B&W DM7

Instruction Manual

OFFICE COPY (free)

THE QUEEN'S AWARD FOR EXPORT ACHIEVEMENT 1978

IMPORTANT

Please read this manual carefully before unpacking your new DM7 speakers

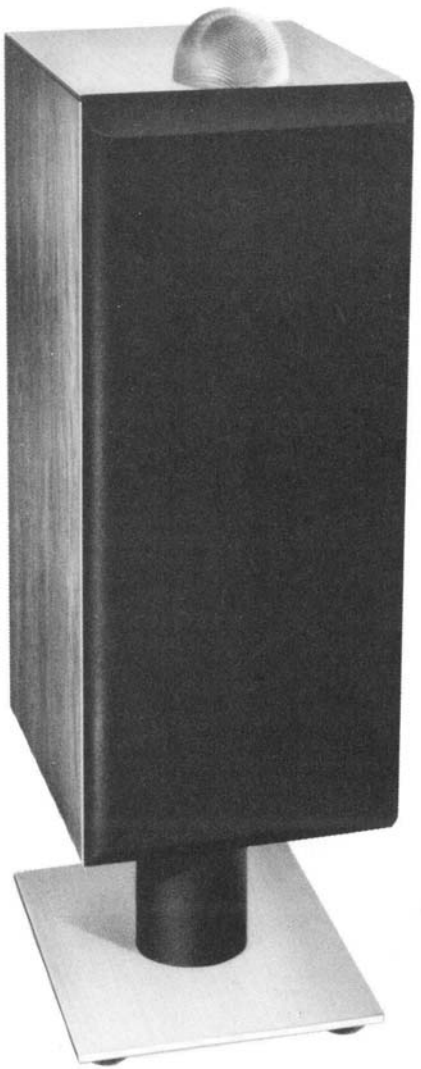
B&W Loudspeakers

INTRODUCING the DM7

The DM7 is a precision, three-unit loudspeaker system featuring entirely new purpose-designed drive units and compact (approx. 40 litre) enclosure. Our lengthy programme of design and development has been completed with excellence of performance rather than cost in mind. Used stereophonically or quadrophonically, your new speakers will achieve the very highest standards of fidelity in the reproduction of original sound.

The integral stand positions the loudspeaker at the optimal listening height for accurate amplitude and phase-coherent information within a listening 'window'. The following instructions and information will help to ensure that you derive the maximum listening pleasure from this exceptional loudspeaker system.

Contents



Specification

Frequency response
30Hz to 25kHz. Better than ± 2dB, 70Hz to 20kHz on measuring axis. −3dB at 50Hz.

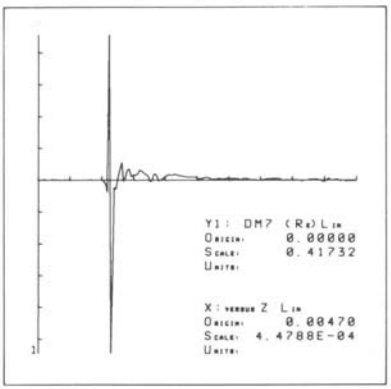
Dispersion
Amplitude and phase-response is preserved to the highest degree within the listening window.
Vertical: ± 1dB over 10 degrees.
Horizontal: ± 1.5dB off axial response for 40 degree listening arc from speaker centre line.

Phase characteristic
Accurately optimised inter-unit time delay with third order Butterworth high- and low - pass sections on filter network give a substantially accurate 'first order all-pass' system phase characteristic.

Distortion
Third harmonic: less than 1% for a spl of 95dB at 1 metre from 40Hz to 20kHz.
Second harmonic: less than 3% for a spl of 95dB at 1 metre from 40Hz to 20kHz.

Impedance
Not falling below 8 Ohms throughout entire operating range.

Transient response
Of the highest order as shown here by the B&W computer readout.



