

The Aspect® series is a range of high performance modular loudspeaker enclosures designed for use across a wide spectrum of sound reinforcement activities, easily scalable to specific acoustical and venue requirements ranging from large scale indoor or outdoor concerts to corporate events, theatre shows and nightclub applications.

The aim of any sound reinforcement system is to distribute sound evenly, with consistent frequency response and in a predictable way, across all seats of an auditorium or listening area. An optimum method of attaining this goal is through the correct application of point source arrays to create a segment of a spherical wavefront. Not only does this approach provide an exceptionally well defined and coherent acoustic source, but it also allows for considerable flexibility when assembling arrays in both horizontal and vertical dimensions.

In practice, the dispersion characteristics of a typical sound system are less than ideal because of the tendency for conventional high frequency exponential horns to 'beam' with increasing frequency. When arraying such horns, interference between adjacent sources is inevitable due to the variable curvature of the wavefront caused by the horn's geometry, and this results in undesirable comb filtering effects.

Turbosound engineers, through intensive research and the subsequent implementation of innovative and patented Polyhorn™ designs, have identified and overcome these deficiencies and implemented solutions in the Turbosound Aspect® series. Fundamental to the Polyhorn™ designs—and applied in both mid and high frequency bands—is the principle of dividing an exponential horn flare into a multiplicity of tapered waveguides. A further requirement is that all path lengths from the diaphragm surface to horn mouth are identical, and consequently guarantees uniformity of phase of the wavefront

at the horn mouth. The Polyhorn™ design effectively locates the acoustic centre well behind the motor system, forming a virtual point source whose radius coincides with the array curvature without requiring an excessively deep enclosure.

The TA-500HM is a trapezoidal two-way down-fill and in-fill enclosure designed for flown and ground-stacked touring and fixed installation applications. It houses high frequency and mid frequency elements arranged in a vertical orientation, covering the frequency range from 250Hz to 20kHz.

The HF section of the enclosure is dedicated to handling the high frequency band above 5kHz, being reproduced by a custom designed HF driver loaded by a high frequency Polyhorn™ device. The HF driver combines highly innovative patented (and patent applied for) design features to ensure exceptional high frequency performance and long term reliability. High-mid frequencies from 250Hz to 4kHz are handled by a custom designed 10" drive unit on a further Polyhorn™ device optimised for mid frequencies.

A key feature of the Polyhorn™ designs is the very sharp cut-off at the edges of the coverage pattern, which all but eliminates the comb filtering effects commonly experienced between adjacent sources when arraying conventional horn designs. This makes it possible to achieve seamless arrayability in a very intuitive and predictable fashion.

All drive units employ high stability, neodymium magnet structures in order to provide very high motor strength—and hence fast transient response—as well as exceptional thermal performance. This also results in a useful reduction in weight which aids transportation and handling.



FEATURES

- Ultra low distortion
- Very high output
- Wide dispersion
- Trapezoidal enclosure
- Seamless arrayability

APPLICATIONS

- Down-fills
- In-fills
- House of Worship
- Flown clusters
- Ground-stacked touring

The TA-500HM cabinet is constructed from 15mm (5/8") birch plywood, and is trapezoidally shaped with side angles optimised at 22.5°. It is equipped with two recessed handles on the sides, with additional grab positions at the rear of the box. An optional removable, stackable wheel-board clips on to the front of the cabinet for transportation.

The TA-500HM is designed to be used as a downfill cabinet with flown Aspect TA-890 clusters. A simple tubular flybar attached to the cabinet and mates with the integral rigging hardware on the 890 cabinet. M10 rigging points are also provided for installed applications on the top, bottom and sides of the cabinet as well as two further points on the rear, situated near the top and bottom of the cabinet for adjusting the vertical angle.

A recessed panel at the rear carries two parallel-linked Speakon NL8MP's for tri-amped connections, with a Speakon NL4MP for link-through sub connections. It includes a passive crossover network between the MF and HF drive units for passive operation. It can be bypassed for bi-amped operation by moving an internal jumper located inside the connector panel, the status of which is visible externally.

KEY FEATURES

- Controlled dispersion pattern of 50° x 25° generates highly focused coverage pattern in both horizontal and vertical planes with exceptional projection capabilities
- HF transducer employs a high stability, high temperature neodymium magnet structure which offers higher efficiency, as well as reduced weight
- Patented HF and MF Polyhorn™ designs generate equal level across a uniformly curved wavefront identical to the array profile
- Directivity over 1kHz exhibits very sharp cut-off at the edges of the pattern, dramatically reducing out-of-band signal
- Unique 10" high-mid frequency driver is fabricated from a single-piece aluminium bowl, serving as a high strength frame, heatsink, rear compression chamber and high pass filter.

