JBL

PROFESSIONAL

VTX SERIES

SYSTEM SOLUTIONS

VTX B15 | User Manual

GENERAL INFORMATION

VTX B15 User Manual

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JBL PROFESSIONAL

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USA

Thank you for purchasing JBL VTX Series products

In more than 75 years of JBL innovations, the VTX Series stands apart as a milestone in the practical application of creative engineering. VTX products herald the next generation in line array loudspeaker systems: a new era in performance, system integration, and user friendliness. VTX products draw on multiple JBL patents in driver, waveguide, and suspension technology, as well as custom amplification, DSP, control, and system management designs created in collaboration with HARMAN Professional sister companies.

VTX loudspeakers marry custom transducer design and in-house manufacture, breakthrough technologies, and a comprehensive system approach to deliver a premium experience for all who come into contact with them from the FOH mixing engineer to the systems engineer, rigger, road crew, warehouse manager, and, of course, the audience. Designed for operators of portable and fixed systems alike, the VTX Series features JBL's legendary sound quality coupled with expert support and advanced tools that enable optimal specification, configuration, and operation of VTX systems in any venue, anywhere in the world. The VTX Series delivers a comprehensive solution: the finest sound quality available, plus efficient and intuitive setup, tuning, networking, and control.

TABLE OF CONTENTS

1 - SAFETY

1.1 SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not expose the product to direct rain or sea spray.
6. Clean only with a dry cloth.
7. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus that produce heat.
8. Only use attachments/accessories specified by the manufacturer.
9. Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
10. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as if liquid has been spilled or objects have fallen into the apparatus, or if the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
11. Contact JBL Professional for advanced servicing issues.
12. CAUTION - DO NOT PERFORM ANY SERVICING UNLESS YOU ARE QUALIFIED TO DO SO.
13. Prolonged exposure to excessive SPL can cause hearing damage. The loudspeaker is 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.
14. Read the System **Rigging Manual** before installation and use of the product.

1.2 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. Compliant hardware will be referenced with a working load limit (WLL) and a traceability code.

1.3 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.

1.4 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 included 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, or missing/loose/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 JBL suspendable loudspeaker models.

1.5 ARE YOU NEW TO RIGGING?

If you are new to rigging, you should:

- Know the rules for safe rigging.
- Attend a safe rigging seminar.
- Meet and establish a relationship with a licensed mechanical or structural engineer. Get in the habit of asking them questions instead of assuming their answers. Learn from what they tell you.
- Research and understand the codes, practices and requirements of the venues where you intend to operate your sound system.

1.6 INSPECTION AND MAINTENANCE

Suspension systems are comprised of mechanical devices and, as such, require regular inspection and routine maintenance to ensure proper functionality. Before suspending or pole mounting any speaker system, always inspect all components (enclosure, suspension frames or brackets, pins, eyebolts, etc.) for cracks, deformations, corrosion, or missing/loose/damaged parts that could reduce strength and safety of the array. Do not suspend or pole mount a speaker until the proper corrective action has been taken.

Installed systems should be inspected at least once a year. The inspection must include a visual survey of all corners and load-bearing surfaces for signs of cracking, water damage, delamination, or any other condition that may decrease the strength of the loudspeaker enclosure.

Accessory suspension hardware provided with or for VTX systems must be inspected for fatigue at least once a year or as required by local ordinance. The inspection must 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, any eyebolts must be checked for possible spin-out of the enclosure.

Refer to the manufacturer's guidelines for inspection and maintenance of all other hardware and fittings.

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 suspending speaker systems, should inspect all parts and components.

1.7 SYMBOLS

The following symbols are used in this document:

CAUTION: This symbol gives notice of a potential risk of harm to the individual or the equipment. Instructions marked with this symbol must be strictly followed.

TIP: This symbol gives notice of helpful, relevant information about the topic.

INSTRUCTIONS: This symbol gives notice of instructions that must be followed for proper installation and use of the product.

TOOLS REQUIRED: This symbol gives notice of tools that must be used for proper installation and use of the product.

TIPPING HAZARD: This symbol gives notice of a potential tip hazard. Use caution when moving the cart/apparatus combination to avoid injury from tip-over.

1.8 RESOURCES AND DOCUMENTATION

Several resources are available to VTX Series owners to illustrate proper and safe use of the equipment. Below is an overview of what is available and a brief description of each resource:

USER MANUAL: This document focuses on the electromechanical aspects of the system, including amplification, wiring, speaker presets, tuning, and optimization. User manuals do not include information regarding rigging and suspension hardware.

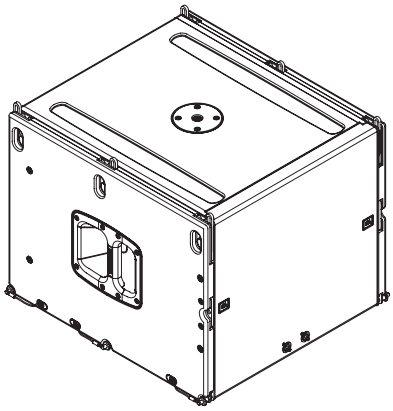
RIGGING MANUAL: This document focuses on the mechanical aspects of the system, including step-by-step rigging instructions, accessory usage, mechanical limits, and safety instructions. All users must read this document.

SPECIFICATION SHEETS: These documents include detailed specifications for loudspeakers and accessories. Specifications include acoustical performance, material types, weight, and general mechanical information. Specification sheets are available for each product.

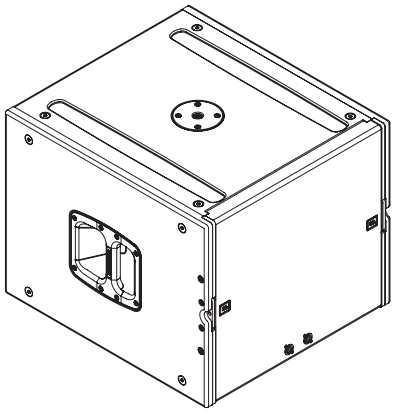
CUSTOMER DRAWINGS: This is a collection of files that includes detailed drawings for each SKU. The collection consists of detailed dimensional 2D PDF/DXF documents and simplified 3D DXF models. Depending on the product, additional types of 3D files might be available for download at www.jblpro.com.

VIDEO TUTORIALS: Software and hardware video tutorials are available for watching on the JBL Professional YouTube channel.

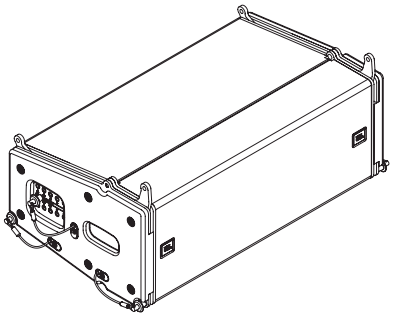
2 - SYSTEM COMPONENTS



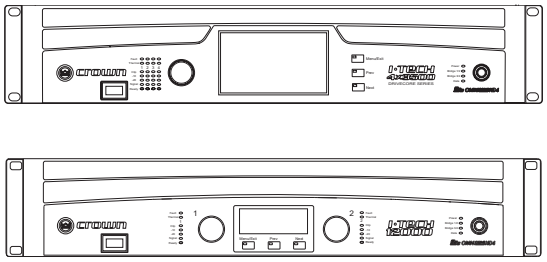
VTX B15



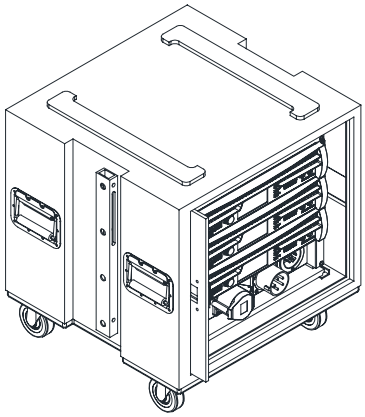
VTX B15G



VTX A6



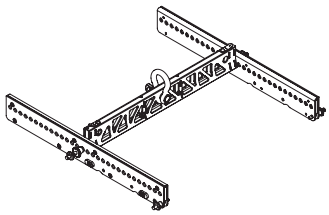
Crown I-Tech HD Amplifiers



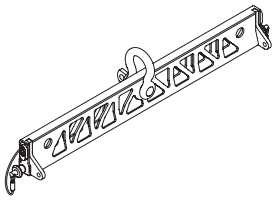
Crown V-Rack

3 - COMPATIBLE ACCESSORIES

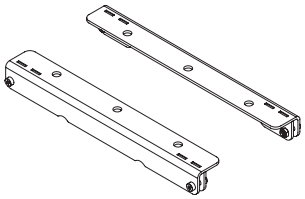
The accessories listed below are compatible with the VTX B15. For more detailed information about B15 accessories, refer to the **VTX B15 Rigging Manual** found at www.jblpro.com.



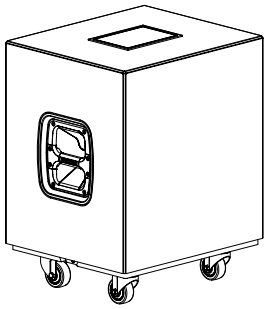
VTX A6 MF | Mini Frame



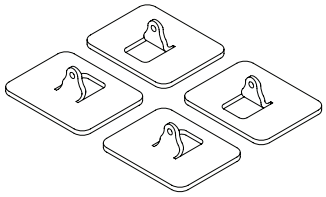
VTX A6 SB | Suspension Bar



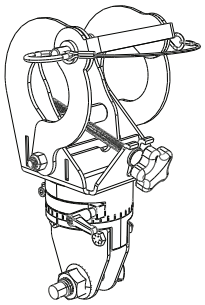
VTX A6 CM | Ceiling Mount



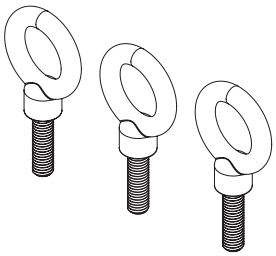
VTX B15 ACC | Caster Board & Cover



VTX B1 GND | Ground Stack Accessory



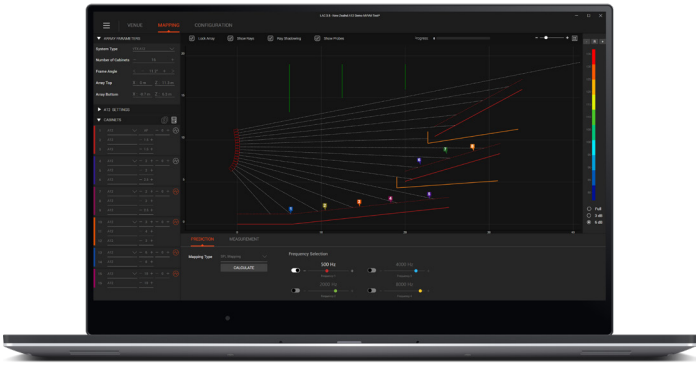
VTX RC500 | Rotating Clamp



229-00009-01 | M10 Eyebolt Set

CAUTION: Always use components and accessories specified and approved by JBL Professional. When a cart is used, use caution when moving the cart to avoid injury from tip-over.

