



Venue Performance Series VP Array Guide

A Guide to Assist in the Application of JBL Venue Performance Series Loudspeaker Systems

Featuring Pre-Designed Arrayed Systems



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Introduction

This first edition of the Venue Performance Series Array Guide illustrates how VP Series loudspeakers can provide the building blocks to construct arrays that fit a variety of room sizes or applications.

The arrays in this guide are categorized by configuration. These configurations help emphasize the scalability of the VP Series loudspeakers. General performance information including frequency range, nominal coverage, SPL capability, size, and weight are provided for each array.

Many of the arrays take advantage of available hardware developed to rig the more popular configurations. This includes the PAF Planar Array Frames. Additional information on these and other VP Series accessories can be found on the JBL Professional web site www.jblpro.com/installedsound/vpseries.

Although each venue and project has its own demanding set of circumstances, we hope this Array Guide provides the basis for understanding the wide variety of effective solutions that are possible with the VP Series of loudspeakers.

The Venue Performance Series includes 12" 2-way (60°x40° & 90°x50°), 15" 2-way (60°x40° & 90°x50°), 15" 3-way (60°x40°), and a single 18" subwoofer in the lineup.

For complete technical specifications on the VP Series please visit our web site at: http://www.jblpro.com/installedsound/vpseries



VP7212/64 VP7212/95



VP7215/64 VP7215/95



VP7315/64



VPSB7118

Each of these models is driven by an integral JBL DrivePack[®] Amplifier/Digital Signal Processor, developed jointly by Harman Pro companies JBL Professional and Crown International. The systems accept line-level analog audio or optionally, CobraNet[™] digital audio, and may be connected to a network for control and monitoring via HiQNet System Architect[™] software.

Before You Begin

The VP Series loudspeakers covered by this manual are not intended for fixed installation in outdoor or high moisture environments. Moisture can damage the speaker cone and surround and cause corrosion of electrical contacts and metal parts. Avoid exposing the speakers to direct moisture. Keep loudspeakers out of extended or intense direct sunlight. The driver suspension will prematurely dry out and finished surfaces may be degraded by long-term exposure to intense ultra-violet (UV) light.

The VP Series loudspeakers can generate considerable energy. When placed on a slippery surface such as polished wood or linoleum, the speaker may move due to its acoustical energy output. Precautions should be taken to assure that the speaker does not fall off a stage or table on which it is placed.

Stand Mounting Safety Precautions

Some VP Series models can be used with an optional stand mount accessory allow mounting on tripod stands or on a pole over subwoofers. When using stands or poles, be sure to observe the following precautions:

- Check the stand or pole specification to be certain the device is designed to support the weight of the speaker. Observe all safety precautions specified by the manufacturer.
- Always verify that the stand (or subwoofer / pole) is placed on a flat, level, and stable surface and be sure to fully extend the legs of tripod type stands. Position the stand so that the legs do not present a trip hazard.
- Route cables so that performers, production crew, and audience will not trip over them and pull the speaker over.
- Inspect the stand (or pole and associated hardware) before each use and do not use equipment with worn, damaged, or missing parts.
- Do not attempt to place more than one VP Series loudspeaker on a stand or pole.
- Always be cautious in windy, outdoor conditions. It may be necessary to place additional weight (i.e. sandbags) on the base of the stand to improve stability. Avoid attaching banners or similar items to any part of a speaker system. Such attachments could act as a sail and topple the system.
- Unless you are confident that you can handle the weight of the speaker, ask another person to help you get it onto the tripod stand or pole.

Hearing Damage, Prolonged Exposure to Excessive SPL

VP Series loudspeakers are easily capable of generating sound pressure levels (SPL) sufficient to cause permanent hearing damage to performers, production crew and audience members. Caution should be taken to avoid prolonged exposure to SPL in excess of 90 dB.

Suspending Loudspeakers

IMPORTANT SAFETY WARNING!

The information in this section has been assembled from recognized engineering data and is intended for informational purposes only. None of the information in this section should be used without first obtaining competent advice with respect to applicability to a given circumstance. None of the information presented herein is intended as a representation or warranty on the part of JBL. Anyone making use of this information assumes all liability arising from such use.