KEY SYSTEM BENEFITS

- Minimal destructive interference between adjacent enclosures, effectively giving seamless arrayability in both horizontal and vertical planes. All audience seats get essentially the same frequency response
- Wide horizontal dispersion pattern suits many one-box-a-side touring applications
- Intuitive 'point and shoot' characteristics make it very easy to adapt flown or ground stacked clusters to widely variable venue and audience requirements
- Very high power capability combined with high efficiency means that peak sound pressure levels of up to 141dB are easily achievable from one cabinet
- Greatly improved thermal performance from neodymium magnet structures reduces power compression to negligible levels and delivers more amplifier power into acoustic watts
- Ability to tailor the PA coverage according to extremely varied venue requirements; can achieve optimum coverage even in irregularly shaped rooms
- Integrates with Aspect® TA-500 and TA-890 cabinets.



DIMENSIONS (HxWxD)	551mm x 574mm x 498mm (21.7" x 22.6" x 19.6")
NET WEIGHT	37kg (81.4 lbs)
COMPONENTS	1 x custom 10" (254mm) MF driver on a midrange Polyhorn™ 1 x custom HF driver on a high frequency Polyhorn™
FREQUENCY RESPONSE¹	250Hz - 20kHz ±4dB
DISPERSION²	50°H x 25°V; horizontal array angle: 45°
POWER HANDLING	MF: 200 watts r.m.s., 400 watts program HF: 50 watts r.m.s., 100 watts program
SENSITIVITY³ (1W@1M)	MF: 105dB; HF: 112dB
MAXIMUM SPL	132dB continuous ⁴ , 138dB peak ⁵
CROSSOVER POINTS	4k/5k99Hz
NOMINAL IMPEDANCE	MF: 16 ohms; HF: 16 ohms
CONSTRUCTION	15mm (5/8") birch plywood throughout; rebated, screwed and glued. Finished in black semi-matt textured paint. Two recessed carrying handles.
GRILLE	Powder coated perforated steel with reticulated foam backing
CONNECTORS	(2) Neutrik Speakon NL8 wired: pin1+ and 1- link to NL4; pin 2+: n/c; pin 2-: n/c; pin 3+: MF positive, pin 3-: MF negative, pin 4+: HF positive, pin 4- HF negative (1) Neutrik NL4 wired: pin 1+: sub positive, pin 1-: sub negative
OPTIONS	Wheelboard
SPARES AND ACCESSORIES	MG-500 Replacement cloth/expanded metal grille LS-1021.2 10" (254mm) MF loudspeaker RC-1021.2 Recone kit CD-113 HF driver RD-113 Replacement HF diaphragm WB-500 Wheelboard

Notes

¹Measured on axis

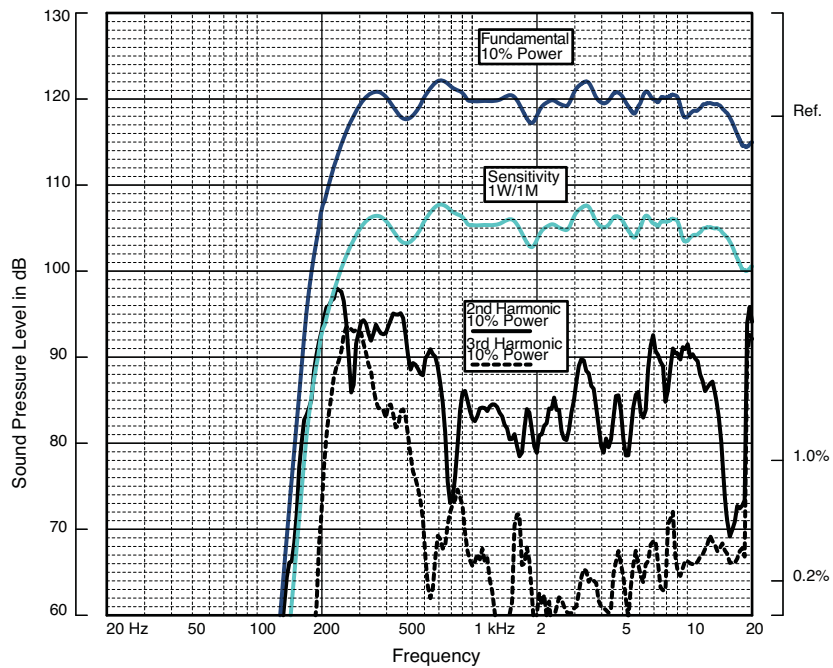
²Average over stated bandwidth

³Average over stated bandwidth

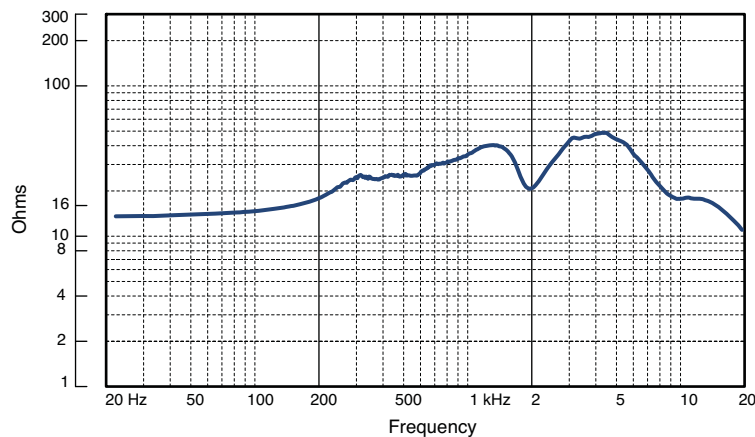
⁴Unweighted diode-clipped pink noise. Measured in a half space environment.

