

# Professional Installation Products User's Guide





# Welcome

Thank you for trusting JBL with your sound – it's an honor we don't regard lightly. As a world leader in sound reinforcement, JBL sound systems are permanently installed in many famous arenas, concert halls, theaters, theme parks and clubs. In fact, JBL speakers provide the body, substance and clarity for today's hottest music acts, showcase stores, and premiere restaurants – you just can't make a more professional choice.

The JBL Professional Installation Products are the result of over a decade of custom designed and custom built sound reinforcement solutions. From cathedrals to discos, to arenas and small boutiques, JBL has successfully provided the tools and system resources to meet and exceed every need. It's with this experience and success that JBL offers three new series of sonic solutions. Congratulations on your purchase.

For maximum product life and performance, please read through this guide to familiarize yourself with the features, applications and cautions before you use your system. If you need additional information:

Within the United States:

Contact your local JBL dealer or contact Applications Dept.,

JBL Professional, P.O. Box 2200 8500 Balboa Blvd., Northridge, CA 91329

In the USA, you may call (818) 894- 8850 - Monday through Friday 8:00am to 5:00pm Pacific Coast Time.

In other areas throughout the world:

Contact your local JBL distributor or dealer

**CAUTION!** Suspending any system from the JBL Professional Installation Product Range should be done by qualified persons following safe rigging standards.



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## About this Guide

This guide is intended to familiarize you with the JBL Professional Installation Product Range and the main features common to the majority of the loudspeaker systems within it. Some systems have unique features, and are addressed at the rear of this guide.

This manual is JBL Professional part # 981-00043-02

# Product Range

The JBL Professional Installation Product Range provides the sound system designer with an extremely comprehensive selection of loudspeaker systems designed specifically for fixed installation applications. The Marquis Series, Sound Power and Venue Series are each a resource pool from which one can draw the most suitable loudspeaker solution for the application.

The 6 Marquis Series systems provide the solution for small venues, area fill locations and near field requirements. For high performance at maximum value, Sound Power offers 9 loudspeaker systems with superb sonic performance in user friendly enclosures. To meet the challenges of large installations, Venue Series offer 9 models designed for uncompromised performance, excellent pattern control, and unparalleled sonic performance.

All enclosures are finished with JBL's DuraFlex™ coating. This textured finish is extremely durable, which means that all systems are capable of withstanding outdoor environmental conditions (to an IXP4 rating per IEC 529 and Mil-Std 810), and can be painted to match the decor of the installation. Neutrik® Speakon® connectors are used throughout the range for ease of use and reliable operation. In addition, all systems are supplied with internal threaded fittings that readily accept M10 threaded hardware for a universal suspension solution.

## Marquis Series

The Marquis Series consists of five full range 2 way designs and one compact sub woofer system. The series includes three cabinets designed with low profile applications in mind, allowing for close ceiling mounting, and all Marquis Series may be suspended either horizontally or vertically.

## Sound Power

Including seven full range systems and two low frequency systems, Sound Power was created to provide the system solution for high sonic performance for mid to short throw applications, primary installation systems to high performance fill applications. The versatility of this line provides solutions for central clusters in moderately large spaces, main dance floor systems in night clubs to side fill in large auditoriums.

## Venue Series

The Venue Series; five full range, two mid/hi and one very high efficiency bass system. These horn-loaded mid range systems provide high directivity for optimum arrayability and excellent pattern control in the mid frequency range. Designed to meet the challenges of large venue installations, the Venue Series delivers uncompromised performance through the use of the latest component technology and advanced system design features.

# Marquis Series

JBL

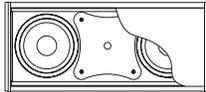
PROFESSIONAL

The Marquis Series is the new "Specified Solution" for small venues, area fill locations, and near field requirements. All systems have integral passive networks that incorporate JBL's proven Sonic Guard®, and the series features the JBL OASR (Optimized Aperture Symmetrical Radiator®) which provides even and clear high frequency coverage over a uniformly defined area.



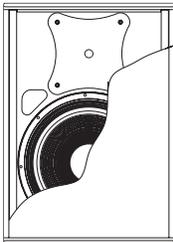
## MS26

The ultra compact low profile design of this system makes it ideal for close fill applications. (eg. underbalcony, columns, and select area fill.) The high frequency device is a 1" exit composite diaphragm tweeter integrated to a newly designed elliptical waveguide. The combination exhibits smooth power response resulting in extremely natural voicing. With a nominal 100° x 70° coverage pattern the system provides even coverage for these applications.



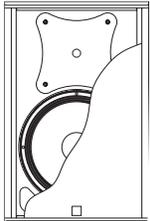
## MS28

A full range system designed to provide extended bandwidth and maximum SPL in a single system package and yet be visually unobtrusive. The enclosure design allows for installation very close to walls, ceilings, thus making it an ideal choice for high SPL under balcony and distributed applications. Featuring the OASR®, this system delivers clear transient highs over a well defined coverage area, whether installed vertically or horizontally.



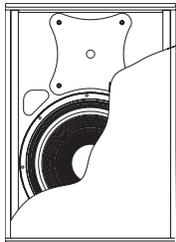
## MS105

This fullrange 2-way design offers maximum value, delivering unprecedented bandwidth and maximum SPL, in compact arrays or individually as part of a distributed installation design. The OASR® with a 1" exit titanium compression driver provide the distribution of clear highs over a well defined coverage area.



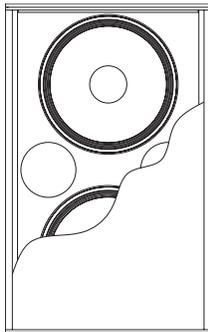
## MS112

The unique profile of the MS112 enclosure lends this system to a multitude of applications. This full range system can be used in its vertical orientation individually or together in cluster arrays. In its horizontal orientation it is ideal for high SPL applications where the ceiling is low but is the only area available to install the system. Also, it can be used horizontally as a compact low profile permanent floor monitor.



## MS115

Providing the highest single system SPL and broadest bandwidth, this 2 way full range design is more than suitable for any foreground sound reinforcement installation. Using top class JBL components (the proven 3" voice coil 15" woofer, and new OASR device coupled to one of JBL's most reliable 1" exit compression drivers), the MS115 will give many years of accurate and reliable reproduction.

