



Product Parameters and Specifications
Model: Legatia Pro L1 Series Tweeter

Legatia Pro™ L1

The Legatia Pro™ L1 is a small-format, super high-end mobile audio tweeter. Continuing on in the tradition of exceptional tweeter manufacturing by Hybrid Audio Technologies, the Legatia Pro L1 is an articulate, detailed, and tonally-correct tweeter in a slightly larger diaphragm than its sibling, the Legatia L1. The Pro L1 is a light and transiently fast tweeter in a 25mm body that doesn't suffer from typical "heaviness" in tonal quality, typically associated with damped, large-diameter dome tweeters, while having exceptional polar response, and still being small enough to install in typical locations within a vehicular environment. During our testing of the Pro L1, we wanted to be sure that this tweeter could be listened to for long listening sessions with no noticeable listener fatigue, and the mission was a huge success. The Pro L1 does an immaculate job of recreating tones well into the vocal and midrange frequencies, should the user decide to use an exceptionally low crossover frequency. The Pro L1 sets the new benchmark for car audio tweeters.



Figure 1: Pro L1 tweeter pair, shown larger than actual size for detail.

Legatia Pro™ L1 in more detail

The Legatia Pro™ L1 is a 25mm (1-inch) dome-type tweeter which has a very good extended linear response and exceptional transient response. The design offers a wide dispersion pattern to make for flexible installation and speaker location, and the phase linearity of the design ensures phase coherent imaging and staging cues in the car audiophile system.

The Pro L1 starts with an impregnated fine cloth silk dome diaphragm for a linear, smooth sound, with a treated silk surround to damp edge modes and resonances. The Pro L1 is efficient, exhibits low distortion, and has a wide dispersion; the dome is of exceptionally low mass and has an extremely high power handling with proper filtering. The Pro L1 dome design is much less susceptible to mechanical deformation than other designs, and yet yields a smooth response over the extent of its range.

The motor assembly is conventional dynamic, with a $\phi 24.5 \times 3.5$ H NdFeB neodymium magnet structure to ensure a relatively small footprint size and shallow depth. A perforated grille protects the dome. What separates the Pro L1 from its sibling the L1 is the fully machined aluminum body (the body is machined aluminum, not cast aluminum). The dense metal structure of the tweeter housing helps to reduce resonances within the body of the tweeter for effective reproduction of extremely low music tones. Additionally, the Pro L1 has a polypropylene tuned and damped chamber at the rear of the motor assembly; the chamber helps to reduce backwave distortion and significantly lower the tweeter's resonance frequency to allow it to be used to play tones in the vocal spectrum, if desired. A machined aluminum 46mm knurled accoutrement (denoted as "aluminum adapter" in Figure 2) at the base of the tweeter provides optimized clamping strength to the mounting media.

