

# Introducing the DM2/II

The DM2/II is a three-driver loudspeaker system of 47 litres capacity. It is a free-standing design, for use with B&W purpose-made accessories but will also incorporate well into existing wall furniture.

The DM2/II offers a wide horizontal dispersion and excellent vertical dispersion within a listening window of approximately  $10^\circ$  in the vertical plane and  $40^\circ$  in the horizontal. To take maximum advantage of this important design feature, the loudspeaker must be mounted vertically and located at the correct listening height or angled slightly to project the window in an upward direction. The pedestal stand or angled plinth cater for these two alternatives.

The following instructions and information will ensure that you derive the best possible performance from your DM2/II loudspeaker system.

# Specification

## **BASS DRIVER: 35Hz to 400Hz**

The bass driver, housed in a critically vented enclosure, has a crossover point of 400Hz where the vent tuning is so designed to extend the low frequency half power point to 45Hz. By lowering the port resonance to 15Hz the objectionable aspects sometimes associated with vented designs were removed. The result is a useful extension of low frequency performance and a reduction in harmonic distortion.

A long throw motor system on the bass driver, giving a free excursion of 20mm, ensures safe high level low-frequency performance.

## **MID-RANGE DRIVER: 400Hz to 3kHz**

The vital mid-band frequencies are handled by a 100mm unit housed in a separate enclosure—critically damped with long-haired natural wool—completely isolated from the bass unit. This enclosure—of "line" tapered contour driven from a third order band pass section—gives reduced inter-modulation distortion.

Both Bass and Mid-range units employ vacuum-formed Bextrene cone assemblies, critically laminated with viscose-elastic damping layers to ensure lowest colouration.

## **HIGH-FREQUENCY DRIVER: 3kHz to 20kHz**

Frequencies above 3kHz are handled by a 25mm multi-filament weave polyester dome unit, critically damped with PVA compounds.

## **CROSSOVER UNIT**

Integration of the three drive units into a complete loudspeaker system is performed by a 19-element Crossover Unit with true third-order Butterworth filters employed on all sections. These filters are accurately contoured to conform to the idealised Butterworth characteristic. The result is (1) significantly lower inter-modulation distortion and therefore noticeably cleaner reproduction of complex orchestral and choral sounds; (2) broad polar distribution and (3) excellent phase and amplitude characteristics throughout

the whole audio spectrum.

In-house computer measurements throughout all development stages ensure excellent transient performance with minimum discrete resonances in the time domain.

## **FREQUENCY RESPONSE**

50Hz to 18kHz  $\pm 3$ db at centre of listening window.

## **DISPERSION**

Vertical:  $\pm 1$ db over 10°.

Horizontal:  $\pm 2$ db over 40°.

Accurate amplitude and phase coherence to free-field response within the listening window.

## **SENSITIVITY**

9 volts into 8 ohms = 95dB at 1 metre (free-field).

## **POWER HANDLING**

Entirely suitable for amplifiers delivering 25 to 200 watts r.m.s. into 8 ohms (music content).

**Cabinet height**  
710mm (28in)

**Width**  
270mm (10 $\frac{3}{4}$ in)

**Depth**  
330mm (13in)

**Weight**  
22kg (48 $\frac{1}{2}$ lb)

**Stand height**  
188mm (7 $\frac{3}{4}$ in)

**Plinth height**  
60mm (2 $\frac{3}{4}$ in)

*B&W Loudspeakers Ltd reserve the right to amend all specifications without prior notice in line with technical developments.*



- 1 Mid-range enclosure—separate “line” tapered and critically damped with natural long-haired wool
- 2 High-temperature voice coil and rear suspension assembly allow exceptionally safe high power handling capacity
- 3 PVC centre dome extends minimum phase behaviour
- 4 Computer-designed concave PVC front suspension absorbs cone wave front and provides minimum defraction from termination
- 5 High-frequency driver—25mm polyester weave with high temperature coil assembly
- 6 Bass driver—extra long throw, with aluminium voice coil, soft PVC dome and linear front suspension. Gives high low-frequency performance with minimum distortion
- 7 Crossover and filter network—19-element unit with true third-order bandpass mid-frequency network. Other drivers have third order low- and high-pass networks. All accurately conform to Butterworth characteristic
- 8 Large cross section ferrite-cored inductors reduce distortion and ensure optimum amplifier damping to drivers
- 9 Critically tuned vent extends low-frequency performance
- 10 Terminal tray incorporates protective system fuse
- 11 Cabinet constructed from high-density particle board. All internal surfaces bonded with bituminous pads to eliminate resonances
- 12 Extensive bracing at critical points eliminates cabinet “readout”
- 13 Tailored open cell polyurethane foam pads eliminate all internal cabinet reflections
- 14 Pedestal stand purpose-designed to give correct listening height. Angled plinth also available

# Unpacking & Assembly

Your DM2/II loudspeakers have been meticulously inspected and packed for complete protection during transit. We suggest that the outer cardboard container, moulded polystyrene interior and polythene wrap should all be kept for re-use if the loudspeakers are to be packed again for transporting.

