

PROJECT K2 S9800

3-WAY FLOORSTANDING
SPEAKER SYSTEM

THE MUSIC, revealed.



**FULL BANDWIDTH
AND DYNAMICS,
AND EVERY
EMOTION THE
MUSIC POSSESSES.**

**INTRODUCING
PROJECT K2 S9800
FROM JBL.**

Today's new media present a formidable challenge to audio engineers. DVD and SACD technologies, which far surpass CD audio in frequency response and dynamic range, place unprecedented performance demands on loudspeaker systems.

With the flagship Project K2 S9800, JBL's engineers have created a reference loudspeaker system for the 21st century. Effortlessly delivering the full bandwidth and dynamics of the new media - without suppression at any listening level - K2 S9800 speakers reveal subtleties you've never before experienced in recorded music.





THE TECHNOLOGIES OF K2 S9800.

SOLVING A LONG-STANDING PROBLEM, LEADING TO DEEPER, MORE ENERGETIC BASS: THE 1500AL ALNICO MAGNET WOOFER.

The magnetic circuit is a speaker's most fundamental component, the very engine of sound. Alnico magnets, prized for their lively, high-energy sound, were once widely used in the magnetic circuits of high-end speaker systems. But, because Alnico magnets tend to demagnetize at high power levels, they've all but disappeared since the 1970s, when amplifier power outputs increased dramatically.

Having successfully overcome the demagnetization problem, JBL's engineers are pleased to reintroduce the deep, energetic Alnico sound.

The 1500AL is built around an Alnico 5DG magnet. A 2-inch (50mm) aluminum shorting ring below the voice-coil gap, combined with fifteen 0.03-inch (0.8mm) copper rings and sixteen 0.06-inch (1.6mm) steel rings that form an inner gap ring assembly, effectively stabilizing the local and global magnetic fields – an engineering first.

- A Symmetrical Field Geometry™ (SFG) circuit, specifically designed for the 1500AL, creates vertical symmetry and generates a constant magnetic-flux density of 0.52 tesla across the entire 0.10-inch (2.54mm)-wide and 1.6-inch (40.64mm)-long gap.
- The diaphragm is a 15-inch (380mm)-in-diameter fiber-pulp cone. Naturally dried to increase fiber strength, the cone's surface features corrugated ribs for added stiffness.

- Aquaplas™ applied to the rear periphery of the cone, helps to eliminate distortion at high power levels. And a newly developed, lightweight, low-loss, EPDM foam-rubber edging ensures long-term durability. The curved shape is computer-modeled for maximum precision of movement.
- A symmetrical double-damper structure of Nomex® cancels asymmetrical, nonlinear, motion-reducing harmonics distortion.
- A 3.94-inch (100mm)-diameter, high-density voice coil is built of 0.06-inch x 0.01-inch (1.524mm x 0.15mm), flat, aluminum ribbon wire wound to a width of 0.8 inch (20.32mm). Used with a newly developed SFG magnetic circuit, it achieves linearity without distortion up to a maximum cone excursion of 1 inch (25.4mm) peak to peak.
- JBL's unique vented-gap cooling system employs three air tunnels running from the polepiece to the magnet cover to efficiently radiate the heat generated by the voice coil, while also controlling the back pressure of the unit.

