

TANNOY
SIXES
LOUDSPEAKERS





THE HISTORY OF TANNOY



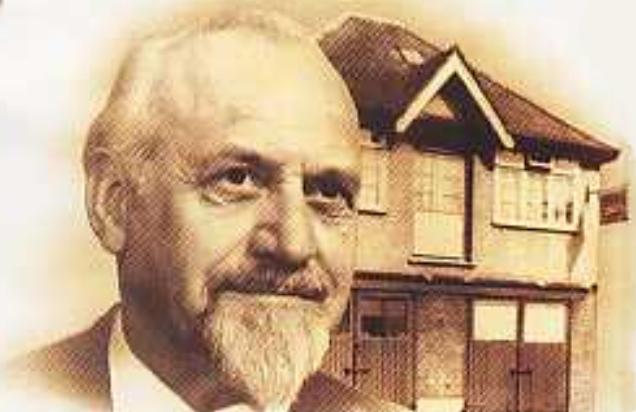
Tannoy - A type of loudspeaker system

Always an enterprising man, Guy Foytaine in 1926 perfected a rectifier that was simple and reliable enough for the home charging of radio batteries. His rectifiers used two metals - Tantalum and a lead alloy - hence Tannoy. Not long after the first Tannoy factory was established in 1929, he began experiments with moving coil loudspeakers using DC energised magnets. Early in 1930 the company won a contract to supply the Bertram Mills Circus with a sound reinforcement system. The company never looked back.

The undisputed leader in audio communications

By the beginning of the '60s Tannoy Communication Systems were in operation world-wide, including many prestigious locations such as the House of Commons in London and the United Nations building in New York. A decade later Tannoy was established as the

undisputed leader in Studio Monitor design. Thanks to the point source principle of the Dual Concentric, Hi-Fi listeners were also benefiting from Tannoy's research achievements in adapting professional engineering developments for domestic use.



I
do you
want
my
Love

REAL CABINET DESIGN

A vital component to uncoloured sound

As the bass cone piston moves, it not only produces sound in front of it but sound behind, within the loudspeaker cabinet. If the wavelength (or a multiple of it) of the particular note being reproduced is equal, for instance, to the internal width of the parallel sides of the cabinet, then a standing wave is set up in the air space, falsely exaggerating that note and giving that characteristically 'boomy' sound. Adjacent walls in the Tannoy SIXES cabinets form an angle of 120° rather than the more conventional 90°. This, reduces the number of parallel faces in the cabinets and the potential for the generation of standing waves, so that you can enjoy your favourite music without an uninvited bass player joining in.

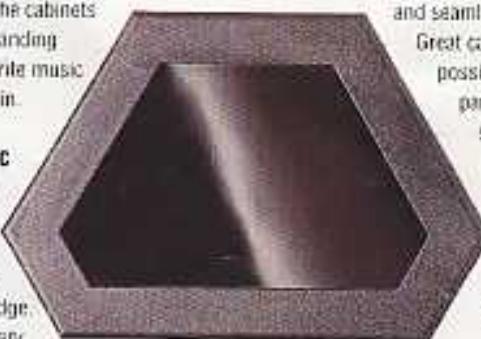
A design that conveys the music

The cabinet structure has been specially designed to reduce diffraction effects to a minimum. Diffraction of a sound wave occurs wherever that sound wave reaches a boundary, such as a cabinet edge. The boundary then behaves as a secondary

C.oC.o Party

sound source in its own right. The size of this source is greatly dependent on the severity of this boundary. The edges of the cabinet on the SIXES models are much less severe than those of a conventionally shaped loudspeaker cabinet, resulting in much smaller secondary sources. These diffractions cause anomalies in the frequency response of the loudspeaker and reduce its ability to produce a believable stereo image. On listening to the SIXES, the considerable reduction of these diffraction effects will become immediately apparent by the positively tactile nature of the imaging and seamless frequency response.

Great care has been taken to minimise diffraction possibilities in all areas of the design. This is particularly noticeable not just in the cabinet shape itself, but in the way that the drive unit chassis blend into the front baffle. The grille too is designed to stand slightly off the baffle and has a very open slender rounded frame which attaches to the front baffle via flush fitting mounting clips.