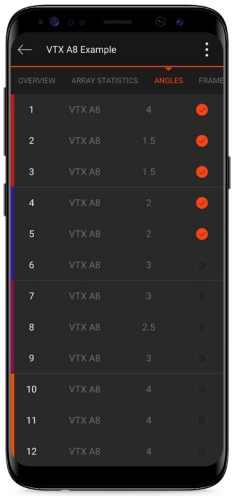
4 - SOFTWARE



4.1 LINE ARRAY CALCULATOR 3™

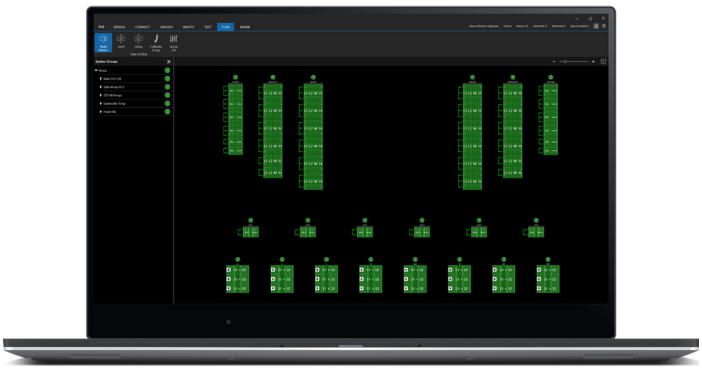
LAC-3 is simulation software for designing and predicting VTX Series systems. LAC predicts the acoustical performance of line array systems, as well as flown and ground-stacked subwoofer arrays. Subwoofer delay values can be generated for electronic delay steering (EDS) using the built-in coverage calculator. LAC-3 also performs mechanical validation of rigging hardware, calculates weight limits, and generates safety warnings.

www.jblpro.com/lac3



4.2 ARRAY LINK™

Array Link™ is a mobile companion app that works in conjunction with LAC-3 software to assist in deployment of VTX Series systems. Array Link uses a QR code system to transfer all mechanical array information from the main LAC-3 application to a mobile phone. All relevant rigging and mechanical options are presented in an easy-to-understand layout. The application is compatible with iOS® and Android™ and can be obtained from their respective app stores.



4.3 PERFORMANCE MANAGER™

Performance Manager™ is a configuration and control application for networked audio systems. Performance Manager's user interface guides system designers through the complete system design, configuration, and control processes. A dedicated show mode provides all monitoring and control functions needed to deliver a complete picture of the system's performance in real time.

www.jblpro.com/performancemanager

5 - OVERVIEW

The VTX B15 Compact Arrayable 15-inch Subwoofer extends the low end performance of VTX full-range sound reinforcement systems, including the VTX A6 Subcompact Dual 6.5-inch Line Array Element. The B15 is a versatile solution for production companies, touring acts, rental houses, theaters, houses of worship, or anyone who demands superior sound reinforcement when space is at a premium. The B15 joins the VTX B-Series subwoofer family in harnessing VTX acoustic innovations such as SlipStream™ double-flared exponential ports and Differential Drive® dual voice coil woofer design. The B15 has the same width and suspension hardware as the A6, allowing the two products to be combined in a range of flown and ground-stacked configurations. Together with the A6, the B15 brings flagship VTX sound quality and performance to a compact footprint, whether supporting small and midsize applications or supplementing large VTX systems. It's never been easier to deliver impactful, VTX-quality sound at any scale.

TRANSDUCER DESIGN

The B15 features a high performance 15-inch woofer based on the patented Differential Drive technology, which uses a unique dual voice coil, dual gap design. The extra surface area provided by the dual four-inch voice coil design delivers better heat dissipation and lower power compression than conventional single-coil designs. The dual neodymium magnets are placed inside the coils, reducing weight and improving magnetic efficiency. The outside of the woofer is a unified cast aluminum frame, which acts as a large heat sink to cool down the woofer. The ultra-robust carbon fiber-based cone creates a rigid diaphragm, significantly reducing mass and cone breakup distortion. The result is a robust 15-inch woofer with an impressive peak-to-peak maximum excursion that rivals 18-inch designs.

CONTROLLABLE COVERAGE

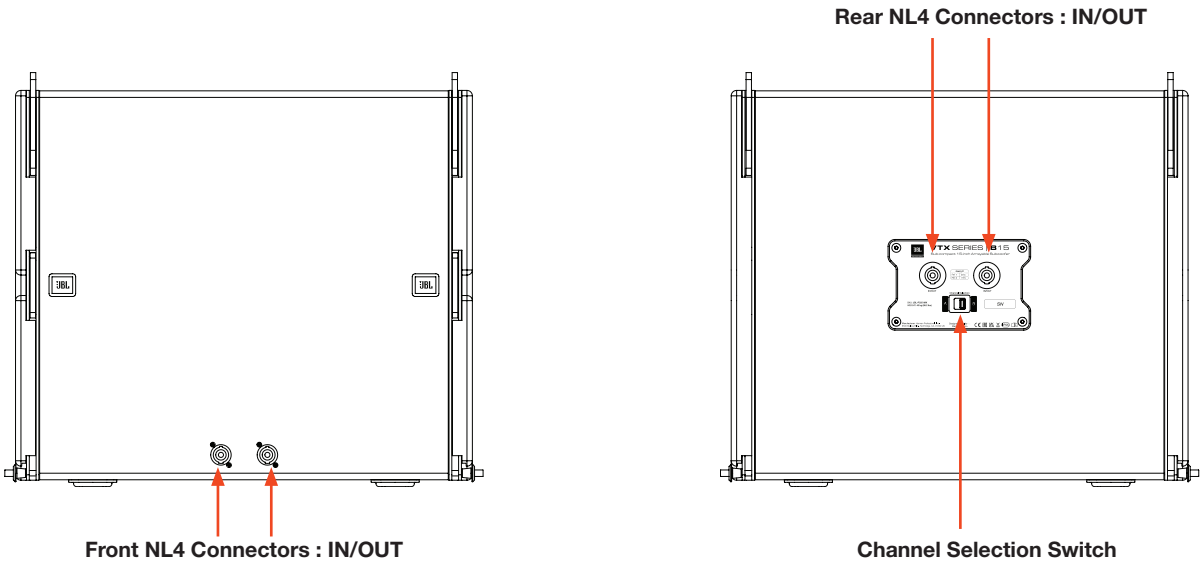
The B15 makes it simple to form omnidirectional or cardioid arrays. Speaker connectors are available on both front and rear panels, streamlining cable management in either configuration. A switch on the rear input panel allows selecting between channel one or two of the NL4 cable, minimizing cable requirements.

VTX A6 COMPATIBILITY

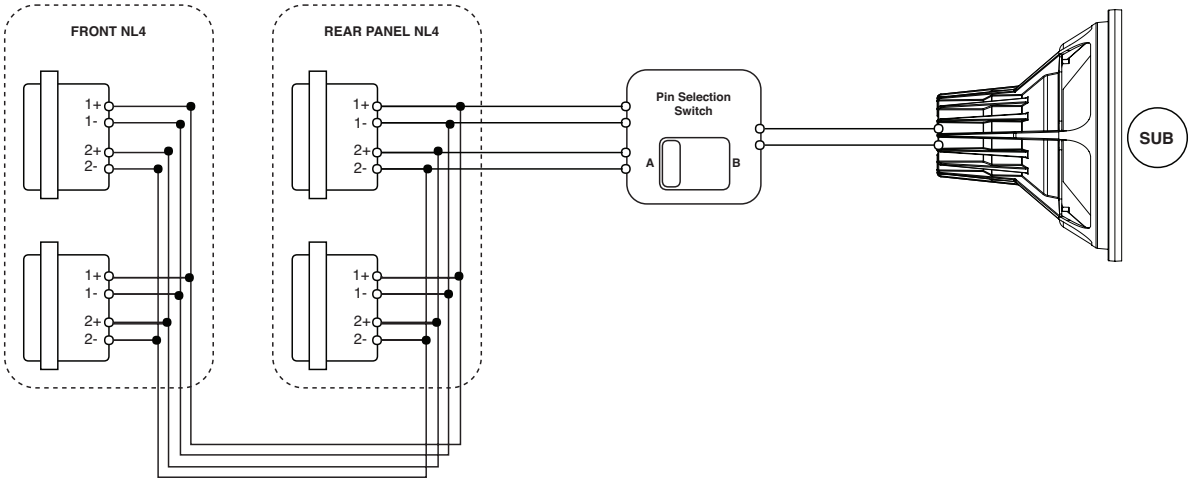
The B15 features a captive, spring-loaded mechanism for quick deployment and quiet operation. The rigging system allows for omnidirectional or cardioid configurations in small and large-scale flown or ground-stacked arrays. The rigging system is compatible with the A6, allowing B15 subwoofers to be suspended above A6 cabinets in flown arrays, or stacked on top of B15 using the A6 Base Plate accessory. All A6 suspension accessories are compatible, and arrays of up to 15 subwoofers can be created.

6 - CONNECTIONS

The B15 is equipped with four Neutrik NL4 speakON connectors, two on the rear and two on the front grill. All four connectors are wired in parallel and can be used interchangeably. The front connectors are typically used when B15s are in a cardioid mode, where some enclosures are pointed backwards. The connectors are installed upside down, making the locking pin position visible from under the array. A channel selection switch available at the rear of the B15 selects between pins 1 (“A” position) and 2 (“B” position) of the NL4 Connector. The switch is wired after the NL connectors and affects all connections equally.



