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# JBL Professional VTX A12 Dual 12" Mid-Size Line Array Loudspeaker

By: Mel Lambert

Product development is a long and painstaking path, from a new idea to a deliverable, commercially viable product. At Harman International's Professional Solutions division, the marketing department continuously monitors the installed and touring sound markets to determine new product opportunities. Having spotted a new opportunity for a specific device—either a logical development of an existing product series, or a new market opening—the ideas and sales rationale are passed to the R&D team,

which innovates the targeted hardware or enhancement.

Such was the genesis of the new JBL Professional VTX A12 dual 12" line array loudspeaker, which fits elegantly into the existing VTX Series, comprising the V25-II high-directivity dual 15" cabinet, the V20 dual 10" cabinet, plus the S25, G28, and S28 subwoofers. In development for some 20 months, the new mid-size, trapezoid three-way A12 enclosure is being targeted at touring and permanent applications for which dual 12" bass

drivers, supported by 5.5" mid-frequency transducers, offer optimum performance in a compact and light-weight package; Harman estimates that a large proportion "up to 85%" of the touring market specifies a dual-12 configuration.

As LSA discovered during a hands-on demonstration with the new JBL VTX A12 system at Harman Professional Solutions' HQ in Northridge, California, JBL Professional has developed what it describes as "a complete tour-sound solution for mid- to large-size touring applications and high-end fixed installations." Designed from the ground up "to address the unique challenges of rental companies, FOH engineers, and tour-sound production crews," the A12 incorporates "next-generation transducer technology, waveguide design, and suspension components." Maximum SPL is a quoted 146dB peak at 1m with pink-noise input.

Featuring all-new low-frequency, mid-frequency, and high-frequency acoustic elements in an axially symmetric transducer layout, the three-way cabinet design measures just 44" x 19" x 13" (W x D x H) and is said to deliver the highest output per weight, with improved bottom-end extension and 90° directivity down to 250Hz. The high-frequency section features three 2" annular diaphragm compression drivers mounted on a combined high-frequency phasing-plug and waveguide, which is said to help provide improved directivity control and enhanced sensitivity above 6kHz while reducing distortion.

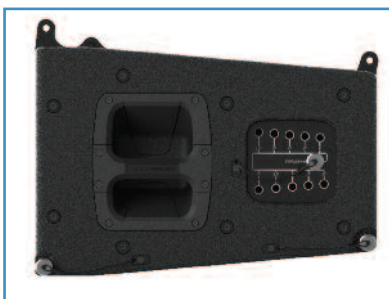
A patented JBL rigging mechanism



The all-new A12 rigging features a tension-only, auto-locking system, with 0.25° to 10° options and a single hinge point for improved accuracy.



Rear-panel connectors handle in/out routing between arrayed cabinets.



The lightweight auto-locking mechanism features a simple three-part assembly with a single hinge point.



Capable of supporting between 18 and 24 enclosures, the redesigned VTX A12 array frame weights just 60lb.

and redesigned suspension system is said to streamline array setup and deployment, while refinements to the system's physical design are described as maximizing reliability and versatility. For example, a redesigned, sixth-generation Radiation Boundary Integrator (RBI) is said to increase mid-frequency and high-frequency performance, with a low-frequency section that includes new differential-drive woofers that feature a voice-coil configuration to increase excursion and linearity. The full-face, enclosed cabinet grill is said to offer superior weatherization, with a reduced number of exposed components. The enclosure design is also said to achieve a higher IP rating of 55, and can be finished in a variety of colors; the grill is also under tension, a configuration that is said to reduce rattling. A newly designed transport cart and frame are intended to dramatically simplify transport and storage.

Based on JBL Professional's patented Radiation Boundary Integrator (RBI), the A12 combines a quartet of 5.5" mid-frequency drivers into the high-frequency waveguide, thereby ensuring a smooth horn surface for the high-frequency section and enhanced horizontal directivity. (Apparently, there was insufficient space in the enclosure for 8" mid-frequency drivers or a traditionally sized RBI.) A new lightweight 12" driver for the low-frequency section features what JBL describes as a fourth-generation Differential Drive design, with a dual NEO magnet, dual-coil arrangement, and other proprietary JBL technologies that are claimed to offer increased linear excursion, power handling, and sensitivity.