All information presented herein is based upon materials and practices common to North America and may not directly apply to other countries because of differing material dimensions, specifications, and/or local regulations. Users in other countries should consult with appropriate engineering and regulatory authorities for specific guidelines.

Correct use of all rigging hardware is required for secure system suspension. Careful calculations should always be performed to ensure that all components are used within their working load limits before the array is suspended. Never exceed the maximum recommended load ratings.

Before suspending any speaker system always inspect all components (enclosure, rigging frames, pins, eyebolts, track fittings, etc.) for cracks, deformations, corrosion, missing, loose or damaged parts that could reduce strength and safety of the array. Do not suspend the speaker until the proper corrective action has been taken. Use only load-rated hardware when suspending Application Engineered[™] Series and Precision Directiv-ity[™] Series loudspeakers.

Are You New to Rigging?

If you are new to rigging, you should do the following:

- Read and study JBL Technical Note Volume 1, Number 14: Basic Principles for Suspending Loud speaker Systems (available at http://www.jblpro.com/pub/technote/tn_v1n14.pdf).
- Know the rules for safe rigging.
- Attend a safe rigging seminar, such as that presented by professionals like Rigging Seminars[™] (www.riggingseminars.com) or by Chain Motor Hoist manufacturers like Columbus McKinnon Corp. (manufacturers of the C/M Lodestar).
- Meet and establish a relationship with a licensed mechanical or structural engineer. Get in the habit of asking them questions instead of guessing about their answers. Learn from what they tell you.
- Meet and discuss this aspect of your business with your Insurance Agent.
- Research and understand the codes, practices, and requirements in the venues where you intend to install and operate sound systems.

General Hardware Information

Any hardware used in an overhead suspension application must be load rated for the intended use. Generally, this type of hardware is available from rigging supply houses, industrial supply catalogs and specialized rigging distributors. Local hardware stores do not usually stock these products. Hardware that is intended for overhead suspension will comply with ASME B30.20 and will be manufactured under product traceability controls. Compliant hardware will be referenced with a working load limit (WLL) and a traceability code.

Suspending Loudspeakers....

Attachment to Structures

A licensed Professional Engineer must approve the placement and method of attachment to the structure prior to the installation of any overhead object. The following performance standards should be provided to the Professional Engineer for design purposes; Uniform Building Code as applicable, Municipal Building Code as applicable, and Seismic Code as applicable.

The installation of the hardware and method of attachment must be carried out in the manner specified by the Professional Engineer. Improper installation may result in damage, injury or death.

Inspection & Maintenance

Suspension systems are comprised of mechanical devices and, as such, they require regular inspection and routine maintenance to insure proper function ability. JBL VP Series loudspeakers must be inspected for fatigue at least annually. The inspection shall include a visual survey of all corners and load bearing surfaces for signs of cracking, water damage, de-lamination, or any other condition that may decrease the strength of the loud-speaker enclosure.

Accessory rigging hardware provided with or for the JBL VP Series loudspeakers must be inspected for fatigue at least annually. The inspection shall include a visual survey of the material for signs of corrosion, bending or any other condition that may decrease the strength of the fastener. Additionally, all eyebolts shall be checked for possible spin-out from the enclosure. For all other hardware and fittings, refer to the hardware manufacturer's inspection and maintenance guidelines for process.

JBL is not responsible for the application of its products for any purpose or the misuse of this information for any purpose. Furthermore, JBL is not responsible for the abuse of its products caused by avoiding compliance with inspection and maintenance procedures or any other abuse.

Prior to suspending the system, an expert, trained and experienced in flying speaker systems should inspect all rigging parts and components.

Safe Rigging

WARNING!

Suspending any loudspeaker system should be done by qualified persons following safe rigging standards.



Safe Rigging

The JBL VP Series suspendable loudspeakers are supplied with built-in brackets. The system is designed to facilitate the suspension of the loudspeaker by a qualified person familiar with rigging hardware and industry practices. Improper installation may result in damage, injury or death.