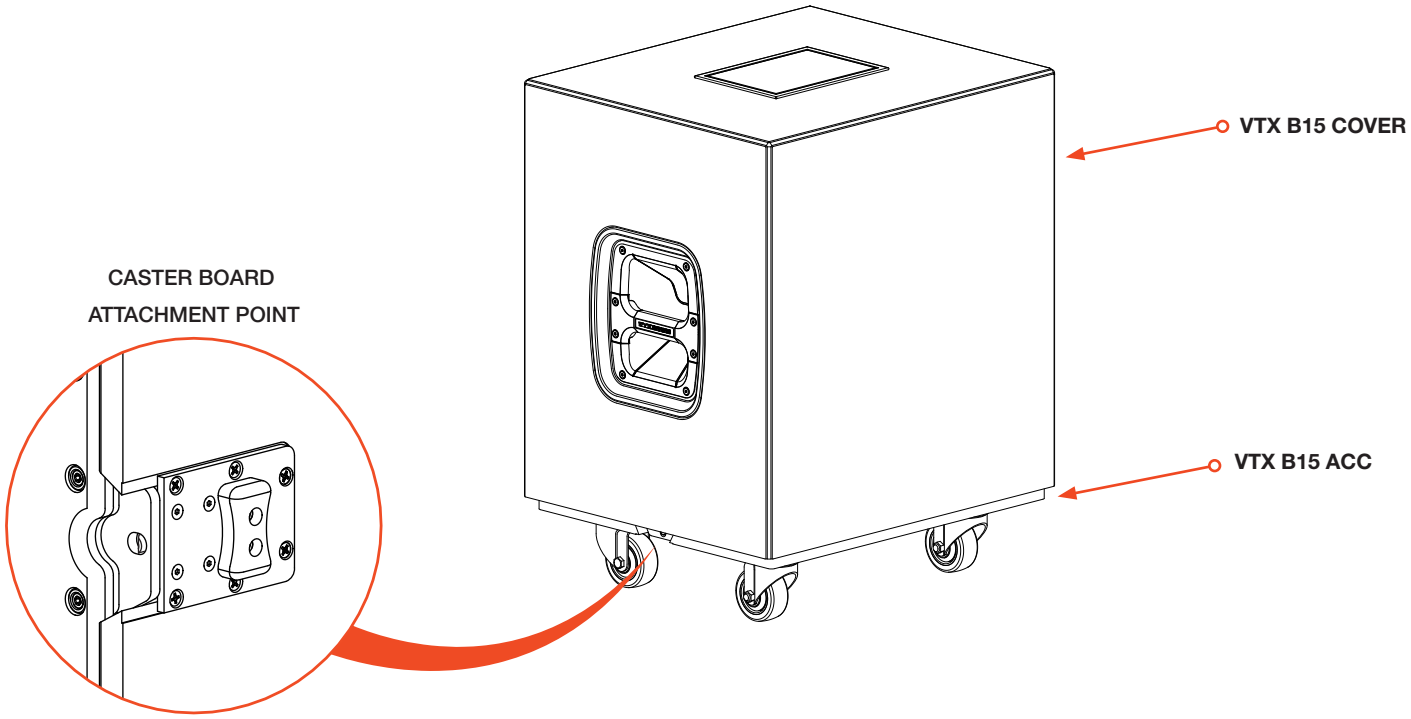
6.1 INTERNAL WIRING

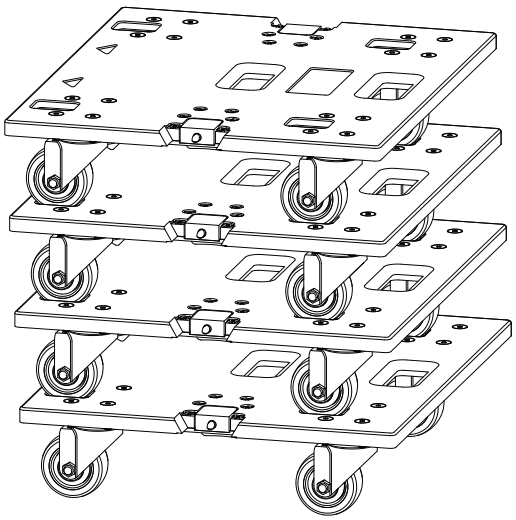


CAUTION: Always use high-quality insulated speaker cables made by reputable manufacturers. Keep cable length as short as possible, with a sufficient wire gauge for the application.

7 - TRANSPORTATION

The VTX B15 ACC accessory kit includes a front face caster board for a single B15 and a protective cover. The ACC is an efficient solution for easy transportation and maximizing truck packs. Because of their small footprint, B15 subwoofers can be stacked on top of other equipment packed in a truck. When not in use, the caster boards can be stacked on top of each other for storage.



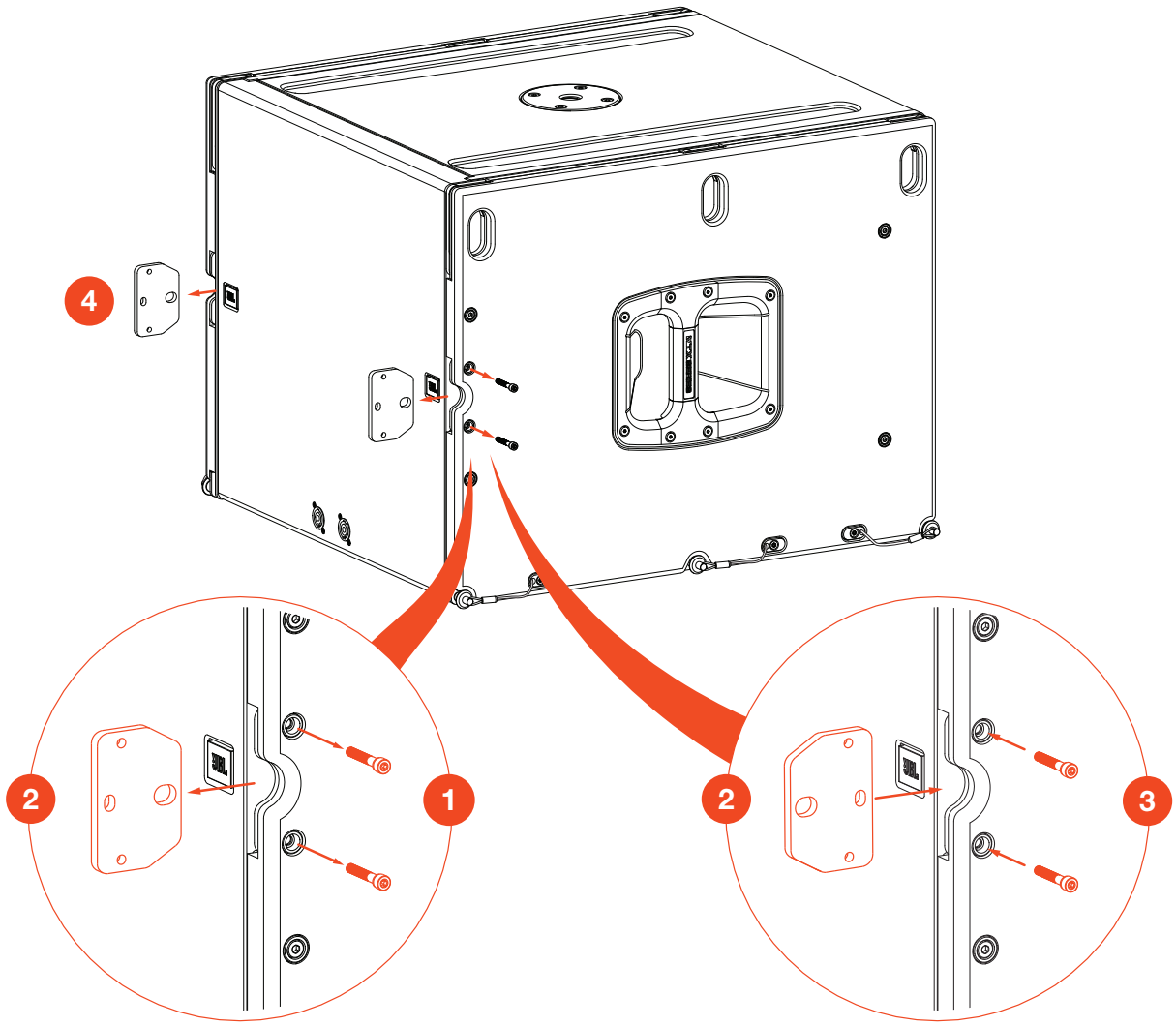


7.1 CASTER BOARD INSTALLATION

Two caster board tabs at the front of the B15 are used to secure the front face ACC caster board to the B15. The tabs are retractable and ship from the factory in the retracted position inside the B15. This orientation is ideal when B15s are used in an installation, where the tabs are not needed, but the tabs must be rotated to attach the caster board to the B15.

STEPS:

1. Remove the four M6 HEX bolts holding the bracket onto the B15.
2. Rotate the bracket to the extended position.
3. Install the bolts.
4. Repeat for the other side.



TOOLS REQUIRED: A Torx T25 wrench is required to remove the four bolts holding the ACC brackets. All bolts should be torqued to 2.82 Nm (25 in-lbs).

8 - PRESET LIBRARY

The B15 preset library includes 60 and 80 Hz operating modes along with cardioid presets for rear-facing subwoofer enclosures. VTX presets are exclusively developed for Crown I-Tech HD amplifiers and come bundled with Performance Manager control software. Audio Architect™ presets are also available and can be downloaded from www.jblpro.com. See below for a detailed description of B15 operating modes and processing options, and refer to the Preset Library setup sheets for preset descriptions, memory locations, and output channel assignments.

8.1 B15 PRESET MODES

VTX B15 60: The 60 Hz preset mode extends the upper frequency response of the subwoofer to 60 Hz. The 60 Hz preset is normally employed when VTX cabinets are used in full-range mode.