Inside the package which contains this instruction manual you will also find calibration certificates spare fuses and a wrench key for fixing the plinth or stand.

## Fixing plinth or stand and removing grille

### PLINTH

1 Turn loudspeaker upside down on a soft cloth or carpet to avoid marking the top of the cabinet.

2 Using the wrench key provided, remove the two pan-headed socket screws nearest the front of the speaker.

**Do not remove the cross-headed screws as these retain the cross-over and filter board.**

3 Position the plinth and secure with the pan-headed socket screws (fig.1).

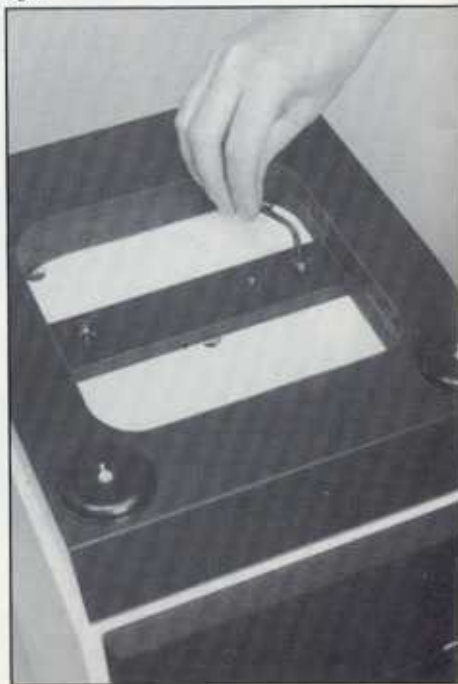
### STAND

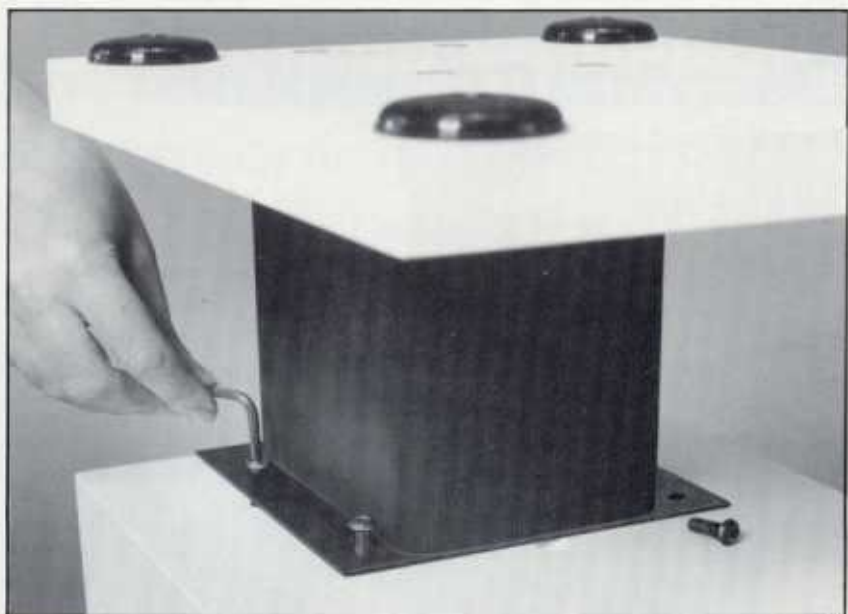
The stand is fixed in a similar way to the plinth except that all four pan-headed socket screws must be removed and used (fig.2).

### GRILLE

If the front grille is to be removed it should be eased away from the top of the speaker until the retaining pins are clear and then lifted vertically from the slot above the bottom area of grille (fig.3).

fig.1





*fig.2*



*fig.3*

# Electrical Connection

## Terminal and fuse panel



fig.4

Connect the output lead from your amplifier to the sockets at the rear of the loudspeaker by means of the 4mm plugs provided. Connect the red plug to the positive socket on the loudspeaker panel and positive output terminal of your amplifier. Use the black plug for the negative connection.