Working Load Limit

The working load limit (WLL) of any JBL VP Series suspendable loudspeaker shall be maintained as long as no more than 136 kg (300 lbs.) is suspended by a minimum of TWO (2) PRIMARY SUSPENSION points (Track Suspension), or 46 kg (100 lbs.) is suspended by TWO (2) of the SECONDARY SUSPENSION points (M10 forged Shoulder Eyebolts).

Suspending Loudspeakers....

Flying for Portable Applications (Primary Suspension)

For portable, temporary suspension, order the SRX-FF3 detachable flying fittings kit. This kit includes three (3) detachable fly-clips. For additional suspension components, contact a professional rigging hardware supplier.

Suspension in Fixed Installations (Secondary Suspension)

For fixed installations using M10, forged-shoulder eyebolts, order JBL Part number 229-00009-01 which includes three (3) eyebolts with washers.

More Information

For more information on designing loudspeaker system, refer to JBL Audio Engineering for Sound Reinforcement by John Eargle and Chris Foreman (Hal Leonard Publications, 2002) Additional system design information, including advanced design concepts, can be found at the "Technical Library" available on the JBL Professional's web site at:

http://www.jblpro.com/pages/tech_lib.htm

VP Series Rigging & Mounting Accessories



VP Series Rigging & Mounting Accessories....

3 pc. Detachable flying fittings (JBL part #SRX-FF3)
MTU7212 "U" Bracket for VP7212
MTU7215 "U" Bracket for VP7215
YM7212-15 Yoke Bracket for VP7212 and VP7215
SM7212-15 Stand Mount for VP7212 and VP7215
PM42 42" pole for use with SM7212-15 when used with VPSB7118
3 pc. M10 x 35 mm Forged Shouldered Eye-Bolt Kit (JBL part #229-00009-01)
3 pc. Detachable flying fittings (JBL part #SRX-FF3)

Example A1

Two-Element Horizontal System

2-Way, 12" Loudspeakers, Horizontally Splayed



Overview

• This example is a good solution for a simple center, left, or right cluster in small to medium-sized rooms for both speech and speech + music systems.

Specifications

- Loudspeakers: (2) VP7212/64
- Overall Coverage: 110° horizontal x 40° vertical
- Enclosure splay angle: 60°
- Frequency range (+/-3 dB): 63 Hz 18 kHz
- Maximum Peak Output: 139 dB SPL 1m
- Overall Dimensions: 28" H x 32" W x 22" D (711 x 813 x 559 mm)
- Total Loudspeaker Weight: 156 lbs. (70.8 kg)

* All dimensions are approximate as overall dimensions of clusters will very based on different splay angles used.

- PA7212-2 Planar Array Frame Kit
- 3 pc. M10 x 35 mm Forged Shouldered Eye-Bolt Kit (JBL part #229-00009-01)

Example A2

Two-Element Horizontal System

2-Way, 15" Loudspeakers, Horizontally Splayed



Overview

• This example is a good solution for a simple center, left, or right cluster in small to medium-sized rooms for both speech and speech + music systems.

Specifications

- Loudspeakers: (2) VP7215/64
- Overall Coverage: 110° horizontal x 40° vertical
- Enclosure splay angle: 60°
- Frequency range (+/-3 dB): 60 Hz 18 kHz
- Maximum Peak Output: 140 dB SPL 1m
- Overall Dimensions: 31" H x 36" W x 22" D (787 x 914 x 559 mm)
- Total Loudspeaker Weight: 170 lbs. (77.6 kg)

* All dimensions are approximate as overall dimensions of clusters will very based on different splay angles used.

- PA7215-2 Planar Array Frame Kit
- 3 pc. M10 x 35 mm Forged Shouldered Eye-Bolt Kit (JBL part #229-00009-01)

Example A3

Two-Element Horizontal System

3-Way Loudspeakers, Horizontally Splayed



Overview

• This example is a good solution for a simple center, left, or right cluster in small to medium-sized rooms for both speech and speech + music systems.

