

**For the most demanding performances
in the most challenging places,
no linear array loudspeaker system
can adapt like the new
Electro-Voice® X-Line™ system**

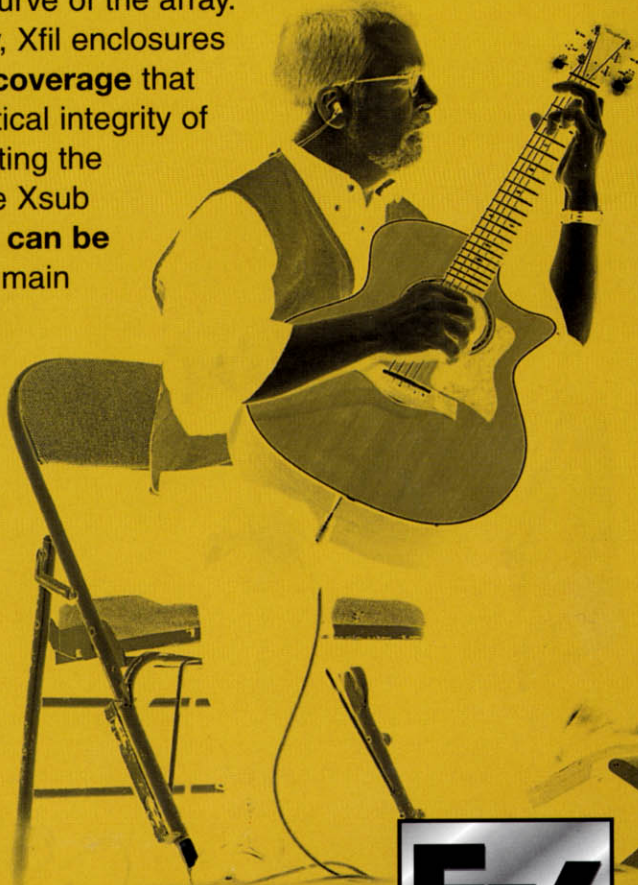


8 If every performance space conformed to some acoustic ideal, any linear loudspeaker array would suffice. But every arena, concert hall, and stadium *is a unique space*, and the one-box, one-dimensional design of most linear arrays just can't adapt. **The Electro-Voice® X-Line™ linear array system is different.** X-Line combines the power and vocal clarity of our X-Array™ loudspeakers with a **versatile, fully configurable linear array design**, plus the efficiency of one-person rigging. X-Line lets you stack Xvls enclosures at the top of an array for a **long throw** with a 90° horizontal included angle, followed by Xvlt enclosures for the **shorter throw** and 120° horizontal coverage

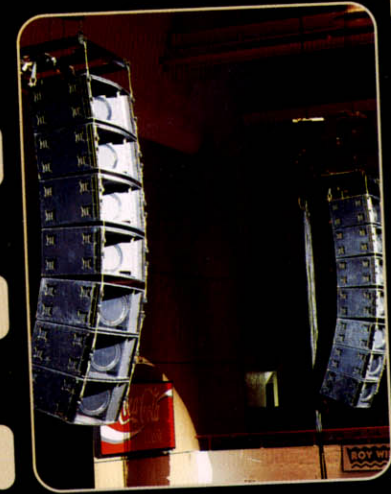
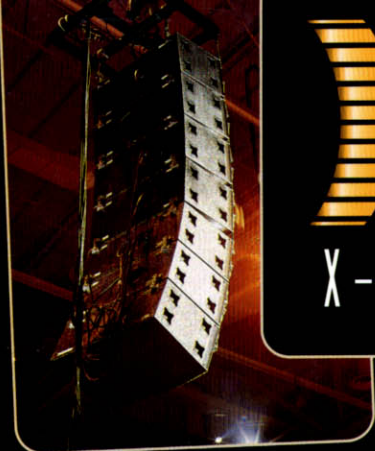
needed at the J-curve of the array. Beneath the array, Xfil enclosures provide **downfill coverage** that maintains the vertical integrity of the array. Completing the X-Line system are Xsub **subwoofers that can be flown** next to the main array or ground stacked.

So if you're a touring professional, FOH engineer, or sound contractor, the X-Line linear array system gives you the ability to **shape the sound - enhancing your performance in the most challenging places.**

6 Ask your Electro-Voice® rep for more information, or visit www.electrovoice.com/x-line.



**Step Up To
Electro-Voice®**



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Electro-Voice® X-Line: Versatile performance for the real world...

Imagine an infinitely long, vertical string.