Before operating the loudspeakers, ensure that the fuse

cap is firmly located (screw in a clockwise direction), as it may have worked loose in transit. In the event of fuse failure, replace with the correct rating of 1.6 amp — fast acting.

# The Listening Room & Positioning Your Loudspeakers

You may find the following simple guidelines helpful in selecting the most suitable room, and the best position for your loudspeakers to achieve optimal tonal balance, reproduction and accuracy in stereo listening.

## Sound dispersion

In the design of the DM2/II we have paid special attention to the achievement of accurate amplitude and phase information within a listening window. In fig.5 you will see that dispersion has been made greater horizontally than vertically, allowing greater group enjoyment of stereo location.

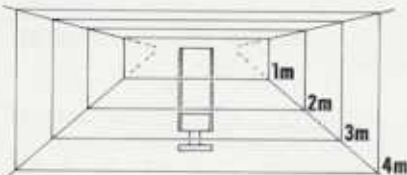


fig.5

When used with either the pedestal stand or plinth, your DM2/II loudspeakers not only give their finest acoustical performance but will also fit happily and unobtrusively into almost any furnishing environment.

Both alternatives are completely integrated with the overall speaker design — yet each has a noticeably different visual effect from the other.

Whilst loudspeaker position within the listening room and the choice of mounting accessory will depend largely upon visual acceptability, the mounting and positioning of the speakers will, of course, greatly influence the final sound. Before considering the options, it may be helpful to comment in more general terms on the listening room.

## The listening room

Choice is normally restricted, but if you are able to choose, it may be helpful to bear in mind the following points:

1 All enclosed volumes exhibit resonances which, in the case of the listening room, will be essentially determined by the distance between parallel surfaces. The strongest resonances will lie between 30Hz and 180Hz in average domestic room sizes.

2 The most unsuitable listening room would be one where all dimensions (wall spacing and ceiling height) are similar, since all resonances occur over a narrow band of frequencies. Rooms where all dimensions are different give the most even and natural bass response.

3 Protuberances and larger items of furniture tend to break up these resonances and, where practical, varying the position of such items can often favourably influence sound reproduction.

## THE STAND



## THE PLINTH



Standing vertically, without stand or plinth, DM2/II's will also fit into an off-the-floor location.

4 Soft furnishings, wall coverings and even pictures influence middle- and high-frequencies. Ideally one should aim to avoid discrete resonances or 'ringing'. An easy test for this problem is a simple hand-clap, if resonances exist there will be a distinct 'overhang' or sustaining of the response which could last between 0.5 and 1 second.

5 A bookcase, placed on a wall opposite a reflective surface such as a window, will often help to alleviate the problem outlined above. Alternatively, a small panel of acoustic tiles — approximately 120 cm x 90 cm (4ft x 3ft) — placed on a wall can produce a remarkable improvement.

### Positioning your loudspeakers

A typical listening room with suggested positions of the loudspeakers for initial listening tests, is shown in fig.6 with the preferred listening area shaded. On initial installation of the loudspeakers, it is advisable to allow

long flexible audio connections for free movement of the speakers during listening tests.

All listening rooms have complex resonances (eigen-tones) and the excitation of these will be considerably affected by the positioning of the loudspeakers.

For either the stand or plinth, the following guidelines may be helpful:

1 Placing the loudspeaker close to either wall will result in an apparent increase in bass response at the cost of some unevenness in low-frequency reproduction. This tighter coupling excites the room resonances more strongly.

2 Placing the loudspeaker close to the corner of a room is usually not the most suitable position for low-frequency performance, although an increase in extreme bass will be apparent.

3 The listening position will also influence apparent bass



performance. The darker area marked in fig.6 is normally preferable to the extreme boundaries of the listening area.

4 The separation of the loudspeakers and their angle toward the listening area influence the accuracy of the stereo reception and the 'solidity' of the centre image. Generally a distance of 2.4-3.6m (8-12ft) between the speakers, and an angle of 15° toward the room centre is most effective.

5 The closer your own position to the loudspeakers, the nearer they should be to each other, or the greater the angle between them.

6 Positioning the loudspeakers may be more critical in smaller, more regularly contoured rooms than in those where boundary dimensions are more varied.

