

TANNOY®

SIXES

LOUDSPEAKERS



# THE HISTORY OF TANNOY



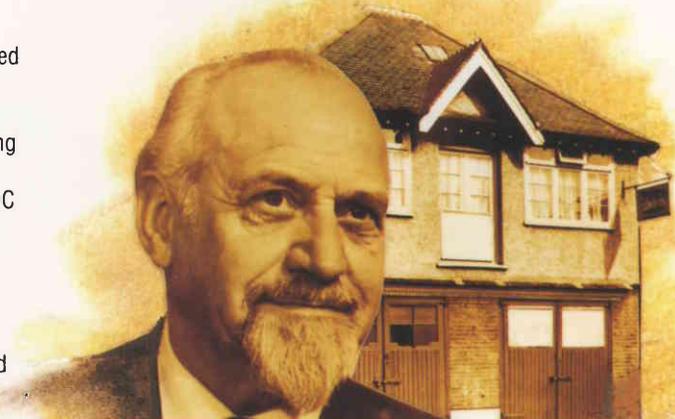
Communication Systems were in operation world-wide, including many prestigious locations such as the House of Commons in London and the United Nations building in New York. A decade later Tannoy was established as the undisputed leader in Studio Monitor design. Thanks to the point source principle of the Dual Concentrics, hi-fi listeners were also benefiting from Tannoy research achievement in adapting professional engineering developments for domestic use. The final endorsement of Tannoy's critical

## Tannoy - A type of loudspeaker system

Always an enterprising man, Guy Fountain in 1926 perfected a rectifier which 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

Since their beginning Tannoy speaker systems have stayed front runners in every area of sound and communications. By the end of World War II, which created tremendous growth in the need for efficient communications, Tannoy



# REAL CABINET DESIGN

## A vital component to uncoloured sound

As the bass cone-piston moves within its excursion path, 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 the 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, together with the reduced number of parallel areas in the cabinets, greatly reduces the potential for the generation of standing waves inside the SIXES cabinets.

## 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

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 uniform frequency response.

## A cabinet that respects the entire audio spectrum

As we have already observed, bass units inject vibrational energy of varying frequencies into the cabinet structure as they operate. The panels which 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



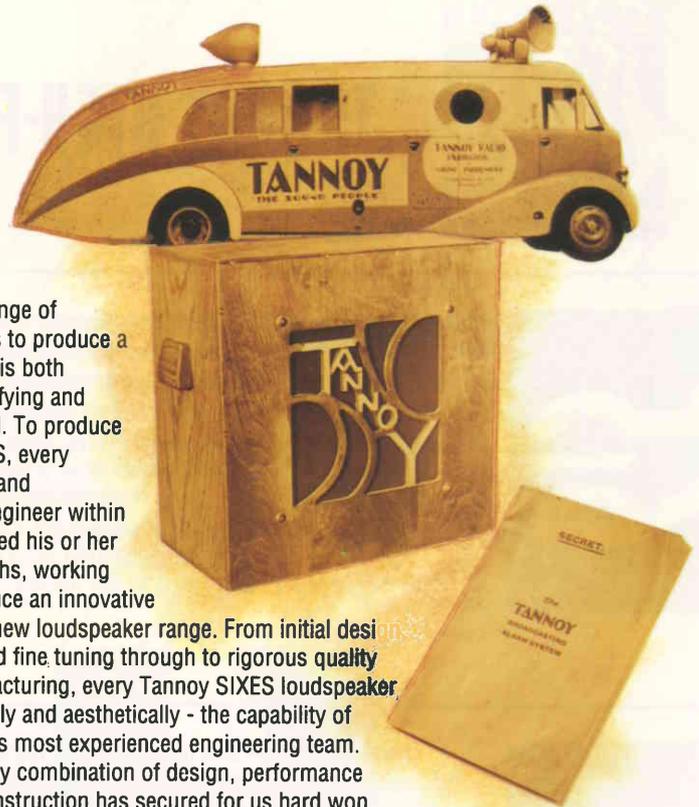
combination of acoustic design and visual styling is that Dual Concentric speakers have now won Japan's prestigious 'Golden Sound' Award three times since its inception in 1979.

