

TSW SERIES ENGINEERING INFORMATION

The TSW-721 is a unique subwoofer incorporating Turbosound's patented loading principles, designed for use in applications requiring accurate and powerful reproduction of low frequency energy at very high levels. Its ability to reproduce program material with such integrity makes the TSW-721 applicable for both fixed or mobile systems which need to provide energetic low frequency response without stress or equalisation.

The TSW-721 incorporates the TurboBass™ device, a patented design which employs a high-velocity partial horn loading technique, giving precise cone control at high power levels. It addresses an increasing demand for accurate, high definition bass reproduction.

The TSW-721 is capable of outstanding electrical to acoustic power conversion (101dB at 1w/1m) and can develop peak sound pressure levels of 137dB. It is the result of exhaustive research which resulted in re-evaluation of the types of transducers available for use at these frequencies. Sub or low bass frequencies span two octaves of the audio spectrum. These frequencies provide some of the most important acoustic information for stimulation of fervour and emotion in music.

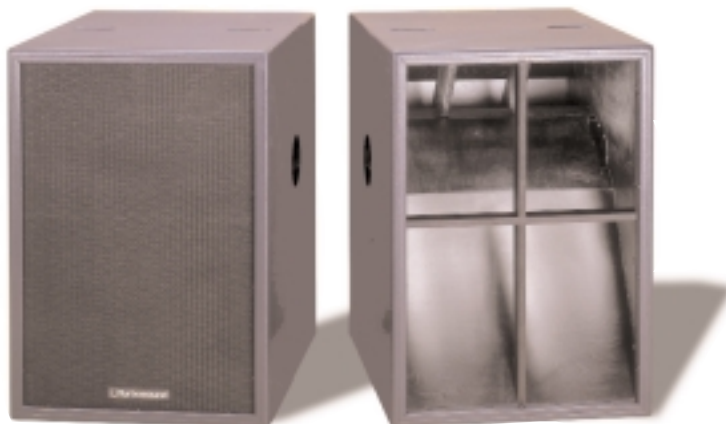
To accommodate these demands at low frequencies, a custom 21" loudspeaker has been created for the TSW-721, which combines massive motor strength with a large cone assembly, capable of moving meaningful quantities of air. The 6" voice coil and double spider assembly, combined with a 12" ceramic magnet, gives a very high BL figure, which is unprecedented in contemporary transducer designs and also approach provides considerable strength and stability to the cone/coil structure. The TSW-721 therefore presents a revelation in enclosure and transducer design. It produces high SPL with very low distortion levels and diminutive power compression (1dB at 500 watts RMS), without the need for compensating electronics to correct for component disparities.

For fixed installations the enclosure is optionally available without wheels or handles (TSW-721i), and is designed to extend the bass response of any sound reinforcement system.

Recommended complementary products:

TFL-760H, TFL-760Ht, TFL-760Hs mid-high enclosures

LMS-D6 loudspeaker management system



FEATURES

Unprecedented bass response

600 watt r.m.s. 21" loudspeaker

APPLICATIONS

Discotheques and clubs

Concert PA systems

DIMENSIONS (HxWxD)	825mm x 574mm x 773mm (32.5" x 22.6" x 30.4")
NET WEIGHT	90kg (198 lbs)
COMPONENTS	1 x 21" (534mm) LF driver on a TurboBass™ device
FREQUENCY RESPONSE¹	50 - 150Hz ±4dB Recommended operational range below 250Hz
POWER HANDLING	600 watts r.m.s., 1200 watts program, 1500 watts peak Recommended amplifier power: 1200 watts @ 8ohms
SENSITIVITY²	101dB, 1 W @ 1metre average
MAXIMUM SPL	131dB continuous ³ , 137dB peak ⁴
CROSSOVER	Active: recommended point 80 - 150Hz, 24dB/octave low pass (depending on application)
NOMINAL IMPEDANCE	8 ohms
CONSTRUCTION	18mm (3/4") birch plywood throughout; rebated, screwed and glued. Finished in TurboBlue semi-matt textured paint. Four recessed carrying handles ⁵ . Four heavy duty wheels ⁵ .
GRILLE	Cloth/expanded metal
CONNECTORS	3 pin XLR; one male, one female. Wired pin 1 -ve; pin 2 +ve; pin 3 N/C
OPTIONS	Installation version, TSW-721i: without handles, wheels or flying points
SPARES AND ACCESSORIES	LS-2101 534mm (21") LF loudspeaker RC-2101 Recone kit for LS-2101 MG-780 Replacement cloth/expanded metal grille W-3 Heavy duty wheel

All measurements are actual figures taken from real-time testing using stated inputs, free from any filtering or weighting. Therefore actual figures may significantly exceed that of other manufacturers with higher published weighted ratings.

