

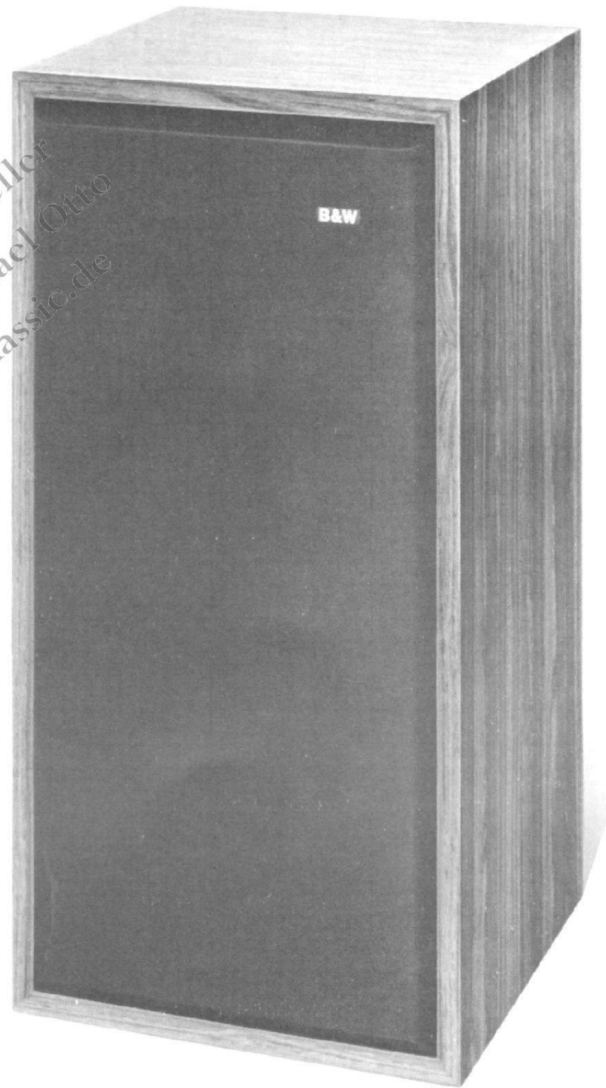
B&W DM11

The Design Brief

Since its introduction some six years ago, DM4 has proved itself to be B&W's most popular loudspeaker system. Well over 150,000 have been sold to date—a record that is closely followed by its smaller companion DM5, introduced about two years later.

It is sometimes difficult to assess fully why a particular model is outstandingly more successful than another of similar design; but in the case of DM4 it is certain that high sensitivity, relatively high acoustical output and modest size were of primary importance. In the case of DM5, factors such as lower cost, excellent bass transient performance and freedom from colouration were the salient features contributing to success.

The design brief for DM11 was: Take the best features from both designs and combine them in a single system. Further improve the overall result with computer and laser technology (which was not, of course, available to the design engineers when DM4 and DM5 were conceived).



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The Drivers

There is little doubt that the worldwide acclaim which B&W loudspeakers receive is due in no small measure to the fact that all drive units are purpose-designed for the particular system requirements. Moreover, they are manufactured within our own factory, being subject to the most rigid quality control at every stage. The bass/mid-range driver for DM11 consists of 160mm dia. piston, critically contoured Bextrene cone driven from a 26mm voice coil on an aluminium former. The entire voice coil is coated with bonding agent and heat-cured to ensure long term stability at high operating temperatures. A long throw rear suspension with specially flexible PVC front suspension is used. This ensures both a continuation of the long throw linear characteristic provided by the rear suspension and an excellent mid-frequency termination. The winding length of coil enables the long throw characteristic to be held within its travel and accounts for the low distortion characteristic of this unit at low frequencies. A pressure diecast chassis of alloy construction is employed with a high flux ceramic magnet assembly. All cones are treated with critical damping compounds and the units are individually hand assembled.

Throughout the last six years the B&W R&D Department has devoted considerable effort to high frequency driver development. Such successful designs as TS26 used in the highly acclaimed DM7, the TW26 in our DM2/II, and the Model 801 high frequency transducer come to mind. (Incidentally, Model 801 received its highest accolade when chosen by EMI as their classical monitor loudspeaker for the Abbey Road recording studios in London and on location throughout the world.)