Crossover and filter network
A thirteen-element LCR network accurately controls phase and frequency response of the units, giving good matching accuracy to the true third order Butterworth high– and low–pass characteristics. All components are of the highest quality, and polyester (not electrolytic) condensers used throughout.

Sensitivity
10 volts rms for a spl of 95dB at 1 metre.

Power handling
Entirely suitable for all high quality amplifiers up to 200 watts rating.

Fuse protection
Both system and high-frequency unit are fuse protected.

Controls
A multi-way contour control allows frequency weighting, in addition to the linear position provided.

Height 900mm (35 7/16 in)
Width 270mm (10 11/16 in)
Depth 382mm (15in)
Weight 29kg (64lb)

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

Contour control giving four positions for selection of optimum or suitable speaker performance

Spheroidal high-frequency transducer TS26 (under protective grille)

Bass/mid-range transducer BM220, based on a B&W cone matrix of aromatic polyamide fibres

Acoustic drive radiator ADR220 to supplement response below 100Hz

Cabinet is veneered particle board of high density with balancing veneers laminated to 12mm thick bituminous anti-resonant panels; total thickness 25mm. Cabinet design, particularly in the vicinity of the HF unit, has been carefully contoured to achieve smooth defraction

Drive units are mounted on a rigid, moulded polystyrene structural foam baffle

Grille comprises an acoustically correct cloth fitted over a moulded polystyrene frame

Strong metal stand with glides. 5mm thick bottom plate of high grade aluminium, brushed and anodised

Section 1 UNPACKING & ASSEMBLY

It is important to follow these unpacking and assembly instructions carefully.

1 Remove mauve accessory bag from the top of the polystyrene pack. This contains all necessary components for your pair of loudspeakers.

2 Bend the opened flaps of the carton securely back and turn the carton upside-down. Slide it up and off the white polystyrene packing which encases the loudspeaker (fig.2). *Leave this inner packing in place until the stand assembly (fig.5) has been completed.*

3 **Fitting the stand:** Fit column to the speaker (fig.3) using the screws and wrench-key provided.

To ensure that the seam on the column is at the rear of the assembled loudspeaker locate arrow on plate pointing to arrow on polystyrene pack.

Using the same wrench-key, secure the aluminium base plate to the base of the column (fig.4).

4 Turn the loudspeaker (still encased in the polystyrene) the right way up, onto its stand.

5 Cut the binding tapes (fig.5)and remove the 2-part polystyrene packing and inner wrap. It is a good idea to retain this packing material for transporting the loudspeaker safely in the future.

Repeat these instructions for the second loudspeaker.

Wrench-key

Countersunk screws (8) for securing base plate to column

2.0 amp 20mm fuses (2)

0.5 amp 20mm fuses (2)

