

THE
Emphasis
LOUDSPEAKER



USER MANUAL

B&W
BENSON & EDWARDS

I N T R O D U C T I O N

About 60 years ago the first 'wooden box' loudspeaker was introduced to the domestic market. In appearance, most modern loudspeakers still owe a great deal to those early models.

One glance at the Emphasis tells you that all previous notions of how a loudspeaker should look have been suspended.

We have now entered an era where sound and vision go hand in hand.

The Emphasis loudspeaker is testament to that.

Although it would be hard to imagine a more contemporary-looking loudspeaker, its origins go back half a century to when the theory of quarter-wave loading was first conceived.

Then, the quality of loudspeaker drivers did not permit the realisation of the theory. Now, advances in driver technology and plastic moulding have enabled quarter-wave loading to emerge as a commercial reality.

In some style.

The world famous B&W Steyning research establishment has for a number of years been at the forefront of innovative loudspeaker enclosure design. The Emphasis loudspeaker draws on the combination of B&W's 25 years of acoustic engineering experience and the design and styling ideas of designer Morten V Warren.

The Emphasis loudspeaker supports the design adage that form follows function. The theory of quarter-wave loading for loudspeakers is an old but well proven acoustic principle which utilises a controlled pipe resonance to extend the lower bass frequencies and reduce distortion. B&W has developed this principle together with a reflex port as a low-pass acoustic filter. This advance has resulted in the following benefits:

- (a) Reduction of the colourations so frequently associated with box-type loudspeakers: any radiation from the enclosure will add its own character to the relatively neutral and uncoloured sound of the drive units.
- (b) The Emphasis produces an extremely low enclosure vibration decay time in comparison to conventional enclosures. The result is an improvement in transient response – vital for the correct reproduction of modern compact discs.
- (c) Improved detail and depth in the stereo image due to the reduced amount of rear and sideways radiation which confuses the image when reflected back to the listener. The sound appears to be in the space around and between the speakers – not emanating from them. The satellite tweeter on a stalk, surrounded by curved surfaces, gives an exceptionally smooth high-frequency response and optimum dispersion. The combination of this tweeter arrangement, together with the low coloration cabinet and the remarkably low small frontal cross section, ensures that the stereo image will be exemplary in its class.

THE DRIVE UNITS

The reduction of enclosure radiation to extremely low levels has the unfortunate effect of exposing hitherto inaudible defects in driver performance. It was therefore necessary to carry out extensive development of drivers, refining their performance in order to take advantage of the new cabinet technology.

The resulting bass/midrange driver has the B&W patented Kevlar cone which incorporates a 30mm (1 1/4 in.) high temperature voice coil on a Kapton former and low hysteresis surround for optimum transient performance.

Using computer aided design, a very powerful motor system was developed for Emphasis, giving worthwhile bass extension — whilst the increased voice coil diameter enables improved power handling.

The high-frequency transducer is an entirely new design incorporating a metal domed diaphragm. This unit exhibits perfect piston-like behaviour to frequencies well beyond audibility and is the result of advanced research using B&W's established laser techniques and the new science of finite element analysis which can predict the performance of drivers, thus enabling the engineer to assess far more options than if each had to be built and tested first.

FILTER NETWORKS

In the same way that the drivers required refinement due to improvements in enclosure design, similar care was needed to ensure that the crossover filtering was able to maintain the overall system performance. The quality and tolerance of components are controlled to fine limits to permit high standards of minimal distortion and linearity to be met.

All the capacitors in the direct high-frequency path are of the superior polypropylene type, and

only heavy duty inductors have been employed for the low-frequency filter. As a final refinement, the high and low-frequency sections of the crossover are physically separated to minimise component interactions.

UNPACKING, INSTALLATION, ELECTRICAL CONNECTION AND AFTERCARE

UNPACKING

We suggest that, after unpacking your loudspeakers, you should retain the packing against the possibility of wishing to transport them at a later date.

Each carton contains:—

- (a) One Emphasis loudspeaker system
- (b) One iron base
- (c) One tweeter grille
- (d) One brass name plate
- (e) One brass collar
- (f) One nut and washer
- (g) One cover plate
- (h) Five rubber feet
- (i) Five floor spikes
- (j) Five cover plate screws
- (k) One instruction manual (per pair)
- (l) One calibration certificate

INSTALLATION AND ELECTRICAL CONNECTION

Emphasis terminals are marked red for positive and black for negative. These should be connected to your amplifier + and - outputs respectively,

using a good quality cable. Since the currents involved can be high when playing loud music, it is recommended that the cable cross-sectional area should not be less than 1.5mm for runs up to 3 metres and correspondingly larger for longer runs.

AFTERCARE

The Emphasis speakers are finished in a high quality two-part paint compound. Consequently, the greatest care should be taken to ensure that any cleaning is carried out in the absence of abrasive materials. A high-polish spray can be used (similar to polishing compound) to produce the best effect. If you use an aerosol, however, please spray onto a piece of cloth first in order to avoid the application of polish to the speaker.