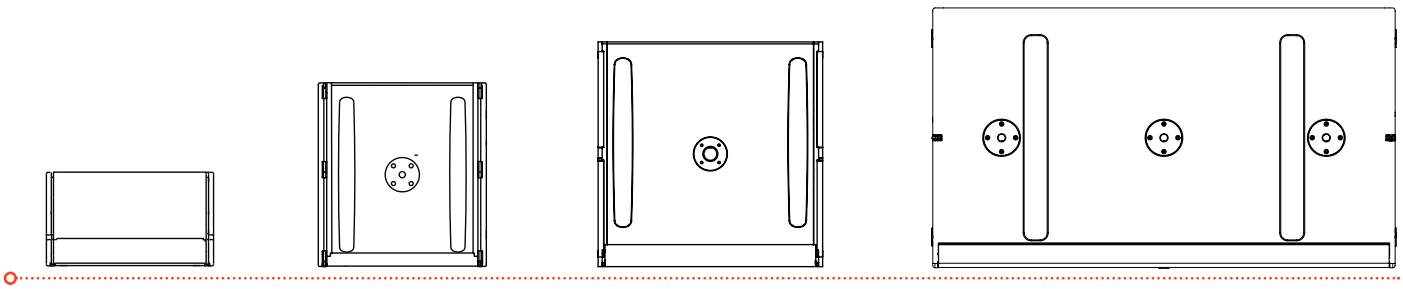
VTX B15 60 REAR: The 60 Hz Rear preset was designed to work in conjunction with the standard 60 Hz preset to drive rear-facing cabinets in cardioid configurations.

VTX B15 80: The 80 Hz preset mode extends the upper frequency response of the subwoofer to 80 Hz. The 80 Hz preset is normally employed when VTX full-range cabinets are set to 80 Hz.

VTX B15 80 REAR: The 80 Hz Rear preset was designed to be work in conjunction with the standard 80 Hz preset to drive rear-facing cabinets in cardioid configurations.

8.2 TIME ALIGNMENT

The B15 presets provide proper system summation with companion VTX full-range cabinets (all models) in physically coupled configurations (stacked or suspended), and when used with corresponding 60 or 80 Hz presets. This pre-alignment is done at the factory, allowing any VTX subwoofer to be used with any VTX loudspeaker without subwoofer presets specific to each system and configuration. Additional time alignment delay should be added as needed to account for physical path length differences between suspended full-range arrays and ground-stacked VTX subwoofers.



8.3 PRODUCT LINE COMPATIBILITY

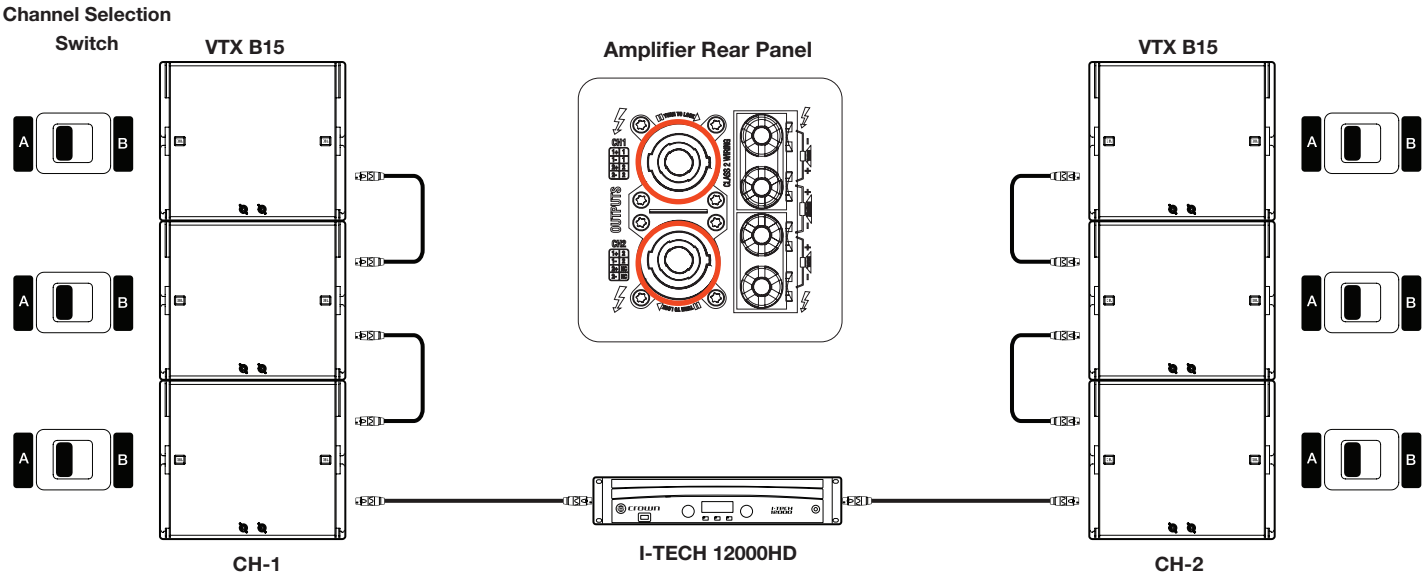
The VTX B15 acoustical characteristics are compatible with those of the VTX B18 and B28. VTX B15, B18, and B28 can be combined together in the same system or array without summation problems. In systems combining the B15, B18, B28, or any other VTX subwoofer, all subwoofers should be operated in the same mode. Mixing 60 Hz and 80 Hz presets in the same system or array is not recommended.

9 - AMPLIFICATION & WIRING

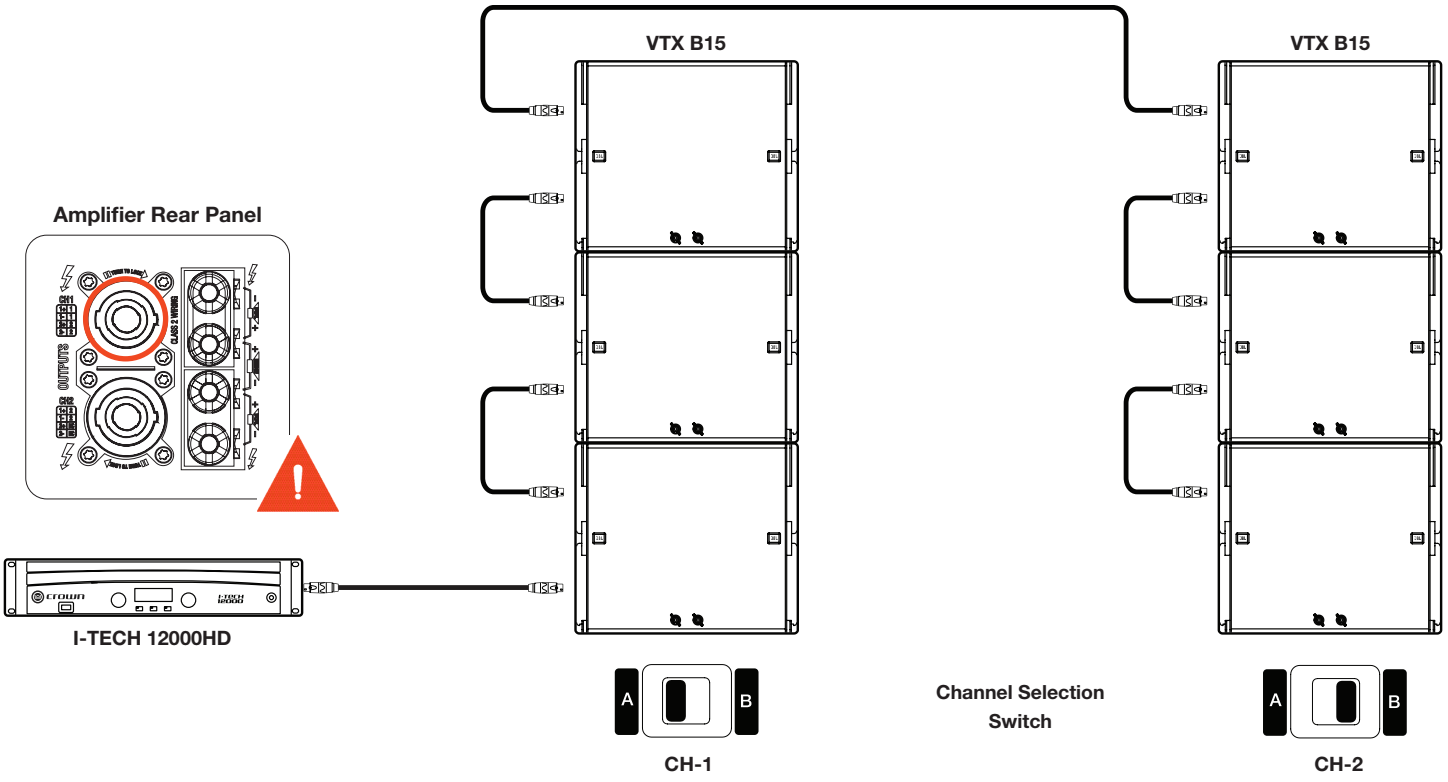
The B15 subwoofer, like all other VTX systems, is powered exclusively by Crown I-Tech HD amplifiers, providing consistency and optimum performance anywhere in the world. All B15 processing is performed by the I-Tech HD's internal processing, which includes the advanced LevelMax™ three-stage limiter suite, ensuring proper, reliable B15 operation under any conditions. LevelMax incorporates excursion control, RMS limiting, and long-term thermal protection for the woofers. The I-Tech HD amplifiers also offer a user-adjustable input section for equalization, time alignment, and electronic delay steering. Standard JBL presets are available for both the Crown I-Tech 4x3500HD and I-Tech 12000HD. The most up-to-date presets are available for download from www.jblpro.com, and bundled in the latest version of Performance Manager control software.

9.1 CROWN I-TECH 12000HD

Up to six B15 subwoofers (three per channel) can be powered by an I-Tech 12000HD amplifier. The example below shows how to connect six cabinets to a two-channel I-Tech HD amplifier using two standard NL4 (or NL2) cables.