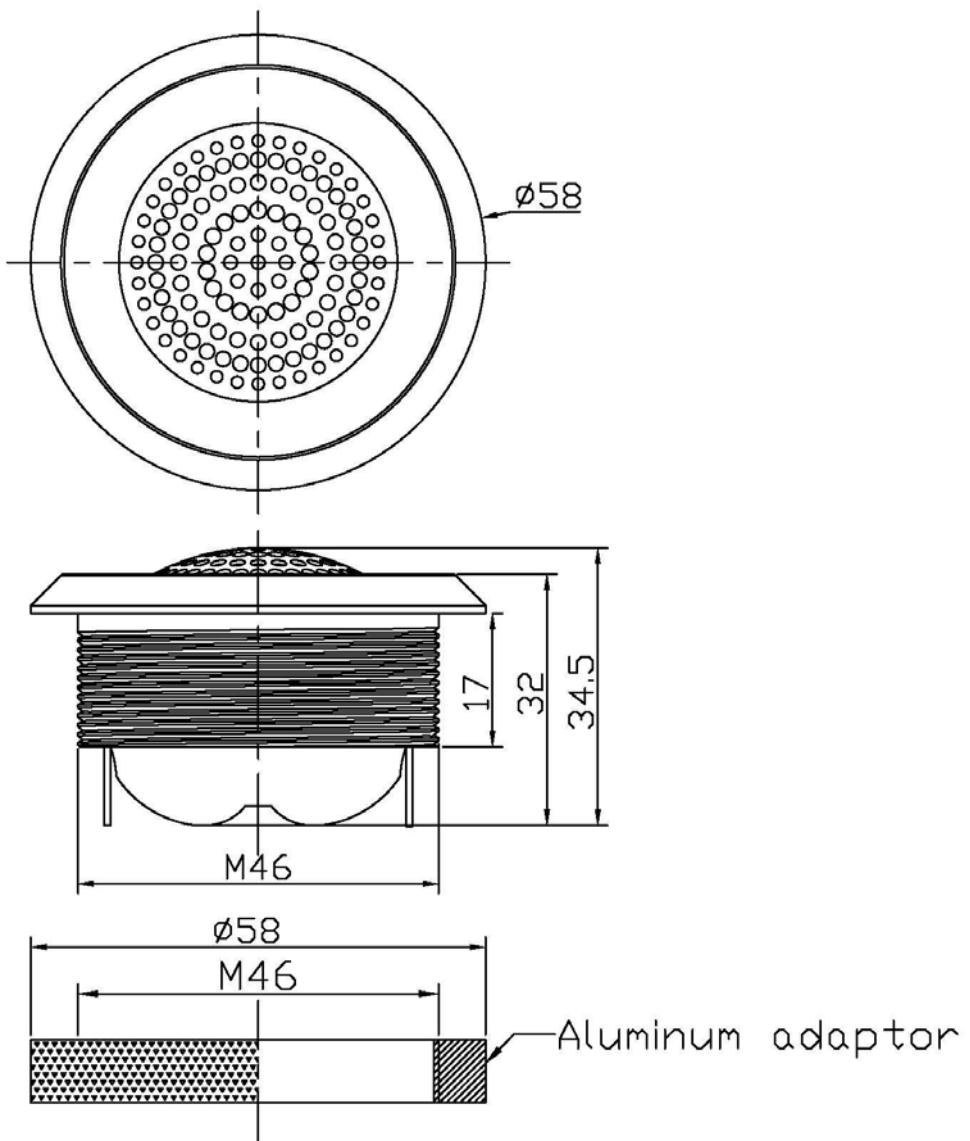


Figure 2: Pro L1 tweeter - detailed view of aluminum 46mm knurled aluminum adapter

The 58mm wide aluminum flange, only 6mm larger than the Legatia L1 tweeter, provides a solid-aluminum mounting surface for the tweeter without the necessity of mounting cups. The overall dimensions of the driver are very amenable for use in the car audio environment, boasting an exceptional depth of just 28mm (nearly unheard of in a tuned-chamber tweeter). The terminations are an extraordinary feature of the Pro L1: nickel-plated spring-loaded binding posts were used to give the end-user flexibility in direct connection with large-gauge tinned wiring, without the need for terminations. Reference Figure 3, below, for the mechanical drawing of the Pro L1 tweeter:

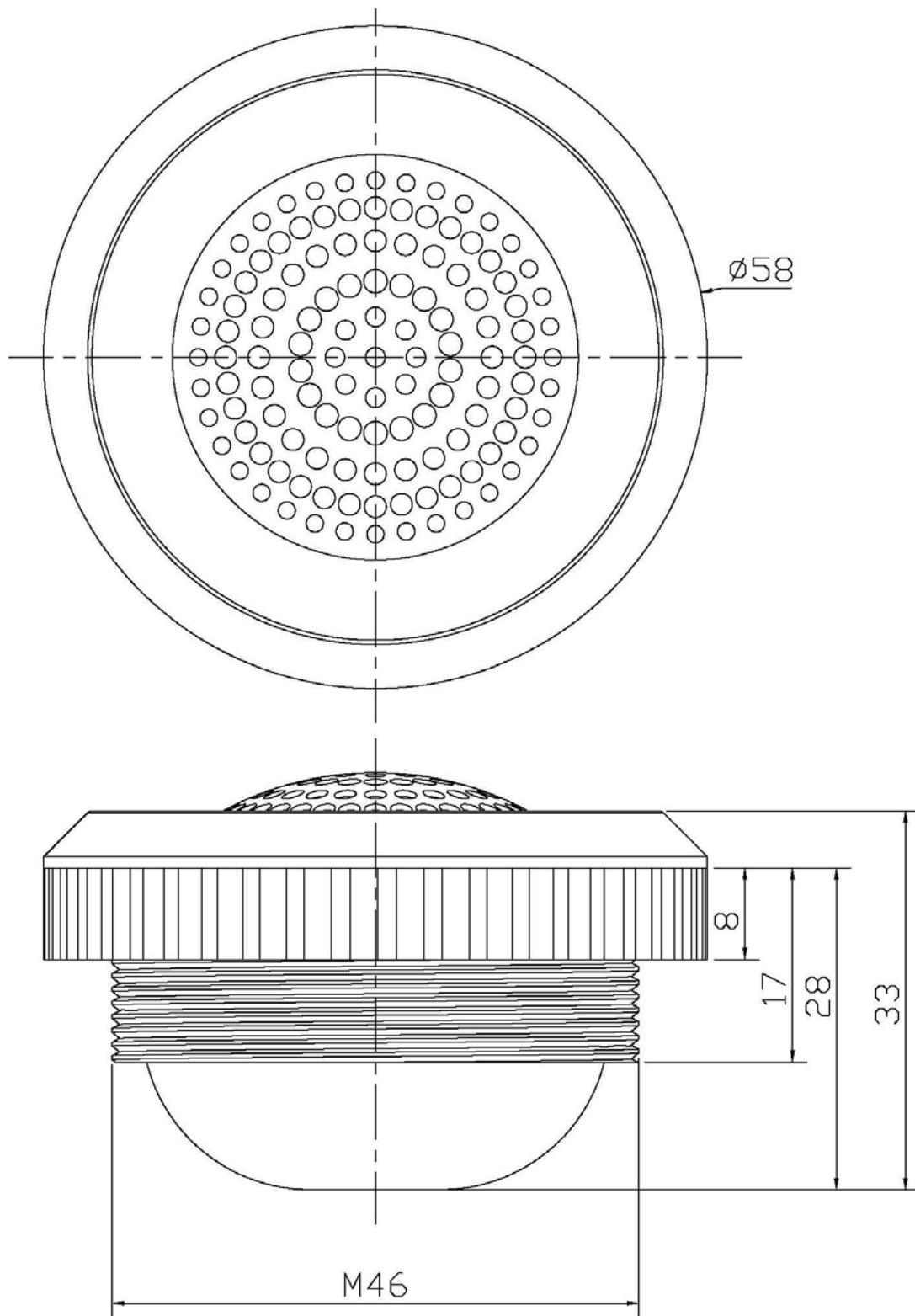
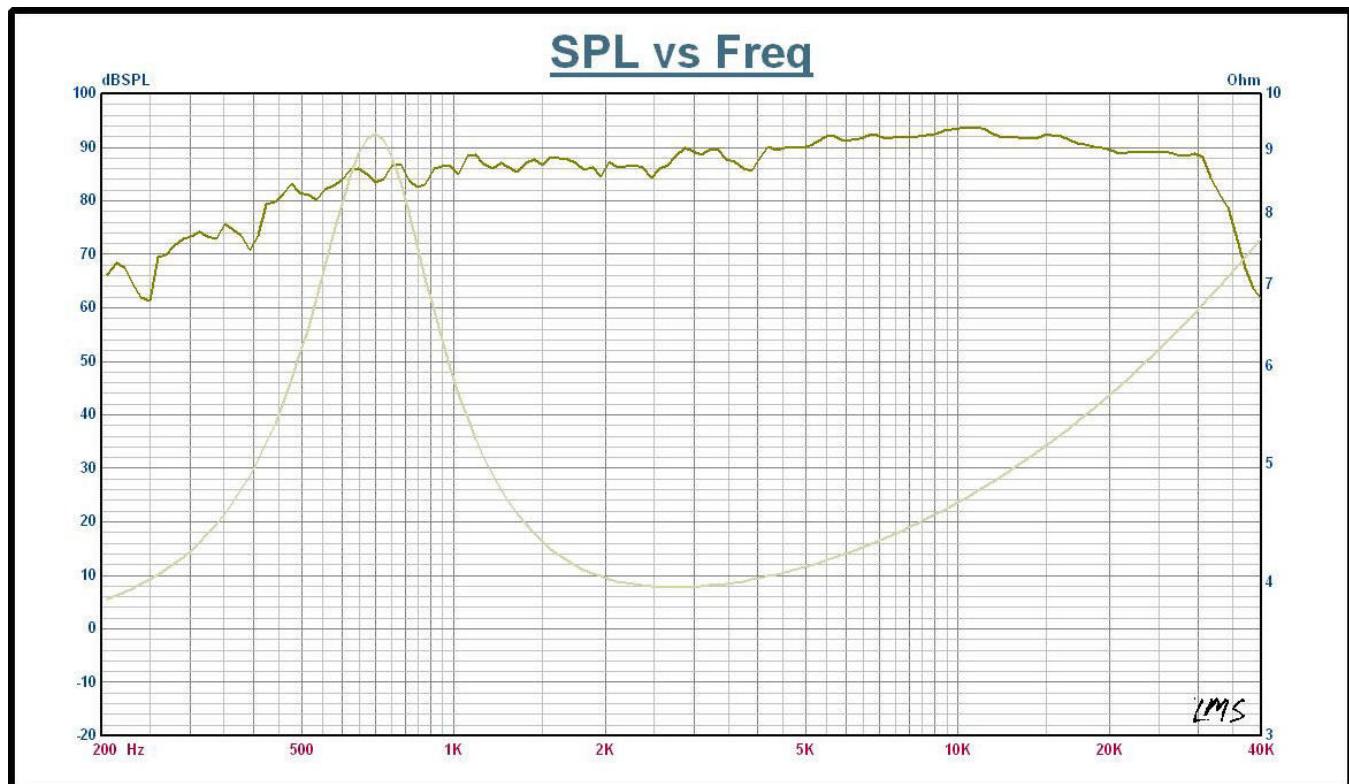