Success and quality

Tannoy's Dual Concentric, developed as an acoustic design principle in the thirties and still unequalled in point source performance, now shares the limelight with the Tannoy Discrete loudspeakers first developed in the early 1980s. By the late 1980s, the Tannoy Series 90 speakers provided us with a unique range of highly regarded Dual Concentric and Discrete systems, winning many awards in Hi-Fi Choice and other respected Hi-Fi journals. To produce the Tannoy SIXES, every acoustic, design and manufacturing engineer within Tannoy contributed their particular strengths, working synergistically to produce an innovative loudspeaker range. From initial design, acoustic tests through to rigorous quality control in manufacturing, every Tannoy SIXES loudspeaker displays - sonically and aesthetically - the capability of the Hi-Fi industry's most capable engineering team.

Continued innovation - differential material technology

DMT is the study of different materials and their relative behaviour in intimate contact. The results of this study were first seen in the Tannoy Series 90 loudspeakers and more recently it was developed further for the Tannoy range of Studio Monitors and the SIXES. Materials in various shapes have distinct sound signatures.

Dropping a plate onto a table tells us about both the plate and the

table. A plastic or metal plate makes a very characteristic sound when dropped onto a wooden or a glass table. The difference in sound, which is easily interpreted by the ear, is wholly attributable to the materials, their shape and the way they behave when subjected to mechanical forces. The materials used in loudspeakers are also subject to mechanical forces and therefore have characteristic sound signatures themselves.

Tannoy designers have studied the effects of the materials used in speaker construction, measured, quantified and identified these effects, and developed this technique to match materials together to cancel out these effects.

DMT will not be immediately visually apparent, but you will notice its many audible benefits. In the SIXES loudspeakers, both in the cabinet and drive units, you can be sure that we have carefully considered the sonic effects of the complex relationships between the materials used.

A cabinet that respects the entire audio spectrum

As we have already observed, as bass units operate they inject vibrational energy of varying frequencies into the cabinet structure. The panels that are the loudspeaker walls all have their own particular resonant frequency and can be excited into resonating by this energy at the appropriate frequency. This we hear as colouration. A Tannoy SIXES cabinet has four different sizes of panels and since there are six panels in total each panel is smaller than a conventional loudspeaker's. Small panels tend to have a higher resonant frequency than large panels. These smaller sizes ensure that the panels are out of reach of most of the low frequency energy coming from the bass unit. Any resonance that does occur in the panels will be at different frequencies, so any possible colouration is minimised by being spread over a broad-band of frequencies. This ensures that bass notes sound properly 'in tune'.

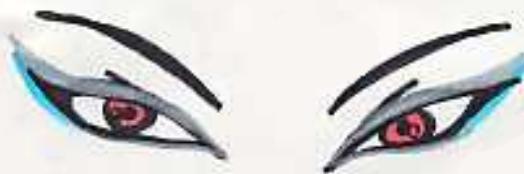


The structure, no longer 'just another box'

The basic cabinet structure is formed from a length of wood machined and folded to form an unequal sided hexagon. This is then 'capped' top and bottom with crowns and bases and on the larger models pulled into a rigid structure by the use of a central vertical brace to which the crowns and bases are bolted and bonded. These elegant crowns and bases that you see on Tannoy

loudspeakers are precision injection moulded from a mineral filled polyolefin to provide good stiffness and damping properties. The internal surfaces of these crowns are profiled to reduce standing waves, for minimum 'boom' cabinet colouration and have rounded outside edges to minimise diffraction effects to ensure lifelike stereo imaging. The top is initialed with a stylish laminate

The base is threaded so that it can be bolted to Tannoy's purpose built range of stands. Floor standing models can accept down-spikes to ensure maximum stability.



TANNOY HIGH-FIDELITY LOUDSPEAKERS

The Single Point Sound Source

The ideal drive unit is one that can reproduce accurately the entire audio spectrum. Unfortunately such a drive unit does not exist. Multiple drive unit designs are adopted as a compromise. The problem with this is that the treble and bass portions of a signal (a saxophone for instance), are reproduced from different places. The benefit of having the high frequency driver sharing the same chassis as the bass driver is that the whole audio range is coming from the same point in space - just like the ideal drive unit, producing almost tactile stereo images of tremendous stability.

