

# THE HISTORY OF BASS GUITAR SPEAKER BOXES

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The earliest speaker boxes for bass use were simple cabinets with open backs, just like guitar speaker systems, but they contained many speakers (usually four 10"s) so as to divide the heavy work between them in the interests of not overloading them. Sealing off the back of the cabinet has the effect of markedly extending its bass response, so the next generation of bass cabinets were of the so-called "infinite baffle" type. As the sturdiness of the available speakers improved, fewer were necessary, so the first sealed-back bass speaker systems contained two 12" speakers.

In the 1950's, only the fanciest hi-fi systems contained 15" woofers. As the price of the 15's came down, they became more common and started showing up in speaker boxes for guitar and bass around 1960 and quickly caught on for bass. The first bass boxes used single 15's but were quickly followed by two 15's per box- essentially a scaled up version of the original 2-12 system.

As bands played louder and in bigger venues, bass systems continued to get stouter. The next move up was to substitute the highest-power 15" speakers available as an upgrade; these were originally from JBL but with time other high-end speaker manufacturers (Altec and Electrovoice) followed suit. Through most of the 1960's the standard bass speaker box of choice for working professionals was the Fender Dual Showman cabinet loaded with two JBL D140F 15" speakers.

During this time, Ampeg built an interesting series of compact bass speaker/amplifier combinations called the Portaflex, with single 12", 15" and eventually 18" speakers mounted in small, easily portable boxes. To improve their bass response, these sealed-back cabinets were ported- a trick borrowed from the hi-fi world, in which a carefully proportioned hole shared the front of the enclosure with the speaker. At bass frequencies, the sound waves trapped inside the box were radiated out the port in phase with the sound radiated by the front of the speaker, thereby extending the bass response of the box and breaking the fundamental resonance of the previously airtight sealed-back enclosure. Early on, these ports were referred to as phase-inverters.

The Sunn company then upped the ante in the late 60's by constructing a line of ported, twin-15 cabinets for bass which, when loaded with JBL's, were the state-of-the-art for high-powered bass systems. The best-known of these was the 200S cabinet which contained another feature designed to improve bass sound reproduction still further: the horn-loaded port, in which the inside of the port opening was coupled to a large funnel which increased the efficiency of the port. Other manufacturers followed with ports which were horn-loaded on their entrance and exit sides, and by enormous (and complex) enclosures in which the speakers themselves were horn-loaded.

These developments were driven by two trends: the growing popularity of live concert performances in which the bass had to play at extremely high sound levels, and the relative cost of speaker cabinetry versus vacuum tube power amplifiers. In the late 60's and early 70's, complex cabinetry was a less expensive way to develop high sound power levels for bass, compared to the cost of building tube-powered amplifiers with more than roughly 100 watts of power. This tyranny of the cabinets was not to be broken until the mid-1970's with the appearance and acceptance of high-powered transistorized bass amplifiers which for all intents and purposes became the default. The evolutionary dead end of the tube amplifier for bass was the Ampeg SVT head, popularized by the Rolling Stones. The cost to re-tube a worn-out SVT today sometimes exceeds the scrap value of the amplifier chassis. (Used transistor amplifiers of comparable power output and substantially lower failure rates can be had today for the cost of retubing an old SVT.) Sunn and Peavey were responsible for starting this trend.

The evolutionary dead end of the monster cabinet came with the appearance of folded-horn bass cabinets from Peavey and Acoustic containing single 18" speakers; these cabinets were roughly the size of apartment refrigerators- and were about as portable.

Through the 1970's, the cost of amplification continued to fall and so cabinets became smaller and the amplifiers which drove them got bigger. Various combinations of speaker count, cabinet design and amplifier size proliferated, but the next technical breakthrough for even higher-powered bass occurred in the mid-1980's with the advent of bi-amplification for bass- another innovation borrowed from the hi-fi world.

Bi-amped bass systems use two power amplifiers and two different speaker systems to handle the high and low frequencies separately, so that bursts of bass power would not drive the amplifier into clipping the high frequency part of the signal. Most working bassists did not convert to bi-amped bass systems due to the complexity and weight penalties associated with having to haul around and set up two of everything.

The endless drive for more and more power for bass was somewhat moderated by the popularity of either miking the bass output into the house PA system or feeding a direct line output from the bass or the amplifier into the PA system mixing board in large venues- a trend driven by the steadily falling costs of power amplification in the PA systems, which made miking the bass guitar viable. This reduced the need for raw bass power on stage since the house PA system would be carrying most of the burden. Nonetheless, in the loudest rock acts of the 1990's, most of the bassists used bi-amped or even tri-amped speaker systems with multiple JBL or Electrovoice 18" folded-horn enclosures for the lowest frequencies, up to 5kW of transistorized power amplification, and large numbers of 10" speakers for the highs- AND either miking of the bass speaker system(s) or direct line feeds into the PA system on top of this.

The current trend is towards convenient, one-piece "combo" amps in which as much as 300 watts of amplifier chassis is built right into the speaker enclosure which also contains (typically) a single very-high-powered 15" speaker. Such a "combo" amp can come close to matching the performance of a 2-15 Sunn cabinet driven by a 150-watt amplifier, but I have found the sheer mass of such "big combos" is a limit to their practicality.