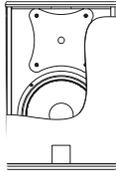


## MS125S

The MS125S is a compact low frequency loudspeaker system. The dual 15" low frequency transducers, combined with an acoustically optimized enclosure design provide powerful transient bass with minimum power compression and distortion. The internal low pass passive network eliminates the need for an external electronic crossover. It has been designed to be the perfect low frequency augmentation to any Marquis Series installation.

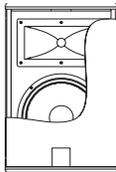
# Sound Power

Sound Power includes seven full range systems and two sub bass systems, all utilizing JBL Professional premium components for high performance installations. All Sound Power systems feature a selectable input connector panel that enables a system to operate in either bi-amp or passive mode - and in the case of the subs, parallel or discrete mode.



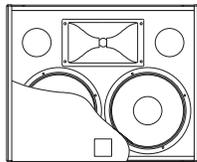
### SP212-A

Wide dispersion OASR™ (Optimized Aperture Symmetrical Radiator™); 1" exit Titanium compression driver; 12" VGC™ LF transducer; Unique multi-application enclosure. Ideal for short throw applications in restricted spaces, ceilings, and permanent floor monitoring.



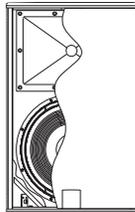
### SP212-9

Large format compression driver; 12" VGC™ LF transducer; Unique multi-application enclosure. Ideal for applications requiring high SPLs in a very limited space.



### SP222

Dual VGC™ 12" LF transducers and Large Format compression driver coupled to Optimized Aperture™ horn; Asymmetrical enclosure allows this compact system to be suspended close to the ceiling. Ideal for high power dance floors in music clubs.



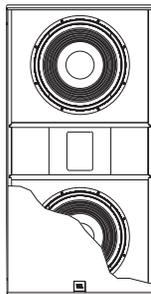
### SP215-9/-6

15" VGC™ LF transducer; Extended LF bandwidth; 90 and 60 degree horizontal coverage option; Large Format compression driver; Compact trapezoidal enclosure. Ideal for use individually or clustered in tight compact arrays.



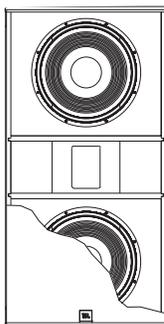
### SP225-9/-6

Dual 15" VGC™ LF transducers; 90 and 60 degree horizontal coverage option; optimized LF response enclosure design; Optimized Aperture™ horn. Ideal for applications that require maximum SPLs and unprecedented bandwidth.



### SP125S

Dual 15" VGC™ LF transducers; Direct Radiator LF reinforcement enclosure; optimized trapezoidal design; Linear Dynamic Vent Design eliminates vent compression for higher output, extended bandwidth and lower distortion. Ideal for arraying with fullrange systems (e.g. VS3215).



### SP128S

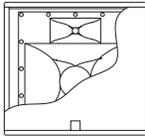
Dual 18" SVG™ LF Transducers; Direct Radiator LF reinforcement enclosure; Linear Dynamic Vent Design; Rectangular enclosure for maximum LF extension. Ideal for ground stacked sub applications.

# Venue Series

JBL

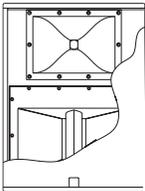
PROFESSIONAL

The Venue Series consists of five full range, three mid/hi and one very high efficiency bass system. For absolute maximum performance - Venue Series comes into its own. Mid horns are used throughout this series, providing accurate and precise control of the vital frequency components that enhance intelligibility. JBL Professional's SVG™ (Super Vented Gap™) transducers are used for maximum performance and minimum power compression, as well as Optimized Aperture™ waveguides for minimum high-frequency distortion.



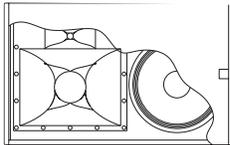
## VS2110

2-way mid-high design; horn loaded midrange wide-band pattern control; mid-high wave guide is rotatable enabling horizontal enclosure orientation; passive/bi-amp selector for maximum configuration flexibility. Ideally suited for medium to long throw applications requiring extended pattern control.



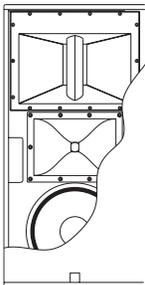
## VS2210-9/-6

2-way mid-high design; horn loaded midrange for wide-band pattern control; the mid-high components are similar to that of VS3215 and VS3218 - making this system compatible in high performance cluster arrays; also available with 90 (-9) or 60 (-6) degree horizontal coverage options. Ideally suited for long throw applications requiring extended midrange pattern control in a mid-high system design.



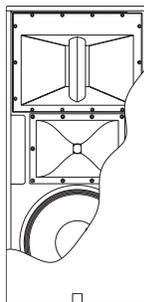
## VS3115

3 -way full range system; nominal 60 degree horizontal coverage pattern; mid-high wave guide is also rotatable for horizontal suspension; the internal selector enables a choice between bi-amp or tri-amp configurations. This system can be vertically or horizontally suspended and maintains its performance specification for any application requiring a compact, high power system with extended wide-band pattern control.



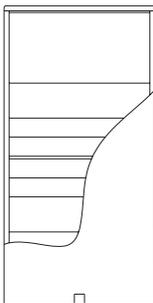
## VS3215-9/-6

3 -way design; very high peak output capability; SVG™ Super Vented Gap™ LF Transducer allows full-range use without a subwoofer; the trapezoidal enclosure and array module baffle layout enable optimum performance in cluster applications. The system is available with 90 (-9) or 60 (-6) degree horizontal coverage options.



## VS3218-9/-6

3-way full range system design; 18" SVG™ Super Vented Gap™ LF transducer gives this system unprecedented LF bandwidth in a single enclosure; 10" driver loads the midrange horn providing extended pattern control and a large format compression driver coupled to an Optimized Aperture™ horn completes the design. The system is available with 90 (-9) or 60 (-6) degree horizontal coverage options. For long throw applications requiring uncompromised performance, individually or arrayed, the VS3218 fulfills the role.



## VS125HS

Dual 15" VGC™ LF Transducers; High efficiency horn loaded LF reinforcement design emphasizes kick drum in music playback; rectangular enclosure design allows for ground stacking and maximum acoustic coupling. Ideal for ground stacking and combining with mid-high systems for a full range horn loaded system.

