.

As an added refinement, a layer of acoustic absorbent foam between the two sections reduces the amount of high frequency energy reflected off the top of the low frequency enclosure.

Finally, the edges of the enclosure have been contoured to avoid diffraction effects that would otherwise color the sound.

In conclusion.

Designing the B&W 801 was an extraordinary challenge. That we were able to meet and even exceed all our design goals has been extremely gratifying.

Regretably, space does not permit us to tell the story in greater detail

... to describe the hundreds, even thousands, of man hours devoted to perfecting the 801.

Nor, have we been able to tell you about our rigorous testing and quality control procedures. How every component is tested separately and how the assembled loudspeakers are then subject to another battery of tests in an anechoic chamber, as well as in more conventional listening environments. How all the performance characteristics are assessed by instrument and by ear. And more, much more.

But no description can adequately convey the experience awaiting you the first time you listen to the B&W 801.

We urge you to compare the 801 to any other loudspeaker, at any price. Only then will you fully understand why we describe it as the next step up.



The next step up.



Worldwide, B&W has established itself as a leader in the design and manufacture of quality loudspeakers. Time and again, our products have earned unstinting praise for innovative engineering and outstanding performance.

Indeed, for a great many knowledgeable enthusiasts, B&W has virtually redefined the listening experience.

Research and development have always played a key role in the company's activities. New materials and techniques are the subject of continual study and evaluation. Extensive field and life tests are required before new models are introduced. Changes are never made for the sake of change. The primary goal at B&W is, what it has always been, to set new standards in design and performance.

Now with the Model 801, the first in a new generation of loudspeakers designated the Series 80, B&W has created a loudspeaker that is so clearly superior to anything that has gone before, that conventional comparisons no longer apply.

B&W 801. The next step up.

B&W 801

Specification

Frequency response 45Hz to 20kHz ± 2 dB at center of the listening window at 2m.

Low-frequency system Closed box acoustic suspension with system resonance of 37Hz and system Q of 0.7 (ie: minus 3dB at resonant frequency).

Dispersion Vertical: ± 1 dB over 10° of center window.
Horizontal: $+0, -3$ dB over 60° of center window, 20Hz to 15kHz.

Drive unit configuration Vertical in-line and corrected for minimum inter-unit time delay. Computer-matched in pairs insuring accuracy typically better than 0.25dB.

Bass driver Diaphragm: 270mm dia. thermo-plastic cone with PVA compound coating. Ultra long-throw suspension.
Voice Coil: 50mm dia. high-temperature Nomex.
Magnet System: 4.5kg. ceramic.

Mid-range driver Diaphragm: 100mm dia. aromatic polyamide fiber matrix cone, critically formed and PVA impregnated following a laser interferometry computer-linked pattern.
Voice Coil: 25mm dia. phenolic bonded and aluminium lined.
Magnet System: Ceramic.

High-frequency driver Diaphragm: 26mm dia. multi-filament polyester weave dome, mechanically damped.
Voice Coil: 26mm dia. high-temperature epoxy impregnated.
Magnet System: high energy nickel cobalt, center pole.
Total moving mass less than 0.3g.

Distortion For a minimal s.p.l. of 95dB at 1m.

		20Hz-100Hz	100Hz-20kHz
Second harmonic:	less than	2.00%	0.60%
Third harmonic:	less than	1.00%	1.00%
Fourth harmonic:	less than	0.20%	0.10%
Fifth harmonic:	less than	0.30%	0.15%

Impedance 8 ohms nominal throughout entire operating range.

Sensitivity 1 watt into 8 ohm load for a s.p.l. of 85dB at 1m, sinewave input at 300Hz.

Power handling Minimum amplifier 50 watts into 8 ohms.
No upper limit.

Dimensions Height: 948mm (37.3 in.)
Width: 432mm (17 in.)
Depth: 560mm (22 in.)
Weight: 44kg (97lb.)

Cabinet finish Standard: Selected veneers of teak or walnut.
Special: Selected veneers of rosewood or black ash.
Lacquer: A limited selection of colors hand-finished in exquisite lacquer, are available to order.



B&W Loudspeakers Ltd. reserve the right to amend details of their specifications in line with technical developments.



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