Notes

¹ Measured on axis, using swept sine-wave input, in a true half space environment

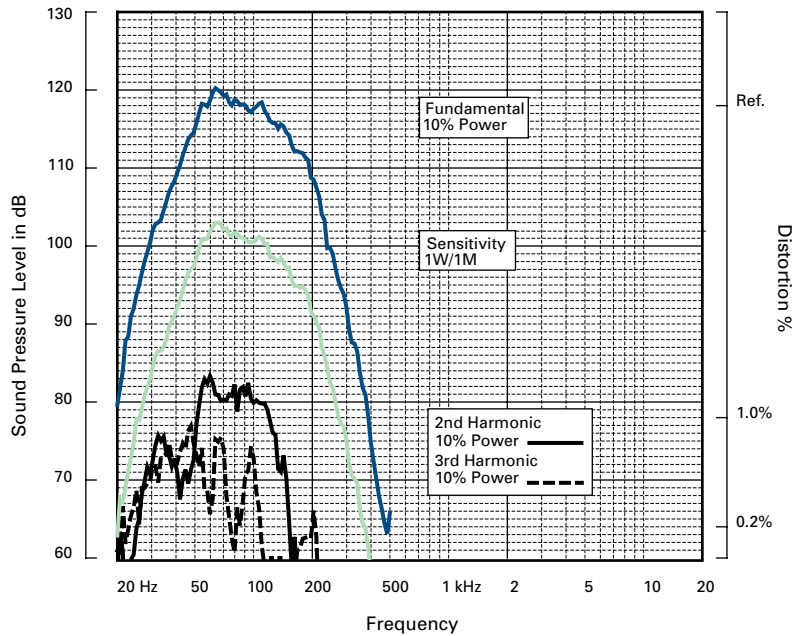
² Average over stated bandwidth. Measured in an anechoic environment (below 100Hz, verified with ground-plane measurement) at 5 watts / 3 metres, then scaled to represent 1 watt / 1 metre, using a swept sine-wave input

³ Unweighted pink noise input, measured at 1 metre

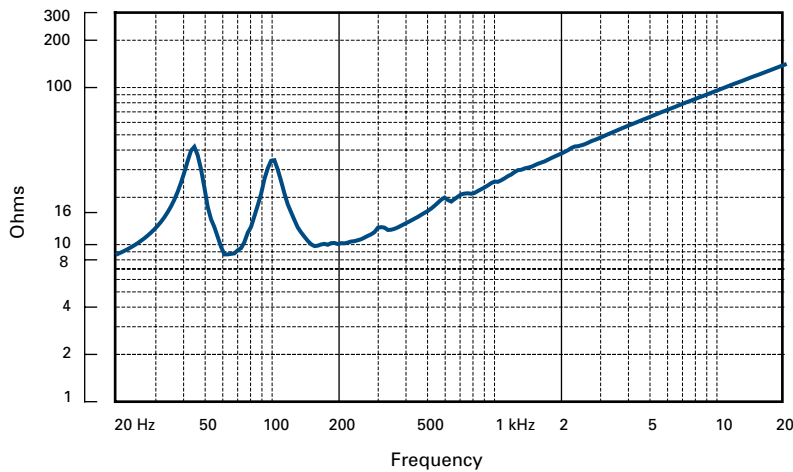
⁴ Verified by subjective listening tests of familiar program material, before the onset of perceived signal degradation

⁵ Not included on installation version

FREQUENCY RESPONSE



IMPEDANCE



Impedance A constant current circuit was used to measure the impedance. **Frequency response** The frequency response shown was obtained by feeding a swept sine wave through the system in a half space environment. The position of the microphone was vertically on-axis at a distance of 2 metres, then scaled to represent 1 metre. **2nd & 3rd Harmonic Distortion** Distortion measurements were obtained using an Audio Precision harmonic distortion analysis system and comply with AES recommendations for enclosure measurement (AES paper ANSI S4-26-1984). **Data Conversion** All graphs were digitally generated using the APEX custom software system, designed to translate data derived from Audio Precision 'System One' test equipment into AutoCAD™. This program enables graphical information to be plotted to a high degree of accuracy.

NOTES ON MEASUREMENT CONDITIONS

**ARCHITECTURAL
& ENGINEER'S
SPECIFICATIONS**

The loudspeaker shall be of the subwoofer type consisting of one 21" low frequency loudspeaker loaded with a patented TurboBass™ device. Performance specifications of a typical production unit shall meet or exceed the following: Frequency response, measured with a swept sine-wave input, shall be flat within $\pm 4\text{dB}$ from 50 - 150Hz. Nominal impedance shall be 8 ohms. Power handling shall be 600 watts r.m.s., 1200 watts program, 1500 watts peak. Sensitivity, measured with 1 watt input at 1 metre distance on axis, mean averaged over stated bandwidth, shall be 101dB. Maximum SPL (peak) measured with music program input at stated amplifier power (below 100Hz) shall be 137dB. Dimensions: 825mmH x 574mmW x 773mmD (32.5" H x 22.6" W x 30.4" D). Weight: 90 kg (198 lbs). Total enclosure volume shall not exceed 0.37 cu meters (12.9 cu ft). The loudspeaker system shall be the Turbosound TSW-721 [TSW-721i]. No other loudspeaker shall be acceptable unless submitted data from an independent test laboratory verify that the above combined performance/size specifications are equalled or exceeded.

DIMENSIONS