All the brass components have been lacquered — and do not need to be polished.

THE LISTENING ROOM AND POSITIONING YOUR LOUDSPEAKERS

The degree of accuracy with which the original musical performance can be reproduced in your own home depends on a number of factors, including the quality of the original recording, the equipment used for reproduction and the acoustic properties of your listening room.

Regardless of other links in the chain, the listening room will to a greater or lesser degree imprint its character on the reproduced sound you hear. To demonstrate this, notice how the sound of the human voice changes according to the environment.

CHOICE OF LISTENING ROOM

Few people are fortunate enough to have a choice of listening rooms, but for those to whom this is possible (or anyone choosing a new home) the following may be helpful:

- (a) Any room with different dimensions for ceiling height, length and width will sound more even in response than rooms where all the dimensions are similar.
- (b) Solid walls are preferable and will show better reproduction of low frequency transients than some modern constructions where the inner walls are of plasterboard and slightly flexible.
- (c) Other than in houses with solid or concrete floor structures, a ground floor room is preferable to an upper floor.

CHANGING LISTENING ROOM ACOUSTICS

Quite small changes in the furnishing of a room can change its acoustic properties significantly. If you already have pictures on the wall, remove these experimentally and at once you will notice a considerable change in the sound from your loudspeakers! We are not suggesting that you should leave the room bare of pictures — quite the reverse, because pictures break up the otherwise plain wall surfaces and generally give fewer discrete high-frequency resonances or flutter echoes.

Curtains are another element which can change the sound of your listening room in the mid/upper frequencies. Heavier curtains give more sound absorption of these frequencies and a softer, less reverberant quality to the upper octaves. Conversely if your room sounds too dead, thinner curtains will give more life or sparkle in these

frequency regions. So far as sound in the low frequencies is concerned, this is largely controlled by the dimensions and construction of the room. However, large items of furniture do change room behaviour at low frequencies, and their placement may be worth experimenting with.

PLACEMENT OF YOUR LOUDSPEAKERS

There is some truth in the saying that correctly placed cheap loudspeakers could sound better than poorly placed, more expensive products. Whilst this is a somewhat over-simplified statement it is certainly true that the position of your loudspeakers within your environment will have a greater effect than any other variable under your control.

AMPLIFIER, CONTROL UNIT AND SOURCE EQUIPMENT

The recommended limits of RMS power output for the driving amplifier are 30W min. 200W max. (into 8 Ω). It should be stated that amplifier power output is impossible to quote precisely as it depends to some extent on the type of music being reproduced. Similarly, the required amplifier power will depend on room volume and the sound level required by the listener.

It is generally true to say that too high a power output is better than too low as this allows more headroom for transients and reduces the risk of clipping, with its attendant sharp rise in distortion.

LOUDSPEAKER ACCESSORIES

B&W's R&D Department has conducted extensive research into active loudspeakers,

circuit protection, amplifiers, test equipment and other areas to produce a range of electronics specifically designed to complement the performance of your loudspeakers. These are, or shortly will be on the market. We suggest you ask your dealer for a comparative demonstration of these products.

SPIKES

Spikes (supplied with the base) can assist sound reproduction in two quite different ways. First, due to their extremely small area of contact relative to the stand base, their interface provides many thousands of times greater pressure at the point of contact. This increases the stability of the loudspeaker and helps withstand any movement of the enclosure due to sound excitation.

Secondly, by reducing the area of contact between floor and loudspeaker enclosure, spikes can also assist output. This is especially valuable in the case of a resonant floor, which may be regarded as a giant sounding board coupled to the cabinet.

Two areas of improvement in sound reproduction will be noticed when spikes are fitted. Bass transients will be tighter and stereo images will be slightly more precise, due to the increased stability of the system.

CABLES

The subject of cables between the power amplifier and loudspeaker is dealt with under electrical connection.

There remains the question of interconnecting cables between the various pieces of equipment and the power amplifier. A number of excellent cables are available on the market and audible differences certainly exist between them. We suggest, therefore, that you choose one of the

