

B&W 800 SERIES

M A T R I X  
**805**

**B&W**  
LOUDSPEAKERS

U S E R



M A N U A L





It is more than ten years since the 800 Series of monitor loudspeakers was launched with the now legendary Model 801. The introduction of the Model 802, and more recently the inclusion of Matrix technology and sixth-order bass alignment, has ensured their continued lead in the professional and discerning audiophile fields. As a logical development of that success, the 800 Series has been extended to include Matrix 803, 804 and 805 models for domestic environments.

From the outset the design brief for the Matrix 805 was to produce a compact loudspeaker in the 800 Series suitable for both stand or shelf mounting – particularly the latter where the practical size limit is around 10–12 litres. Consequently the size of the Matrix 805 is only one third of the next loudspeaker in the series, the 804.

Unlike similar sized speakers however, this has not meant sacrificing either efficiency or bass extension, thanks to B&W's sixth-order alignment. In addition many of the lessons learned from the 800 Series have been incorporated into the 805 – not least B&W's pioneering Matrix cabinet construction. Other major features include a Kevlar coned bass/midrange driver incorporating a 30mm (1 1/4 in) high-temperature voice coil on a Kapton former and low hysteresis surround for optimum transient performance.

High frequencies are handled by a time-aligned metal-domed tweeter, adapted from the Matrix 801, which has been mounted on the top of the enclosure, to substantially increase the spaciousness of the sound image. This unit incorporates all the latest advances in materials technology to ensure good power handling and freedom from compression effects – essential for the faithful reproduction of the transient information present in modern digital recordings. Of course, high quality units in themselves are of no advantage if the crossover is not of similar quality. To this end, all the capacitors in the direct high frequency path are of the superior polypropylene type, and only heavy duty inductors are used 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.

The increase in detail resolution, which comes from the systematic removal of masking influences, enables greater appreciation of subjective improvements through the use of bi-wiring or bi-amplification. Accordingly, the Matrix 805 is permanently bi-wired, although external links are supplied for use where a single speaker cable is unavoidable.

The aim of this manual is to increase your knowledge of the speakers and, in doing so, give you greater enjoyment from their use. But within the manual's limited scope it is possible to give only the briefest insight into the technology embodied in Matrix 805. However, B&W's research and development establishment, the source of this technology, is covered in detail in other B&W literature. Please ask your dealer.

B&W loudspeakers are distributed to more than 50 countries worldwide and we maintain an international network of carefully chosen distributors who aim to give you, the customer, the widest possible service. If at any time you should have any problem which your dealer cannot resolve, our distributors will be more than willing to assist you.

### Unpacking

We suggest that, after unpacking your loudspeakers, you should retain the packing in case it is necessary to transport them at a later date.

#### The carton contains:

- (a) Two Matrix 805 loudspeakers and two grilles.
- (b) Two pairs of terminal link wires.
- (c) One copy of this user manual.
- (d) Two calibration certificates.
- (e) Eight rubber feet.
- (f) One high-pass bass alignment filter.

### Installation

Your Matrix 805 loudspeaker system is designed to be shelf or stand mounted. For shelf mounting, each system can be fitted with the self-adhesive rubber feet. Attach by removing the peel-off backing and applying to the underside corners of the cabinet approximately 1cm (1/2 in) from each edge. Should you wish to stand the speakers on an uneven surface it is suggested that only three feet are fitted with two at the front corners and one centred at the rear.

### Electrical connection

Your speakers are fitted with two pairs of input terminals, allowing the system to be bi-wired (separate cables from a common power amplifier to each pair of terminals) or bi-amplified (each pair of terminals fed from a separate amplifier). (Fig. 1). The positive (red +) and negative (black -) terminals should be connected to the respective (+) and (-) amplifier outputs using a good quality cable of at least 1.5mm conductor area.

## AMPLIFIER, CONTROL UNIT AND SOURCE

### The power amplifier

The recommended limits of power output for the driving amplifier are given in the specification. However, in giving these limits it should also be stated that amplifier power output requirement is an almost impossible figure for the loudspeaker manufacturer to specify. It will depend entirely upon the type of music reproduced, size of listening room and sound level required. It is always better to have an amplifier with high power output, as this allows the proper reproduction of transients; whereas if the amplifier output is too low, clipping can occur during high peak level transients. Apart from causing audible distortion, clipping results in a relative increase in the power fed to the high-frequency unit, with the possibility of thermal damage.

