

T12 & i12 USER MANUAL

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1. Introduction

The Tannoy T12 and i12 professional loudspeakers have been designed for a wide variety of sound reinforcement applications requiring extended frequency response from a compact system, capable of delivering high sound pressure levels with extremely low distortion, resulting in outstanding clarity, definition and detail.

The T12 and i12 comprises one 12 inch Dual Concentric driver in which the low frequency (LF) and high frequency (HF) sources are coincidentally aligned to a point source, resulting in a smooth uniform frequency response over a wide area of coverage either as a portable stand alone system or in a multi-cabinet array. The sophisticated CAD designed waveguide combines 60 degree conical dispersion and excellent acoustic impedance characteristics. As the system is a point source, clusters and arrays have minimal lobing. These features are inherent and achieved without the use of any electronic signal processing.

The T12 features a recessed carrying handle, stand mount and a rugged, multiple-ply hardwood cabinet with structural integrity further enhanced by internal steel braces which double as the flying points accepting M8 eyebolts strategically placed to distribute the weight of the enclosure evenly. The T12 can also be used as a low profile stage monitor. Its conical coverage pattern gives the performer greater freedom of movement than allowed by conventional horn loaded designs.

While delivering the same performance as the T12 and utilising the same transducer and high power, low-loss crossover components the i12 is designed for fixed installations. Featuring the same flying system as the T12 the i12 is constructed from medium density fibreboard (MDF), for a high level of acoustic damping.

For applications requiring extended low frequency enhancement, a range of Tannoy sub-bass systems are available and can be used in conjunction with the T12 and i12.

2. Unpacking

Every Tannoy T12 and i12 product is carefully inspected before packing. After unpacking your loudspeaker, please inspect for any exterior physical damage, and save the carton and any relevant packaging materials in case the loud speaker again requires packing and shipping. In the event that damage has been sustained in transit notify your dealer immediately.

3. Connectors/Cabling

T12 and i12 are fitted with 4-pole Speakon™ connectors. Speakon has the following advantages over EP and XLR type connectors: All termination's are solderless, this makes life easier at the time of installation or when field servicing is required. Contacts will accept 6 sq. mm wire with an outside diameter of up to 15mm and a current rating of 30 Amps. The pins of the 2 Speakon sockets identified input/output on the rear of the input panel are paralleled within the enclosure. Tannoy have adopted the following wiring standard for the T12 and i12 products :-

Pin 1+ is Positive
Pin 1- is Negative

Should you encounter any problems obtaining Speakon connectors, please contact Neutrik or its distributors directly on the following numbers:-

UK: NEUTRIK MARKETING: 0171 792 8188
 USA: NEUTRIK USA INC.: (201) 901 9488

For a world wide list of distributors, please contact Neutrik directly:-

NEUTRIK AG: +41 7529666

Cable choice consists mainly of selecting the correct cross sectional area in relation to the cable length and the load impedance. A small cross sectional area would increase the cables series resistance, inducing power loss and response variations (damping factor).

Connectors should be wired with a minimum of 2.5 sq. mm (12 gauge) cable. This will be perfectly satisfactory under normal conditions. In the case of very long cable runs the wire size should exceed this, refer to the following table for guidance:-

CABLE RUN (m)	C.S.A. OF EACH CONDUCTOR (mm)	CABLE RESISTANCE Ω	% POWER LOSS INTO 8 Ω LOAD	% POWER LOSS INTO 4 Ω LOAD
10	2.5	0.14	1.7	3.5
	4.0	0.09	1.1	2.2
	6.0	0.06	0.73	1.5
25	2.5	0.35	4.3	8.6
	4.0	0.22	2.7	5.4
	6.0	0.14	1.8	3.6
50	2.5	0.69	8.6	17.0
	4.0	0.43	5.4	11.0
	6.0	0.29	3.6	7.2
100	2.5	1.38	17.0	35.0
	4.0	0.86	11.0	22.0
	6.0	0.58	7.2	14.0

4. Polarity Checking

It is most important to check the polarity of the wiring before the speaker system is flown. A simple method of doing this without a pulse based polarity checker for LF units is as follows: Connect two wires to the +ve and -ve terminals of a PP3 battery. Apply the wire which is connected to the +ve terminal of the battery to the speaker cable leg which you believe to be connected to pin 1+ of the speaker connector and likewise the -ve leg of the battery to pin 1-.

If you have wired it correctly the LF drive unit will move forward, indicating the wiring is correct. All that remains now is to connect the +ve speaker lead to the +ve terminal on the amplifier and the -ve lead to the -ve terminal on the amplifier. If however the LF driver moves backwards, the input connections need to be inverted.

If problems are encountered, inspect the cable wiring in the first instance. It should also be noted that different amplifier manufacturers utilise different pin configurations and polarity conventions, if you are using amplifiers from more than one manufacturer, check the polarity at the amplifiers as well as the loudspeakers.