The third mounting alternative, within existing wall furniture, is probably the most difficult from an acoustical point of view but can give excellent results in certain rooms. Obviously, one degree of freedom with this housing method is re-

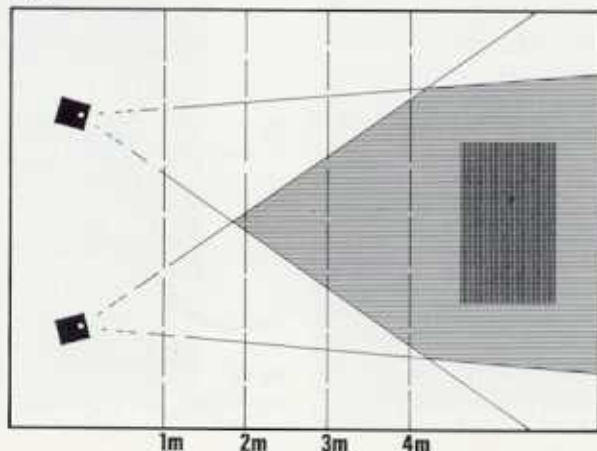
moved and the only option, if excessive bass is experienced, is to move the speakers away from the boundaries or corners and nearer to the centre of the wall unit. It is worth mentioning that placing some absorbent objects such as books or records on either side of the speakers generally improves the mid-frequency performance. When a loudspeaker is free-standing, sound can diffract smoothly around the cabinet. This is not possible with a bookcase mounting — hence the need for some absorbent material.

It is important that the four screws in the base of the cabinet (for stand or plinth fixing) are securely tightened to complete the sealing of the enclosure.

The one-third octave room measurements on page 10 will serve as guidance on the acoustic variation likely with the placing and mounting options discussed above.

*Under Section 4 we have listed a small selection of commercially available recordings which you may find helpful in setting up and demonstrating your equipment.*

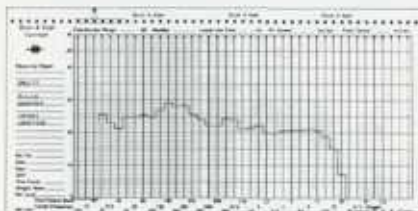
fig.6



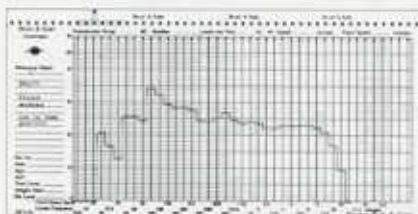
## Plinth-mounted



*fig.7*  
in corner position.



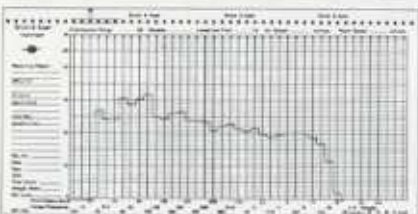
*fig.8*  
in normal position.



*fig.9*  
positioned out in room.

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## Stand-mounted



*fig.10*  
in corner position.



*fig.11*  
in normal position.



*fig.12*  
positioned out in room.

## Ancillary Equipment & Source Material

As a discriminating listener, you will not have chosen your DM2/II loudspeakers without thorough preliminary listening tests. As you will have discovered, far from being the weakest link in the chain — as loudspeakers are so often described — the performance of the DM2/II warrants the best ancil-

lary equipment available in order to realise its full potential.

While we cannot, of course, recommend specific equipment manufacturers, there is a wide range of top-quality components available. Since you have already invested in one of the world's finest speakers, you should therefore pay equal attention to your choice of pick-up arm, cartridge, amplifier, tuner, tape recorder. Differences between them may be subtle but they do exist, and your own listening experience is an invaluable guide.

Reliable advice is always available from a reputable hi-fi specialist, and our own specially-appointed B&W dealer will be pleased to give you expert assistance. Naturally, if it is possible to carry out a listening test in your home, using familiar recordings, this is the best way to ensure lasting satisfaction.

One of the continuing rewards of owning exceptional, high-fidelity equipment is the huge variety of performances from the world's finest artistes that you can enjoy in your own home, both from VHF stereophonic radio transmissions and disc recordings. In particular, you may find the following selection of commercial recordings helpful in setting up your own equipment and in demonstrating its capabilities.



## Recommended Recordings

The records listed in this section have been selected as typically good recordings which may be helpful in setting up your equipment, positioning the loudspeakers and, if necessary, adjusting the acoustics of your listening room. The B&W Selection in particular has been specially produced with this aim in view — although this, and any one of the records mentioned, will prove an enjoyable and interesting addition to your library.