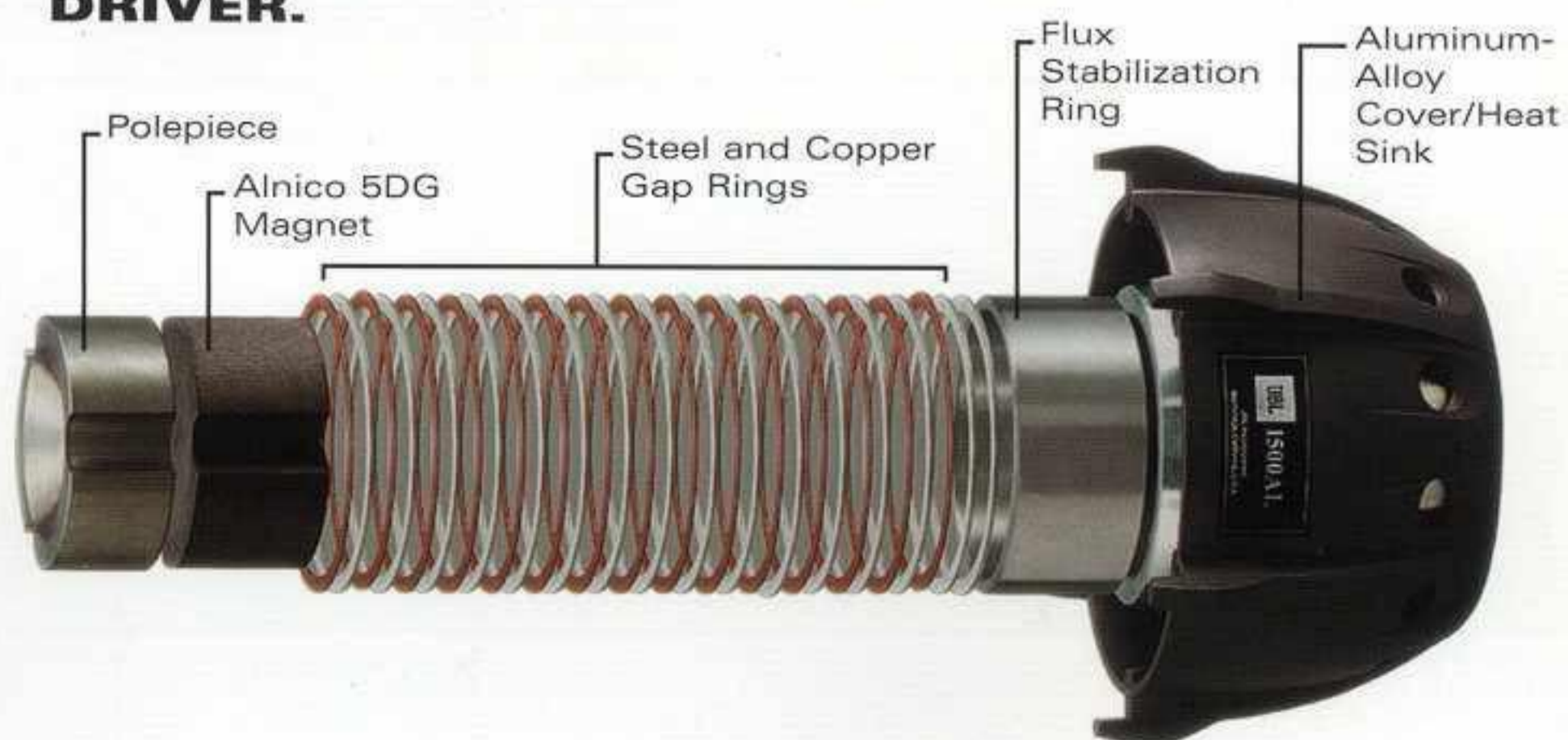
THE STRONGEST, LIGHTEST, FASTEST METAL, NOW IN THE SERVICE OF MUSIC: THE 435Be COMPRESSION DRIVER.

Beryllium, long used in the aerospace industry, is the strongest and lightest of all metallic elements. And with a 12km/sec. transmission speed, it's long been considered an ideal material for audio diaphragms. Unfortunately, beryllium is a substance that's difficult to handle in a manufacturing environment.

In their pursuit of a material equal to the dynamic range of today's new media, JBL's engineers revisited beryllium, and developed new processing and casting techniques.

The result is the 435Be, a 3-inch (76mm) compression driver of pure cast-beryllium, capable of unequalled high-frequency response.