Moulded Cone-Piston Technology

Polyolefin co-polymers have long been accepted as combining all the vital physical properties, from which to produce loudspeaker cone-pistons. Conventionally such cones have been vacuum formed from a flat sheet of this material into the shape required for a loudspeaker cone. Apart from the thickness of the sheet at the beginning of the forming process, control over the thickness of the material in different areas of the cone is difficult to maintain, typically the material stretching and thinning in the crucial neck area. However Tannoy, as one of the largest loudspeaker manufacturers in the UK, has invested a considerable amount of time and money, in research and tooling to make injection moulded loudspeaker cone pistons a reality. The cones used in the SIXES drive units are injection moulded from an engineering plastic which allows us to vary the thickness (and consequent stiffness) in different areas of the cone piston. For example it allows us to make the neck of the cone piston more rigid. This is where the cone is driven by the voice coil and maximum rigidity is required; if the cone is going to be able to react instantaneously to ever changing music signals

The Tweeter

The gold anodised 25mm aluminium dome is mounted in a minimum diffraction face plate that blends smoothly into the front baffle. The dome is attached to a high temperature polyamide insulated coil wound onto a Kapton former. This is cooled and damped by the use of a magnetic fluid. The aluminium dome is itself anodised, producing a coating of light but very rigid oxide on the dome, further enhancing the tweeter's performance by pushing the first break up mode (distortion) still further above the limits of our hearing. A nitrile rubber surround was chosen for the suspension because of its good self-damping non-variable temperature properties. This means that the tweeter



reproduces all the high frequencies in your favourite music sweetly and smoothly all the way up to 30kHz. The dome itself is protected by a metal grille which is easily removed for maximum performance, or retained in situations where damage to the dome might occur.

Tannoy's 'Tulip' Waveguide

The tweeter used at the heart of the Dual Concentric drive unit is broadly similar to the gold anodised 30kHz version used in the discrete models, but in this instance uses an acoustic waveguide to guide the wave to form a perfectly spherical wave at the throat of the bass unit. The flare of the bass cone piston is optimised to continue this wave unhindered, ensuring a smooth and extended high frequency response well integrated with the bass/mid output of the bass unit. This gives the Dual Concentric a large dynamic range, and constant directivity output. Put simply, this means that the Dual Concentric can reproduce the full dynamics of live music or Home Theatre, will be much more tolerant of difficult room positioning and will suffer relatively small tonal changes when listened to off the axis of the loudspeaker.



The 6.5 heads the SIXES loudspeakers. The high performance, low diffraction, low colouration that is provided by the cabinet design is exploited to the best advantage by the use of the 8" Dual Concentric drive unit with its moulded cone and its 30kHz 'tulip' waveguide tweeter. This unit is augmented by an 8" Bass unit and an 8" Mass Tuned Passive Cone. The loudspeaker can be coupled to the floor with the supplied spikes and the base mass-loaded to ensure that the exceptional dynamic qualities of the system are not masked by any instability.



This elegant floor standing closed box loudspeaker system has been designed to produce an accurate tight, fast and extended bass response by the use of one 6.5" Dual Concentric, supplemented by a 6.5" Bass unit driven below 400 Hz and a 6.5" Mass Tuned Passive Cone. The Dual Concentric contains Tannoy's new tweeter and 'tulip' waveguide for extended high frequency response. These units are fed from a Hard-Wired minimalist cross-over network using only the finest components and mounted the units and braced to Tannoy's new cabinet structure.



This floor standing compact loudspeaker uses the 8" Dual Concentric drive unit in a closed box system. High sensitivity bass extension is ensured by the use of a secondary 8" Bass unit, driven below 400Hz. Floor coupling spikes are supplied for optimum bass and mid-band clarity and allow the 6.1 to be tilted to obtain the best listening position for different seating heights. Tannoy's advanced cabinet design provides bracing of the drive units for a colouration free sound.



This 8" Dual Concentric consists of a moulded cone piston bass unit for minimum cone break up and solid bass along with the new 30kHz, gold anodised 25mm aluminium high frequency tweeter and 'tulip' waveguide. The Dual Concentric drive unit is mounted in and cross braced to Tannoy's new cabinet structure providing accurate pin point location of sound within the stereo sound field.