5. Amplification & Power Handling

As with all professional loudspeaker systems, the power handling is a function of voice coil thermal capacity. Care should be taken to avoid running the amplifier into clip (clipping is the end result of overdriving any amplifier). Damage to the loudspeaker will be sustained if the amplifier is driven into clip for any extended period of time. Headroom of at least 3dB should be allowed. When evaluating an amplifier, it is important to take into account its behaviour under low impedance load conditions. A loudspeaker system is highly reactive and with transient signals it can require more current than the nominal impedance would indicate.

Generally a higher power amplifier running free of distortion will do less damage to the loudspeaker than a lower power amplifier continually clipping. It is also worth remembering that a high powered amplifier running at less than 90% of output power generally sounds a lot better than a lower power amplifier running at 100%. An amplifier with insufficient drive capability will not allow the full performance of the loudspeaker to be realised.

It is important when using different manufacturers amplifiers in a single installation that they have very closely matched gains, the variation should be less than +/- 0.5dB. This precaution is important to the overall system balance when only a single active crossover is being used with multiple cabinets, it is therefore recommended that the same amplifiers are used throughout.

6. Crossovers

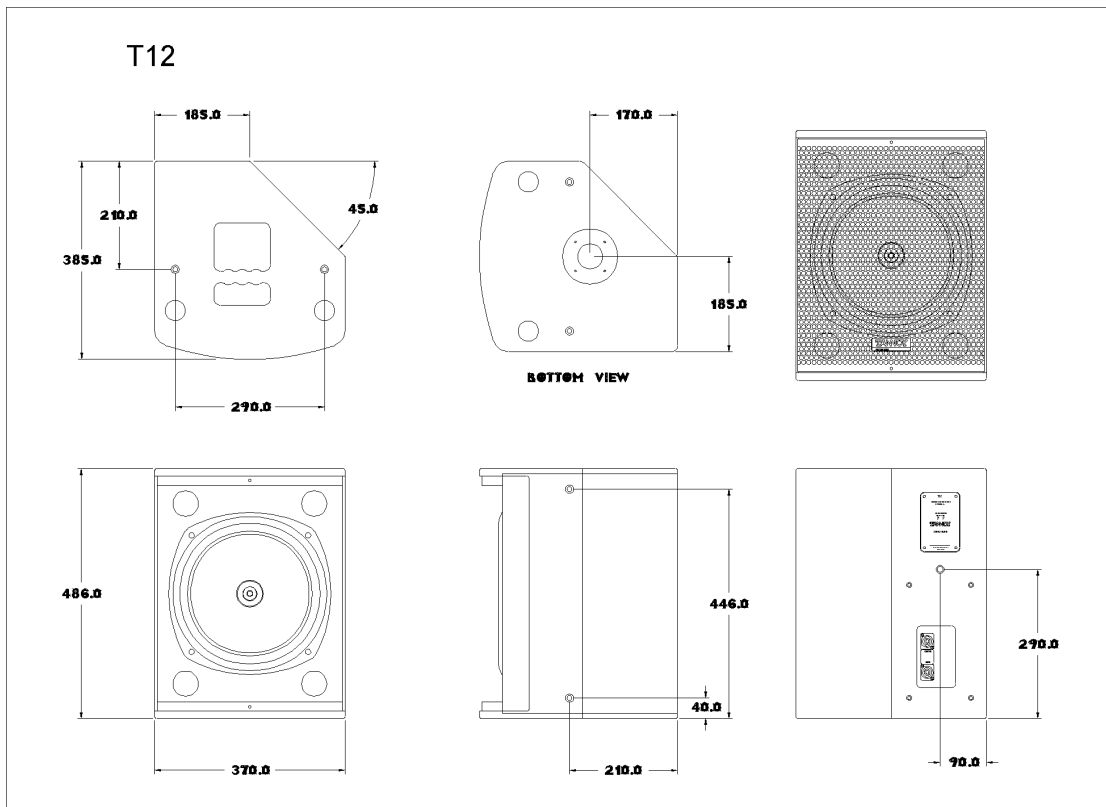
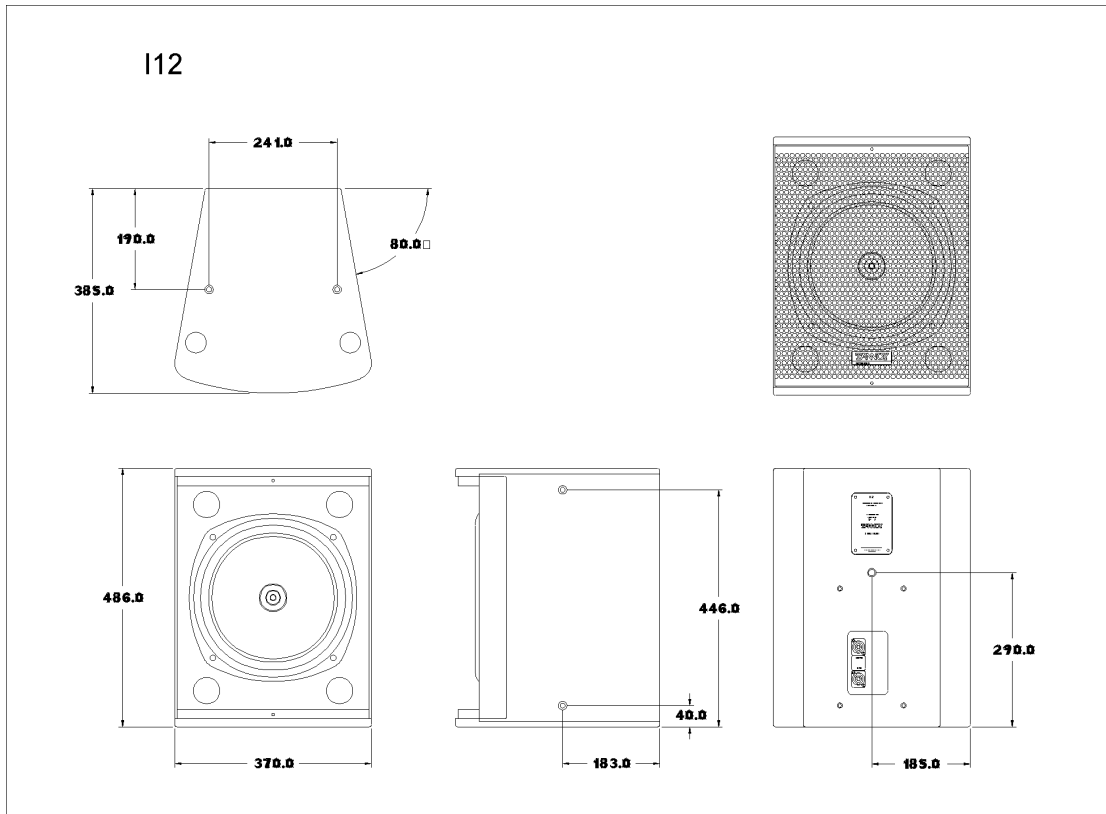
The T12 and i12 are supplied as standard for passive operation via the internal crossover network. If higher peak outputs are required then both models can be used in conjunction with the Tannoy TX2 controller/crossover which provides high pass filtering and a degree of parametric equalisation (see performance data section), as well as a fixed crossover point for use with sub-bass loudspeakers.