Alternatively, all six B15 subwoofers can be daisy chained together for easier cabling. In this scenario the A/B switch is used to designate three subwoofers to channel A of the amplifier and three subwoofers to channel B. **The NL4 connector for channel A on the amplifier must be used In this configuration, as it carries both channel signals, while the channel B connector does not.**

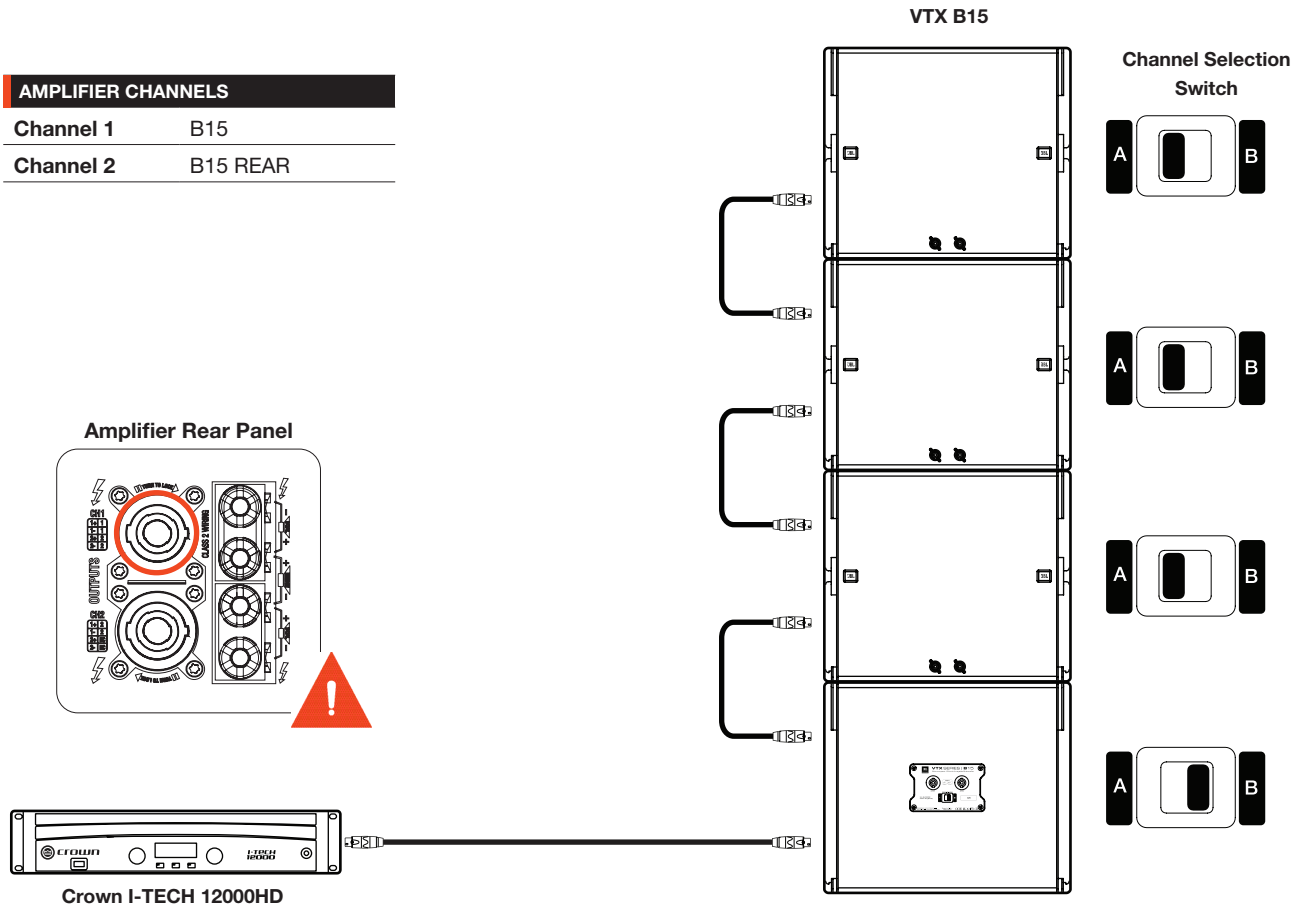


CAUTION: In this configuration, only the Channel 1 NL4 connector can be used on the I-Tech 12000HD amplifier. The Channel 1 NL4 connector carries both channels 1 and 2, while the Channel 2 NL4 connector carries only channel 2.

9.2 CROWN I-TECH 12000HD (CARDIOID)

Cardioid configurations can be created using Crown I-Tech 12000HD amplifiers. In this case, any one of the amplifier channels can be set for cardioid using JBL Performance Manager software. Up to three forward-facing or three rear-facing B15s can be used per amplifier channel. When four-conductor NL4 cables are used, the B15 channel selection switch can be used to select which cabinet is driven by the cardioid channel. In the example below a 3:1 cardioid block of B15s is shown and powered by a single NL4 cable. In this configuration, the front grille NL4 connectors are used for wiring the rear-facing B15 subwoofers.

AMPLIFIER CHANNELS	
Channel 1	B15
Channel 2	B15 REAR

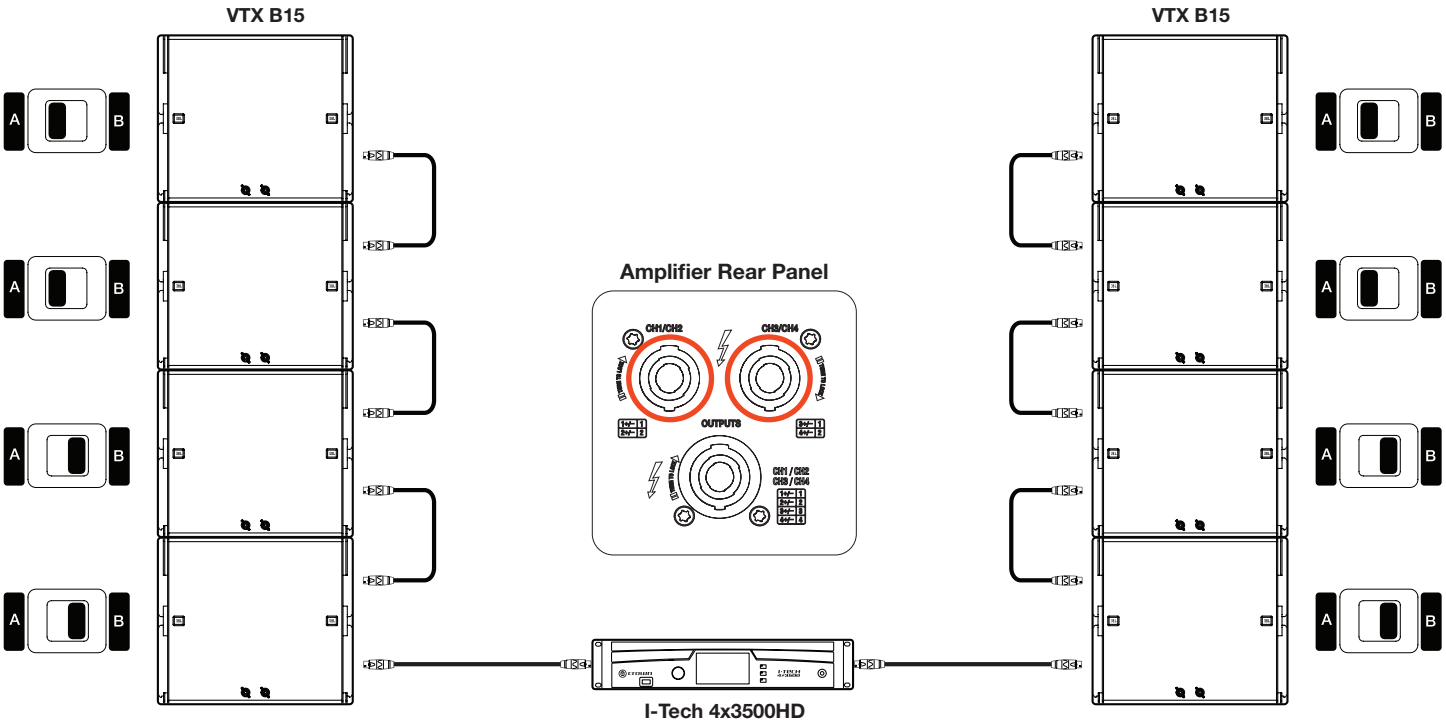


CAUTION: In this configuration, only the Channel 1 NL4 connector can be used on the I-Tech 12000HD amplifier. The Channel 1 NL4 connector carries both channels 1 and 2, while the Channel 2 NL4 connector carries only channel 2.

TIP: Other channel assignments can be implemented when using the two-channel Crown I-Tech HD amplifiers. Use Performance Manager to assign speaker presets.

9.3 CROWN I-TECH 4X3500HD

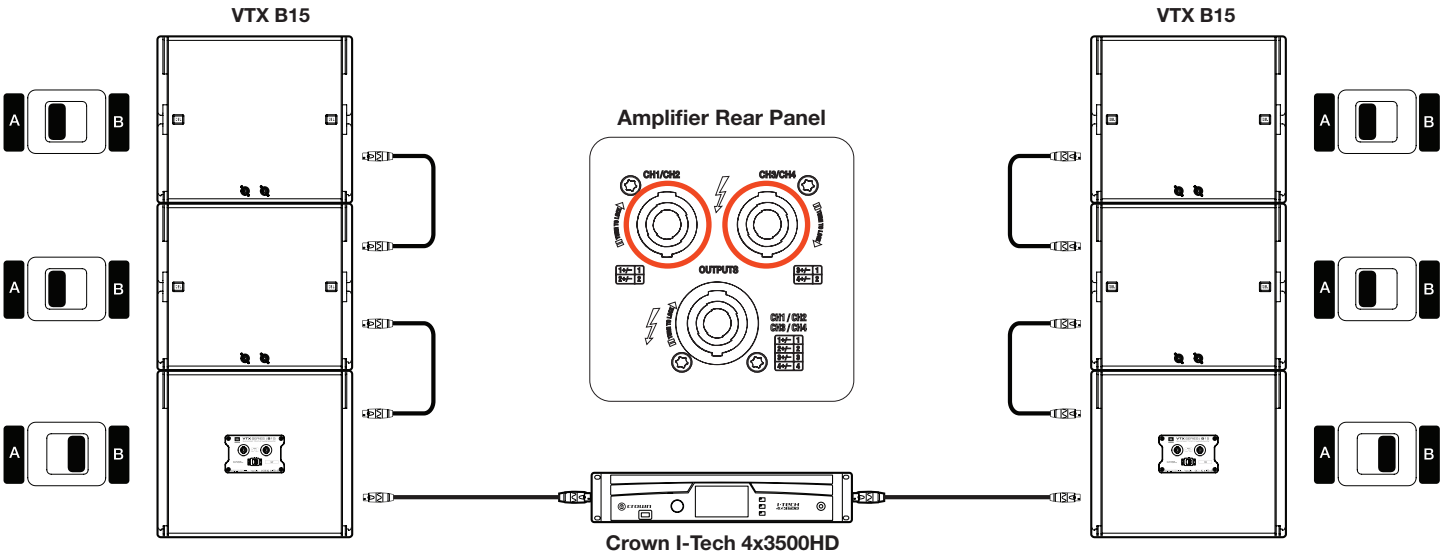
When using Crown I-Tech 4x3500HD amplifiers, up to eight B15 subwoofers can be powered per amplifier (two per channel). The example below illustrates how to connect eight subwoofers to a four-channel I-Tech HD amplifier using standard NL4 cables. In the example below, four cabinets are connected to each NL4 output. Using the channel selector switch, two subwoofers are assigned to each channel of the amplifier.