TANNOY HIGH-FIDELITY LOUDSPEAKERS

The Bass/Mid Drivers

The bass units are constructed with precisely built rigid frames using large magnets to ensure high sensitivity and low frequency control. These chassis are pressed from steel to a shape that is extremely rigid on the axis of the voice coil and cone, allowing the cone to move with the agility required to reproduce the instantaneous impact of musical notes. The chassis are also fitted with an anti-diffraction ring to ensure an output unimpaired by the drive unit chassis frame. State of the art injection moulded cone pistons are used with a carefully chosen profile and fibre, and include an inverted dust cap, optimised to produce the most neutral and natural mid-range emanating from this part of the cone.

Bi-Wiring Technology

All the SIXES have a facility for Bi-Wiring. Two pairs of loudspeaker cables are required. One pair connects the tweeters to the amplifier, the other connects the bass units to the amplifier. Splitting the treble and bass signals in this way allows individual instruments to be better identified, the small electrical signals of a triangle for instance are not swamped by the low frequency, large electrical signals of a tuba. This effect is particularly noticeable in complex passages of music where, after Bi-Wiring, the tune played by an individual instrument becomes easier to follow within the mass of sound.

Cross-Over Networks With Music In Mind

The cross-over networks used in the SIXES are Hard-Wired and made up from the finest quality electronic components including iron-dust core inductors and polypropylene capacitors. Years of experience has led us to discover the enormous differences in sound quality that identical value, different type capacitors have. We have progressed from the 'alcap' to polyester capacitors (in the SERIES 90) and now to polypropylene capacitors, each step being accompanied by a large step forward in high-frequency quality, particularly smoothness. These components are carefully positioned well away from the drive units in order to minimise the magnetic and electrical effects which they can have upon each other and the dynamics of the music. You will read elsewhere in this brochure the phrase 'minimalist cross-over network'. This means simply that we have reduced any unnecessary resistance and/or impedance in the way of the musical signal to an absolute minimum. However well designed elsewhere a loudspeaker may be, an overly complex cross-over network will ensure that your music collection gathers dust from lack of use.

The Terminal Panel

If there is one small area that clearly indicates just how much thought has gone into every aspect of the SIXES design it is probably the terminal panel. Specifically:- The two Bi-Wiring links are captive in the design - so it is easy to switch between Normal and Bi-Wire mode but the links cannot be lost.

The terminals have a slot on the top of them, so that they can be easily tightened with a coin onto cables with some force, and have a brass insert in them to prevent any risk of a thread stripping. The terminals are deep enough to accommodate the full length of 4mm plugs even when the Bi-Wiring links are still in place. The Bi-Wiring links are half round so that larger diameter cables can be accommodated with the links in place and screwed tightly onto a flat surface to ensure a good electrical signal contact. The terminals are the place where the quality loudspeaker cables pass their musical signal onto the loudspeaker, and the care we have taken in their design should ensure that you won't be listening to music through just a few small loose strands of cable, or through a layer of oxidised copper.



A vented box system combined with an 8" moulded cone piston bass unit provides a tight, controlled but extended bass response, whilst a gold anodised 25mm minimum diffraction aluminium dome tweeter ensures accurate high frequency reproduction all the way up to 30kHz. A smooth mid-band is ensured by a high quality minimalist cross-over network. Performance is further enhanced by cross bracing the bass unit within Tannoy's advanced cabinet structure.



A high quality minimalist cross-over integrates the 6.5" moulded cone piston bass unit with a gold anodised 25mm minimum diffraction aluminium dome tweeter. The design benefits from a combined braced bass driver and advanced cabinet structure. These design considerations linked with Tannoy's pedigree of audiophile sound from all enclosure sizes ensure an uncompromised sound quality from the Tannoy 605.



The 603 sets new standards of aural and visual pleasure for such a modestly proportioned loudspeaker. The design consists of a 5" bass unit and the gold anodised 25mm aluminium dome tweeter that it shares with its larger brothers. The design benefits from Tannoy's new cabinet structure and a high quality minimalist cross-over network.



To perform at their best loudspeakers need to be held rigid and stand mounting models raised to an optimum height, so that when listening, the tweeters are approximately at the same height as your ears. To achieve this we have produced 3 pairs of stands of different heights, and a plinth, all specifically designed to gain the best performance from our loudspeakers, whilst complementing them visually.