As stated earlier, the final sound reproduction will depend on your ancillary equipment. It will be of interest therefore to know that the comments made about the listed recordings were based on listening experiences using a variety of high-quality ancillary equipment and B&W DM2/II loudspeakers.

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### THE B&W SELECTION

Our own demonstration record. Ten tracks from the Philips catalogue, carefully selected for the excellence of their recording quality. This record not only gives a taste of high-quality recordings with which to demonstrate and set up your equipment but also provides an opportunity to sample a wide range of music from classical Mozart to contemporary Carl Orff.

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### LISZT

Dezso Ranski plays Liszt  
*Dennon PCM Ox 7029 ND*

As with Sheffield, Dennon have eliminated the analogue tape recorder as the storage medium for transfer to master disc. Dennon are the first recording company to convert the musical information from analogue to digital form and use a computer to replace the analogue tape recorder. In terms of amplitude and phase accuracy this method has much to commend it and one of the side advantages is exceptionally good signal to noise ratio without resorting to Dolby process. In our opinion, some of the Dennon performances are not particularly exciting, but certainly this Ranski disc is one of the exceptions and probably brings us closer than most recordings to having the grand piano in our listening room. Due to the exceptionally good signal to noise ratio, the 'silence' is almost as impressive as the climactic sound in the beautiful way which reverberation from the piano dies away. A thoroughly recommended item for the collector's shelf.

### MOZART

Die Zauberflöte (The Magic Flute)  
Talvela, Burrows, Fischer-Dieskau,  
Equiluz, Deutekan & Lorengar with  
the Berlin Philharmonic Orchestra  
Conducted by Karl Boehm  
*Decca SET 479-481*

This recording is generally accepted as being one of the best available. It is a fine, distortion-free recording and if one is prepared to accept that voices are somewhat 'larger than life', there is no criticism. In the writer's opinion the producer, with his balance engineers, is perfectly entitled to vary the perspective to compensate for the lack of visual experience. And Decca have certainly pioneered the approach of using up to 36 microphones in many of their recordings of major works.

### MUSIC FOR DOUBLE BASS

Rodney Slatford & The Academy of  
St Martin-in-the-Fields  
Directed by Neville Marriner  
*EMI ASD 3264*

This record is another 'one in a thousand', by EMI and of a totally different kind. The sound quality of the strings — and especially of the double bass — is completely natural. Particularly recommended is Rossini's Duetto for violoncell and double bass. Most beautiful music perfectly played, transcribed and reproduced.

## **PUCINI**

Tosca

Caballe, Carreras & Wixwell Chorus  
& Orchestra of the Royal Opera  
House, Covent Garden  
Conducted by Colin Davis

*Philips 6700 108*

The orchestral recording in this set is among the best we have heard. It played at a realistic volume the opening overture is almost frightening in its accuracy and dynamic range without the usual 'jumble' of highly complex sounds. Reverberation is wonderful and the transient accuracy a compliment to modern recording technology. Voices are at times a little distant (although one suspects naturally so) and the general balance between voice and orchestra favours the latter.

## **ROSSINI**

Overtures

The Academy of St Martin-in-the-Fields

Directed by Neville Marriner

*Philips 6500 878*

A generally pleasant recording with the provision that the string sound is somewhat too hard — a fault that so many otherwise 'perfect' recordings suffer. This record has been included in the recommendations because the Bass strings are especially useful in positioning loudspeakers. We would estimate the natural ambience of the recording studio dies within about 1 second and the general bass response is well extended. Use band 2, side 1 (*L'italiana* in *Algeri*) and move the loudspeakers to give the cleanest bass response.

## **SCARLATTI**

Ten Sonatas for Harpsichord

Gustav Leonhardt

*BASF/Harmonia Mundi BAC 3068*

In common with many of the *Harmonia Mundi* recordings, the Scarlatti is without technical fault in terms of recording. The complex transient structure of the harpsichord is reproduced without trace of clouding or distortion. The attack on the chords is especially fine and is a wonderful test for the transient performance of any items of equipment.

## **Johann STRAUSS**

Die Fledermaus

Varady, Popp, Prey, Rebroff, Kollo  
& Weigl with the Bayerisches  
Staatorchester

Conducted by Carlos Kleiber

*Deutsche Grammophon 2707 088*

Another excellent recording of the vocal and orchestral art but unlike the Tosca mentioned above, the recording of the orchestral section is not as good. The voices and especially the 'Stage Set' are excellent. The opening of side 4 (*The Jail Scene*) is an excellent way to check the correctness of loudspeaker spacing and angle. The sound seems entirely divorced from the loudspeakers with the actors taking their place.