- The 3-inch (76mm), Aquaplas-coated diaphragm – the first of this size for JBL – has pistonic motion beyond 15kHz.
- To reduce weight, the aluminum ribbon wire of the voice coil is attached to a one-piece, molded-edge coil support. Together, the voice coil and diaphragm comprise a moving mass of just 0.044 oz (1.25g).
- A highly efficient magnetic circuit, built around a neodymium magnet, concentrates magnetic flux in the gap, while maintaining a magnetic-flux density of 2 tesla.



- A rapid-flare-type phase plug, a mainstay of JBL Professional models, reduces secondary harmonic distortion.



- A die-cast-aluminum back cover with rib-type heat sinks provides a solid foundation for the superbly quick beryllium diaphragm and acts as a highly efficient heat radiator, permitting high-level output for extended periods of time. An extended back cavity is designed to handle frequencies below that of the crossover.

DELIVERING THE SUPERSONICS: THE 045Be COMPRESSION DRIVER.

Today's music sources are information-rich across the entire dynamic range, and particularly in the super-high frequencies. To accurately reproduce this music, today's loudspeakers must greatly extend upper-frequency response, while also improving performance across the mid and low frequencies.

With the 045Be compression driver, JBL has achieved high-frequency reproduction beyond 50kHz with a sensitivity of 95dB and sound pressure capability of 120dB.

Like the 435Be, the 045Be uses a pure-beryllium diaphragm. 1-inch (25.4mm) in diameter, 0.0016-inch (0.04mm) thick and weighing just

0.0035 oz (0.1g), it powerfully reproduces supersonic frequencies that have gone unheard until now.

- The 045Be is the smallest compression driver JBL has ever built, but it demonstrates the best high-frequency response.
- Aluminum ribbon wires are wound directly on the diaphragm to create an extremely lightweight voice-coil assembly – a necessity, because smooth response greater than 50kHz can be achieved only with piston motion.
- A high-magnetic-force neodymium magnet achieves a magnetic-flux density of 2 tesla.
- To prevent distortion and phase interference that can lower output power, finite-element analysis was utilized in designing the annular-slit phase plug. Because absolute precision to minute tolerances is required, the plug is fabricated by stereo lithography.
- The die-cast-aluminum back cover has rib-type heat sinks for maximum rigidity and heat dissipation. Horizontal and vertical directivity is precisely controlled across an exceptionally wide sound field with newly designed Bi-Radial® horns.

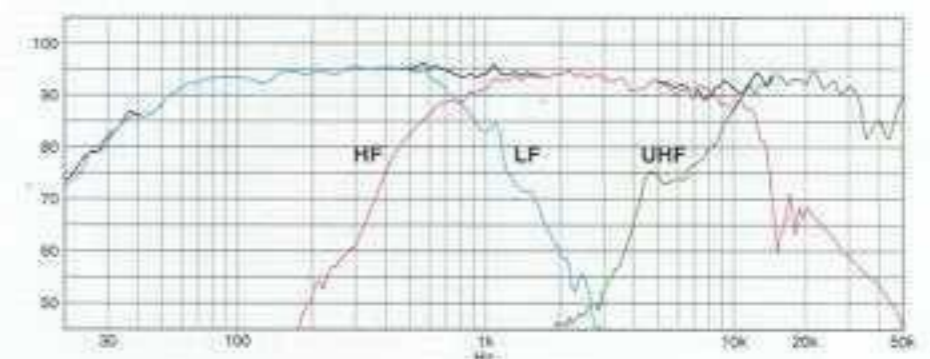


- The HF horn has directivity of 90 degrees horizontal and 50 degrees vertical, while the UHF horn has directivity of 60 degrees vertical and 30 degrees horizontal. Together, they deliver uniform sound pressure to the coverage area and minimize disordered frequency response due to acoustic diffraction.

- The horns are cast of a new, highly rigid material called SonoGlass™, which permits precise manufacturing control of the horn flare, to produce clear, detailed sound without horn resonance or coloration.

HOW THE COMPONENTS COME TOGETHER: THE DIVIDING NETWORK.

Greg Timbers, JBL's chief system engineer, has said that a well-designed two-way system comes the closest to being an ideal loudspeaker, and Project K2 S9800 represents an extension of the classic two-way-design concept, as explained below.