7. Equalisation

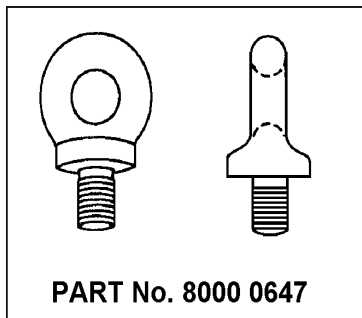
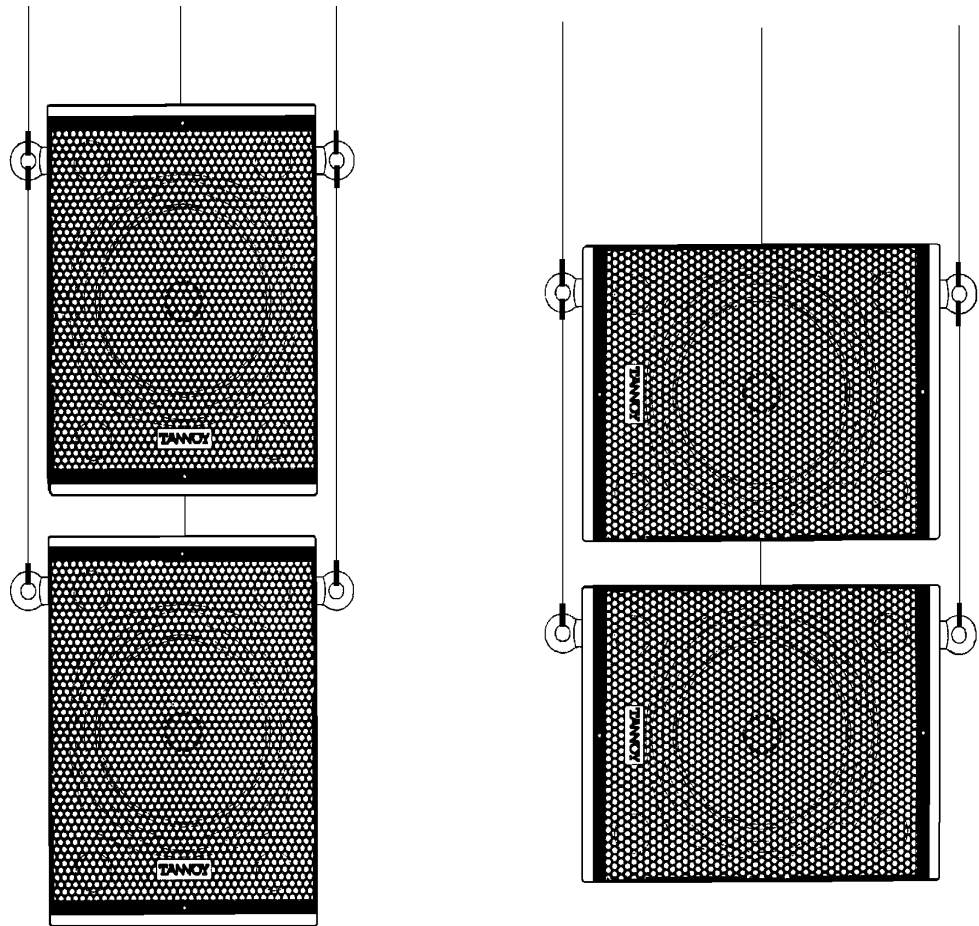
The T12 and i12 loudspeakers are designed to need no equalisation or correction to overcome system limitations. As a result, they will only need equalisation to compensate for difficult acoustic environments.