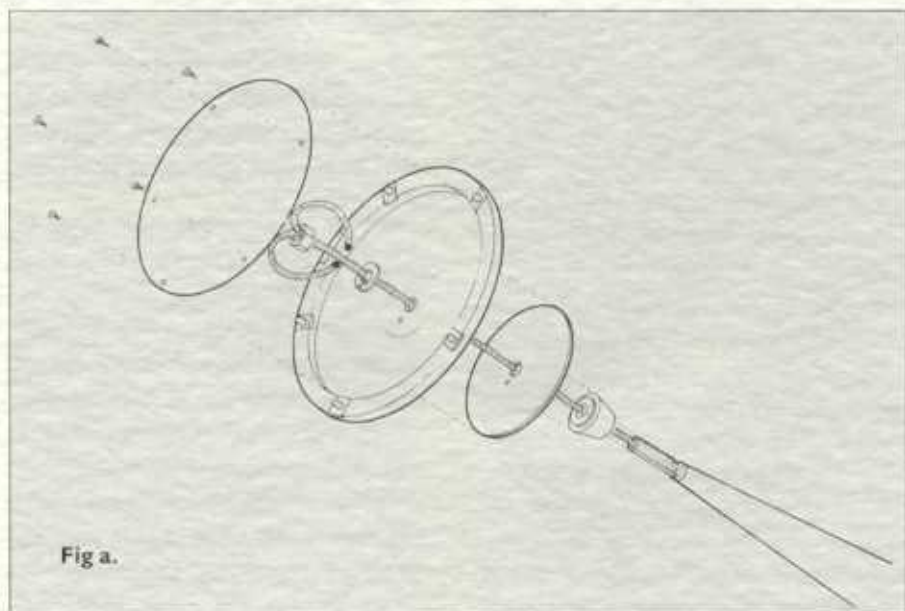
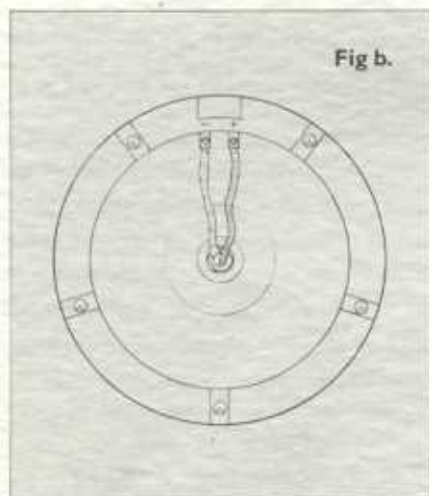
better cables for this purpose, after inspection of the published reports.

ASSEMBLY INSTRUCTIONS

To ensure that the Emphasis loudspeakers reach you in perfect condition it has been necessary to separate the cast iron base from the speaker.

Before you start to assemble the Emphasis loudspeakers, we recommend that they be taken out the carton and assembled laid down. Refer to Fig.a. The components are engaged as shown. Make sure that the terminals are facing at the rear when the speaker is assembled. Once the centre bolt has been tightened firmly and the + and - cables have been linked, the cover plate can then be screwed in place. Ensure that the red + and white - are in the correct polarity (Fig.b), otherwise there will be no stereo image and bass and sound quality will noticeably deteriorate.

We recommend that the metal spikes be fitted, but if they create marks they can be removed to allow the rubber feet to make contact with the floor instead.



SPECIFICATION

Emphasis

DRIVE UNITS

One 85mm (3.3") high power
Kevlar cone bass/midrange
One 28mm (1") magnetic fluid
cooled metal dome high frequency
Quarter wave reflex enclosure
30W to 100W

BASE ALIGNMENT

POWER HANDLING
Recommended amplifier
includes APOC
(Automatic Overload
Protection)

FREQUENCY RANGE

49Hz to 25kHz

FREQUENCY

34Hz to 20kHz $\pm 3dB$

RESPONSE

Free-field

DISPERSION

30Hz to 10kHz

Horizontal

$\pm 2dB$ over 90° arc

Vertical

$\pm 1dB$ over 0° arc

87dB

SENSITIVITY

283V at 1m

DISTORTION

at 1m

For 100dB SPL

Second harmonic

<2.0% 20Hz to 50Hz

<1.0% 50Hz to 20kHz

Third harmonic

<1.5% 20Hz to 50Hz

<1.0% 50Hz to 20kHz

NOMINAL IMPEDANCE

8 Ω (maximum 4 Ω)

CROSSOVER

30Hz

FREQUENCIES

DIMENSIONS

Height: 177.0mm (7in)

Width: 43.0mm (1.7in)

Depth: 36.0mm (1.4in)

WEIGHT

35g (1.2oz)

FINISHES

Clou white

LISTENING SUGGESTIONS

Your B&W Emphasis system will take you a giant step nearer to listening to the music rather than to the loudspeakers. You will hear much more of the desirable ambience and detail in good recordings, unfortunately the faults in poor recordings will also be revealed.

B&W have produced these special compact disc recordings enabling you to enjoy a full appreciation of your new system.

They are available from your dealer.

BW001

The Academy of Ancient Music
Christopher Hogwood



BW002

Live at the Montreux Jazz
Festival



BW003

The EMI Abbey Road Classical
Collection



BW004

Live at the B&W Montreux
Music Festival 1989 Vol 1



BW005

Live at the B&W Montreux
Music Festival 1989 Vol 2



BW006

Live at the B&W Montreux
Music Festival 1989 Vol 3



BW007

Live at the B&W Montreux
Music Festival 1989 Vol 4



BW008

Live at the B&W Montreux
Music Festival 1990 Vol 1



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