⁵Verified by subjective listening tests of familiar program material, before the onset of perceived signal degradation.

**FREQUENCY
RESPONSE**



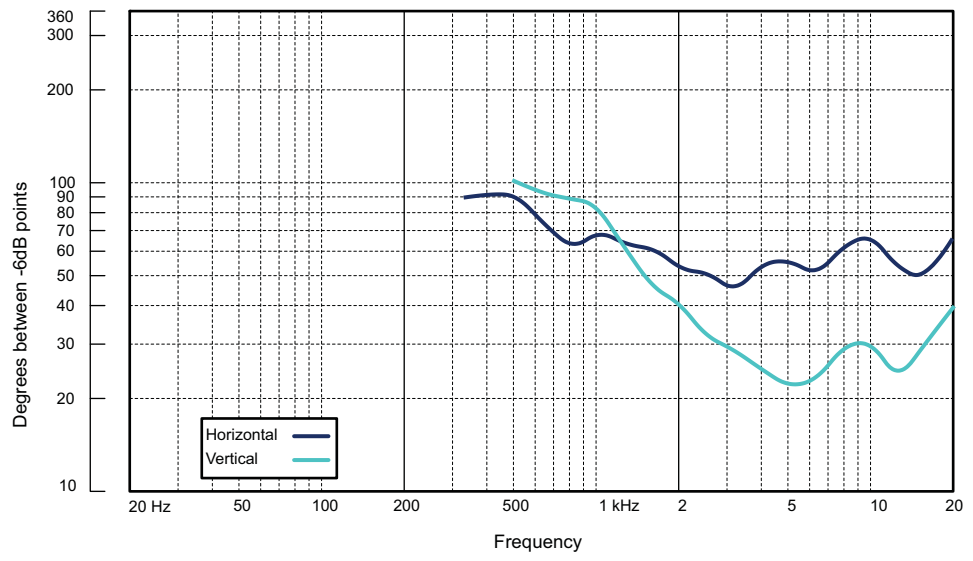
IMPEDANCE



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**

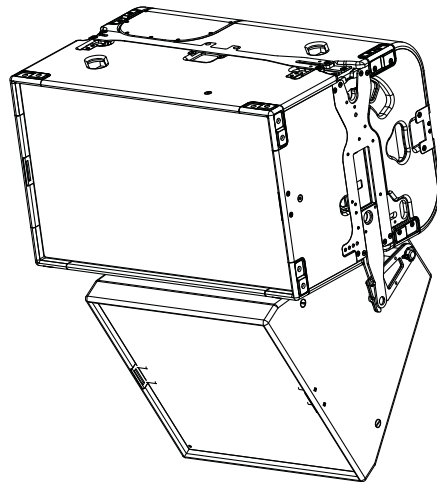
BEAMWIDTH



The TA-500HM is designed to provide downfill coverage for Aspect TA-890 flown clusters, typically at the bottom of a column of cabinets. It is attached using a simple arrangement consisting of a round section flybar which passes through a hole in the cabinet, together with clamps which mate with the drop link of the 890's integral flygear.

RIGGING HARDWARE

The vertical array angle is fixed at 27.5°.



**ARCHITECTURAL
& ENGINEER'S
SPECIFICATIONS**

The loudspeaker system shall be of the trapezoidal bi-amped type comprising: one high frequency driver loaded with a patented PolyHorn™, and one 10" (254mm) high-mid frequency driver loaded with a patented PolyHorn™. 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 250Hz to 20kHz. Dispersion shall average $50^\circ\text{H} \times 25^\circ\text{V}$. Nominal impedance shall be MF: 16 ohms, HF: 16 ohms. Power handling shall be MF: 200 watts r.m.s., 400 watts program; HF: 50 watts r.m.s., 100 watts program. Sensitivity measured with 1 watt input at 1 metre distance on axis, mean averaged over stated bandwidth shall be MF: 105dB, HF: 112dB. Maximum SPL (peak), measured with music program shall be 138dB. Dimensions: 551mm x 574mm x 498mm (21.7" x 22.6" x 19.6"). Weight: 37kg (81.4lbs). The loudspeaker system shall be the Turbosound Aspect TA-500HM. No other system shall be acceptable unless the above combined performance specifications are equalled or exceeded. Flying and installation hardware shall be available comprising a range of load-certified components.

DIMENSIONS