Over equalisation can reduce system headroom, and introduce phase distortion resulting in greater problems than cures. If equalisation is required then it should be applied gently and smoothly. T12 and i12 loudspeakers are point source, phase coherent designs and violent equalisation will be detrimental to the overall sound quality.

7. Dimensions



9.Rigging



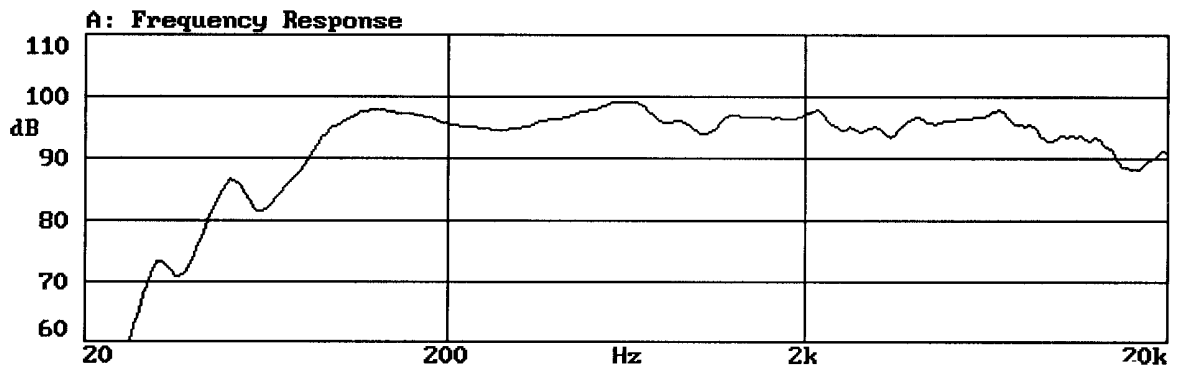
The T12/i12 Loudspeakers are flown using High quality M8 eyebolts with collar to BS4278: 1984. These eyebolts are supplied as part of an optional flying kit (Part No. 8000 0647). The loudspeakers are equipped with internal steel braces which also double as the flying points accepting the M8 eyebolts.

Remove two of the original M8 countersunk screws and replace with the eyebolts. The M8 insert on the back of the cabinet also accepts an eyebolt, this is used for tilting the cabinet at the desired angle.

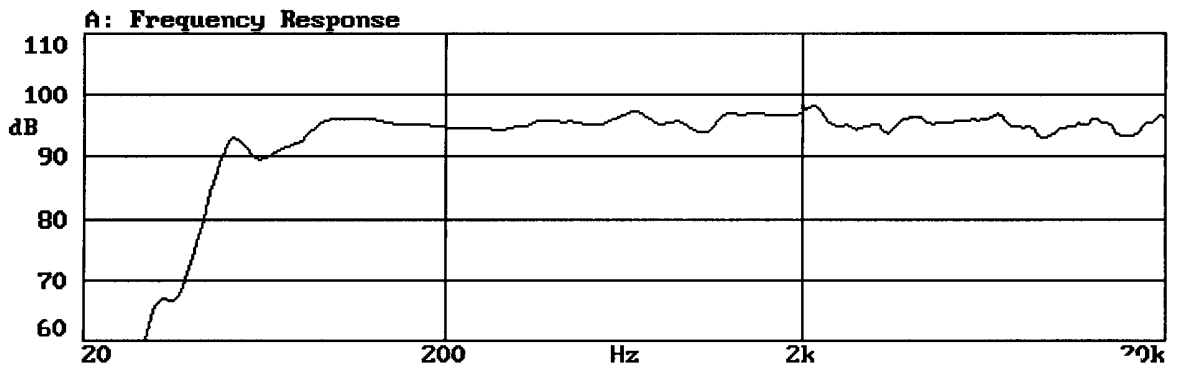
IMPORTANT: It is imperative for safety reasons that two eyebolts linked to two independantly fixed straps are used per cabinet. Fly the cabinets as shown above, do not fix the eyebolts to the top of the cabinets. As with any rigging system safety can only be guaranteed when all precautions have been implemented correctly.