### Success and acclaim

Tannoy's Dual Concentrics, developed as an acoustic design principle in the thirties and still unequalled in point source performance, now share the limelight with the Tannoy Discrete loudspeakers first developed in the early 1980's. The immediate success of the Mercury with both hi-fi critics and discerning buyers led to the development of the Planet Series and was to feature in Hi-Fi Choice Awards for Loudspeakers for no less than four consecutive years in the mid '80's. Concurrent refinement in production methods to the point where it was possible to manufacture Dual Concentrics with no loss of component or assembly quality for a parallel cost to Discrete systems, allowed us to add the acclaimed DC100 and DC200 models to the range. Finally in the late 1980's, the Tannoy Series 90 speakers provided us with a unique range of highly regarded Dual Concentric and Discrete systems, again winning many awards in respected hi-fi journals around the world.

### Quality and design

It takes a wide range of engineering skills to produce a loudspeaker that is both acoustically satisfying and attractively styled. To produce the Tannoy SIXES, every acoustic, design and manufacturing engineer within Tannoy contributed his or her particular strengths, working together to produce an innovative and challenging new loudspeaker range. From initial design acoustic tests and fine tuning through to rigorous quality control in manufacturing, every Tannoy SIXES loudspeaker displays - sonically and aesthetically - the capability of the hi-fi industry's most experienced engineering team. Indeed the Tannoy combination of design, performance and quality of construction has secured for us hard won approval by H.M. Government as a supplier meeting the stringent AQAP-4 standard.



colouration. A Tannoy SIXES cabinet has four different sizes of panels and since there are six walls 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 the worst of the low frequency energy coming from the bass unit. Any resonance which does occur in the panels will be at different frequencies, so any colouration which might occur is minimised by being spread over a broad-band of frequencies.

### The Structure, no longer 'Just another box'

The basic cabinet structure is formed from a 'wrap' vertically folded around upon itself to form an unequal sided hexagon. This is then 'capped' top and bottom with mineral filled polyolefinic crowns and bases and pulled into a rigid structure by the use of a vertical brace to which the crowns and bases are attached. 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 frame, which attaches to the front baffle via flush fitting mounting clips.

### Crowns and Bases

The elegant crowns and bases that you see on Tannoy loudspeakers are precision injection moulded from a mineral filled polyolefinic to provide good stiffness and damping properties. The internal surfaces of these crowns are profiled to reduce standing waves and have rounded outside edges to minimise diffraction effects. The top is inlaid with a stylish laminate and the base threaded so that it can be bolted to Tannoy's purpose built range of stands or can accept down-spikes to ensure maximum stability. A central brace runs internally down the height of the cabinets to which the crowns and bases are bolted and bonded, pulling the cabinet into an extremely rigid structure.



# TANNOY HIGH-FIDELITY LOUDSPEAKERS

615

The 615 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.

613

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 400Hz 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 which are mounted and braced to Tannoy's new cabinet structure, are fed from a Hard-Wired minimalist cross-over network using only the finest components.

611

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 611 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.

609

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

## A Single Point Sound Source

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

## Tannoy's 'Tulip' Waveguide

The H.F. unit used at the heart of the Dual Concentric drive unit is broadly similar to the 30kHz version used in the discrete models, but in this instance uses an acoustic waveguide 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.

## Moulded Cone-Piston Technology

Control of the thickness of the polyolefin co-polymer sheet (the ideal cone material) which is vacuum formed to make the cone, is difficult to maintain. However Tannoy, as one of the largest loudspeaker manufacturers in the UK has invested substantially, in research and tooling to make injection moulded loudspeaker cone-pistons a reality. The SIXES cones are injection moulded from a mineral filled polyolefin co-polymer 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.

## Bi-Wiring Technology

All the SIXES have a facility for Bi-Wiring where 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 allows individual instruments to be better identified, particularly noticeable in complex passages of music where the tune played by an individual instrument becomes easier to follow within the mass of sound.