- The K2 S9800's high-quality, dividing-network circuit sets crossover frequencies at high levels (800Hz and 10kHz) and then adds in ultrahigh frequencies. The slope is set at -24dB/oct. for both the low to high and high to ultrahigh transitions, allowing for the roll-off of each unit. By precisely matching the roll-off of each transducer to ensure smooth and flat frequency response in the crossover range, and by achieving a swift transition between frequency ranges, the K2 S9800 delivers an exceptionally wide vertical-listening angle.
- JBL's unique Charge Coupled Linear Definition™ System, which applies DC bias to the capacitor, eliminates crossover distortion at zero electric potential.
- To avoid the influence of back pressure from the woofer, the crossover network is housed in a sub-enclosure placed low in the overall enclosure, and the circuit boards themselves are slide-mounted for easy access.

THE CONNECTIONS.

To precisely match the K2 S9800 speakers to a power amplifier, the units feature both a three-step HF-level switch for fine adjustments at $\pm 0.75\text{dB}$, and a three-step damping control switch.



- Two sets of large, gold-plated binding posts allow bi-wiring and bi-amplification. In standard connections, shorting wires with gold-plated spade plugs, located between the binding posts, prevent sonic deterioration. There's also a network bypass switch to allow active bi-amplification by separating the link between the low and high frequencies.

THE ENCLOSURES.

The resonance-free enclosure is crafted of highly rigid, heavily braced, 1-inch (25.4mm) MDF panels, and the woofer baffle is further reinforced with a 0.75-inch (19mm) MDF panel. An irregular hexagonal prism structure increases rigidity and keeps panel sizes to a minimum.

- The top cabinet is made of SonoGlass (the same material used in the horns) and the cabinet base comprises layers of MDF and birch primary board. Four bolts fix the base firmly to the bottom of the enclosure.
- The rear panel houses two bass-reflex ports. The shape of the die-cast-aluminum flared ports has been optimized to eliminate unwanted resonances.
- Four rounded feet of stainless steel minimize the potential for damage to floors. Spikes and discs are also provided.