## **STRAVINSKY**

Pulcinella

The Academy of St Martin-in-the-Fields

Directed by Neville Marriner

*Argo ZRG575*

Although first published some 8 years ago, this recording is still current in the catalogue. The only criticism is the slightly hard string sound due probably to either over-close microphones or modest lift in the 1kHz to 4kHz area. The fact that the recording obviously used a number of microphones placed fairly close to the instruments is all the more remarkable for its exciting natural sound. The sense of orchestral depth is well preserved and a particularly exciting section comes towards the end of side 1, the duetto for trombone and double bass.

## **GLORY BE TO GOD**

The Choir of Paisley Abbey

Conducted by George McPhee

*Decca SKL 5049*

The soprano soloist Rachel Rough in Franck's *Panis Angelicus* is especially well reproduced and the voice is delightfully distant, capturing the ambience of the Abbey surroundings perfectly. Quality of this recording is generally good and the 2 bands devoted to George McPhee as organist are very satisfying with pedal notes being sufficiently prominent to make a most satisfying sound.

## **JAZZ GREATEST NAMES**

Slam Stewart Slamberee

*Black & Blue 33049*

One of the lesser known recording companies, this French label produces some of the most lifelike jazz sound we have heard. Close microphones capture the simple arrangements perfectly, and reproduction throughout the audio spectrum is almost without fault. Especially recommended side 1, band 3 'Foolin Around'.

### **KING'S SINGERS CONCERT COLLECTION**

*EMI CSD 3766*

Much of this world-famous group's work is of a more serious nature and equally good from a technical standpoint is their French Collection and the Madrigal Collection. The Concert Collection is so varied that it contains something for most tastes. We would especially recommend band 3 of side 2. The arrangements in close harmony are most lifelike with the 6 performers standing very comfortably between the DM2/II's.

### **LINCOLN MAYORGA — VOLUME 3**

*Sheffield LAB-1 SL5/SL6*

Sheffield Records, being the first company to produce direct from microphones to master disc, are well known among hi-fi enthusiasts for their wide frequency range with low distortion and enormous dynamic range. Where percussive sounds are reproduced from close microphones the result is certainly realistic and exciting. We have examined the frequency spectrum of this disc on the B&K spectrum analyser and the power spectrum is essentially flat from 30Hz to above 10kHz. This is a record to impress and, perhaps more than most, is extremely testing on the safe power handling capacity of the loudspeakers.

### **SONGS OF THE BAROQUE ERA**

Max van Egmond & The Leonhardt  
Consort with original instruments

*Das Alte Werk 6.41088*

Many of the Telefunken productions under the Das Alte Werk label are exceptionally well recorded and this series of songs is no exception. Reverberation throughout the recording is high, but rather than detract, it enhances the feeling of an authentic performance. Max van Egmond's voice is clear, full-sounding and completely lifelike. Being placed well forward of the instrumentalists using the original instruments, they make for a most interesting and enjoyable sound.

### **TALES OF BEATRIX POTTER**

Music from the film

John Lanchbery & Royal Opera  
House Orchestra, Covent Garden

*EMI CSD 3690*

By no means a modern recording, this disc has been used extensively in Audio Fair demonstrations throughout the world and extracts incorporated in 'sampler' demonstration records. The music is not especially demanding of either the orchestra or the recording engineer but throughout both sides of this disc quality is good, making use

of fairly close microphones without at any time it being too obvious. Band 3, side 2 (Mrs. Tigglywinkle's Laundry) is a favourite demonstration piece.

## Fault Finding & Service

The DM2/II is a robust dynamic loudspeaker system, engineered to the highest standards to give many years of trouble-free service and guaranteed against defective workmanship and materials for five years. The complete system is fuse-protected against accidental damage and fuse failure is the only fault likely to be encountered in normal operation.

If the complete loudspeaker fails to operate, the 1.6 amp fuse should be replaced and this

will in all probability restore the system. The fuse is located on the rear terminal panel (see fig. 4).

Throughout the world B&W Loudspeakers have appointed distributors (see page 16). Should any service problems occur, these distributors will always be pleased to direct you to your nearest B&W Appointed Dealer. In the United Kingdom some 150 dealers have been appointed and a list may be obtained from the factory.