## Differential Material Technology

The results of Tannoy's study of different materials and their relative behaviour when in ultimate contact (DMT) were first seen in Tannoy's Series 90 loudspeakers and was more recently developed further for the Tannoy studio monitors. DMT will not be immediately visually apparent, but you will notice its many audible benefits. In all areas of the loudspeaker, wherever you see different materials in intimate contact or a "glue" joint, you can be sure that we have carefully considered the sonic effects of the complex relationships between these materials.



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- Advanced cabinet structure
- Cross braced driver/cabinet design.
- Hard-Wired, high quality minimalist cross-over network
- Ergonomically designed, Bi-Wired terminal panel, with gold plated terminals
- 8" Dual Concentric DMT drive unit
- 8" Bass unit, driven below 400Hz
- 8" Mass Tuned Passive Cone.
- Smooth H.F. from 'tulip' waveguide and 30kHz tweeter
- Vented bass driver chassis reduces thermal dynamic compression
- High sensitivity
- High quality Van den Hul internal wiring
- Facility for mass-loading base
- Floor standing design with coupling spikes
- Black ash or walnut finish
- 5 year warranty

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# TANNOY HIGH-FIDELITY LOUDSPEAKERS

607

A vented box system combined with an 8" moulded cone-piston bass unit provides a tight, controlled but extended bass response, while a 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.

605

A high quality minimalist cross-over integrates the 6.5" moulded cone-piston bass unit with a 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.

603

It is no exaggeration to claim that the 603 sets new standards of aural and visual pleasure for such a modestly proportioned loudspeaker. The design consists of a 5" Bass unit/ducted port system and the 25mm aluminium dome tweeter that it shares with its larger brothers. The design also benefits from Tannoy's new cabinet structure and a high quality minimalist cross-over network.

6s3  
6s5  
6s7  
6s1

To perform at their best loudspeakers need to be held rigid, and stand mounting raises them 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 three pairs of stands of different heights and a foundation, specifically designed to gain the best performance from our loudspeakers, whilst complementing them visually.

Heights from top surface to tip of floor spikes :

6s3 = 585mm, 6s5 = 515mm, 6s7 = 415mm, 6s1 = 60mm.

## The Bass/Mid Drivers

The bass units are constructed with precision built rigid frames using large magnets to ensure high sensitivity and low frequency control. These chassis are fitted with an anti-diffraction ring to ensure an output unhindered by the drive unit chassis. State of the art injection moulded cone-pistons are used with a carefully chosen profile and flare, and include an inverted dust cap optimised to produce the most neutral and natural mid-range.

## The Tweeter

The 25mm aluminium dome is mounted in a minimum diffraction face plate which 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. A nitrile rubber surround was chosen for the suspension because of its good self-damping non-variable temperature properties. Very careful and subtle design has produced a tweeter capable of smoothly reproducing 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.

## The Terminal Panel

One small area that clearly demonstrates just how much thought has gone into every aspect of the SIXES design is probably the terminal panel. Specifically:- the two Bi-Wiring links are captive in the design - so cannot be lost. The terminals have a slot on the top of them, so that they can be tightened 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 large diameter cables can be accommodated with the links in place and screwed tightly on to a flat surface.

## Cross-Over Networks With Music In Mind

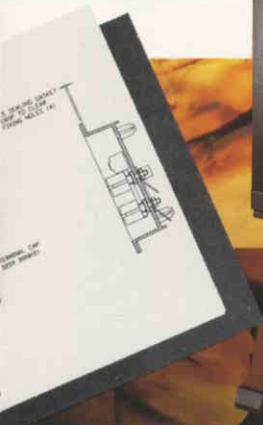
The cross-over networks used in the SIXES are Hard-Wired and made up from the finest quality electronic components including iron-dust core inductors and polypropylene capacitors. These are carefully positioned well away from the drive units in order to minimise the magnetic and electrical effects which 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 could ensure that your music collection gathers dust from lack of use.

## Internal Bracing

Comprehensive internal bracing is used inside all the SIXES, bracing the crowns and bases, drivers and cabinet walls via lossy couplings into a comprehensive energy controlling structure. This reduces significantly, cabinet derived colourations.