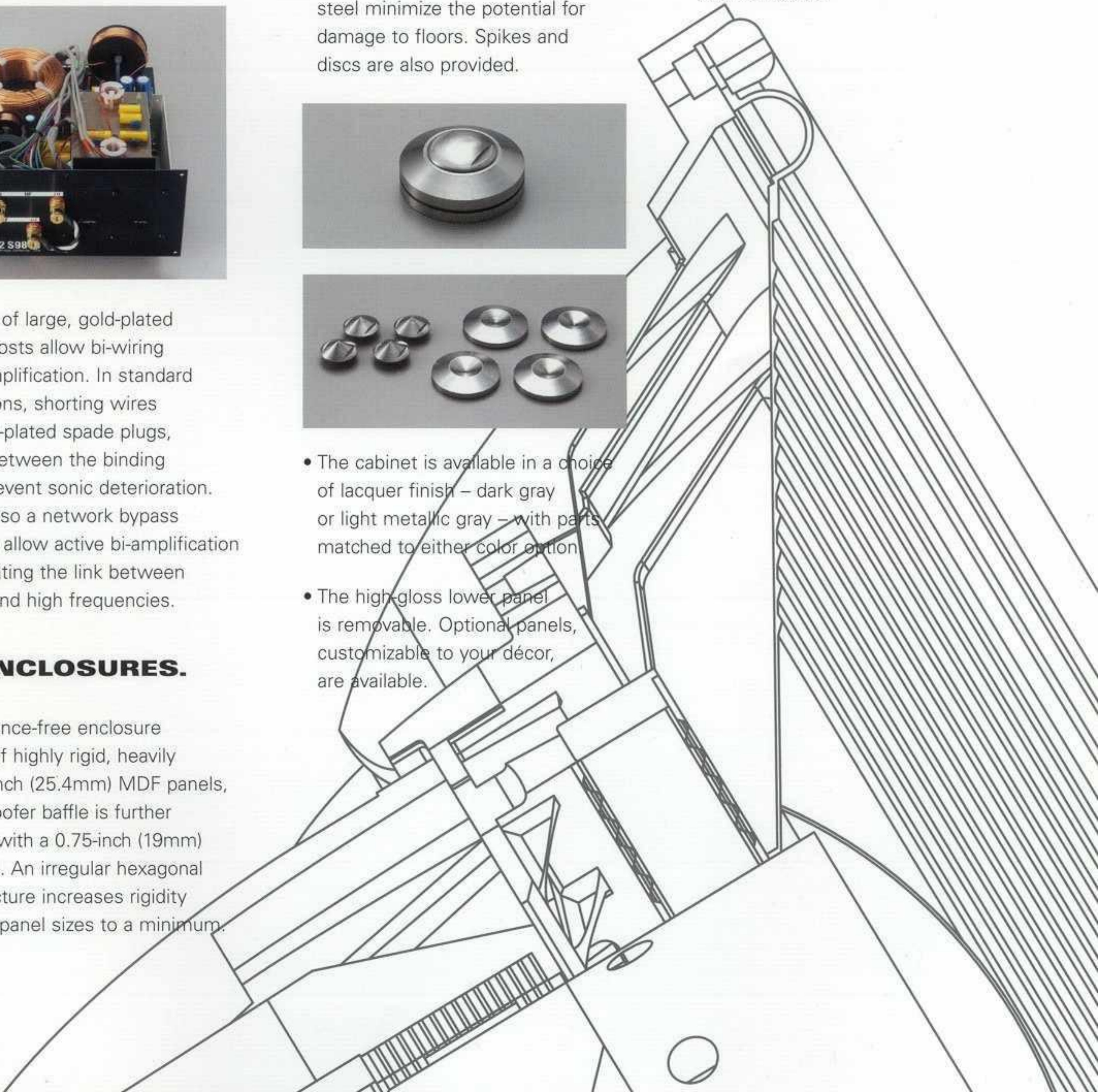


- The cabinet is available in a choice of lacquer finish – dark gray or light metallic gray – with parts matched to either color option.
- The high-gloss lower panel is removable. Optional panels, customizable to your décor, are available.

A REVELATION AWAITS.