WARNING: As the legal requirements for flying change from country to country, please consult your local safety standards officer before installing any product. Alternatively, check any laws or bylaws.

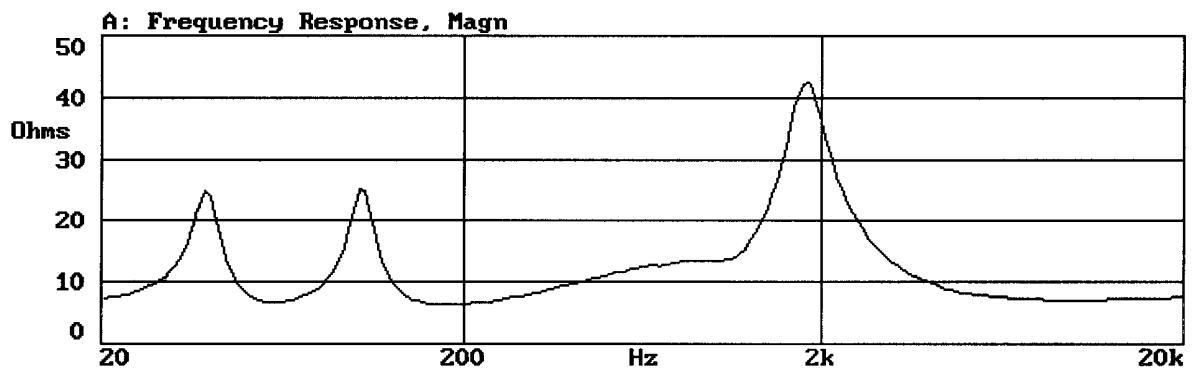
8. Performance Data



Anechoic Frequency Response, 1watt @ 1metre



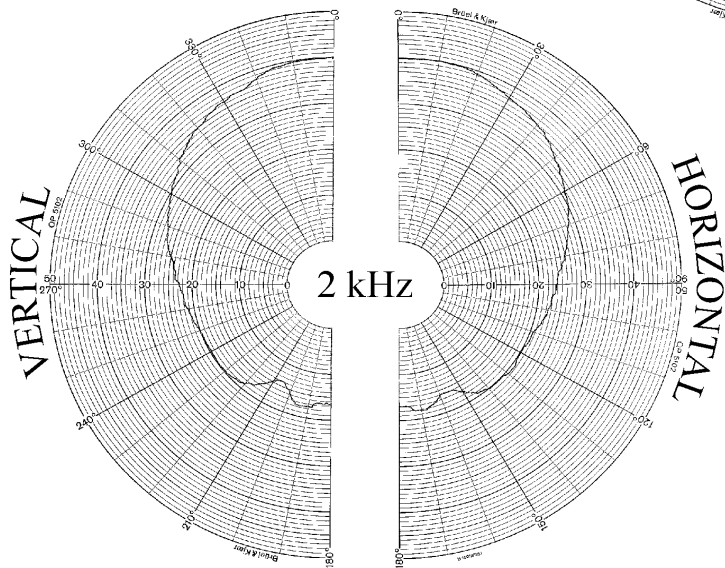
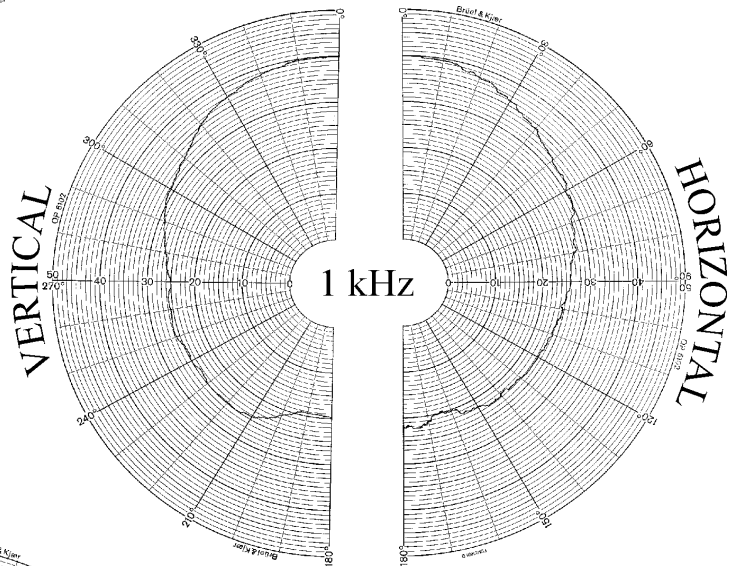
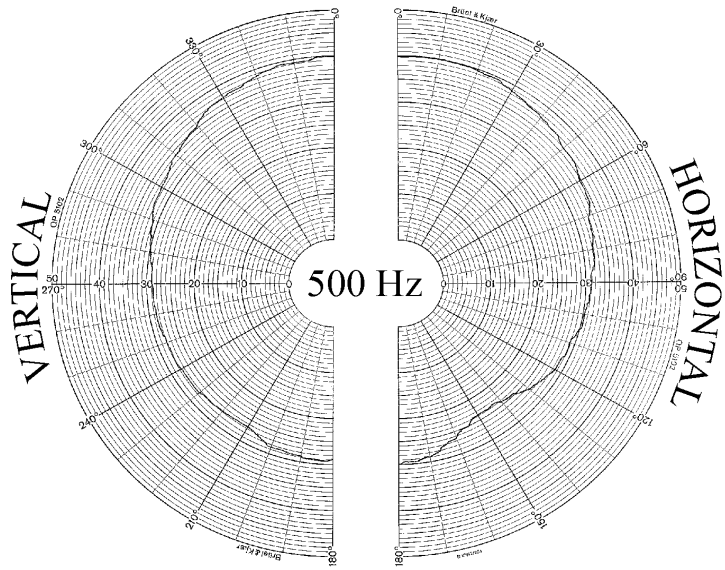
Anechoic Frequency Response, With TX2 Controller