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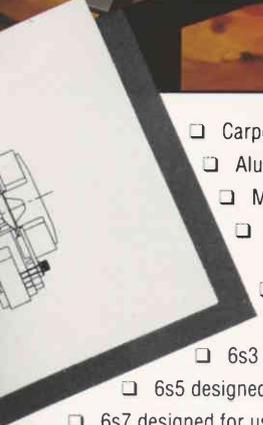


- Advanced cabinet structure
- Cross braced driver/cabinet design.
- Hard-Wired, high quality minimalist cross-over network
- Ergonomically designed, Bi-Wired terminal panel.
- 8" Moulded cone-piston bass driver
- 25mm DMT minimum diffraction tweeter
- Provision for down spikes or bolting to stand
- Ducted port system
- Black ash or walnut finish
- 5 year warranty

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- Advanced cabinet structure
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- Hard-Wired, high quality minimalist cross-over network
- Ergonomically designed, Bi-Wired terminal panel.
- 5" Moulded cone-piston bass driver
- 25mm DMT minimum diffraction tweeter
- Provision for down spikes or bolting to stand
- Ducted port system
- Black ash or walnut finish
- 5 year warranty



- Carpet piercing spikes or hard nylon feet for maximum stability
- Aluminium 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
- 6s3 designed for use with 6o3
  - 6s5 designed for use with 6o5
- 6s7 designed for use with 6o7, 6o9
- 6s1 designed for use with 6i1, 6i3, 6i5



# TECHNICAL SPECIFICATIONS



## 615

## 613

## 611

## 609

## 607

## 605

## 603

PEAK POWER /Channel	300 Watts	250 Watts	250 Watts	200 Watts	175 Watts	150 Watts	120 Watts
RECOMMENDED AMPLIFIER POWER /Channel	10-175 Watts	10-150 Watts	10-150 Watts	10-120 Watts	10-100 Watts	10-90 Watts	10-70 Watts
FREQUENCY RESPONSE +/-3dB	41Hz - 30kHz	44Hz-30kHz	45Hz-30kHz	46Hz-30kHz	50Hz-30kHz	55Hz-30kHz	60Hz-30kHz
NOMINAL IMPEDANCE	6 Ohms	6 Ohms	6 Ohms	8 Ohms	8 Ohms	8 Ohms	6 Ohms
MINIMUM IMPEDANCE	4 Ohms	4 Ohms	4 Ohms	5 Ohms	6 Ohms	6 Ohms	4 Ohms
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	Ducted port
INTERNAL VOLUME	32.4 Litres	22.4 Litres	22.9 Litres	16.0 Litres	17.0 Litres	10.5 Litres	5.4 Litres
DRIVE UNIT COMPLEMENT	8" Dual Concentric 8" Bass Unit 8" Mass Tuned Passive Cone	6.5" Dual Concentric 6.5" Bass Unit 6.5" Mass Tuned Passive Cone	8" Dual Concentric 8" Bass Unit	8" Dual Concentric 8" Bass Unit	25 mm Aluminium dome tweeter 8" Bass Unit	25 mm Aluminium dome tweeter 6.5" Bass Unit	25 mm Aluminium dome tweeter 5" Bass Unit
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 15.6" x 10.8" x 7.3"	333 x 221 x 152 mm 13.0" x 8.6" x 5.9"
WEIGHT EACH	21.0 kgs 46.2 lbs	15.0 kgs 33.0 lbs	15.0 kgs 33.0 lbs	10.0 kgs 22.0 lbs	9.0 kgs 19.8 lbs	7.0 kgs 15.4 lbs	4.0 kgs 8.8 lbs
NOTES	Spikes provided for floor mounting. Facilities for mass loading base.						
	Inserts provided for spikes or bolting to stand.						

Remember to take care with any amplifier, irrespective of power output, to avoid abnormal conditions such as switch-on surges or output overload (clipping) which may result in power peaks greatly in excess of rated output. The high power handling of Tannoy loudspeakers will allow responsible use with large amplifiers on wide dynamic range material. Due to our policy of continuous improvement, all specifications are subject to change without notice.

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# TANNOY®

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