The A12 is fully integrated with JBL Professional's HiQnet Performance Manager, a software application for system configuration, optimization, and performance control. A12 systems include support for V6 level presets for enhanced ease of use with four-channel amplification per cabinet; JBL specifies Crown I-Tech HD amplifiers, configured as three A12 enclosures per four-channel amplifier, utilizing two

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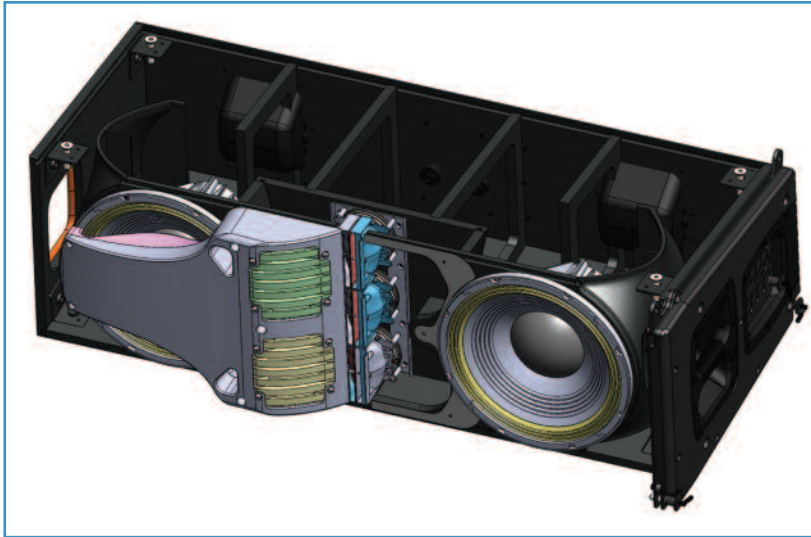
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Design objectives of the A12's low-frequency section: increased X-Max, plus reduced port distortion and noise.

channels for the pair of low frequency drivers, and single channels for the mid- and high-frequency sections.

Standout features of the new system are its rigging and transport elements. For faster deployment, A12

cabinets elements are stacked four per vertical-transport cart in a 10° collapsed position. A patented internal locking mechanism is said to streamline array setups with high-precision increments using captive selector pins.

Angles are preselected while on the ground and, once suspended, the mechanism automatically locks the cabinet angles at the prescribed positions; the cart also doubles as a ground-stack for faster deployment using an optional accessory. Weighing just 60lb and capable of supporting between 18 – 24 enclosures, the redesigned VTX A12 array frame allows the system to be deployed in a variety of configurations. The VT (vertical transport) cart was designed to meet both US and European truck pack dimensions, and hence offer more cost-effective transport options.

### Enhanced component elements and LF/MF/HF section design

Focusing on the A12 cabinet's unique new high-frequency section, which is designed to offer increased sensitivity above 6kHz, the three tweeters each feature a single V-shaped annular diaphragm with a redesigned "flower-

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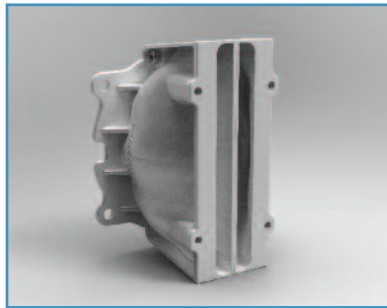


shaped" exit that is said to offer enhanced diaphragm sampling, together with high-strength neodymium magnets. The simplified five-part assembly housing each high-frequency tweeter is less than 4" long, and combines the phasing-plug and line-array waveguide within a single light-weight compact part. Non-metallic diaphragms are said to improve time-domain response, with reduced decay time in the break-up range. The reduced size enables the use of three compression drivers, and ensures a larger volume for the dual 12" low-frequency section.

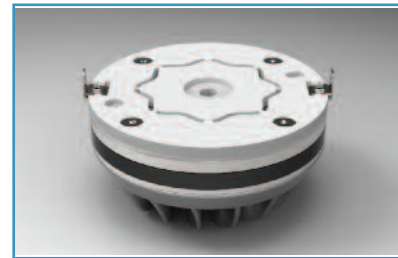
The mid-frequency section's RBI is intended to maintain all benefits of existing designs, but with reduced horn-edge diffraction effects, and an increased radiating surface area for added sensitivity; this, in combination with the low-frequency driver, is said to offer 90° coverage down to 250Hz. The RBI design incorporates a pair of JBL Professional's proprietary Differential-

Drive 5.5" mid-frequency drivers per side with no open gaps onto the high-

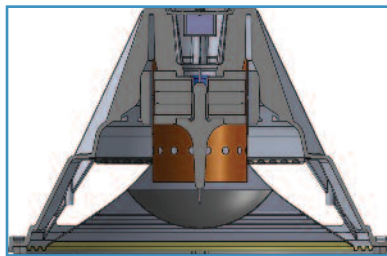
frequency horn walls, but with increased radiating area and—unique-



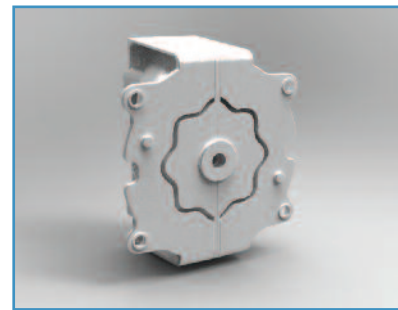
High-frequency section combines phasing plug and waveguide in a single part.