### The control unit

The control unit – although it deals with small voltages rather than large currents as in the case of the power amplifier – is an equally critical part of your listening chain.

## LOUDSPEAKER ACCESSORIES

Here we comment briefly on three accessories associated with loudspeakers.

### Stands

The performance of a loudspeaker can often be degraded by the use of an unsuitable stand. To avoid this problem B&W have produced a purpose-designed stand for the 805 as an optional extra.

Whilst some other designs will function equally well, you are advised to audition any prospective speaker/stand combinations carefully.

### Cables

The subject of cables between the power amplifier and loudspeakers 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 consideration of the published reports.

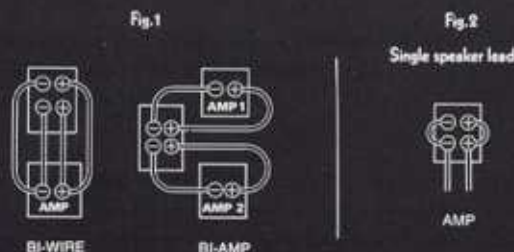
### High-pass bass alignment filter

This external filter gives the possibility of extending the response down to 42Hz (-3dB point) with a sixth-order Butterworth alignment, and also filtering out sub-sonic frequencies which may give rise to excessive cone excursion and intermodulation distortion.

The unit may be either connected permanently between the pre-amplifier and power amplifier, or to the tape input and output sockets of the pre-amplifier, enabling it to be switched in and out by means of the tape monitor switch (Fig. 3).

## AL CONNECTION AND AFTERCARE

For bi-amplification the amplifier gains on each system must be very closely matched in order to maintain the correct system balance.



Bi-wiring is strongly recommended as a minimum requirement. However, if a single speaker lead only is possible, the two positive (+) and negative (-) input terminals must be joined using the links supplied (Fig. 2).

### Aftercare

The cabinet should be treated as any normal piece of furniture. If you use an aerosol cleaner, spray onto a cloth and keep it away from the front of the loudspeaker, especially the grille cloth and drive units. For the paint finish use a soft damp cloth. If you need to clean the grille, first remove the frame by grasping the outer edges near the corners and gently pull away from the cabinet. The material may then be brushed with a normal clothes brush or similar. Please avoid touching the drive units, as damage could result.

## CE EQUIPMENT

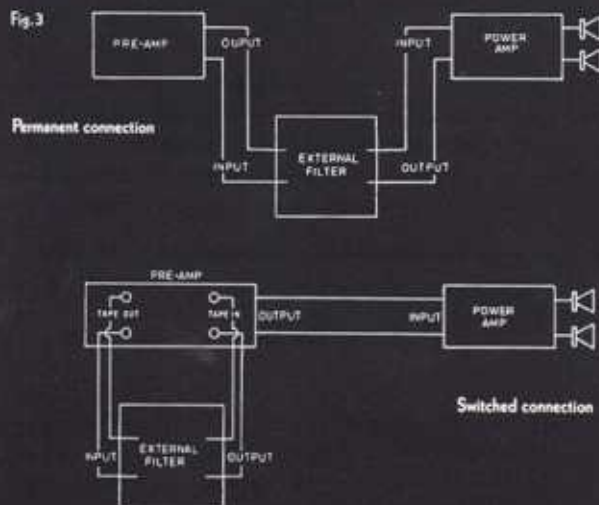
Choose with care, in the knowledge that the ultimate test for audio components is critical listening.

At B&W's research department there are many different combinations of control units, amplifiers and source components such as analogue/CD players, tuners, etc. It is our experience that each unit (to say nothing of the interconnecting cable) is a variable, and the final listening chain is a combination of variables which should be carefully listened to before making a final choice.

### CD player, analogue turntable and tuner

The comments in the previous paragraph apply equally to these items of equipment. CD players have now been on the market for some years and considerable advances have been made. In its present state of development the CD player when coupled with the best recordings made on this medium, can provide the most exceptional source material, totally worthy of the finest equipment with which it is associated.