Figure 3: Pro L1 tweeter - dimensioned mechanical drawing

Legatia Pro™ L1 Thiele-Small Parameters

Overall Diameter	φ58mm
Mounting Depth	28mm from bottom of surface-mount flange
Mounting Methodology	Surface-mount tweeter with standard-pitch M46 X 8mm thick knurled thread aluminum adapter to secure the tweeter body from the rear
Construction	Solid machined aluminum with polypropylene tuning chamber
Distortion	<5% MAX at rated power input, no crossover
Magnet Diameter and Construction	φ24.5 × 3.5 H NdFeB
Recommended Minimum Crossover Frequency	2,000 Hz at 24 dB/octave
Pnom: Rated Power Input (No Crossover)	20 watts (AES Standard)
Pmax: Maximum Power Input (No Crossover)	40 watts (AES Standard)
Resonance Frequency (Fs)	698.5 Hz
Frequency Range	Fs (698.5 Hz) - 31,000 Hz, +/- 3 dB
Sensitivity	91.5 dB
Nominal Impedance	4Ω
DC Resistance	3.6Ω
Voice Coil Diameter	25mm (1-inch)
Q Mechanical System (Qms)	2.068
Q Electrical System (Qes)	1.329
Q Total System (Qts)	0.809
Krm	22.078 μΩ
Erm	0.963
Kxm	1.742 mH
Exm	0.595

Legatia Pro™ L1 Impedance and SPL Verses Frequency Plots



Annex 1: Legatia Pro™ L1 3-Dimension Design Drawings