It's vibrating, producing a pure, unbroken sound wavefront. That's what every loudspeaker linear array tries to achieve. But most designs forget that linear arrays must perform in the real world of different venues, problem acoustics, rigging, and transportation. The Electro-Voice® X-Line™ system stands out as a no-compromise combination of clear, powerful sound and real-world functionality. Here's what makes the X-Line system the most versatile linear array in any performance space:

Primary Enclosures

The **Xvls** and **Xvlt** full-range enclosures contain identical transducer components, but provide different coverage specs. The **Xvls** has a rectangular cabinet designed for the upper, long-throw part of the linear array, with a horizontal included angle of 90°. The **Xvlt** has a trapezoidal cabinet with a top-to-bottom 5° angle that allows **Xvlt** enclosures to fit together and form the classic J-curve at the bottom of the linear array hang. The **Xvlt** enclosure has a horizontal included angle of 120°, ideal for the shorter throw, wider coverage needed in the lower portion of the array.

Combining **Xvls** and **Xvlt** enclosures in a single hang gives you the variable horizontal angle that provides minimized reflections in an enclosed space, and maximum throw for outdoor venues. The X-Line system offers a variety of other array configurations. For example, you can build shorter (four to eight box) vertical arrays entirely of **Xvlt** enclosures for applications where a short throw but very wide coverage is required, such as in large performing arts halls, or large houses of worship.

Note that array configurations are based on the fundamental physical relationship between the total height of the linear array, and the radiated wavelengths. A single X-Line full-range enclosure can't be used alone because of its extremely tight vertical radiation pattern, particularly at high frequencies.

Downfill and Sub-Bass Enclosures

The **Xfil** and **Xsub** enclosures round out the X-Line system. The **Xfil** is designed specifically to provide high-level, coherent output underneath the main array hang. (On a polar response diagram, an **Xfil**

enclosure fills-in the bottom portion of the "Christmas tree" pattern.) The **Xfil** uses two 8-inch ND8A drivers and two ND5A high-frequency drivers in a vertically asymmetrical design that provides complete downfill coverage while maintaining the vertical wavefront integrity of the full array.

The **Xsub** enclosure is a true sub-bass system designed for high-level, extended low-frequency output. **Xsub** enclosures can be flown as a bass array next to the main **Xvls/Xvlt** hangs, or ground stacked. (All other X-Line enclosures must be flown.) Both configurations have their advantages. A ground stack of **Xsub** enclosures offer an acoustic advantage in radiated power over a flown **Xsub** bass array. However, the low frequency output level will (of course) drop as you move farther away from the stack. A flown bass array can provide more even low-frequency coverage from the front to the back of the venue. Even though the flown bass array typically provides less sound pressure level at the front of the venue, the SPL is substantially more even and consistent with the full-range hang.

Design and Components

Both the **Xvls** and **Xvlt** enclosures use newly developed components and time-synchronized wave guides. All high-frequency sections in the X-Line system use the new Electro-Voice® ND5A compression driver, which delivers excellent time domain response and a clean, less-colored upper vocal response.

A common problem with many linear arrays is that their HF components produce spherical waves that, if you look at a single slice, has non-constant amplitude and phase. As the spherical waves from all the HF drivers in the vertical array combine, they produce substantial variation in tonal character when walking from front to back in a venue.

In the **Xvls** and **Xvlt** enclosures, three ND5A drivers are each coupled to an Electro-Voice® Hydra™, our unique vertical plane wave generator. The Hydras equalize the arrival times of the HF waves and produce a planar wave with the same amplitude and phase over an entire "slice." These planar waves produce excellent far-field summing with a much more uniform and interference-limited sound.

Another problem with many linear arrays is that they symmetrically place the HF section on the center line between two

mid-bass drivers. While this produces identical responses on either side of the system in the horizontal plane, it also generates off-axis null spots.

The design of the X-Line **Xvls** and **Xvlt** enclosures eliminates this problem by placing the entire HF section (drivers, Hydras, and wave guides) on the "on-stage side" of the enclosure. This allows the critical mid-bass response to be unaltered by the "horizontal array" separated mid-bass drivers in the stereo field.

Like all Electro-Voice® concert-grade loudspeaker systems, all X-Line enclosures are built with our RMD® Ring Mode Decoupling technology which suppresses the acoustical and mechanical resonances that color the sound of a loudspeaker. As a result, X-Line arrays produce superb sound quality and clarity that is consistent at all sound levels.

Rigging and Transportation

A major advantage of loudspeaker linear arrays versus clusters is that you should be able to get excellent sound by flying fewer boxes. But too often the advantage of fewer boxes is erased by an array design that's too complicated and time-consuming to rig and fly.

That's why the X-Line engineering team devoted considerable effort to making X-Line enclosures easy to load-in, rig, fly, load-out, and transport. For example, up to four **Xvls** cabinets can be raised and lowered as a single "cell," and moved together on one dolly, while still allowing individual cabinet aiming by a single person. The uniform X-Line enclosure dimensions of 49" wide x 29.15" deep x 19.5" high (124.5cm x 74cm x 49.5cm) has been optimized for a variety of truck packs.

The Complete Story

This handout barely begins to explain the full capabilities and technical background of the X-Line linear array system. Ask your Electro-Voice® sales representative for the complete X-Line technical overview, or visit our website at www.electrovoice.com/x-line.



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