



Product Parameters and Specifications  
Model: Legatia L41-2 Two-Way Component Set

### Legatia™ L41-2

The Legatia™ L41-2 is an incredible two-way component system which pairs the Legatia™ L1V2 tweeter with the ultra wide-bandwidth and tonally correct midrange driver, known as the Legatia™ L4. Like the Legatia™ L31-2 set, the L41-2 set begins with a pair of Legatia™ L1V2 tweeters, which accurately reproduce treble tones in the critical bandwidth of the set, in a small diameter 20mm soft-dome package that fits in the palm of your hand. The L1V2 tweeter is a small diameter impregnated silk soft-dome high frequency driver which can be listened to for hours without listener fatigue typical of metal dome drivers, and drivers with larger moving mass and larger diameter. The L1V2 tweeter reproduces treble in a way that must be heard to be believed. The set is rounded out with one of the widest bandwidth, and best-sounding 4-inch midranges on the market today, our crowning achievement, the Legatia™ L4. The L4 was developed after two years of rigorous real-world testing, against designs costing up to six times as much as the L4 model. In concert with the L1V2 tweeter, this represents an entire front stage above 100 Hz, and can only be made better with the addition of a detailed midwoofer/subwoofer pairing, such as the Legatia™ L6 or L8 designs.



Photo 1: L41-2 two-way component set. Tweeter is also available in brushed aluminum.

### Legatia™ L41-2 in more detail

The Legatia™ L41-2 takes the bandwidth and installation flexibility afforded by the Legatia™ L31-2 and improves upon it. If installed, set-up, and tuned properly, this system will effectively reproduce every tone above 100Hz at listening levels, for the ultimate two-way front stage for precise imaging and staging. This system uses a combination of the Legatia™ L1V2 20mm soft dome tweeter and the Legatia™ L4 four and a half-inch midrange. This is the perfect system to add to an existing system - even a factory/OEM system, to improve power handling, dynamics, and critical response above 100 Hz, especially in the vocal spectrum, or to supplement a larger dedicated midbass driver. And the L41-2 set benefits from the more sensitive L4 midrange, for more flexibility installations, set-up, and tuning.



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### *Tweeter*

The Legatia™ L1V2 is a 20mm (3/4-inch) dome-type tweeter which has a very good 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 L1V2 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 L1V2 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 the recommended filtering, or using the available two-way passive crossover system for the L31-2x component system. The L1V2 dome design is much less susceptible to mechanical deformation than other designs, and yet yields a smooth response over the extent of its range.

For more information about the L1V2 tweeter, please visit here: <http://hybrid-audio.com/Legatia%20L1V2.pdf>.

### *Midrange/Midbass*

Like the Legatia™ L3, the Legatia™ L4 is a very unique driver that satisfies a need in the high-end car audio community for a small diameter, super wide-bandwidth midrange driver for the ultimate in point-source midrange applications. With proper filtering, installation, and tuning, this driver will effectively reproduce music tones from 100 Hz (24 dB/octave) to 17,000 Hz. It is the ultimate point-source midrange driver; there is no comparison to L4. In certain applications and installations, as noted above, this driver can be used as both the midrange and treble driver, and can only be made better with the addition of a transient midwoofer or subwoofer, such as the Legatia™ L6 or L8 for the ultimate true two-way front stage system.

The Legatia™ L4 is a 118mm (4.65-inch) cone-type wide-bandwidth midrange; the cone is an untreated pressed paper with extremely low moving mass. The cone design offers a wide dispersion pattern to make for flexible installation and speaker location. What makes the L4 different than the L3 is the addition of a phase plug pole piece extension at the center of the cone. The highest frequencies of audio emanate from the area around the center of the cone and the lower frequencies are produced by the area of the cone that is farther from the center. Due to the shape of a conventional loudspeaker cone, the higher frequency sound waves tend to collide at a focal point, causing phase distortion. The phase plug pole piece extension improves the L4's performance and clarity by deflecting delicate midrange and treble tones forward of the driver, while minimizing distortion and improving the driver's ability to reproduce a wider bandwidth; this is the reason why the L4 has an extremely wide bandwidth into the upper treble frequencies.

You will find no composite or metal cone materials used on the L4, as our approach to point-sourcing is to allow the midrange or midbass driver to effectively play into treble frequencies. The paper cone is critical to tame unwanted cone modes, resonances, and the classic "cone breakup" associated with all composite and most polypropylene cones, but still be rigid enough for upper midbass attack. The "point source" design ensures stable stereo imaging across the fundamental frequencies which define image placement and definition. Rounding out the face of the driver is an inverted high-loss rubber surround that, in concert with the spider, provides the compliance needed for this 118mm midrange to play middle and upper midbass frequencies. You'll also know a higher-end Hybrid Audio midrange and midbass design by its inverted surround; this design feature allows for the use of a smaller height grille, and more flexibility in mounting options.



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The motor of the design is conventional dynamic and very complimentary, utilizing a 1-inch voice coil, ferrite magnet, and a unique T-yoke to improve the speaker's power handling. The basket is a high-quality cast aluminum design, and contains a 118mm wide flange providing for the mounting of the driver via four screw holes (the use of 3 - 4mm screws is ideal). The overall dimensions of the driver are very amenable for use in the car audio environment, boasting a depth of just 54mm, just 8mm more than the L3, for the ultimate in mounting flexibility. The terminations are standard spade terminals which have been gold plated to optimize contact, and give the end user flexibility in low-temperature soldered options and crimp terminations.

Mechanical and electrical parameters are amenable to a variety of different installations and speaker locations. The high Qts and low Mms of the driver will allow it to be used in a purely infinite baffle configuration. Hybrid Audio and select Team Hybrids competitors have also had great success using this driver in a dipole configuration, a.k.a. completely "free-air", in larger vented enclosures, arrays, and in folded horns and transmission lines. It is important to note that sealed enclosures are not required; in fact, the L4 works optimally in areas where a large volume of area is available, such as in kick panel, floor boards, or foot wells, underneath dashboards, etc. You do not have to build enclosures for these speakers to perform as intended; a simple baffle attached to the car's chassis with available airspace at the rear of the baffle is all that is required; this driver quickly solves the universal installation quandary of having to build enclosures for car stereo speakers. Finally, the size of the unit allows it to be mounted in typical locations within a vehicle, including kick panels, floor boards, and in some cases a-pillars and dash pods, as long as there is adequate airspace behind the driver to allow it to maintain proper damping and acoustic suspension.

### *Summary*

The Legatia™ L4 might be slightly larger than the famed L3, but its performance makes up for the larger footprint area. If you can fit the larger L4 midrange, it is well worth your time to utilize this driver. In our unabashed opinion, it is the best 4-inch car audio midrange on the market today. In concert with our 20mm soft-dome tweeter, this is the ultimate two-way front stage above 100 Hz. Add a snappy midbass, or an up-front subwoofer for the ultimate three-way front stage. Our years of developing and refining drivers to win world championships can now be yours for your own vehicle!