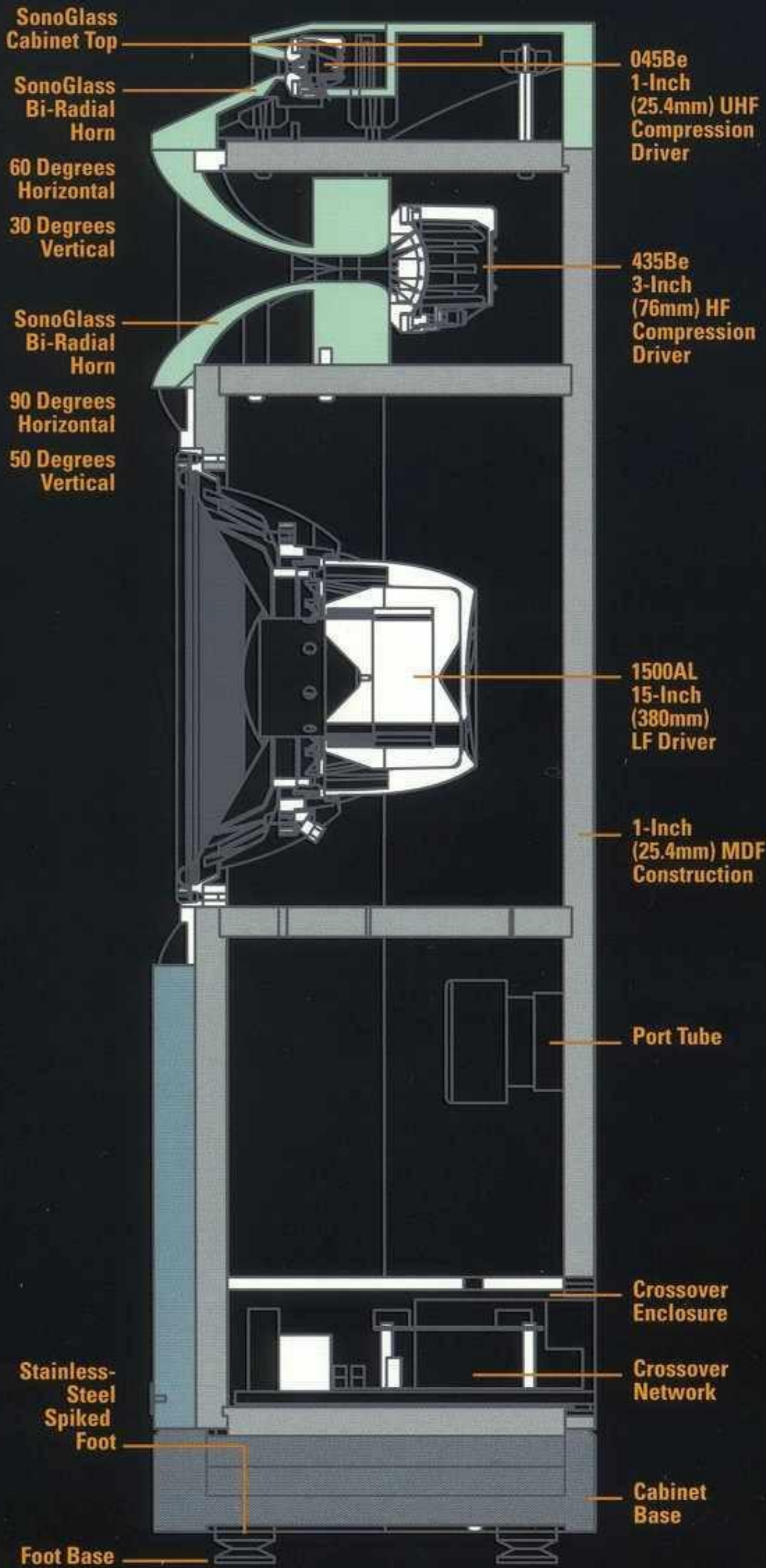
Project K2 S9800 represents an uncompromising engineering response to the sonic demands of 21st-century media.

Every detail of its design and construction have been directed toward a single goal: to reproduce the full bandwidth and dynamics of today's recorded music and deliver a new music experience to the listener.