# Using the Eye Bolt Kit

## WARNING!

**Suspending this system should be done by qualified persons following safe rigging standards.**

For more information, please refer to the JBL Technical Note Volume 1, Number 14 - Basic Principles for Suspending Loudspeaker Systems.

## Important Information

Before suspending this system, inspect all components to be used for cracks, deformations, corrosion and/or missing or damaged parts that could reduce strength and safety of the installation.

Careful calculations must be performed to ensure that all components are used within their rated work load before the system is suspended. Remember: the weakest component determines the size and safety of the entire installation.

Pull tests at a certified test facility have documented non-catastrophic failure at 2,600 lbs. (1,182 kg). This allows a rating of 371 lbs. (167 kg) assuming a 7 to 1 safety factor.

**Never load the top suspension points with more than 371 lbs. (167 kg)!**

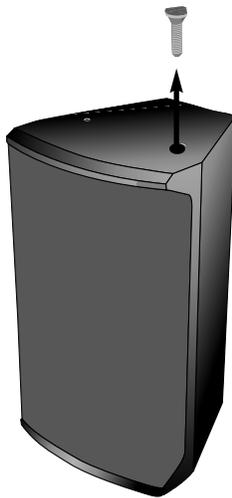
For Example: Maximum Load rating 371 lbs. (167 kg) ÷ Net weight of VS3218-9 165 lbs. (74.8 kg) = 2.25  
Therefore only two VS3218-9 may be used in a vertical array if both are suspended from the points on the upper system.

## Parts Included in Kit

3x Shoulder Eye-Bolts, 3x Washers, 1x Suspension Advisory and Tech note

## Installation of the Shoulder Eye-Bolts

**1** Remove placeholder bolts (x3)



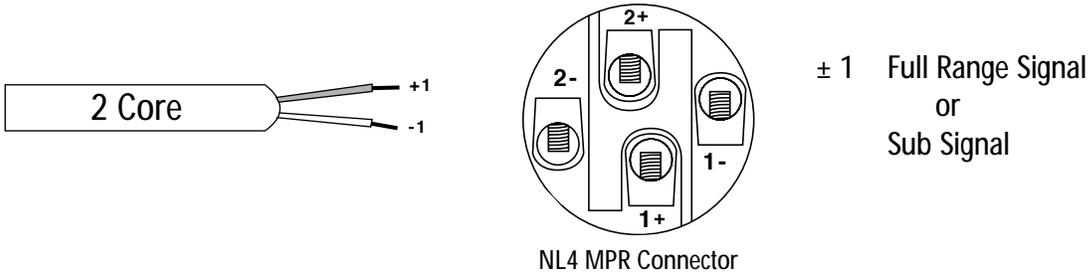
**2** Using the included washer as a stand-off, insert shoulder eye bolts with thread locking material (Loctite #2 or equivalent) and tighten appropriately.



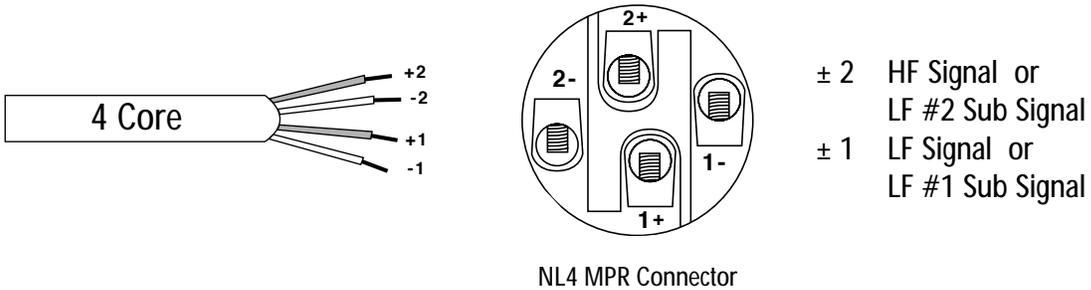
# Cable & Connections

Each connector panel incorporates two Neutrik® Speakon® connectors. The second connector facilitates the ability to “loop through” to other Sound Power systems in the installation. The diagrams below detail the cable-side connections. Please refer to Appendix E for more information regarding recommended cable ranges and gauges.

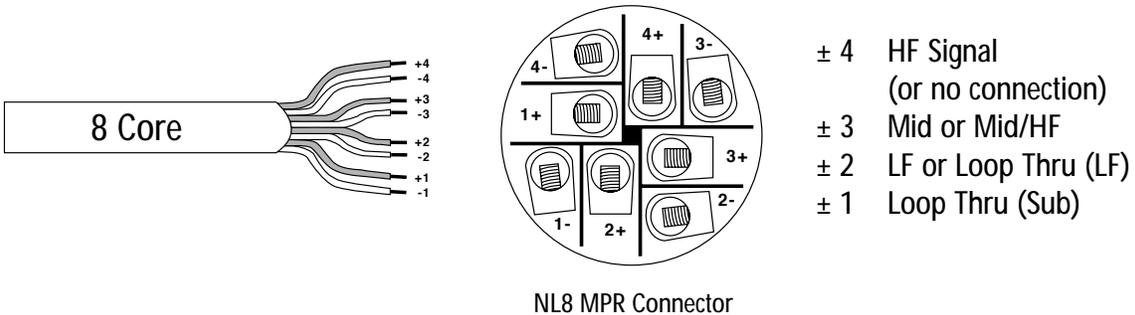
## Passive Systems & Subs (Parallel mode)



## Bi-Amp Systems & Subs (Discrete mode)



## Passive, Bi-Amp, 3-way Bi-Amp and 3-Way Tri-Amp Systems



# Input Panel

## Internal Network Mode Selector

All Sound Power models and some Venue Series models are fitted with the internal network mode selector. The following section is relevant to these systems.

The ability to select the mode of operation provides the sound system designer flexibility in the installation configuration, and also permits the installation to be upgraded at a later date. By simply removing the connector plate and changing the position of a heavy duty Molex® connector, the system can be configured to either a bi-amp or a passive system (or tri-amp to bi-amp). After replacing the connector plate, the network position is indicated on the connector plate panel. This provides a truly tamper resistant solution to avoid the horrors of a mis-configuration.



