



Product Parameters and Specifications
Model: Legatia L631-3 Three-Way Component Set

Legatia™ L631-3

The Legatia™ L631-3 is the component system designed and manufactured by Hybrid Audio Technologies that has won world championship honors in every major car audio competition sanctioning organization around the world; it is our flagship model for Team Hybrids. The set begins with a pairing of the best small-format transducers Hybrid Audio manufactures (the L31-2 set), for the ultimate petite two-way component system above 200 Hz, paired with an extremely transient, detailed, and accurate Legatia™ L6 for the best three-way component system available in its class. The L631-3 set is basically the L31-2 set with the addition of a pair of L6 midbass, for the ultimate small-format three-way front stage, ideal for dashboard and a-pillar installation scenarios, with door or kick panel-mounted midbass. The 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. The L1V2 tweeter's small diameter ensures detail in the upper treble frequencies, and ensures easy installation with its nearly negligible mounting depth. The critical midrange bandwidth is effectively reproduced by the best 3-inch cone transducer on the planet, the Legatia™ L3. The L3 is the point-source driver in this set; the L3's frequency range covers more than five octaves in this component system for precise imaging and staging detail and placement, and vocal tonality unsurpassed with designs that filter the tweeter into the vocal bandwidth. The final component utilized in this incredible system is the Legatia™ L6 midbass driver. In this arrangement, the L6 is used strictly for midbass operation. The low moving mass, high Qts L6 ensures snappy attack and immediate decay of the frequencies below 200 Hz in infinite baffle operation, with extension into the bass frequencies.



Photo 1: L631-3 three-way component set. Tweeter is also available in brushed aluminum.



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Legatia™ L631-3 in more detail

The Legatia™ L631-3 is the ultimate three-way system that uses a combination of the Legatia™ L1V2 20mm soft dome tweeter, the Legatia™ L3, three-inch midrange, and the Legatia™ L6 large format 7.1-inch midbass. The three-way system offers improved power handling over the Legatia™ L61-2 set, and further offers a dedicated midrange driver for precise imaging, staging, and tonality. A very easy way to get a three-way system in your car using just a single 4-channel amplifier is detailed here: <http://hybrid-audio.com/White%20Paper%20-%203%20Way%20Quasi-Active%20Crossover%20System.pdf>. The Legatia™ L631-3 set is the set we use in many of our high-end competition and demonstration vehicles; it is our system of choice.

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

The Legatia™ L3 has an outstanding extended frequency response; the usable frequency range of this driver exceeds six octaves. It is the ultimate small-diameter point-source midrange driver and reproduces the majority of the audible spectrum in this system.

The Legatia™ L3 is a 74mm (2.9-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, and the phase linearity of the design ensures phase coherent imaging and staging cues in the car audiophile system. You will find no composite or metal cone materials used in our upper-end designs, 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. The paper cone is mated with just the right dust cap to ensure desired operation into the upper midrange and lower/mid treble frequencies; the dust cap is also an untreated black pressed paper. 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 2.9-inch midrange to play 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 93mm wide flange providing for the mounting of the driver via four screw holes (the use of 3mm cap head screws is ideal). The overall dimensions of the driver are very amenable for use in the car audio environment, boasting a depth of just 46mm, 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 L3 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 locations previously unheard of with other speakers. This driver can be mounted on a-pillars, in dashboards or kick panels, or anywhere your imagination takes you, as long as there is adequate airspace behind the driver to allow it to maintain proper damping and acoustic suspension.

Midbass

The Legatia™ L6 is a 181mm (7.1-inch) large format wide-bandwidth midbass driver to compliment this three-way system design. The Legatia™ L6 is a cone-type driver consisting of a pressed paper diaphragm with extremely low moving mass. The cone has been treated with a water resistant element for door mounting, and other areas prone to occasional contact with water. The cone design offers a wide dispersion pattern to make for flexible installation and speaker location. The L6 comes equipped with 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 L6's performance and clarity by deflecting delicate midrange 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 L6 has an extremely wide bandwidth into the upper midrange frequencies. This means that if the end user ever decides to go to a strict two-way front stage system, no additional components will be required.

Like other Legatia midrange designs, you will find no composite or metal cone materials used on the L6, as our approach to point-sourcing is to allow the midrange or midbass driver to effectively play into upper midrange and lower 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 midbass and upper subbass attack. The "point source" design ensures stable stereo imaging across the fundamental frequencies which define image placement and definition.



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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 the L6 midbass to adequately present a real sense of “bass up front” in this three-way front stage system.

The basket is a high-quality cast aluminum design, and contains a 181mm wide flange providing for the mounting of the driver via four screw holes (the use of 4mm cap head screws is ideal). The overall dimensions of the driver are very amenable for use in the car audio environment, boasting a depth of just 81.5mm for the ultimate in mounting flexibility. The terminations are 5-way binding posts which have been gold plated to optimize contact, and give the end user flexibility in tinned wire or binding post 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 L6 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 secured 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, door panels, and in some cases custom dashboard locations, as long as there is adequate airspace behind the driver to allow it to maintain proper damping and acoustic suspension.

The Legatia™ L6 is the ideal multi-purpose high-end speaker driver. At home in virtually any arrangement, the L6 is Hybrid Audio’s flagship midbass driver, boasting exceptional performance and a design philosophy that goes hand in hand with foolproof high-end audio.

Summary

The Legatia™ 631-3 is going to be by far the best sounding three-way component set you'll hear in this price point, and perhaps irrespective of price point. The small midrange allows it to be mounted infinite baffle virtually anywhere in a car environment. The midbass is authoritative, and the treble is smooth and warm. This set **really** is that good.