Cap screws (8) for securing base column to speaker

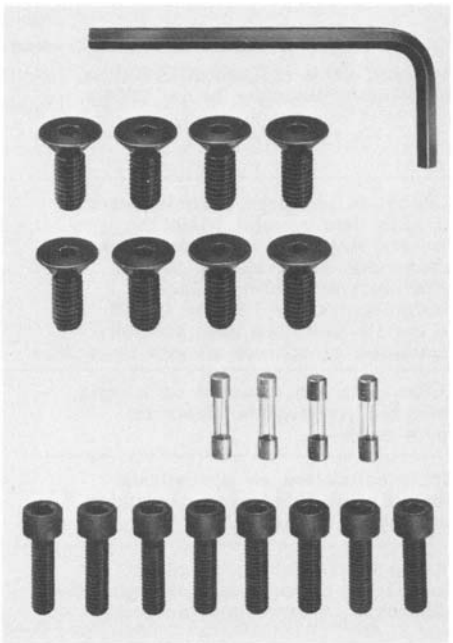


fig. 1

fig. 2

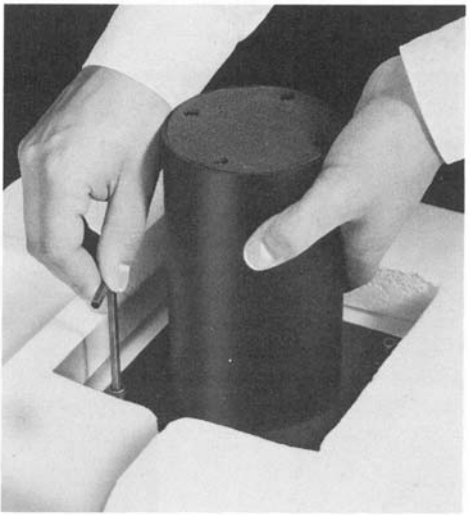


fig. 3

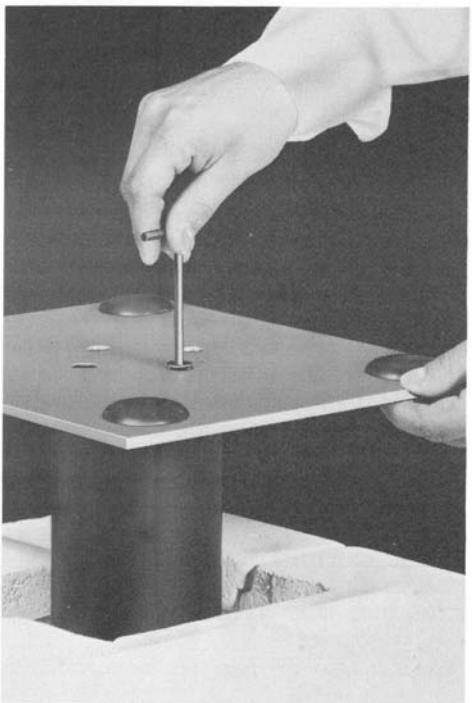


fig. 4

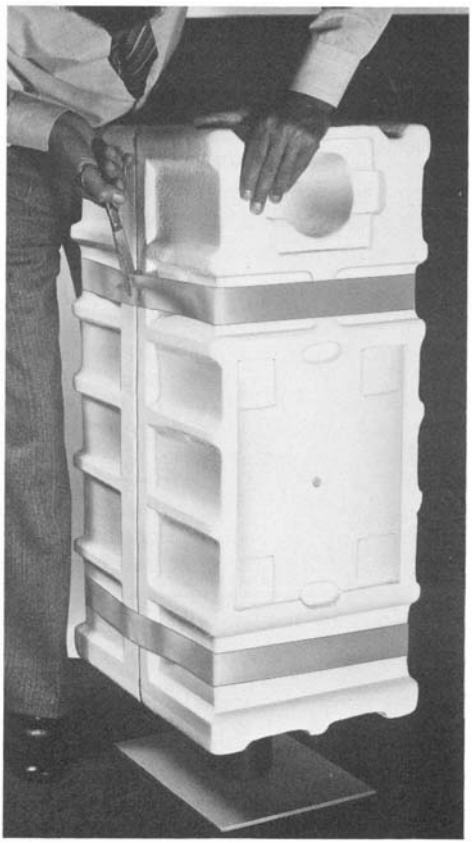


fig. 5

Section 2 ELECTRICAL CONNECTION

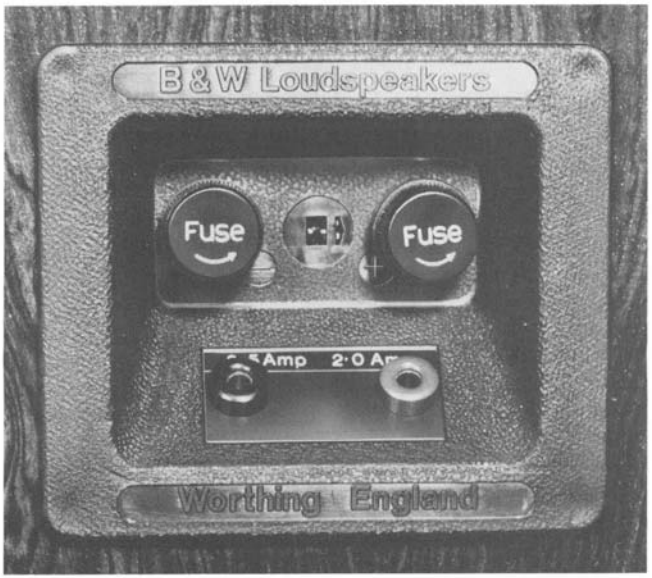


fig. 6

Terminal and fuse panel

Connect the output lead from your amplifier to the sockets at the rear of the loudspeaker by means of the 4mm plugs or standard DIN loudspeaker plug, both of which are provided.

If using the 4mm plugs, connect the red plug to the red socket on the loudspeaker panel and positive output terminal of your amplifier. Use the black plug for the negative connections.

If the alternative DIN connector is used, exercise similar care in polarity for connection.

Check that both fuse caps are firmly located (screw in a clockwise direction) before operating the loudspeaker, as they may have worked loose in transit.

Section 3

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 DM7 we have paid special attention to the achievement of accurate amplitude and phase information within a listening window. In fig.7 you will see that dispersion has been made greater horizontally than vertically, allowing greater group enjoyment of stereo location.

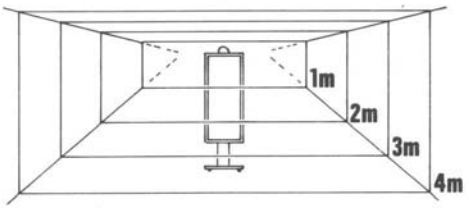


fig. 7

The height of the stand ensures that the centre of the vertical listening axis is approximately at ear height when the listener is seated.
The greater the distance from the loudspeaker, the greater the tolerance or listening location (see fig.8).

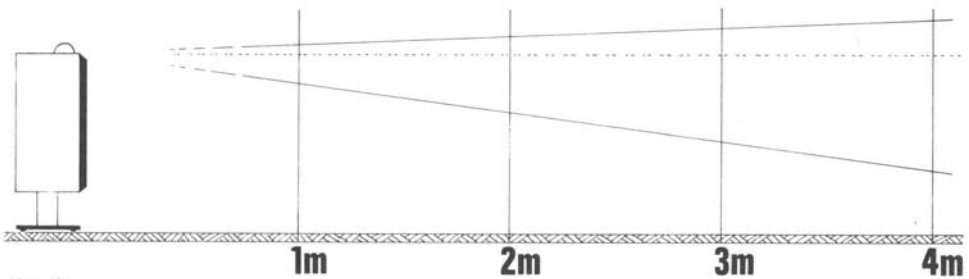


fig. 8

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:

i 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 180 Hz in average domestic room sizes.

ii. 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.

iii. 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.

iv Soft furnishings, wall coverings and even pictures influence middle - and high-frequencies. Ideally one should aim to avoid discrete resonances or 'ringing,' and 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.

v 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 4ft x 3ft (120cm x 90cm) — 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.9, 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 (eigentones) and the excitation of these will be considerably affected by the positioning of the loudspeakers. The following guidelines may be helpful :

i 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.

ii Placing the loudspeakers 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.

iii The listening position will also influence apparent bass performance. The darker area marked in fig.9 is normally preferable to the extreme boundaries of the listening area.

iv 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 8 – 12ft (2.4 – 3.6m) between the speakers, and an angle of 15° toward the room centre is most effective.

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

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

Figs. 10, 11 and 12 illustrate the influence of positioning on low-frequency performance — see i and ii facing.

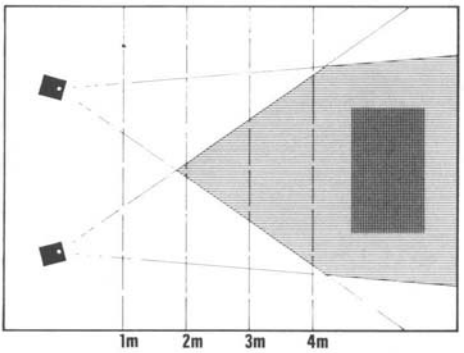


fig. 9

Under Section 5 we have listed a small selection of commercially-available recordings which you may find helpful in setting up and demonstrating your equipment.