It should be noted that the loudspeakers may be used perfectly satisfactorily without this additional filter, giving the system a fourth-order Bessel alignment. Indeed, many recordings have little information below 35Hz, so the effect of introducing the filter can be quite subtle.



## 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. In simple proof of this statement, notice how the sound of the human voice changes according to 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 guidelines:

- 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.
- 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.
- 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 quite 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

The designation of the Matrix 805 as a shelf mounting loudspeaker pre-supposes that it will be used close to a wall.

The effects of such placing have been taken into account in the special low frequency alignment unique to the 805. The size, shape and acoustic treatment of listening rooms can vary almost infinitely, however, it still remains true that changing the position of your loudspeakers will have a greater influence on the sound balance and stereo image than any other variable under your control.

Placement in corners is not recommended, but if this is unavoidable it is worthwhile limiting it to one speaker only. In this case you may well prefer the balance without the alignment filter, due to the extra low frequency boost which results from such placing — indeed, even with a more normal placing you may still prefer to switch out the filter on some bass-heavy recordings.

The choice as to which of the four walls to place your loudspeakers near will largely depend on your arrangement of furniture. But again, the option of the longer, as opposed to the shorter wall is well worth trying.

A final word about symmetry. For best balance of stereo information the boundary conditions relative to each of the two loudspeakers should be as acoustically similar as is possible.



**MATRIX 805**

<b>FREQUENCY RANGE</b>	(-6dB points) 35Hz to 22kHz
<b>BASS LOADING</b>	Sixth-order Butterworth alignment 42Hz cut-off
<b>FREE-FIELD RESPONSE</b>	Listening axis $\pm 2$ dB 45Hz to 20kHz $\pm 30^\circ$ horizontal $\pm 2$ dB to 10kHz $\pm 5^\circ$ vertical $\pm 2$ dB to 20kHz
<b>SENSITIVITY</b>	87dB spl (2.83V at 1m)
<b>DRIVE UNITS</b>	One 165mm (6 1/2in) bass/midrange with Kevlar cone. One 26mm (1in) high-frequency with metal-dome, high-temperature voice coil and ferrofluid cooling.

<b>DISTORTION</b>	For 90dB at 1m Second harmonic: <2.0% (20Hz to 150Hz) <1.0% (150Hz to 20kHz) Third harmonic: <1.5% (20Hz to 150Hz) <1.0% (150Hz to 20kHz)	
<b>IMPEDANCE</b>	Nominal 8 $\Omega$ (not falling below 4 $\Omega$ )	
<b>POWER HANDLING</b>	Suitable for amplifiers with 50 to 120W output into 4 $\Omega$ .	
<b>DIMENSIONS</b>	<b>805H</b> Height: 333mm (13 1/8in) Width: 334mm (13 1/8in) Depth: 210mm (8 1/4in)	<b>805V</b> Height: 407mm (16in) Width: 260mm (10 1/4in) Depth: 210mm (8 1/4in)
<b>WEIGHT</b>	8.5kg (18.7lb)	

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**LISTENING SUGGESTIONS**

Your B&W 800 Series 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.

<p><b>BW001</b> The Academy of Ancient Music: Christopher Hogwood.</p>	<p><b>BW002</b> Live at the Montreux Jazz Festival.</p>	<p><b>BW003</b> The EMI Abbey Road Classical Collection.</p>	<p><b>BW004</b> Live at the B&amp;W Montreux Music Festival 1989 Vol.1.</p>
<p><b>BW005</b> Live at the B&amp;W Montreux Music Festival 1989 Vol.2.</p>	<p><b>BW006</b> Live at the B&amp;W Montreux Music Festival 1989 Vol.3.</p>	<p><b>BW007</b> Live at the B&amp;W Montreux Music Festival 1989 Vol.4.</p>	<p><b>BW008</b> Live at the B&amp;W Montreux Music Festival 1990 Vol.1.</p>



B&W Loudspeakers Ltd Meadow Road Worthing  
West Sussex BN11 0RX England