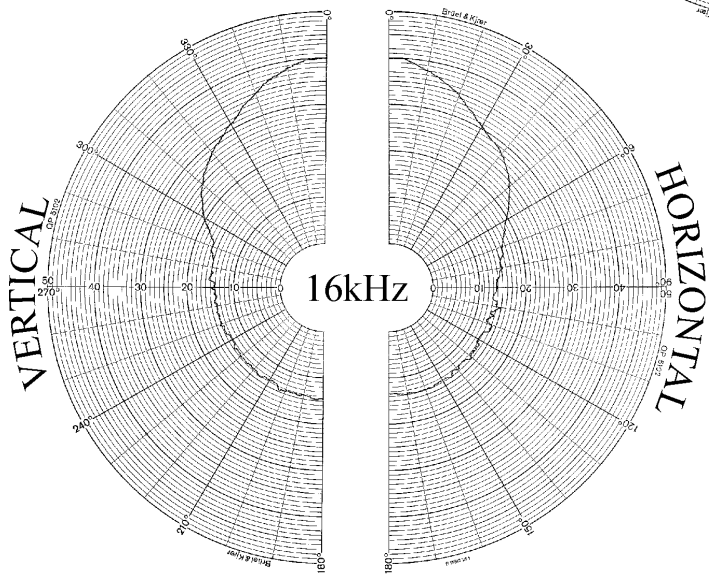
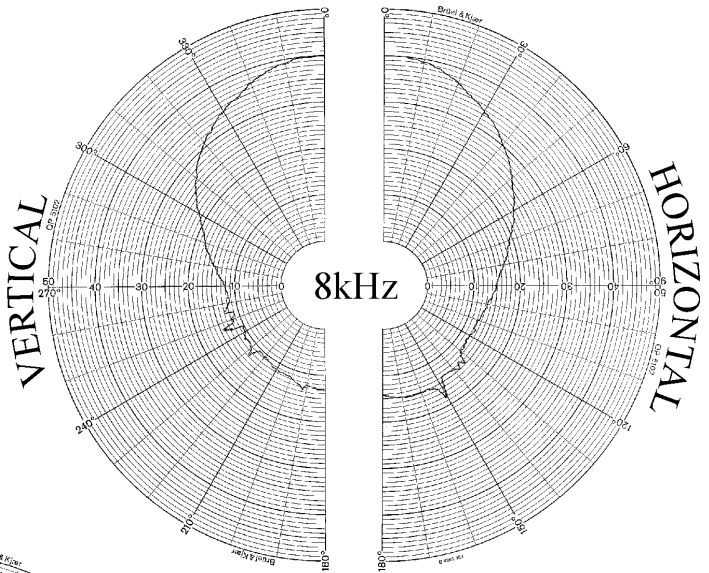
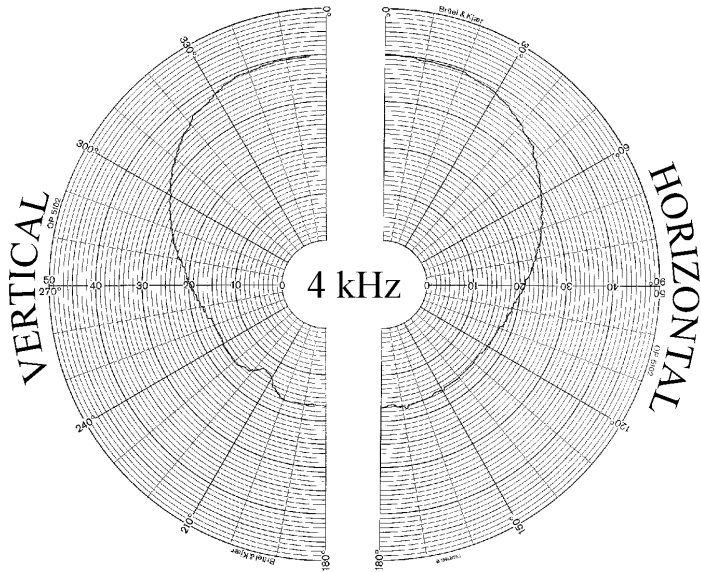