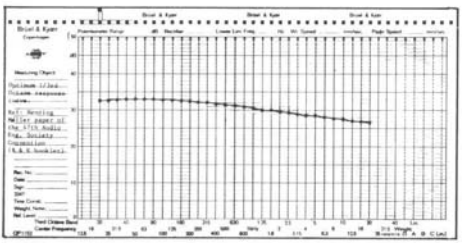


fig. 10

Optimum $\frac{1}{3}$ octave response curve. Ref: Henning Møller paper of the 47th Audio Engineering Society Convention.

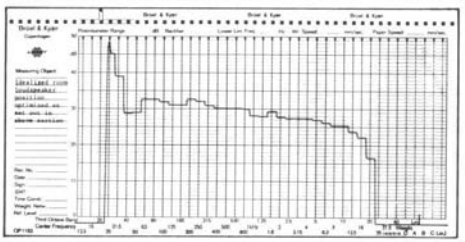


fig. 11

Idealised room loudspeaker position.

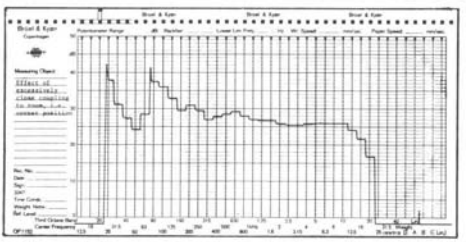
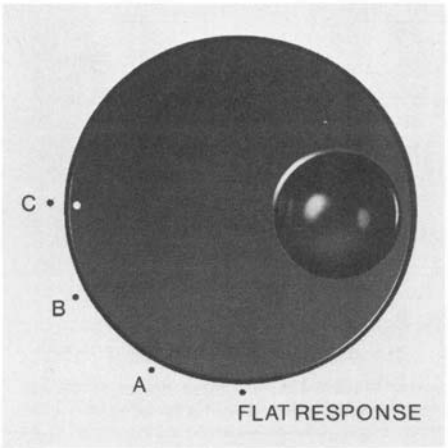


fig. 12

Effect of excessively close coupling to room, i.e. corner position.

Section 4 THE CONTOUR CONTROL



In the ideal listening room, and using top-quality source material, deviation from linear response can only give unnatural reproduction. Normally, however, the listener has only marginal control over the listening environment, and records are more usually chosen for their content rather than technical merit.

The DM7 contour control located on the top rear of the enclosure, permits adjustment of sound balance.

The contour control has four positions, to give varied frequency weightings or deviation from flat response which are different from those obtainable with your amplifier tone controls. The deviations obtained with the contour control will be helpful in mitigating against unfavourable room acoustics or certain types of recordings.

As the illustrations below indicate, frequency variations exist to two discrete areas: below 150Hz and above 3kHz. We have already emphasized that listening is the most accurate method of making a subjective judgement of sound quality when positioning the speakers — and the same applies to the selection of contour control settings. Quite simply, if it sounds right it is right. You may, however, find the following information on each control setting, together with observations on listening experience, of help in making your adjustments.

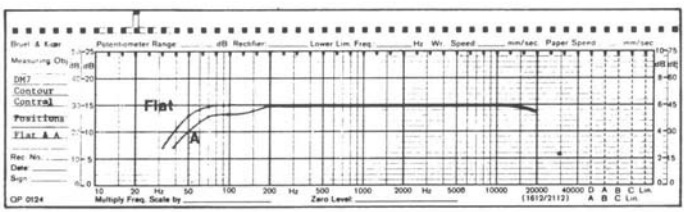


fig. 13
Contour control positions Flat and A.