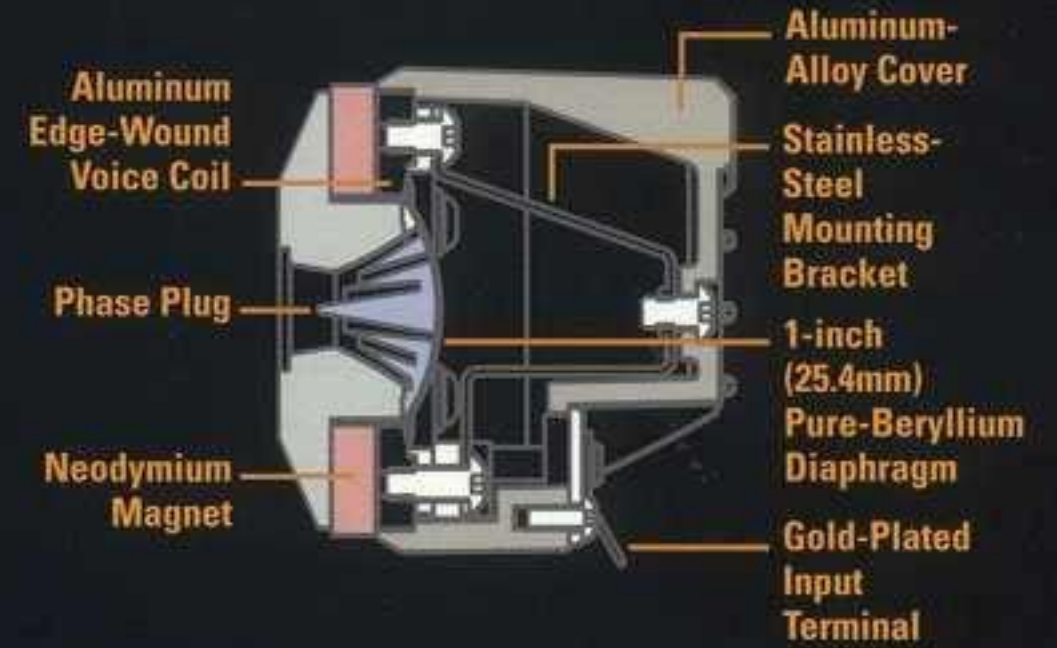


THE K2 S9800, exposed.