Impedance



3rd OCTAVE POLAR CHARACTERISTICS





11. Technical Specifications

Frequency response (1) +/- 3dB	70Hz - 25kHz 45Hz - 25kHz (with Tx2 controller)
Recommended Amplifier Power	200 - 400 watt / 8 ohm
Power Handling	Average(2) Programme Peak (10ms) 200 watt 400 watt 800 watt
Sensitivity (1) 2.83 volt @ 1m	97 dB
Maximum SPL (3) @ 1m	Average Peak 120 dB 126 dB
Impedance	Nominal 8.0 ohm Minimum 6.1 ohm
DI Averaged (PCQ) @ 1kHz (ISO) @ 2kHz (ISO) @ 4kHz (ISO) @ 8kHz (ISO) @ 16kHz (ISO)	8.3, 250 Hz - 16 kHz 7.1 9.3 10.1 12.6 14.2
Q Averaged (PCQ) @ 1kHz (ISO) @ 2kHz (ISO) @ 4kHz (ISO) @ 8kHz (ISO) @ 16kHz (ISO)	9.5, 250 Hz - 16 kHz 5.1 8.5 10.2 18.2 26.3
Distortion	
0.1 Full Power	2nd Harmonic 3rd Harmonic
250 Hz	0.17% 0.14%
1000 Hz	1.00% 1.25%
10000 Hz	1.78% 0.04%
0.01 Full Power	2nd Harmonic 3rd Harmonic
250 Hz	0.08% 0.06%
1000 Hz	0.32% 0.89%
10000 Hz	0.56% 0.01%
Driver Complement	1 x 12" (300mm) Constant Directivity Dual Concentric Type number 3142
Crossover Point	Passive 1.5 kHz 2 nd order high pass, 2 nd order low pass Halogen HF protection
Enclosure	38.7 litre vented, 15mm birch plywood (T12), MDF (i12)
Finish	Textured black\grey paint
Protective Grille	Perforated steel, black with 58% free air flow
Connectors	2 x Speakon NL4MPR IN/OUT
Fittings	T12: 1 x Recessed carrying handle T12: 1 x 35mm pole mounting socket T12/i12: 8 x M8 flying inserts & 1x M8 pullback point
Dimensions	486mm(H) x 370mm(W) x 385mm(D) 19.13ins(H) x 14.57ins(W) x 15.15ins(D)
Weight	20 Kg (44 lbs)

NOTES:

- (1) Average over stated bandwidth. Measured at 1m on axis, in an anechoic chamber.
- (2) Long term power handling capacity as defined in EIA standard RS - 426A.
- (3) Unweighted pink noise input, measured at 1m

Tannoy operate a policy of continuous research and development. The introduction of new materials or manufacturing methods will always equal or exceed published specifications which Tannoy reserve the right to alter without prior notice.
Please verify the latest specifications when dealing with critical applications.

12. T12 & i12 Service Parts & Accessories

Part Number	Description
7900 0433	Driver Kit - 3142
7900 0441	Recone Kit - 3142
7900 0199	HF Diaphragm Kit
7300 0158	Crossover Kit - 1206
7900 0442	Paint - Touch up Black-Grey
8000 0644	Padded Protective Transit Cover (T12)
8000 0647	Flying Kit (3 x M8 Eyebolts)
8000 0648	Wall Mounting Bracket
8000 0630	Tannoy TX2 Active System Controller

13. Warranty

No maintenance of the T12 and i12 loudspeakers is necessary.

All Tannoy professional loudspeaker products are covered by a 5 year warranty from the date of manufacture subject to the absence of misuse, overload or accidental damage. Claims will not be considered if the serial number has been altered or removed. Work under warranty should only be carried out by a Tannoy Professional dealer or service agent. This warranty in no way affects your statutory rights. For further information please contact your dealer or distributor in your country. If you cannot locate your distributor please contact Customer Services, Tannoy Ltd at the address given below.

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EASE™ Data for Tannoy Professional products available on request.