- Advanced cabinet structure ensures a colouration free sound
- Cross braced driver/cabinet design minimises acoustic vibration
- Hand-Wired, high quality, minimalist cross-over network with Tannoy OFC cable for distortion free music
- Ergonomically designed, Bi-Wired terminal panel for good electrical contacts
- 6.5" moulded cone piston bass driver for powerful bass

- gold anodised 25mm DMT minimum diffraction tweeter for clear treble
- Ducted port system for extended bass response
- Provision for down spikes or bolting to stand
- Black ash finish
- 5 year warranty



- Carpet piercing spikes for maximum stability
- Aluminum extruded central pillar for maximum rigidity
- MDF top and bottom plates for ideal damping and rigidity
- Central pillar can be mass-loaded to increase stability and lower the centre of gravity
- Facility for rigidly bolting to the SIXES
- Complementary styling to match the SIXES

- Advanced cabinet structure ensures a colouration free sound
- Cross braced driver/cabinet design minimises acoustic vibration
- Hand-Wired, high quality, minimalist cross-over network with Tannoy OFC cable for distortion free music
- Ergonomically designed, Bi-Wired terminal panel for good electrical contacts
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TECHNICAL SPECIFICATIONS

65II

63II

61II

609II

607II

605II

603II

PEAK POWER /Channel	300 watt	250 watt	250 watt	200 watt	175 watt	150 watt	120 watt
RECOMMENDED AMPLIFIER POWER /Channel	10-175 watt	10-150 watt	10-150 watt	10-120 watt	10-100 watt	10-90 watt	10-70 watt
FREQUENCY RESPONSE +/-3dB	45Hz - 30kHz	55Hz-30kHz	45Hz-30kHz	40Hz-30kHz	50Hz-30kHz	55Hz-30kHz	60Hz-30kHz
NOMINAL IMPEDANCE	8 ohm	5 ohm	6 ohm	8 ohm	8 ohm	8 ohm	6 ohm
MINIMUM IMPEDANCE	4 ohm	4 ohm	4 ohm	5 ohm	6 ohm	6 ohm	4 ohm
SENSITIVITY (2.83V @ 1m)	92dB	90dB	91dB	89dB	88dB	87dB	86dB
CROSS-OVER FREQUENCY	400Hz & 2.5kHz	400Hz & 2.5kHz	400Hz & 2.5kHz	2.5kHz	3.0kHz	3.0kHz	3.5kHz
CROSS-OVER TYPE				First Order Low Pass	First Order High Pass		
TERMINALS	Gold plated, Bi-Wired	Gold plated, Bi-Wired	Gold plated, Bi-Wired	Gold plated, Bi-Wired	Bi-Wired	Bi-Wired	Bi-Wired
SYSTEM TYPE	MTPC	MTPC	Closed box	Ducted port	Ducted port	Ducted port	Closed box
INTERNAL VOLUME	32.4 litre	22.4 litre	22.0 litre	16.0 litre	17.0 litre	10.5 litre	5.4 litre
DRIVE UNIT COMPLEMENT	5" Dual Concentric 6" Bass unit 8" Mass tuned passive cones	6.5" Dual Concentric 6.5" Bass unit 6.5" Mass tuned passive cones	8" Dual Concentric 8" Bass unit	8" Dual Concentric Aluminium dome tweeter	25 mm gold anodised Aluminium dome tweeter	25 mm gold anodised Aluminium dome tweeter	25 mm gold anodised Aluminium dome tweeter
DIMENSIONS (H x W x D)	974 x 324 x 228 mm 38.0" x 12.6" x 8.9"	899 x 276 x 188 mm 35.1" x 10.8" x 7.3"	699 x 324 x 228 mm 27.3" x 12.6" x 8.9"	499 x 324 x 228 mm 19.5" x 12.6" x 8.9"	499 x 324 x 228 mm 19.5" x 12.6" x 8.9"	400 x 276 x 188 mm 15.5" x 10.8" x 7.3"	333 x 221 x 152 mm 13.0" x 8.6" x 5.9"
WEIGHT EACH	21.0 kg 46.0 lb	15.0 kg 33.0 lb	15.0 kg 33.0 lb	10.0 kg 22.0 lb	9.0 kg 20.0 lb	7.0 kg 15.0 lb	4.0 kg 9.0 lb
NOTES	Spikes provided for floor mounting. Facilities for bass loading base.				Inserts provided for spikes or bolting to stand.		

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