CAUTION: Attempting to drive more than eight B15 enclosures from a single 4X3500HD is not recommended and may degrade performance (SPL).

9.4 CROWN I-TECH 4X3500HD (CARDIOID)

Cardioid configurations can be created using Crown I-Tech 4x3500HD amplifiers. In this case, any one of the amplifier channels can be set for cardioid using Performance Manager. Each amplifier channel is capable of driving two B15 enclosures, and the channel selection switch at the back of the B15s can be used to assign B15 cabinets to the cardioid channels. In this configuration, the front grill NL4 connectors are used for wiring the rear-facing B15 subwoofers.



AMPLIFIER CHANNELS	
Channel 1	B15 1&2
Channel 2	B15 3 REAR
Channel 3	B15 4&5
Channel 4	B15 6 REAR

CAUTION: Make sure the total number of VTX B15 enclosures per circuit/amplifier does not exceed the maximum number recommended.

9.5 CROWN V-RACK

VTX Series systems are compatible with the Crown V-Rack 12000HD and Crown V-Rack 4x3500HD touring racks. The number of supported cabinets per amplifier and wiring options remain the same as the Crown I-Tech examples illustrated in this document. For more information on Crown V-Rack products, refer to the **V-Rack User Manuals** and documentation.

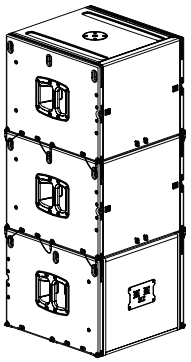
10 - CARDIOID CONFIGURATIONS

The directivity of a subwoofer is understood to be omnidirectional, meaning that it projects energy equally in all directions. In reality, most subwoofers do exhibit some front-to-back directivity (about 1 to 3 dB, depending on the frequency), but not enough to have any meaningful impact. In some situations, the omnidirectional nature of subwoofers is desirable, but in others, a more controlled (directional) coverage is appropriate. The most common use case for directional subwoofers involves preventing excessive low frequency energy from reaching the stage. Other directional subwoofer applications include avoiding over-energizing a room with low frequency energy or minimizing noise pollution from outdoor concerts located near residential areas. A single VTX B15 radiates omnidirectionally, but cardioid coverage can be achieved with an array of B15s in which the physical orientation of some cabinets is reversed and an appropriate amplifier preset selected.

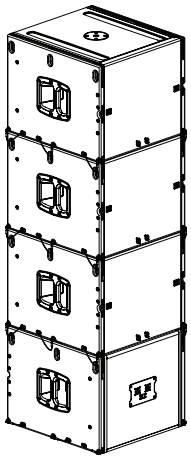
10.1 RECOMMENDED SETUPS

B15 subwoofers can be used in a number of ground-stacked or flown cardioid configurations depending on available space and the number of cabinets available. Cardioid configurations are typically differentiated by the ratio of front-facing to rear-facing cabinets, the spacing between stacks, and the position of rear-facing subwoofers within the stacks. Since all configurations and ratios use the same set of amplifier presets (e.g. VTX B15 80 REAR), the amount of rear rejection is controlled by the front-to-rear-facing cabinet ratio. Lower ratios produce higher rejection, higher ratios result in lower rejection. The B15 factory presets were engineered to work with blocks having **2:1** and **3:1** ratios, with 2:1 delivering the greatest rear rejection. Subwoofers arrays designed around a 2:1 ratio can easily generate broadband rejection of 20 to 30 dB. These ratios can be considered as building blocks from which any ground-stacked or flown array can be built.

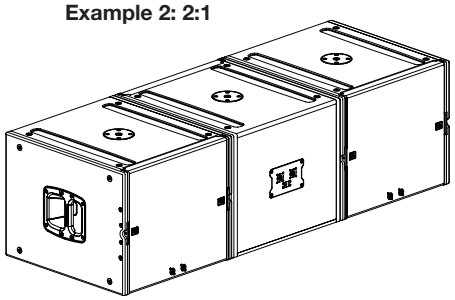
Example 1: 2:1



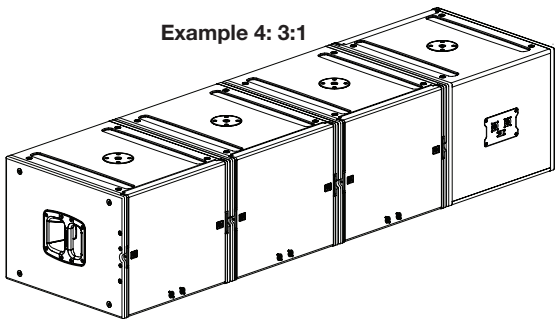
Example 3: 3:1



Example 2: 2:1



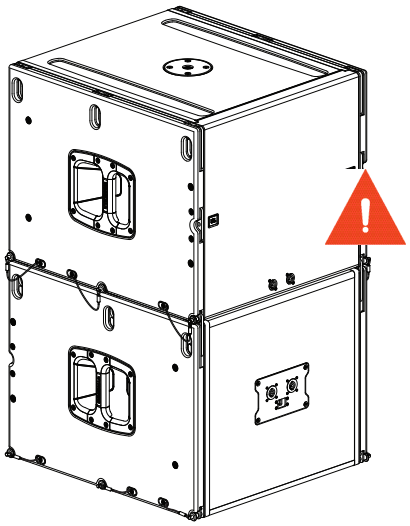
Example 4: 3:1



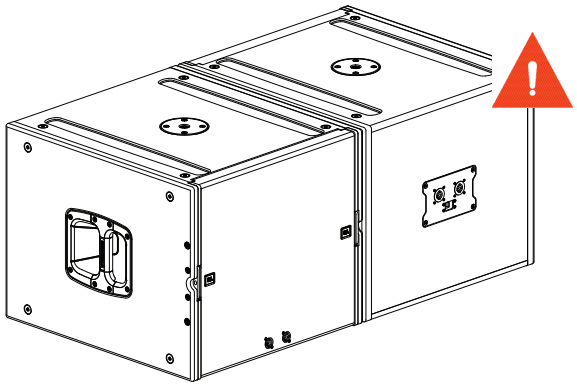
CAUTION: The level of the rear-facing subwoofers was carefully selected to allow B15 cardioid arrays to reach maximum SPL without dynamically compromising low-frequency directivity, and should not be adjusted.

As previously discussed, subwoofers do exhibit some front-to-back directivity, resulting in 1 to 3 dB of natural rear rejection. This is taken into consideration in the factory presets, and is the reason 2:1 is the most effective ratio. A 1:1 ratio supplies less rejection than 2:1 or 3:1, and should be avoided whenever possible. This is true for both ground-stacked and suspended configurations.