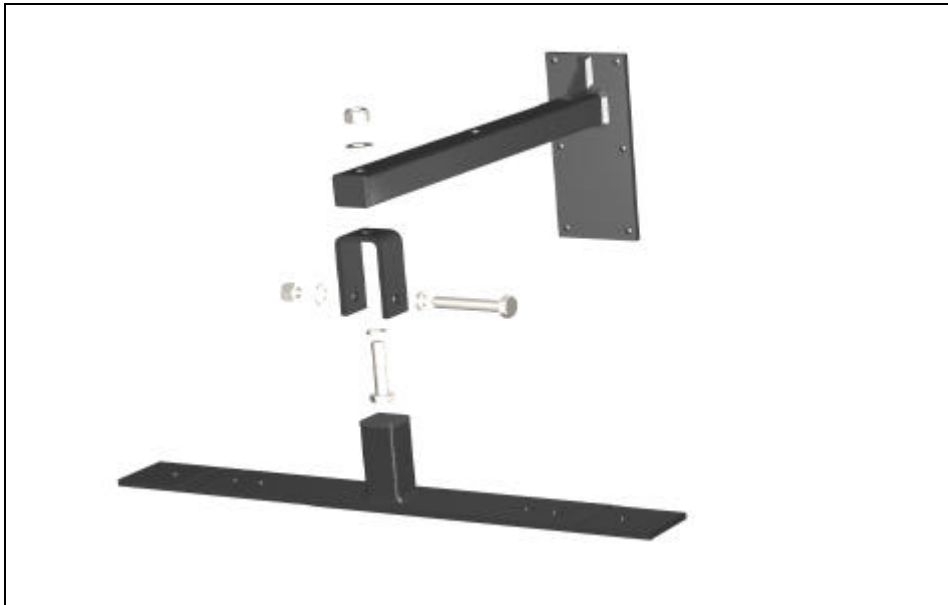
14. Wall Mounting Bracket - Assembly Instructions

A dedicated wall mounting bracket (Part No. 8000 0648) is available for the T12 & i12. The design of the bracket allows the loudspeaker to be mounted either in portrait or landscape orientation:-

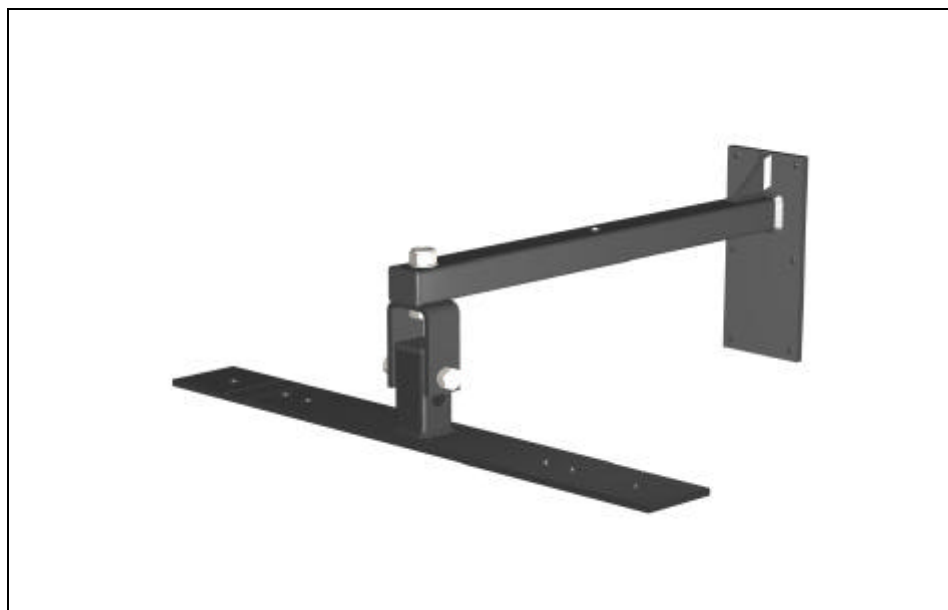
Landscape mounting - Remove two of the original M8 countersunk screws on one side of the cabinet, place the T- Bar in position and fix in place using the two cap-head bolts which are included along with the bracket hardware, remembering to use the washers and locking washers which are also provided. Assemble the bracket as shown on the diagram below. It is imperative that the bracket is fixed soundly to the wall. Be sure to use the correct fixings (e.g. Rawbolt, Rawplug) according to the wall type.

Portrait mounting - Using a hacksaw, cut along the indents on the T-bar. Carry out the above instructions, removing two of the original M8 countersunk screws on **top** of the cabinet.

Exploded View of Bracket



Assembled View of Bracket



Declaration of Conformity

The following apparatus is/are manufactured in the United Kingdom by Tannoy Ltd of Rosehall Industrial estate, Coatbridge, Scotland, ML5 4TF and conform(s) to the protection requirements of the European Electromagnetic Compatibility Standards and Directives relevant to Domestic Electrical Equipment. The apparatus is designed and constructed such that electromagnetic disturbances generated do not exceed levels allowing radio and telecommunications equipment and other apparatus to operate as intended, and, the apparatus has an adequate level of intrinsic immunity to electromagnetic disturbance to enable operation as specified and intended.

Details of the Apparatus: Tannoy Contractor Loudspeaker
Model Number: T12/i12

Associated Technical File: EMCT12/i12

Applicable Standards: EN 50081-1 Emission
EN 50082-1 Immunity

Signed:



Position: Technical Manager
Tannoy Professional

Date: 16th July 1998

For Tannoy Ltd

**Tannoy Loudspeakers are manufactured
in Great Britain by :**

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