Control Setting

FLAT RESPONSE. Always use **flat response** as your basic reference. In a good listening room with top-quality material this setting should give the most natural result.

A Most problems associated with bass reproduction in the home occur within the 80 – 160Hz range. This is due to the floor-ceiling resonances, particularly if this dimension coincides with either of the wall dimensions. If there is evidence of cloudy or muddled bass (pizzicato strings are an excellent test) switching to the A position should effect an improvement. It should be emphasized that with all settings of the contour control the frequency deviation is localised. In the A setting, therefore, the frequency response above about 150Hz remains flat.

B In this setting, the frequency response up to 3kHz remains unaltered from the flat position, while the upper frequencies are attenuated. Position B will be found particularly effective on source material which is over-brilliant, where strings have a hard or steely sound.

C This setting achieves the simultaneous attenuation of two sections of the frequency spectrum: the bass attenuation of position A, together with the upper frequency attenuation of setting B.

Some of the suggested recordings listed at the end of the next section may help to illustrate the usefulness of this control.

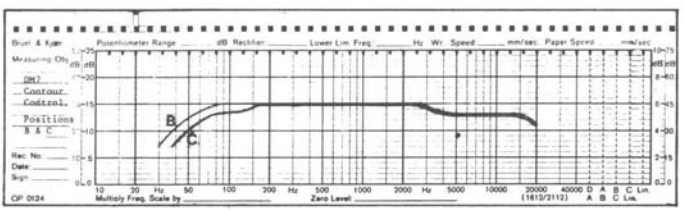
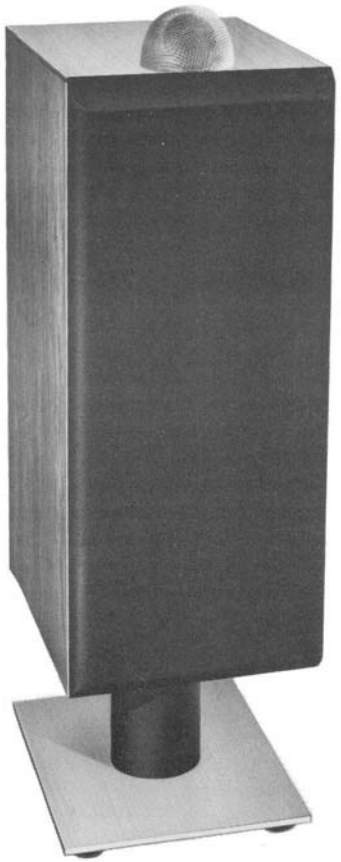


fig. 14

Contour control positions B and C.

Section 5 ANCILLARY EQUIPMENT

As a discriminating listener, you will not have chosen your DM7 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 DM7 warrants the best ancillary 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.

& SOURCE MATERIAL

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. Should you decide to purchase any of these it is hoped that the programme content will prove enjoyable and that they will be interesting additions to your library.

As stated in the section of this instruction manual covering ancillary equipment, the final sound reproduction will depend on this equipment. It will be of interest therefore to know that the comments made about the listed recordings were based on listening experience using a variety of high-quality ancillary equipment and B&W DM7 loudspeakers.

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 (3 record set)
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.

PUCCINI
Tosca
Caballe, Carreras & Wixwell Chorus & Orchestra of the Royal Opera House, Covent Garden Conducted by Colin Davis
Philips 6700 108 (2 record boxed set)
The orchestral recording in this set is among the best we have heard. If 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 Adademy 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 Harpsicord
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 harpsicord 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 & Weikl with the Bayerisches Staatsorchester
Conducted by Carlos Kleiber
Deutsche Grammophon 2707 088
(2 record set)

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. The'front–back dimension' is excellently reproduced, one of the advances made in DM7.

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 excitingly 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 DM7s.

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 Tiggywinkle's Laundry) is a favourite demonstration piece.

