TANNOY®

The Name for Loudspeakers

BALMORAL

Time Compensated Dual Concentric Loudspeaker System

Superb stereo sound has always been a feature of the Tannoy Dual Concentric Loudspeaker. Now the latest Time Compensated Dual Concentric Systems take another step closer to the real thing.

The Balmoral uses our 305mm (12") diameter Dual Concentric drive unit, where the high frequency compression driver is mounted behind the centre of the bass cone. Our new Time Compensated crossover uses unique sophisticated circuitry to align the high and low frequency sound sources at one point on their common axis.

Precise stereo images are, therefore, created by the Balmoral, a phase coherent Loudspeaker System which eliminates time delay distortions irrespective of your listening position.

Tannoy Loudspeakers are designed as complete systems, and so we have devoted our research to the cabinet as well as to the electronics. The subtle proportions of the Balmoral are no stylist's whim. Research has dictated these dimensions as providing the best acoustic match for our 305mm Dual Concentric. The shape has also enabled us to mount the drive unit higher, and so reduce the colouration produced when low frequencies interact with the floor.

We use high density particle board with lock-mitre construction for greater strength, and employ rigid cross-bracing and heavy bitumen damping to reduce spurious resonances.

Unlike some loudspeakers the Balmoral will not look out of place in your home. Our specially woven grille cloth and real walnut veneers have been designed to co-ordinate well with any decor. Removing the three-piece grille reveals an original styling feature — a handsome cork finished baffle with gold trims.

We realise that the acoustic characteristics of your room can sometimes affect the sound quality. We have, therefore, provided two controls, on a panel showing accurate representations of their effects, to enable you to alter the high frequency response of the Balmoral to suit your environment.

The Tannoy Balmoral — The loudspeaker that sounds as good as it looks

Why Dual Concentric?

The theoretically 'ideal' loudspeaker would have just one single drive unit producing both high and low frequencies.

This is, however, impossible as the reproduction of different frequencies requires drive units of quite different physical and electrical characteristics. High frequency reproduction requires a light, fast moving diaphragm; while a much larger unit is required to move the greater volume of air needed for mid and low frequencies.

In a conventional loudspeaker, therefore, two (or more) drivers are used, mounted separately on the front baffle behind the grille. This separation means that the soundwaves from each driver have to travel unequal distances to the listener, causing unnatural time delays in the arrival of high and low frequencies. That delay confuses our hearing mechanism, which is less able to reconstruct a convincing stereo image of the original performance.

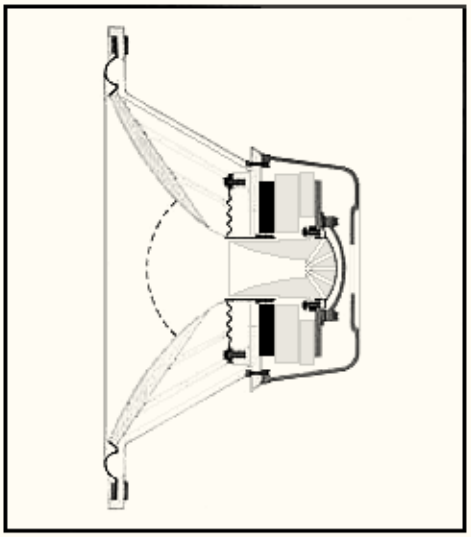
The Tannoy Dual Concentric takes a major step towards the theoretical ideal by actually combining two quite separate and physically different drive units within the same chassis.

High frequencies are reproduced by a compression driver, which is mounted behind the centre of the cone of the mid/low frequency driver. Both drivers are engineered to accept wide ranging power levels, using high temperature coil winding techniques, and are capable of very wide dynamic range reproduction.

The Tannoy Dual Concentric looks, at first glance, like one speaker. A closer look will reveal the throat of the compression driver behind the dust dome in the centre of the bass cone.

The result is that the source of sound at high frequencies and the source of sound at low frequencies are on the same axis. Complementary crossover design, using unique circuitry, aligns the high frequency and low frequency sources at one point on that axis.

The Tannoy Dual Concentric is, therefore, a true single point sound source loudspeaker system which eliminates unnatural time delays, and provides the smooth consistent intensity of sound necessary to create a precise stereo image.