Appropriately therefore—since DM11 is the first of the new series of DM loudspeakers for the 80's—we decided to use TW26 as the high frequency driver. TW26 employs a 26mm high temperature epoxy bonded voice coil assembly, coupled to a critically damped multi-filament weave polyester dome. It offers wide dispersion, high power handling capacity and, due to the extremely low mass of the moving parts, excellent transient response.

The Crossover Network

Crossover development has probably contributed more than any other aspect of design to the modern high fidelity loudspeaker. Indeed, B&W have been in the forefront of this work. DM11 employs a sophisticated 9-element crossover and filter network giving complementary high- and low-pass third order Butterworth configuration with impedance linearisation on high frequency section. All capacitors are close tolerance reversible electrolytic with generous 'over

designed' voltage ratings; inductors are ferrite cored to minimise series DC resistance. The configuration employed in the DM11 crossover network offers a high attenuation of 18dB per octave outside the pass band, thus ensuring that drivers are working well within their optimum, giving a worthwhile reduction in distortion and enhanced stereo imaging.

The Enclosure Design

DM11 employs acoustic suspension rear loading for the bass/mid-range driver, giving a second order high-pass characteristic. This, coupled with a sensibly low system resonance of 60Hz, ensures excellent bass response and good transient performance at low frequencies. The enclosure is constructed throughout of 12mm high-density veneered particle board; the front baffle thickness is 19mm. Internal reflections within the enclosure are absorbed by a critical quantity of synthetic long-strand fibre wool.

It will be appreciated that when the total surface area of any loudspeaker enclosure is related to that of the drive units, relatively small excitations of the enclosure will contribute an appreciable amount of radiated energy. This design problem was quantified and resolved in our professional monitor Model 801 by mechanically isolating the driver. The same isolation design has been used in DM11.

The Overload Protection

An 'in-line' fuse is supplied with each DM11 to assist in protecting this sensitive loudspeaker system against accidental damage when it is used with high powered amplifiers.

The Accessories

The DM11 may be shelf mounted or free standing on an existing piece of furniture. However, there are considerable advantages to be gained by purpose-mounting the loudspeaker and locating it away from wall reflections. A B&W stand (type STAV/11) specifically for this model is available as an accessory.

Conclusion

So, by employing a combination of proven components and the very latest technology, it has been possible not only to meet the design brief in terms of combining the high sensitivity of DM4 with the low colouration of DM5, but to create an altogether better loudspeaker than either, and at economical cost. DM11 out-performs not only much of the competition—speakers that are both larger and more expensive—but also our own DM4 and DM5. Yet its cost is of the same order as DM5.

SPECIFICATION

Frequency response

80Hz to 20kHz \pm 3dB free-field on listening axis at 2m.

Low-frequency system

Acoustic suspension system resonance 60Hz and system Q of 0.67.

Dispersion

Vertical: \pm 2dB over 10° arc.

Horizontal: +0 - 4dB over 60° arc, 20Hz - 10kHz.

Drive units

Two, vertical in-line.

Bass/mid-range driver DW200/4

160mm Bextrene piston with 26mm high-temperature voice coil.

High-frequency driver TW26

26mm high-temperature epoxy-bonded voice coil with polyester weave dome.

Distortion

Second and third harmonic for a nominal s.p.l. of 90dB at 1m.

Less than 3% below 500Hz.

Less than 1% above 500Hz.

Impedance

8.92ohms average. 4.5ohms minimum.

Sensitivity

1 watt into 8ohms for a s.p.l. of 87dB at 1m.

Power handling

Suitable for amplifiers 10 to 100 watts rms into 8ohms.

Maximum s.p.l. at 1kHz 106dB, at 1m.

Dimensions

Height: 504mm (19¾in).

Width: 254mm (10in).

Depth: 254mm (10in).

Weight

9kg (19.84lb).

Cabinet finish

Veneered to resemble solid rosewood, teak, walnut, black ash and white.

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



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