Example 1: 1:1 horizontal stack

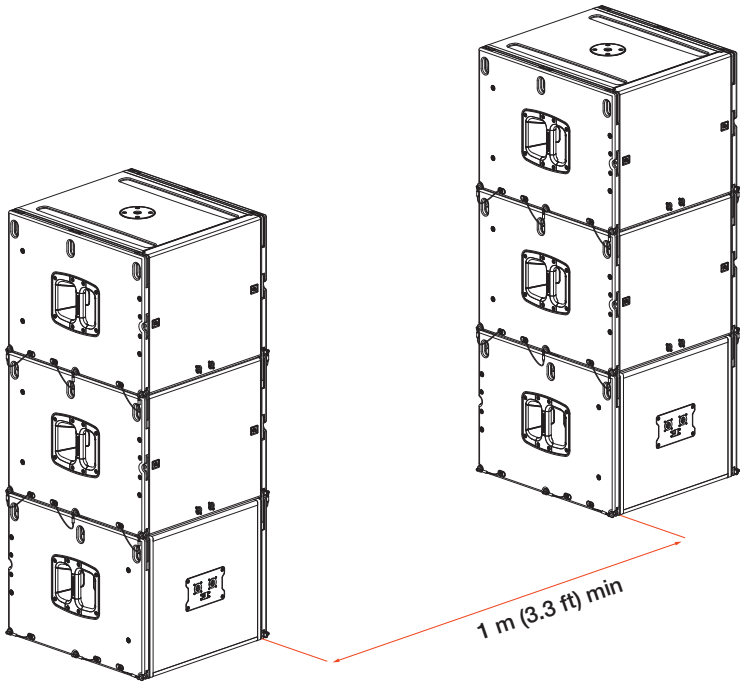


Example 2: 1:1 on-end



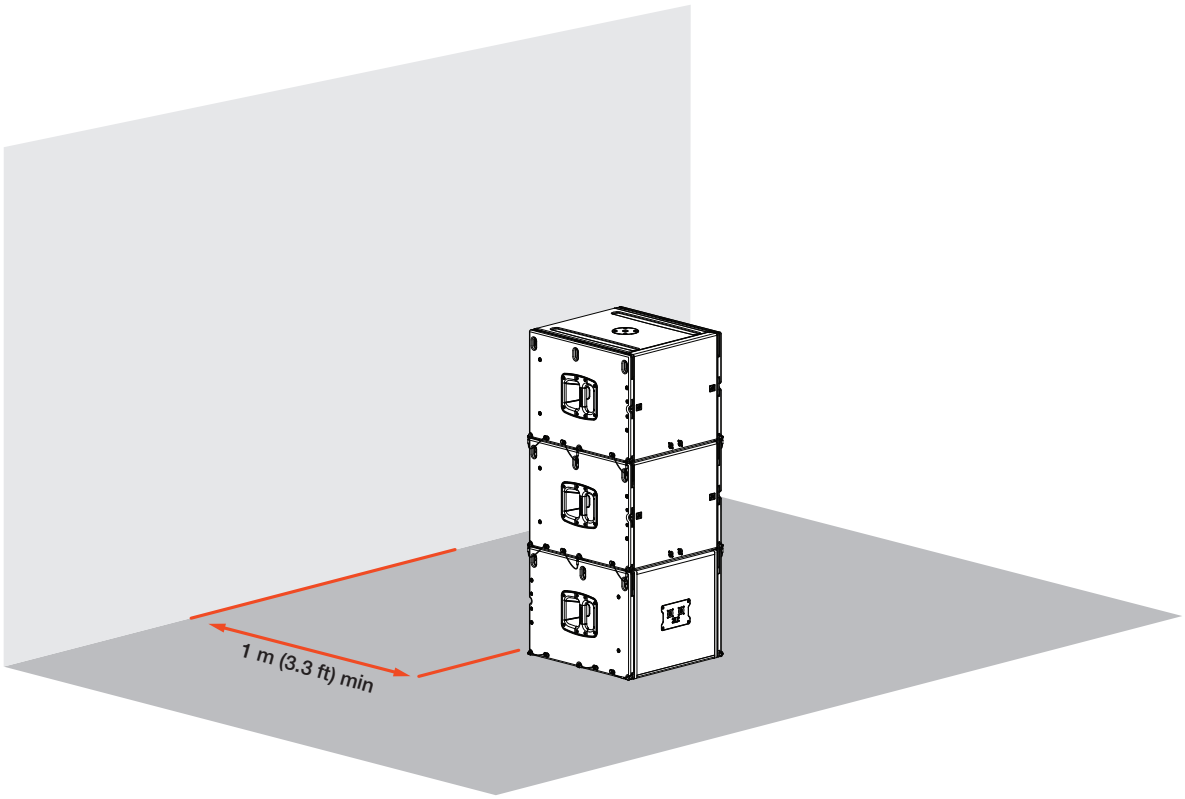
10.2 MINIMUM SPACING

When creating large subwoofer arrays using cardioid blocks of B15 subwoofers, a distance of at least 1 meter (3.3 feet) should be allowed between stacks to maximize rejection directly behind the array.



10.3 MINIMUM SPACE FROM A WALL

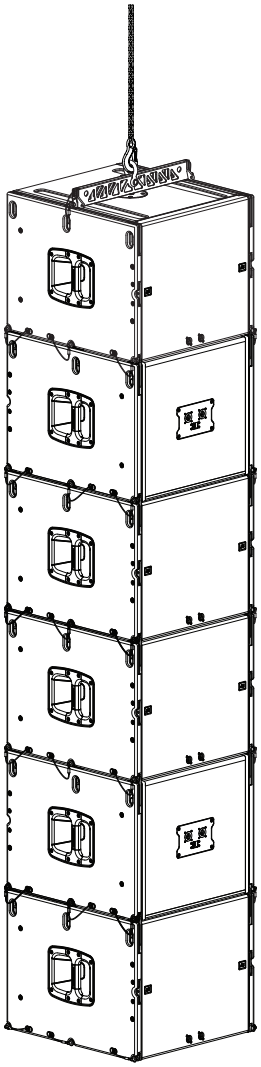
When cardioid subwoofer stacks are placed in front of a high-mass structure, like a concrete wall or stage, rear radiation patterns can be disrupted. Allow at least 1 meter (3.3 feet) of space behind the array for the cardioid effect to develop.



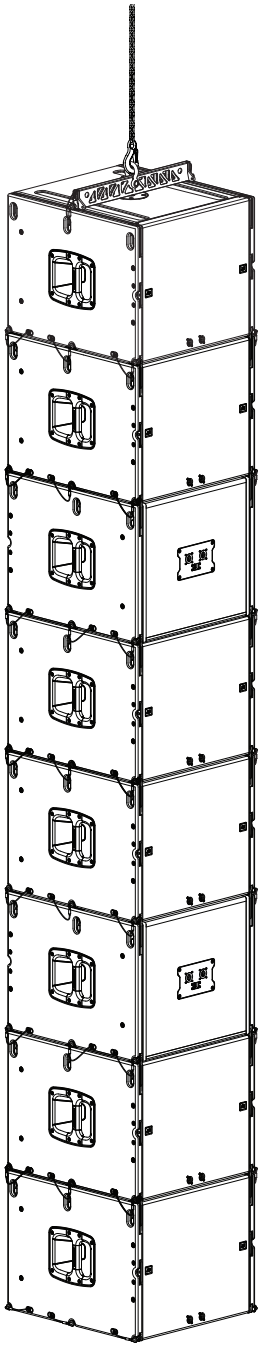
10.4 FLOWN ARRAY CONFIGURATIONS

Subwoofers in flown cardioid arrays should be configured in 2:1 or 3:1 building blocks and, when possible, in arrangements that are symmetrical, top to bottom. Symmetry ensures that the pattern produced by the array is axially symmetric with the physical array, allowing more predictable coverage and aiming. Asymmetric arrangements can be created, but should always be modeled first in LAC-3 to ensure that cancellation areas in the coverage fall outside of audience areas.

Example 1: (6) subwoofer flown array in 2:1 blocks



Example 2: (8) subwoofer arrays in 3:1 blocks



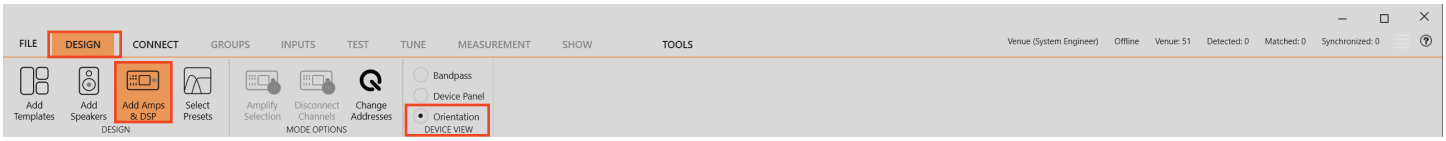
In some cases, asymmetric arrays are unavoidable, especially when the arrays are configured in blocks of four cabinets. In these cases, coverage tends to be biased towards a specific direction, but strategic placement can help shape coverage to the specific needs of a venue. Use LAC-3 to design such arrays.

10.5 CARDIOID PRESETS IN PERFORMANCE MANAGER

Performance Manager software allows selection of the appropriate factory preset for any subwoofer configuration. Each amplifier channel can run its own preset, enabling implementation of the configuration and layout needed for each situation.

STEPS:

1. Navigate to “DESIGN” mode, then to “Add Amps & DSP.”
2. Using the “Device View” selection control, switch the view to “Orientation.”
3. Use the “R” (REAR) button to reverse the orientation of a cabinet in Performance Manager.
4. Switch the “Device View” back to “Bandpass” view.



Once orientation has been selected, Performance Manager assigns the appropriate factory preset to the amplifier channel assigned to the selected B15. Cardioid arrays created in LAC-3 can be imported into Performance Manager with all parameters maintained.

TIP: The latest version of Performance Manager and LAC-3 can be downloaded directly from www.jblpro.com or by choosing the **Check for Updates** menu command from within Performance Manager.

11 - SYSTEM TESTING

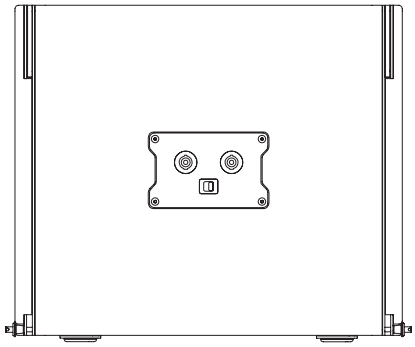
As with all speakers, the B15 must be checked and maintained periodically in order to assure long-term performance. While the system is designed to exhibit the utmost reliability, ensuring optimal performance for years to come requires confirming that the B15 is operating within specified tolerances. Below are two methods of checking and verifying proper transducer performance in a VTX B15 system.

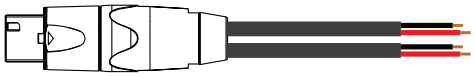
11.1 USING A DMM (DIGITAL MULTIMETER)

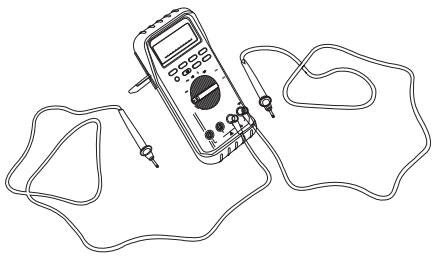
This method is best suited for when the speaker system can be tested in the shop. A DCR (DC resistance) test with a multimeter can give a very accurate reading of whether transducers are properly wired and operating within standard tolerances. This test is appropriate only for individual enclosures, not groups of cabinets.

With the B15 unconnected from any amplifier, set a DMM to the resistance (Ω) setting, set the B15 pin selection switch to the “A” position and place the probes across the Pin1+/- outputs . Record the values indicated on the DMM for the leads and refer to the chart below to determine if the DCR readings are within tolerance.

VTX B15		
	DCR	**Tolerance**
Good B15	5.0 Ω	+/- 0.2 Ω
Driver shorted	0.2 Ω	-







Notes:

- The DCR numbers listed above assume the transducers are at room temperature. If a measurement is taken right after use when the transducers are warm, readings may vary. For best results, test the speakers cold.
- The DCR value of a transducer gives an accurate representation of its electrical state. Mechanical defects will not be indicated by this test. Refer to the **VTX B15 Service Manual** for instructions on performing a rub-and-buzz test using a sine wave generator.

11.2 USING PERFORMANCE MANAGER

When in the field, Performance Manager's **Test System Mode** can be used to test VTX systems. This method is quick, and especially useful for determining whether all speaker cables, including cabinet-to-cabinet NL jumpers, are properly functioning.

To perform the test, Performance Manager uses the I-Tech HD's built-in noise generator, in conjunction with the amplifier's capabilities to sense voltage and current draw, to generate a nominal load impedance reading for each amplifier output channel. Since broadband pink noise is used as the test stimulus, the returned value is considered to be an average impedance value, which will differ from the resistance values given earlier in this document, which are taken using DC resistance.