The separate components of the Dual Concentric have been developed to be the best of their type available.

Our compression driver is a massive device in comparison with conventional tweeters, capable of accepting very high power inputs and converting significantly more of that power into pure sound. The horn throat and phase compensating array is machined from solid steel to eliminate resonance. The flare of the horn throat is continued by the bass cone, ensuring a smooth, distortion free sound at the crossover point.

Our special Barium Ferrite magnet has a much greater mass than most speaker magnets, and utilises a unique magnetic shunt to ensure the best acoustic balance of high and low frequencies.

The bass driver uses an individually treated cone with specially damped suspension to give controlled bass response without colouration.

The Complementary Crossover
Our crossover networks are individually designed to complement each model of loudspeaker and provide a fully 'phase coherent' system, using our unique circuitry. This gives a single point sound source, particularly at frequencies where the human ear derives the information necessary to create a precise stereo image.

All of our crossover components are the finest available and each is mechanically and thermally stable, enabling full advantage to be taken of the Dual Concentric's high power handling without the need for signal degrading 'protection' devices.

To enable you to adjust the high frequency response of the system to suit your listening environment, we have included two controls in the crossover. An energy control to increase or decrease the output of the compression driver over the frequencies from 1kHz to 20kHz, and a roll-off control which alters the output of frequencies above 5kHz.

The Tannoy Dual Concentric System is not the cheapest way to make a loudspeaker; but we do it because we know it is the best way to give you superior stereo sound. The elimination of unnatural time delay distortion provides superb stereo imagery. Wide sound dispersion enables you to appreciate that image over a wider area than with conventional loudspeakers. Wide dynamic range gives you the highs and lows of a musical performance, and is essential to realise the full benefit of today's high quality analogue and digital recordings as well as tomorrow's laser technology.

BALMORAL — Technical specification

Recommended amplifier power (RMS per channel into 8Ω)*		50–180W
Peak power handling		350W
Impedance		8Ω nominal 5.5Ω minimum
Sensitivity (1W @ 1m)		90dB (anechoic) 93dB (domestic)
Frequency response (±3dB)		30Hz–20kHz
Phase response		100Hz–8kHz ± 15°
Time compensation		Better than ±15μsec. 100Hz–8kHz
Dispersion (including angle @ –6dB points @ 10kHz)		90° horizontal & vertical
Crossover type		Passive, low loss, time compensated type 1020
Crossover frequency		1.2kHz
Crossover controls	Energy	Shelving. ±6dB over 1kHz–20kHz
	Roll-off	Slope. +3dB to –6dB per octave 5kHz–20kHz
Driver type		Dual Concentric, high compliance type 3128 Diameter 305mm (12")

Distortion		Less than 3.5% 3rd harmonic at half power 100Hz–20kHz Less than 0.5% 3rd harmonic for 85dB 70Hz–20kHz Less than 1.5% 3rd harmonic for 100dB 70Hz–20kHz Less than 5% 3rd harmonic for 110dB 150Hz–20kHz
Bass loading		Single ducted port
Cabinet construction		18mm high density particle board with rigid cross-bracing and bitumen damping
	Finish	Real walnut veneers Baffle finished in hand laid cork
	Grille	3-piece detachable. Oatmeal cloth on wood frames.
Cabinet internal volume		125 litres
Cabinet dimensions (h × w × d)		930 × 416 × 455mm (Packed: 1080 × 490 × 505mm)
Cabinet weight		37kg (Packed: 45kg)

* The peak power capability of all Tannoy Loudspeakers will allow higher amplifier powers to be used with wide dynamic range material. Care must be taken, however, to avoid conditions such as switch-on surges and amplifier overloading or 'clipping' which may result in momentary peaks of power greatly in excess of the specified ratings.

Due to our policy of continuous improvement, we reserve the right to change specifications without notice.

All Tannoy products are designed and manufactured in Great Britain by:

TANNOY LIMITED
Rosehall Industrial Estate, Coatbridge,
Strathclyde, Scotland ML5 4TF.
Telephone: Coatbridge (0236) 20199 Telex 778621

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