Section 6
FAULT-FINDING & SERVICE

The DM7 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. Both the complete system and the high-frequency unit are separately 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 2.0 amp system fuse should be replaced and if there is evidence of loss in high frequencies the 0.5 amp HF fuse should be replaced. Both fuses are located on the rear terminal input panel as shown in fig.6.

It is important to note that when shipped from the factory, standard 20mm diameter fuses are fitted complete with adaptor. Should it be more convenient to replace with $1\frac{1}{4}$ x $\frac{1}{4}$in. (32 x 6mm) fuses, the adaptor should be removed. This adaptor will normally be removed automatically by withdrawing the 20mm fuse.

Throughout the world B&W Loudspeakers have appointed distributors and a list is printed at the back of this manual. 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 180 dealers have been appointed and a list may be obtained from the factory.

B&W Loudspeakers

Distributed throughout the world

UNITED KINGDOM
A. C. Farnell Ltd,
Kenyon Street,
Sheffield S1 4BD

Lugton & Co. Ltd,
Cross Lane,
Hornsey,
London N8 7SB

AUSTRALIA
Convoy International (Pty) Ltd,
4 Dowling Street,
Wooloomooloo,
2011 Sydney.

BELGIUM
Ets. Van der Heyden,
Brusselbaan 278,
9440 Erembodegem.

CANADA
Remcron Electronics Ltd,
2250 Midland Avenue,
Unit 1, Scarborough.

GREECE
Praxitelous Str. 40,
P.O. Box 245,
Athens.

HOLLAND
Audioscript,
Nieuw Loosdrechtsedijk 107,
Loosdrecht.

HONG KONG
Melchers (HK) Ltd,
401-8 Realty Building,
71 Des Voeux Road Central.

ITALY
Gammavox,
Via P. Calvi 16,
20129 Milano.

JAPAN
Lux Corporation,
1-1, 1-chome
Shinsenri-nishimachi,
Toyonaka

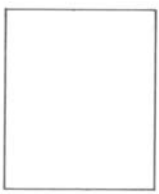
PORTUGAL
Matesil,
Rua 31 de Janeiro,
Porto.

SOUTH AFRICA
Foglar Sound (Pty) Ltd,
Parliament Towers,
105 Plein Street,
Cape Town.

SPAIN
Vieta Audio Electronica SA,
Bolivia 239,
Barcelona 5.

SWEDEN
Svensk Audioproduktion ab,
Karl X1-gatan 1,
Fack,
221 01 Lund.

SWITZERLAND
Hi-Fi Electronics,
Idastrasse 3,



Guarantee

The apparatus is guaranteed against faulty material and workmanship for a period of five years from the date of purchase subject to the following conditions:

(1) The attached guarantee registration card must be completed and posted to B&W Loudspeakers within 14 days from the date of purchase.

(2) Any claim arising under this guarantee should be made either direct to B&W Loudspeakers, or to the authorised dealer from whom the equipment was purchased and whose name appears on the registration card.

(3) In the event of service being required from B&W Loudspeakers the equipment must be securely packed and despatched to the address below, prepaid and if desired insured by the owner.

(4) Defective component parts (excluding valves, transistors and fuses – which are covered separately by the manufacturers of these components) will be replaced free of charge but labour and cost of transit may be charged at the discretion of B&W Loudspeakers.

(5) This guarantee expressly excludes:
(a) Damage caused by incorrect use of the apparatus.
(b) Loss or damage in transit in either direction.
(c) Contingent and third party liability.

(6) Any service modification or alteration carried out by any person other than the authorised representative of B&W Loudspeakers or their appointed agents renders this guarantee invalid.

(7) No alteration or variation of the guarantee will be recognised.

(8) This guarantee is not transferable.

Purchasers in countries listed return guarantee to company indicated.
UK purchasers return guarantee to:
B&W Loudspeakers Ltd, Meadow Road, Worthing, West Sussex, BN11 2RX

INSPECTION CERTIFICATE

Bass Phase		**Pwr. & Distortion**	
White Noise		**Pen Test**	
Programme		**Appearance**	

B&W DM7
STEREO PAIR