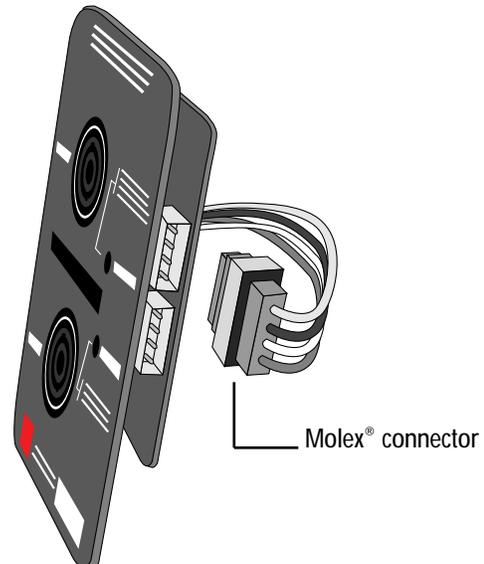
In passive operation, a system can be operated with a minimum of only one amplifier and no additional system controllers. In bi-amp operation, the system can be operated for maximum transducer performance and will require the use of additional amplifiers - and for this product range, the JBL DSC260 system controller. For Sub systems with more than one transducer, the same ability to select the mode of operation is provided - but instead of bi-amp/passive selection, the input can be configured for either parallel woofers (4 ohm) or individual transducer access (2 x 8 ohm). This can be useful for assuring maximum power transfer from the amplifier to the transducers.

**Please Note:** There are no passive network components in the circuit when the Bi-amp/Tri-amp mode is selected.

## Changing the Input Mode Connector



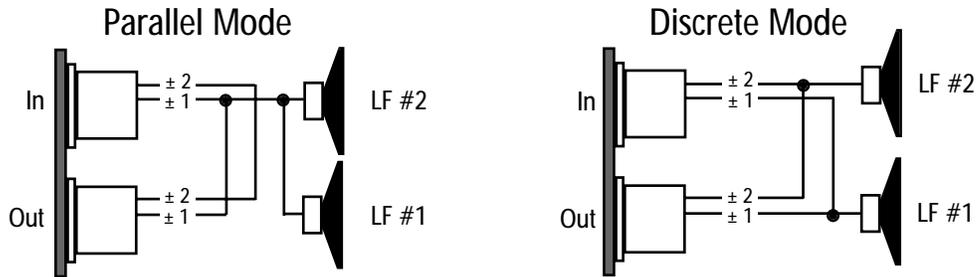
1. Remove 6 connector plate retaining screws and remove the plate.
2. Turn plate over and locate the male Molex® connector
3. Pull out connector and firmly place in Molex® socket of desired system mode
4. Replace plate and secure with 6 screws



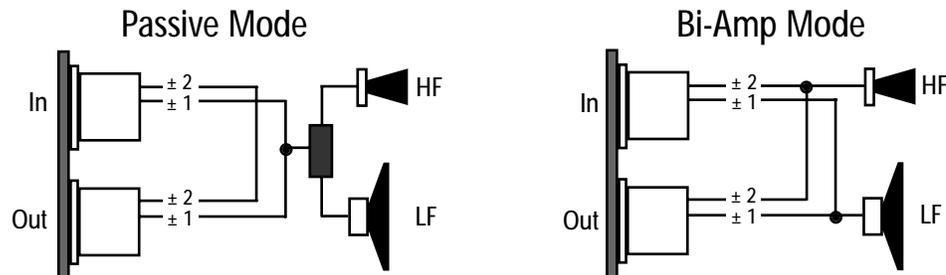
# Input Configurations

This section describes the different configurations of Input Connector Panel mode selections. The wiring connections from the Input Panel to the transducers change when the mode selector is moved.  
Please Note: Each line in the diagrams below represents a pair of wires. (E.g. *both* +1 and -1 connecting wires.)

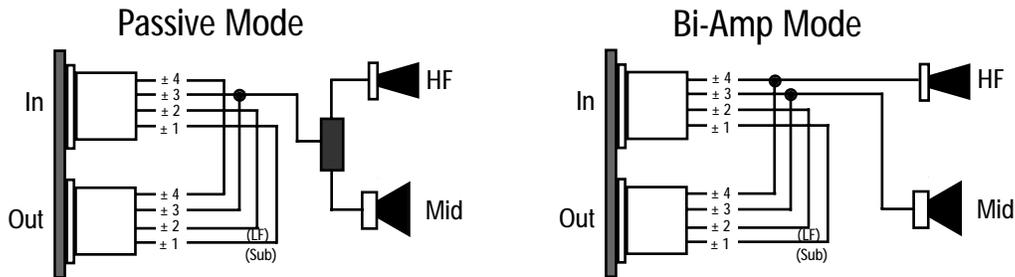
## Sub Connector Plate w/ NL4 MPR Inputs



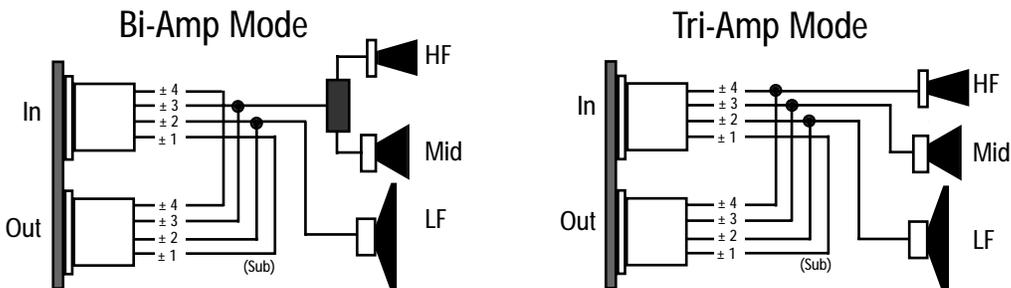
## 2-Way Connector Plate w/ NL4 MPR Inputs