Specifications

- Loudspeakers: (2) VP7315/64
- Overall Coverage: 120° horizontal x 40° vertical
- Enclosure splay angle: 60°
- Frequency range (+/-3 dB): 43 Hz 18 kHz
- Maximum Peak Output: 141 dB SPL 1m
- Overall Dimensions: 36" H x 42" W x 26" D (914 x 1067 x 660 mm)
- Total Loudspeaker Weight: 194 lbs. (88 kg)

* All dimensions are approximate as overall dimensions of clusters will very based on different splay angles used.

- PA7315-2 Planar Array Frame Kit
- 3 pc. M10 x 35 mm Forged Shouldered Eye-Bolt Kit (JBL part #229-00009-01)

Example B1

Two-Element Vertical System in a Long/Short-Throw Configuration 2-Way, 12" Loudspeakers, Horizontally Configured and Vertically Splayed



Overview

- This low-profile example is a good choice for smaller L/R or exploded clusters.
- The stacked low-frequency drivers provide additional vertical pattern control to increase gain before feedback.
- H.F. waveguides are rotated 90° from standard. A 60° x 40° waveguide is used for the upper enclo sure and a 90° x 50° waveguide for the lower.

Specifications

- Loudspeakers: (1) VP7212/64, (1) VP7212/95
- Overall Coverage: 60%90° horizontal x 90° vertical
- Vertical splay angle: 60°
- Frequency range (+/-3 dB): 63 Hz 18 kHz
- Maximum Peak Output: 139 dB SPL 1m
- Overall Dimensions: 35" H x 28" W x 22" D (889 x 711 x 559 mm)
- Total Loudspeaker Weight: 156 lbs. (70.8 kg)

* All dimensions are approximate as overall dimensions of clusters will very based on different splay angles used.

- PA7212-2 Planar Array Frame Kit
- 3 pc. M10 x 35 mm Forged Shouldered Eye-Bolt Kit (JBL part #229-00009-01)

Example B2

Two-Element Vertical System in a Long/Short-Throw Configuration 2-Way, 15" Loudspeakers, Horizontally Configured & Vertically Splayed



Overview

- This low-profile example is a good choice for smaller L/R or exploded clusters in speech + music systems.
- The stacked low-frequency drivers provide additional vertical pattern control to increase gain before feedback.
- High-frequency waveguides are rotated 90° from standard. The upper enclosure contains a 60° x 40° waveguide and the lower a 90° x 50° waveguide.

Specifications

- Loudspeakers: (1) VP7215/64, (1) VP7215/95
- Overall Coverage: 60%90% horizontal x 90% vertical
- Vertical splay angle: 60°
- Frequency range (+/-3 dB): 60 Hz 18 kHz
- Maximum Peak Output: 140 dB SPL 1m
- Overall Dimensions: 39" H x 31" W x 22" D (991 x 787 x 559 mm)
- Total Loudspeaker Weight: 170 lbs. (77.6 kg)

* All dimensions are approximate as overall dimensions of clusters will very based on different splay angles used.

- PA7215-2 Planar Array Frame Kit
- 3 pc. M10 x 35 mm Forged Shouldered Eye-Bolt Kit (JBL part #229-00009-01)

Example B3

Two-Element Vertical System

3-Way, 15" Loudspeakers, Horizontally Configured & Vertically Splayed



Overview

- This low-profile example is a good choice for mid to large L/R or exploded clusters in speech + music systems.
- The stacked low-frequency drivers provide additional vertical pattern control to increase gain before feedback.
- H.F. waveguides are rotated 90° from standard.

Specifications

- Loudspeakers: (2) VP7315/64
- Overall Coverage: 60° horizontal x 80° vertical
- Vertical splay angle: 55°
- Frequency range (+/-3 dB): 43 Hz 18 kHz
- Maximum Peak Output: 141 dB SPL 1m
- Overall Dimensions: 42" H x 36" W x 26" D (1067 x 914 x 660 mm)
- Total Loudspeaker Weight: 194 lbs. (88 kg)

* All dimensions are approximate as overall dimensions of clusters will very based on different splay angles used.