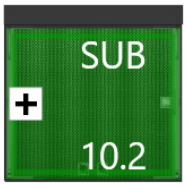
STEPS:

1. To start the test, make sure Performance Manager is online and connected to the devices.
2. Navigate to the **TEST** tab and make sure all speakers are muted.
3. Switch the Noise Generator to the ON position and change the level to between -30 and -10 dB. Levels lower than -30 dB may not be sufficient to trigger a reading.
4. Unmute the speaker to start the measurement. The measured value is displayed on the speaker icons.

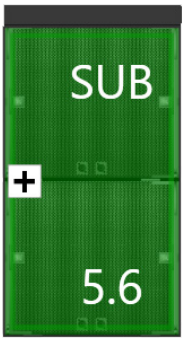
11.3 PERFORMANCE MANAGER READINGS

The measurements below show the expected impedance values for B15 cabinets, taken at room temperature with a cable length of 25 meters (82 feet). Acceptable tolerance is +/- 0.5 ohms.

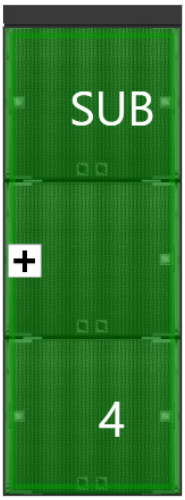
(1) VTX B15



(2) VTX B15



(3) VTX B15



The measurements recorded by Performance Manager are susceptible to drift based on variables such as temperature, cable length, wire gauge, and usage conditions. Parameter variations such as temperature will be common across all B15 enclosures in use, so all B15 subwoofers in a system should measure similarly. An enclosure measuring significantly different than others (by as much as several ohms) indicates something wrong with that enclosure.

TIP: The Performance Manager measurement uses an averaging algorithm in the background to generate a stable and reliable impedance value. Measurements take time to stabilize. Continue running the measurement until the displayed value settles.

12 - SPECIFICATIONS

12.1 VTX B15

ACOUSTICAL

Frequency Range	
(-10 dB) :	35 Hz-95 Hz (Preset: 80 Hz)
(±3 dB) :	42 Hz-80 Hz (Preset: 80 Hz)
Coverage Pattern Options[1] :	Omnidirectional or Cardioid
Maximum Peak Output[2] :	132 dB (Preset: 80 Hz)
System Power Rating[3] :	1300 Watts Continuous (IEC/100 hour)
System Type :	Passive Subwoofer

AMPLIFICATION

System Amplification :	Crown iTech 4x3500HD	Crown iTech 9000HD	Crown iTech 12000HD
Number of Cabinets per Channel[4] :	(2)	(2)	(3)
Required Amplifier Channels[4] :	(1)		
System Nominal Impedance[5] :	8 ohms		

TRANSDUCERS

Low Frequency :	(1) JBL 2285H, 15 in diameter, dual 4 in diameter voice coil, neodymium Differential Drive®

PHYSICAL

Enclosure :	15 mm, 18 mm and 24 mm exterior grade birch plywood, black DuraFlex™ finish, two integral recessed handles
Environmental Specifications :	IP55 (IEC 60529)[6] MIL-STD-810 UV (ASTM G154)
Suspension :	High-grade steel with anti-corrosion coating, captive suspension plates, quick release pins, auto-locking mechanism for setting angles
Grille :	Powder coated 1.5 mm (16-gauge) hex perforated steel with acoustically transparent black cloth backing
Connectors	
Type :	(4) Neutrik® speakON® STXX Series NL4 (two at the rear and two at the front)
Pin Assignments :	Selectable between Pin 1 ± and Pin 2 ±
Dimensions (H x W x D) :	446 mm x 536 mm x 586 mm 18.3 in x 21.1 in x 23.1 in
Net Weight :	41.5 kg (91.5 lbs)
Shipping Weight :	46.7 kg (103 lbs)

Footnotes:
1: Based on speaker preset selection and cabinet orientation/configuration.
2: Peak, unweighted SPL, measured under **half-space** conditions at 1 meter using broadband pink noise with a 12 dB crest factor and specified preset.
3: IEC Standard: IEC shaped noise with 6 dB crest factor based on nominal impedance and a duration of 100 hours. Continuous is defined as 2x RMS.
4: For more information on how to power B15 subwoofers, refer to the **VTX B15 User Manual**.
5: Nominal impedance within the stated frequency range of the product. Minimum impedance is 6.1 Ω at 38 Hz and 180 Hz.
6: Front face at 0 degrees or greater down angle to allow the cabinet to drain water. Suspension components fully weather rated for indoor or covered outdoor conditions where humidity is nominally under 50% and not local to bodies of corrosive materials. Unused speakON connectors must be sealed using silicone to protect against water and moisture.

12.1 VTX B15G

ACOUSTICAL

Frequency Range	
(-10 dB) :	35 Hz-95 Hz (Preset: 80 Hz)
(±3 dB) :	42 Hz-80 Hz (Preset: 80 Hz)
Coverage Pattern Options[1] :	Omnidirectional or Cardioid
Maximum Peak Output[2] :	132 dB (Preset: 80 Hz)
System Power Rating[3] :	1300 Watts Continuous (IEC/100 hour)
System Type :	Passive Subwoofer

AMPLIFICATION

System Amplification :	Crown iTech 4x3500HD	Crown iTech 9000HD	Crown iTech 12000HD
Number of Cabinets per Channel[4] :	(2)	(2)	(3)
Required Amplifier Channels[4] :	(1)		
System Nominal Impedance[5] :	8 ohms		

TRANSDUCERS

Low Frequency :	(1) JBL 2285H, 15 in diameter, dual 4 in diameter voice coil, neodymium Differential Drive®

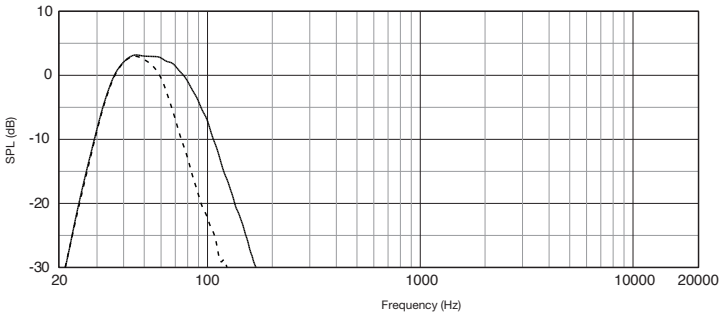
PHYSICAL

Enclosure :	15 mm, 18 mm and 24 mm exterior grade birch plywood, black DuraFlex™ finish, two integral recessed handles
Environmental Specifications :	IP55 (IEC 60529)[6] MIL-STD-810 UV (ASTM G154)
Suspension :	(16) M10 points for eyebolts
Grille :	Powder coated 1.5 mm (16-gauge) hex perforated steel with acoustically transparent black cloth backing
Connectors	
Type :	(4) Neutrik® speakON® STXX Series NL4 (two at the rear and two at the front)
Pin Assignments :	Selectable between Pin 1 ± and Pin 2 ±
Dimensions (H x W x D) :	446 mm x 536 mm x 587 mm 18.4 in x 21.1 in x 23.1 in
Net Weight :	33.5 kg (74 lbs)
Shipping Weight :	39.5 kg (87 lbs)

Footnotes:
1: Based on speaker preset selection and cabinet orientation/configuration.
2: Peak, unweighted SPL, measured under **half-space** conditions at 1 meter using broadband pink noise with a 12 dB crest factor and specified preset.
3: IEC Standard: IEC shaped noise with 6 dB crest factor based on nominal impedance and a duration of 100 hours. Continuous is defined as 2x RMS.
4: For more information on how to power B15 subwoofers, refer to the **VTX B15 User Manual**.
5: Nominal impedance within the stated frequency range of the product. Minimum impedance is 6.1 Ω at 38 Hz and 180 Hz.
6: Front face at 0 degrees or greater down angle to allow the cabinet to drain water. Suspension components fully weather rated for indoor or covered outdoor conditions where humidity is nominally under 50% and not local to bodies of corrosive materials. Unused speakON connectors must be sealed using silicone to protect against water and moisture.

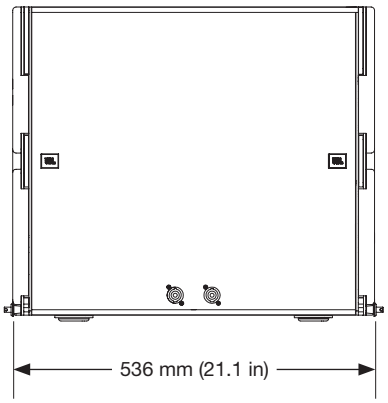
13 - ACOUSTIC MEASUREMENTS

FREQUENCY RESPONSE

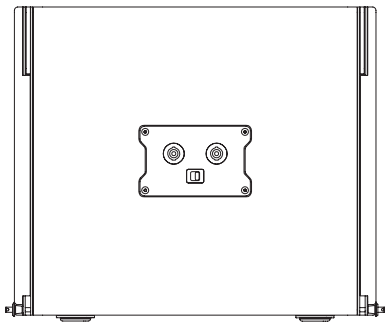


14 - DIMENSIONS

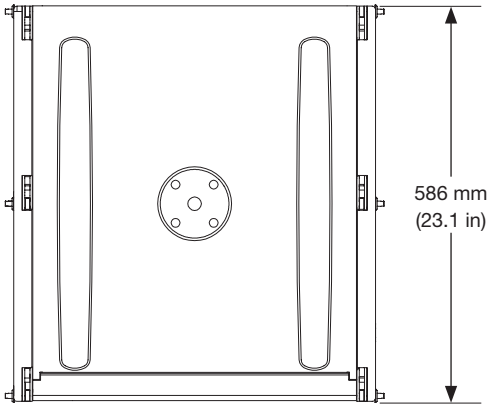
FRONT



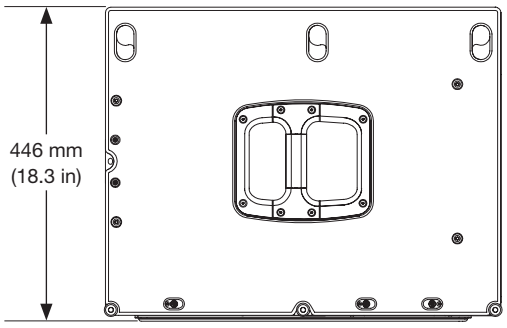
REAR



TOP/BOTTOM



LEFT/RIGHT



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