## 2-Way Connector Plate w/ NL8 MPR Inputs



## 3-Way Connector Plate w/ NL8 MPR Inputs

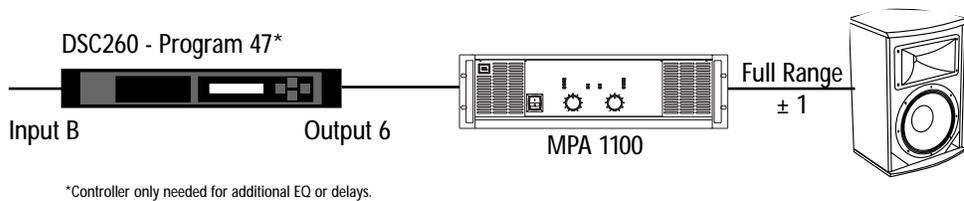


# System Configurations

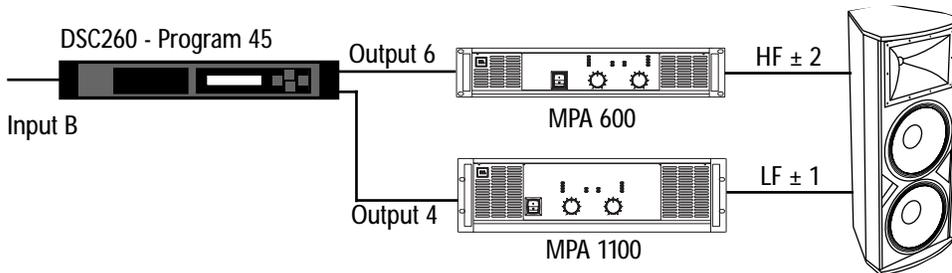
There are many different possible configurations of systems within the JBL Installation Product Range. This section shows a selection of key system configurations that will provide a basis for setting up any installation, it includes: DSC controllers, amplifier requirement and wiring connections. It is very important that you are familiar with the previous sections of this Users Guide and also the DSC260 system controller (please refer to Appendix A). Settings have been programmed into the DSC260 for bi-amplifier operation of the Installation Range systems. Please note that when using the LF reinforcement systems, a suitable adjustment may be required in the DSC260 for accurate operation in the installation. This is a straight forward procedure which is clearly outlined in the DSC260 Users Guide.

Note: Each line in the diagrams below represents a pair of wires. (E.g. *both* +1 and -1 connecting wire.)

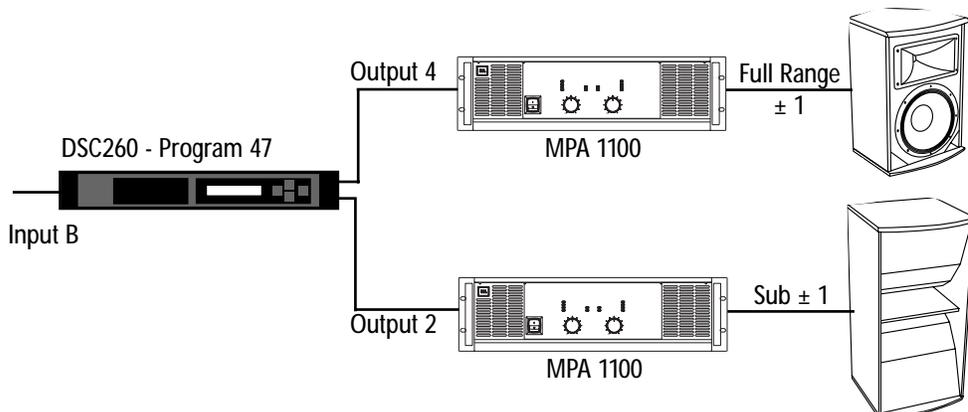
## Full-range 2-Way



## Bi-Amp 2-Way



## Full-range 2-way with Sub (Parallel Mode)

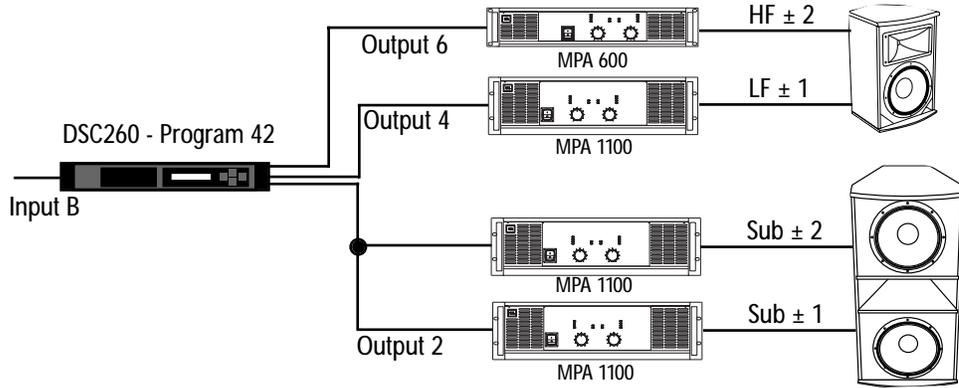


# System Configurations

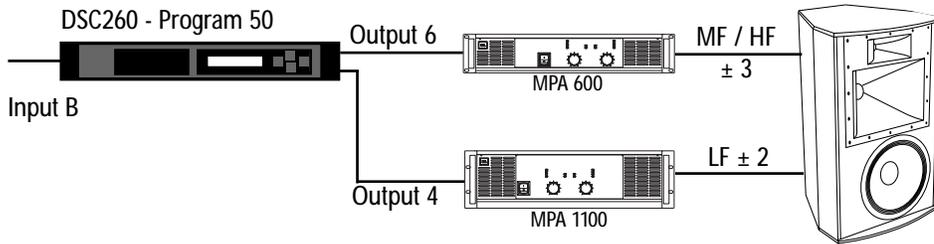
**JBL**

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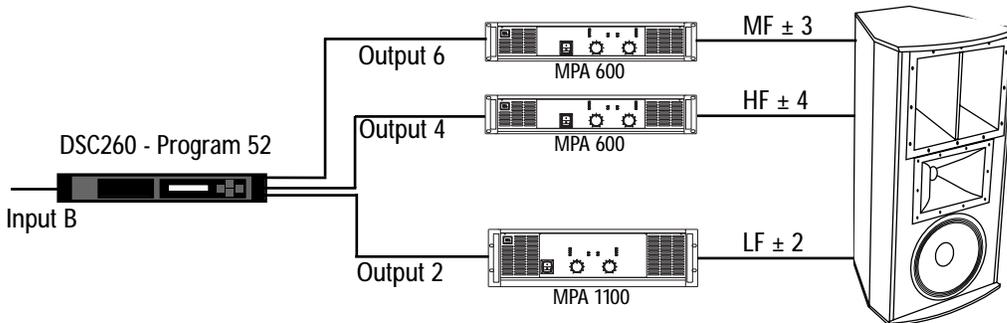
## Bi-Amp 2-way with Sub (Discrete Mode)