- PA7315-2 Planar Array Frame Kit
- 3 pc. M10 x 35 mm Forged Shouldered Eye-Bolt Kit (JBL part #229-00009-01)

Example C1 Three-Element Horizontal System Including Subwoofer

2-Way, 12" Loudspeakers, Horizontally Splayed plus Subwoofer



Overview

- This example is a great choice for small to medium-sized rooms as a center cluster or as left/right clusters.
- Provides a cost-effective center cluster solution with excellent coverage for speech and full-range program material.

Specifications

- Loudspeakers: (2) VP7212/64, (1) VPSB7118 Subwoofer
- Overall Coverage: 110° horizontal x 40° vertical
- Frequency range (+/-3 dB): 39 Hz 18 kHz
- Maximum Peak Output: Full Range, 139 dB SPL 1m (Low-Frequency, 129 dB SPL)
- Overall Dimensions: 28" H x 60" W x 32" D (711 x 1524 x 813 mm)
- Total Loudspeaker Weight: 235 lbs. (106.6 kg)

* All dimensions are approximate as over all dimensions of clusters will very based on different splay angles used.

- PA7212-18H Planar Array Frame Kit
- 3 pc. M10 x 35 mm Forged Shouldered Eye-Bolt Kit (JBL part #229-00009-01)

 Example H1
 Three-Element Vertical System Including Subwoofer

2-Way, 12" Loudspeakers, Horizontally Configured plus Subwoofer



Overview

- This example is a great choice for small to medium-sized rooms as a center cluster or as left/right clusters.
- Provides a cost-effective center cluster solution with excellent coverage for speech and full-range program material.

Specifications

- Loudspeakers: (2) VP7212/64, (1) VPSB7118 Subwoofer
- Overall Coverage: 110° horizontal x 40° vertical
- Frequency range (+/-3 dB): 39 Hz 18 kHz
- Maximum Peak Output: Full Range, 139 dB SPL 1m (Low-Frequency, 129 dB SPL)
- Overall Dimensions: 28" H x 60" W x 32" D (711 x 1524 x 813 mm)
- Total Loudspeaker Weight: 235 lbs. (106.6 kg)

* All dimensions are approximate as over all dimensions of clusters will very based on different splay angles used.

- PA7212-18V Planar Array Frame Kit
- 3 pc. M10 x 35 mm Forged Shouldered Eye-Bolt Kit (JBL part #229-00009-01)

Appendix

JBL DrivePack®

A key feature of the VP Series is its highly adaptable JBL DrivePack amplifier and signal-processing module. The two-channel DP-2 module provides 1100 watts of total continuous power to each full-range system while the DP-1 subwoofer module provides 1800 watts (continuous) power to the loudspeaker. The JBL DrivePack operates on auto-selecting line voltages at 50 or 60 Hz for worldwide operation. Each JBL DrivePack unit incorporates Crown's BCA (Balanced Current Amplification) Class-I circuitry with temperature-compensated modulation and state of the art feedback circuitry for lower noise and distortion than any other high-powered switching amplifier, providing even higher fidelity than traditional analog amplifier circuitry. An extraordinarily efficient passive cooling system effects heat dissipation for optimal cooling, eliminating expensive and noisy fans.

Input Modules

Each VP Series enclosure is equipped with a modular input bay that accepts the standard DPAN analog audio input module or the optional DPCN CobraNet[™] digital audio input module. Both input modules features sophisticated onboard digital signal processing technology. Precision band-pass limiting, pre-equalization filters and automatic self-test functions ensure optimized performance. Network control and monitoring is enabled through a 100Mb Ethernet connection.

HiQnet System Architect[™]

A variety of control and monitoring options are available at your fingertips, integrated into Harman Pro's HiQnet System Architect software. This provides complete software control of not only your JBL DrivePack-equipped loudspeakers, but also other HiQnet-compatible audio products in the system such as JBL's VERTEC® DP Series, or traditional VERTEC models powered with Crown I-Tech amplifiers. In these applications, VP Series and VERTEC systems are fully compatible to suit project-specific system design requirements.

For more information on HiQnet, please visit our web site: http://hiqnet.harmanpro.com.

For more information about JBL DrivePack and Input Modules, please visit our web site: http://www.jblpro.com/installedsound/support/drivepack.

Notes



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