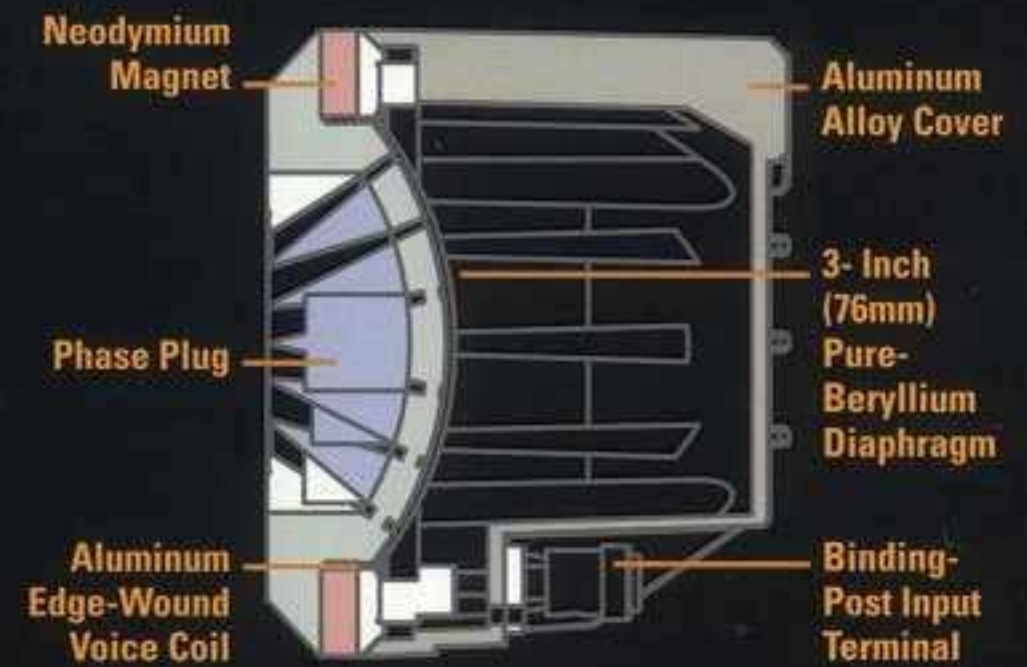
K2 S9800 CROSS-SECTIONAL VIEW



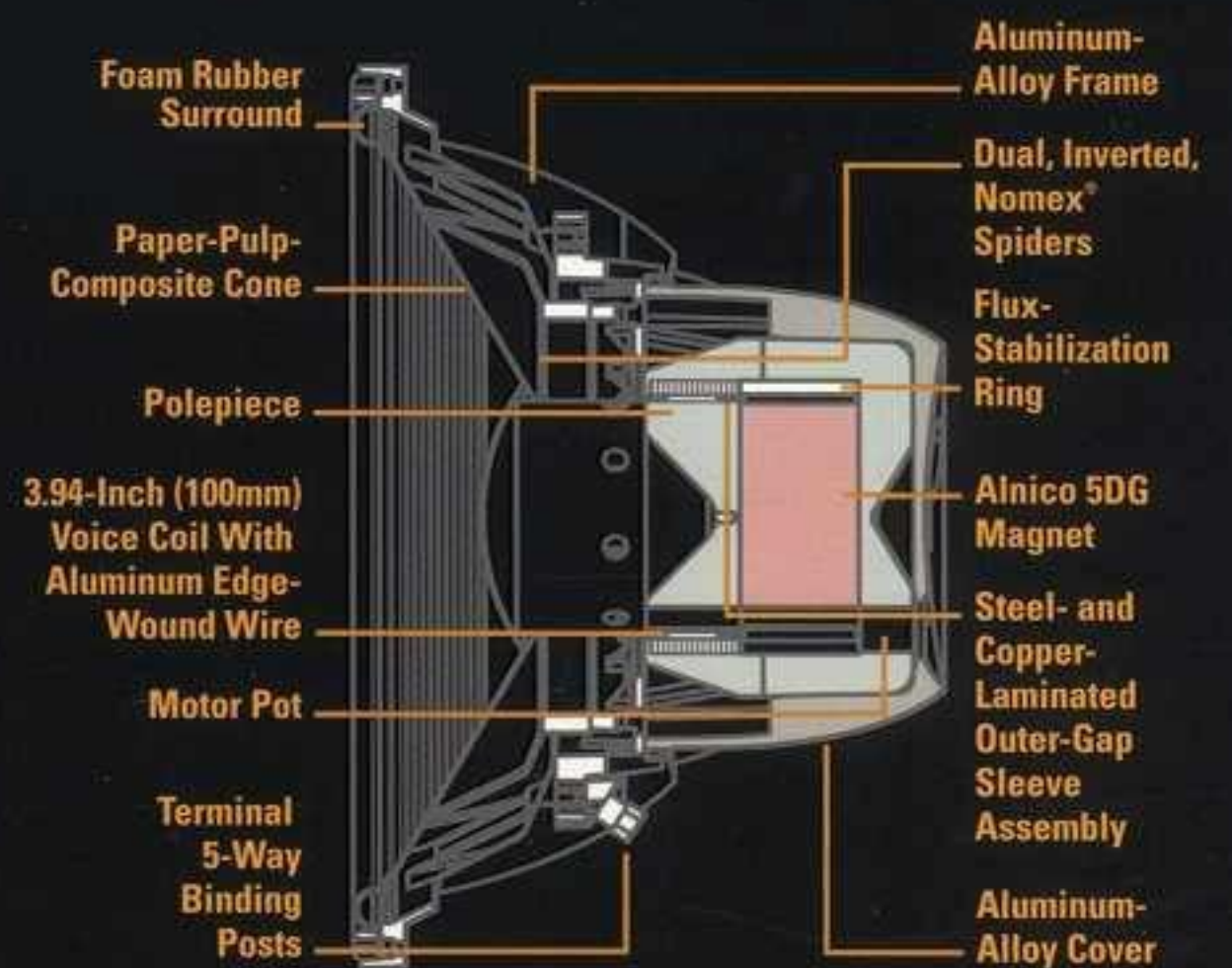
045Be CROSS-SECTIONAL VIEW



435Be CROSS-SECTIONAL VIEW



1500AL CROSS-SECTIONAL VIEW





THE SPECIFICATIONS

Units	15-inch (380mm) pulp-cone woofer (1500AL) 2.95-inch (75mm) pure-beryllium compression driver (435Be) and 1-inch (25.4mm)-throat Bi-Radial horn 1-inch (25.4mm) pure-beryllium compression driver (045Be) and 0.50-inch (12.8mm)-throat Bi-Radial horn
Power Handling	400W (RMS)
Frequency Response	45Hz - 50kHz (-6dB)
Low-Frequency Extension	35Hz (-10dB)
Nominal Impedance	8 ohms
Sensitivity	94dB (2.83V/1m)
Crossover Frequencies	800Hz, 10kHz
Dimensions (H x W x D)	51" x 20" x 14-3/4" (1295mm x 508mm x 375mm)
Weight	198 lb (90kg)




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