Each tweeter features a high-strength neodymium magnet.



New RBI design features four Differential Drive mid-frequency drivers.



Flower-shaped exit provides improved diaphragm sampling.

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ly—eight exits per driver. The new RBI and high-frequency horn extends in front of the low-frequency woofers to reduce diffraction effects and improve directivity. The design is said to offer reduced harmonic distortion, compared to previous designs. The overall result is enhanced horizontal directivity control: a quoted 90° constant directivity down to 250Hz, with control of beam width and polar shape for multi-way symmetric arrays utilizing a combination of physical component arrangement and DSP.

Design objectives for the A12's low-frequency section were said to be an increased X-Max value, or the driver diaphragm's peak linear displacement; reduction of port distortion and noise; increased sensitivity below 100Hz; and maintenance of linear frequency response at maximum SPL. The all-new Model 2264H 12" woofer weighs just 7lb and features a Differential-Drive design with a dual-neodymium magnet configuration and dual 3"

voice coil; the configuration is said to offer high power handling of 800W (IEC/100-hour) with low power compression. A new low-frequency flared-port design is said to offer increased air flow with minimal diameter, resulting in low velocity areas at the exit of the port and high velocity areas at the center for virtually silent, chuff-free operation.

The all-new A12 rigging features a tension-only, auto-locking system, with 0.25° — 10° options, and utilizes a two-step process: #1: Select the array angle; #2: Elevate and suspend the cluster. The lightweight auto-locking mechanism features a simple three-part assembly with a single hinge point for improved rigging accuracy. Capable of supporting between 18 and 24 cabinets, the array frame utilizes a main frame and extension bar design, to offer 0.5° resolution for single-point applications. Weighing just 60lb, the array frame is also reversible for up-tilt configurations.

A vertical transport cart with heavy-duty casters can be used to transport up to four A12 enclosures, and includes a hard top for easy stacking and storage. The compact, truck-friendly device weighs just 65lb. Ground-stacking also is supported with optional outrigger system support for between four and six cabinets, with four screw-jacks for height adjustment and an in-progress zero-gravity angle-set system. The lightweight design can be raked between -10° and +15°. A heavy-duty soft cover will enclose four A12 cabinets mounted on a vertical transport cart, and includes input-panel flaps for system testing, industrial-grade zippers, plus a clear, see-through pocket for shipping labels. Handle cutouts are provided for easy transportation; the cover folds and stores within the VT cart. A separate, lightweight suspension bar support 18 cabinets, and can be used as a pull-back or array frame, while a universal Delta

*(continued on page 92)*

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## Comments from End Users of Prototype VTX A12 Line Array Systems

At LSA's invitation, Harman Professional Solutions provided the names and contact information for several individuals who have attended advance listening sessions with prototype and pre-production A12 enclosures, including Brad Divens, Kevin Madigan, and Michael MacDonald.

Brad Divens is probably best known as the exclusive front-of-house mixer for Enrique Iglesias—a role he has fulfilled for the past three years—but he has also worked with Garbage, Bob Seger, Jane's Addiction, Mötley Crüe, and many others; he also serves as CEO of fixintogetmixin Inc. "Enrique has used an L-Acoustics K1 rig, but I have also worked with Meyer, MLA, Adams, and d&b rigs, in addition to JBL VTX 25 line arrays," Divens advises.

His first impression of the new A12 was the clarity, depth, and its solid stereo image. "I could hear details in the stereo field that were stellar!" he says. "The A12 delivers a full frequency range from 45Hz to 20kHz, with a smooth response; these new boxes sound very musical—that's what we listen for in a PA system."

During extensive listening tests, the front-of-house mixer replayed his road-refined mixes from an Avid Profile console using virtual sound check. "My desk was fully dialed in," he states, "which let me hear the PA with no overall EQ added. It was... 'Wow!' My mixes translated perfectly through the A12 PA

rig exactly as it should, with no additional equalization. I was able to hear details and clarity in the mix that I don't always hear with other systems. That is always my acid test, because I then know that the box sounds good. [In essence,] a PA system should sound like a big pair of studio monitors. For me, it's a major development."

For several years, Kevin Madigan has handled front-of-house mixing duties for Crosby, Stills & Nash—also encompassing their solo tours—as well as Lana Del Rey, Smashing Pumpkins, and Ray LaMontagne. "Normally, we rent JBL VTX arrays from Sound Image that are deployed daily between 12 to 18 enclosures a side," he says. "The sound has got to be pristine for CSN, with their complex harmonies and band accompaniment. I use a DiGiCo SD7 console, bringing virtual sound checks to these system evaluations.