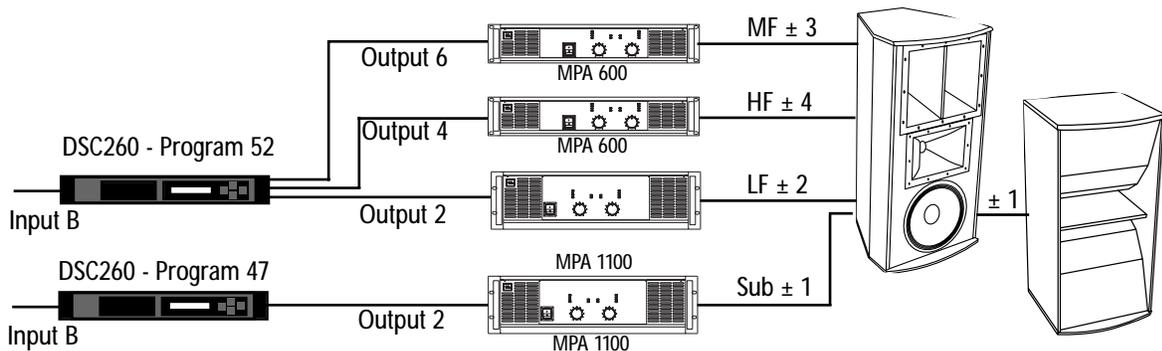
## Bi-Amp 3-Way



## Tri-Amp 3-Way

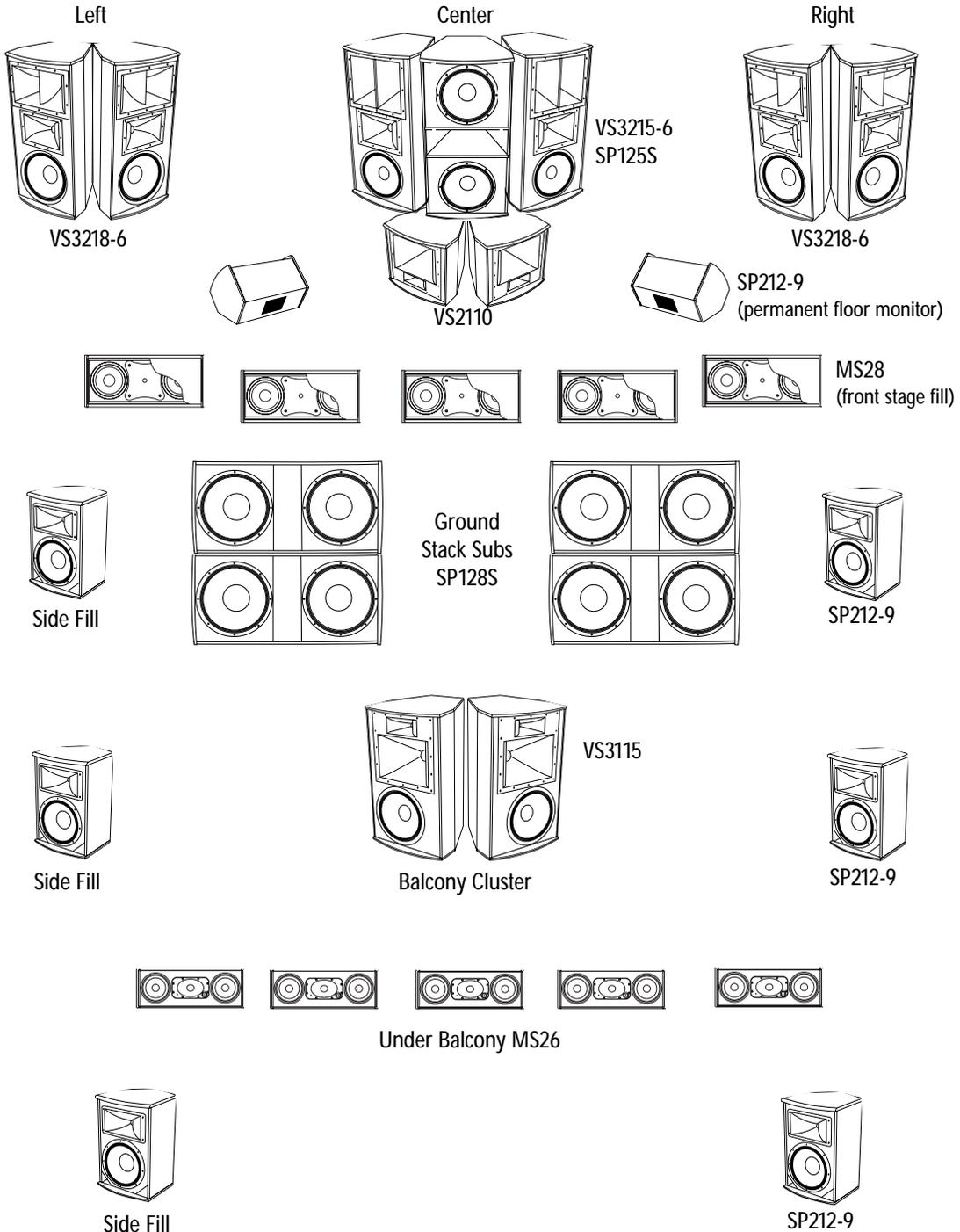


## Tri-Amp 3-Way with Loop Thru Sub



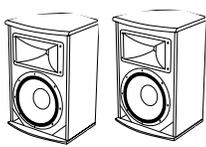
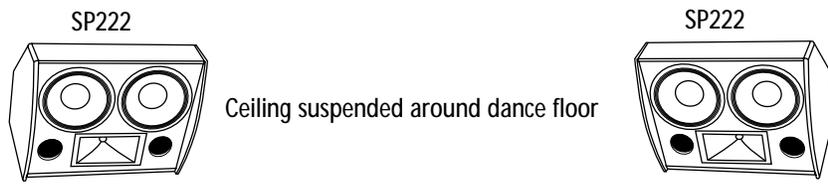
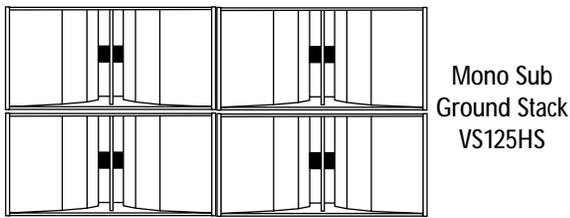
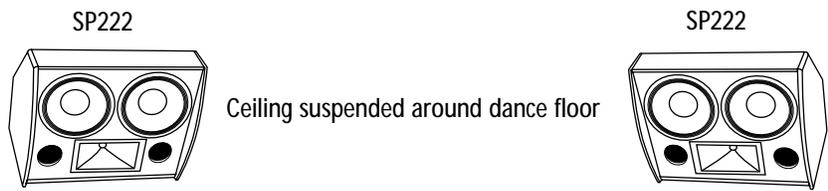
# Large Installation

This installation example represents a large auditorium. Note how Sound Power and Venue Series may be mixed and matched. This is just one example of how JBL Professional Installation products may be used to provide a comprehensive sound reinforcement solution.

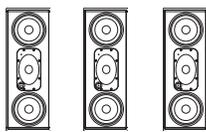


# Medium Installation

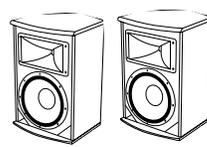
This medium installation example represents a typical club application of JBL Professional Installation products.



In-fill SP212-9



Bar Area In-fill  
MS26



In-fill SP212-9

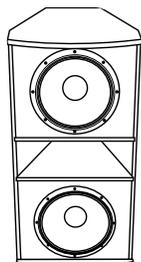
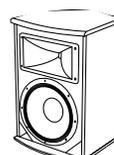
# Small Installation

This small installation example represents a typical small performing arts theater or live music club application.

SP212-9



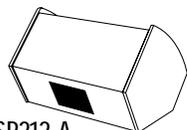
SP212-9



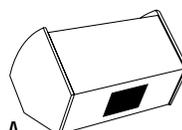
SP125S



SP125S



SP212-A  
(permanent floor monitor)



SP212-A  
(permanent floor monitor)

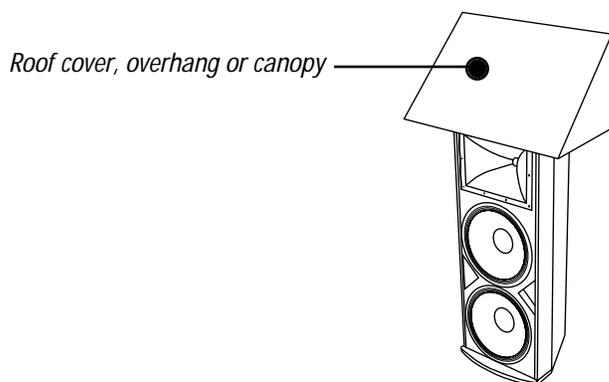
# Using Outdoors

## Using in Hostile Environments

Each Sound Power is coated with a tough weather resistant finish called DuraFlex™. DuraFlex™ is inherently flexible, and therefore is extremely resilient to knocks, scratches and scuffs, thus allowing the loudspeaker to retain its appearance following the transition from packaging to fixed installation.

DuraFlex™, premium grade wood, treated cones, and heavy duty metal and foam grilles are all features that enable each system to withstand the effects of the environment. JBL Installation Range systems have proven weather resistance to Mil-Std-810 and IPX4 per IEC 529 specification, thus providing reliable service for many years.

Even though the JBL Installation Range systems have proven resistance to water splashing (IPX4 per IEC 529), care should be taken when installing outdoors. It is strongly recommended that they be installed within the protection of a shelter or overhang. The Mil-Std-810 specification refers to a degree of resistance to; humidity (95% @ 24°C), salt spray, high and low temperatures (-2°F to 120°F), and UV exposure. In addition, all transducer cones have been treated with a moisture resistant coating.



## Painting

Each JBL Professional Installation model is readily paintable. The DuraFlex™ finish provides a lightly textured surface that any standard household or industrial paint readily adheres to. The result is a loudspeaker enclosure that is able to blend unobtrusively into the decor of its environment.

Instructions for painting:

- 1 Prepare the enclosure surface by cleaning and wiping off dust with a damp cloth. It may be necessary to use a mild household cleaner to remove grease. Avoid using a cloth that will deteriorate over the textured surface.
- 2 Apply as many coats of paint as is required. Application can be by rolling, brushing or spraying. Care must be taken when painting the grille, avoid any paint or type of application that will clog the open cells in the foam backing the grille. Depending on the type of paint, it may not be wise to spray the grille.
- 3 For painting systems installed in environmentally hostile locations, it is recommended that an automotive paint should be used for maximum protection.

# Appendix A

## DSC260 Digital System Controller

Most Sound Power and Venue Series systems have optional modes of operation: passive, bi-amplified and tri-amplified. For optimum system performance of these systems, the DSC260 should be utilized, as it provides correct system crossover, signal alignment and equalizer functions.

To fully understand the operation and programming of the DSC260, the user should read the Owners Manual supplied with the DSC260. This section is intended as a "quick start" instruction to operating the DSC260 for JBL Professional Installation systems that have been pre-programmed in the DSC260.

1. Before making any connections between the controller and the amplifiers, make sure that all power to the amplifiers is disconnected and the amplifier level controls are completely down.
2. The DSC260 has been programmed for many popular JBL Speaker System models, this includes all Sound Power and Venue Series systems that require an active system controller. Before connecting the controller to the amplifiers, this program should be changed to a setting that matches your JBL product.
3. To Select the appropriate program, turn the power of the DSC260 on, then press RECALL. Use the Parameter Plus and Minus buttons located on the left side of the LCD panel to page up and down until the correct setting is visible. Press RECALL after the cursor is on the setting.
4. Connect the console outputs to the inputs of the DSC260. Left to A and Right to B.  
In the case of a mono system, use input A.
5. Connect the outputs of the controller to the amplifier input channels maintaining the Left and Right identification. Typically the higher the number of the output, the higher the frequency content. (I.e. In a 2 channel 3-way default, outputs 1 & 2 are Low, 3 & 4 are Mid and 5 & 6 are High.) As the outputs vary depending upon the type of system and program loaded into the DSC260, consult Appendix B in the DSC260 Manual for correct output information.
6. Turn on the power to the console, controller(s) and finally the amplifiers. (It is best to turn the amplifiers on last and off first to prevent any thumps or pops from damaging the transducers.)
7. Apply a signal source to the controller. This can be pink noise, a tone or music.
8. Unmute the outputs on the DSC260, one at a time. The RED LEDs below each Output Meter signify the output is muted.
9. Advance each amplifier channel slowly and confirm that the signal reaching the transducers is correct. (It is best to begin with channels driving the low frequency transducers first. In this way, if the high and low are reversed, high frequency signals will be going to the woofer. It's better to find this problem than the low frequencies going to the high frequency device!)
10. After it is confirmed that all transducers are receiving the proper signals, initial calibration can begin.