"I was very impressed with the way the new A12 sounds, which is the bottom line for me. They produce a very consistent sound across the field of throw and axis of coverage; it doesn't change through the audience area and through its vertical dimension.

"I'm very familiar with how other manufacturers' 15" enclosures move a lot of low-frequency air," he adds. "But I didn't miss that

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with these dual 12" A12 enclosures, which offer a lot of power. The overall frequency response is a significant improvement over the previous VTX product; JBL's designers have done a really good job. The mid and high frequencies sound really good, which is especially important for both male and female vocals; it is quite impressive to hear that 'realness' of reproduction.

"Another thing that was striking was that the directivity of the entire array was linear-sounding down to 200Hz," he continues. "I could walk around the rig [in the audience areas] and hear little difference, except when I moved to the rear of the hang, at which point the sound virtually disappeared—which is very important for bands to prevent stage spill. The A12 will be versatile for use in medium- to large-sized theatres; for 'sheds,' we will just hang more cabinets."

In terms of suspension hardware, "the A12 looks to be very versatile; these enclosures are rigging-friendly and packing-friendly; the transport carts look well-thought-out for the truck pack and for array deployment," Madigan says. "Flying the flown 12-enclosure system, I heard, was an easy task—that'll make quite a difference in terms of labor required and time from load-in to sound check. Production managers will love that, and so will I!"

Michael MacDonald is president of ATK Audiotek, which handles rentals and installation for a wide range of venues, including a JBL VTX-based audience system for the annual Grammy

Awards. (In 2016, ATK specified 12 VTX V25-II-CS cabinets per side, 15 VTX V20 cabinets per hang as left/right outfills, plus nine VTX S28 subwoofers per side in cardioid configuration.)

MacDonald also served as president of JBL Professional and VP of sales and marketing at Harman Professional, having operated a successful consulting business for many years; he began his career as an audio engineer on many major tours and projects, including Olympics opening and closing ceremonies, Grammy Awards, and presidential debates.

"The A12 is the most impressive JBL box I have heard to date," he confides. "For an enclosure of its size, the A12 provides a substantial amount of low frequencies. It should almost be illegal; the enclosure breaks the laws of physics! In the mid and high frequencies, it 'breathes' very well, which makes it a good choice for touring systems and fixed installations. The A12 looks to be extremely versatile and surprisingly powerful; its compact size and weight means that it can handle a wide variety of sound applications in our marketplace."

"The system is also very acceptable for rentals; right now, we are determining pricing for a new purchase. We expect to own a substantial inventory within the next several months. I'm very optimistic about the new VTX A12. I think it is going to raise the bar."



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Plate supports up to 24 A12 enclosures, with at least  $\pm 10^\circ$  adjustments, dependent upon rigging; the design includes a trio of 5/8" CM shackles.

**In a nutshell: JBL performance and sonic accuracy in a mid-size configuration**

All in all, the new JBL Professional VTX A12 line-array enclosure has taken the familiar VTX multi-driver design and rethought the concept for medium- and large-format touring systems and permanent installations. The sound

output is crisp and forward in the upper frequency range, punchy in the mid frequencies, and enveloping in the low end; in fact, several listening sessions without subwoofers suggest that, dependent upon the intended application, a six- or eight-cabinet array might offer sufficient bottom-end energy without low-frequency augmentation.

The compact design will offer an enhanced range of applications for which time and money can be saved during truck load in/out and rigging, to

enable touring shows to be turned faster and more efficiently. For permanent systems, the lighter weight and ease of deployment will offer an obvious advantage on situations where time is money.

I predict that the new VTX A12 enclosure will go up against three leading brands that currently offer dual 12" enclosures—L-Acoustics, d&b audiotechnik, and Meyer Sound—and may possibly prompt other established suppliers, including EAW, Electro-Voice, and others, to follow suit in the high-end touring and live-performance markets. (Think of Vue Audiotechnik, Adamson, QSC, and RCF.)

I would suggest that the competition will benefit from a close and critical look at the new VTX A12 concept; it combines outstanding acoustic science with an eye to current industry friendliness in its practical manifestation. The JBL Professional VTX A12 is, without doubt, a remarkable development from a company that is already very well known for its top-of-the-line technical innovations.

My sincere thanks to Phillip Scobee, Tour Audio solutions manager at Harman Professional Solutions, George Georgallis, product manager, Tour Audio, and David Glaubke, director of public relations, for a guided tour of an arrayed, multi-element VTX A12 array. 📶

*Mel Lambert has been intimately involved with production industries on both sides of the Atlantic for more years than he cares to remember. He is principal of Content Creators, a Los Angeles-based copywriting and editorial service, and can be reached at [mel.lambert@content-creators.com](mailto:mel.lambert@content-creators.com); 818.558-3924. He is also a 30-year member of the UK's National Union of Journalists.*

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