### Important Note

Gain and limiter settings are programmed for all Sound Power and Venue Series systems using rated power amplifiers, actual amplifiers used during programming were;

MPA600 - HF  
MPA600 - MID & MID/HF  
MPA1100 - LF

For detailed limiter settings for rated power levels, it is strongly recommended that reference is made to Appendix B in the DSC260 Owners Manual.

# DSC260 Connection Matrix

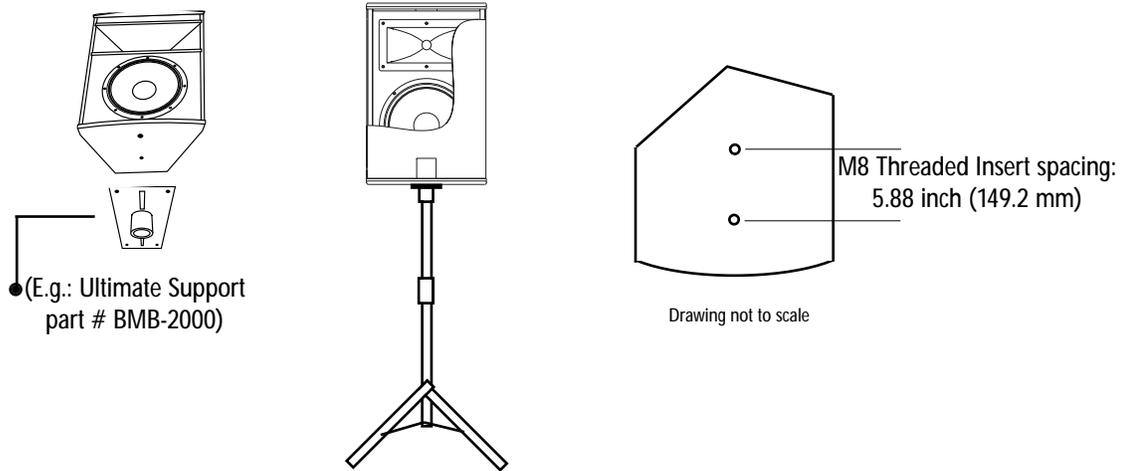


PGM	SPEAKER MODEL	NOMINAL BAND PASS		NOMINAL BAND PASS		NOMINAL BAND PASS		NOMINAL BAND PASS		NOMINAL BAND PASS	
		OUT 1	OUT 2	OUT 3	OUT 4	OUT 5	OUT 6	OUT 1	OUT 2	OUT 3	OUT 4
40	SP-212-A BIAMP	L SUB	R SUB	L LF	R LF	L HF	R HF	L HF	R HF	L HF	R HF
41	SP-212-9 BIAMP	L SUB	R SUB	L LF	R LF	L HF	R HF	L HF	R HF	L HF	R HF
42	SP-215-9 BIAMP	L SUB	R SUB	L LF	R LF	L HF	R HF	L HF	R HF	L HF	R HF
43	SP-215-6 BIAMP	L SUB	R SUB	L LF	R LF	L HF	R HF	L HF	R HF	L HF	R HF
44	SP-222 BIAMP	L SUB	R SUB	L LF	R LF	L HF	R HF	L HF	R HF	L HF	R HF
45	SP-225-9 BIAMP	L SUB	R SUB	L LF	R LF	L HF	R HF	L HF	R HF	L HF	R HF
46	SP-225-6 BIAMP	L SUB	R SUB	L LF	R LF	L HF	R HF	L HF	R HF	L HF	R HF
47	SP SUBS	L SUB	R SUB	L HF	R HF	L FR	R FR	L FR	R FR	L FR	R FR
50	VS2110P	**Connect other compatible components									
51	VS2110 BIAMP	L SUB	R SUB	L MF	R MF	L HF	R HF	L HF	R HF	L HF	R HF
50	VS3115P BIAMP	L SUB	R SUB	L LF	R LF	L HF	R HF	L HF	R HF	L HF	R HF
51	VS3115 TRIAMP	L LF	R LF	L MF	R MF	L HF	R HF	L HF	R HF	L HF	R HF
52	VS2210-9 BIAMP	**Connect other compatible components									
53	VS2210-6 BIAMP	**Connect other compatible components									
52	VS3215-9 TRIAMP	L LF	R LF	L LF	R LF	L HF	R HF	L HF	R HF	L HF	R HF
53	VS3215-6 TRIAMP	L LF	R LF	L LF	R LF	L HF	R HF	L HF	R HF	L HF	R HF
54	VS3218-9 TRIAMP	L LF	R LF	L LF	R LF	L HF	R HF	L HF	R HF	L HF	R HF
55	VS3218-6 TRIAMP	L LF	R LF	L LF	R LF	L HF	R HF	L HF	R HF	L HF	R HF
56	VS SUBS	L SUB	R SUB	L HF	R HF	L FR	R FR	L FR	R FR	L FR	R FR

# Appendix B / C / D

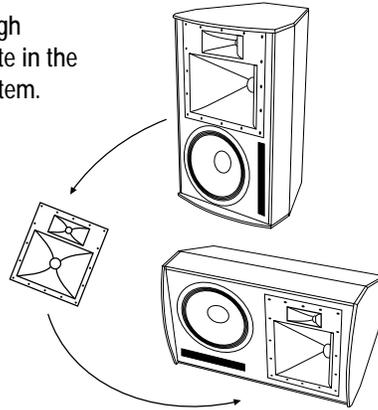
## Appendix B: Pole Mount Adaptor

The SP212-9 and SP212-A, as well as the MS112, MS115 and MS105 feature two locations on the bottom of the enclosure that accept M8 threaded hardware.



## Appendix C: VS3115 & VS2110 Rotatable Waveguide

The VS3115 and VS2110 share a common component; the mid-high waveguide. This waveguide has been designed so that it will rotate in the baffle of the enclosure enabling horizontal suspension of the system.



## Appendix D: Grille Logo

If installing systems in a horizontal format, you may rotate the grille logo to the conforming orientation.

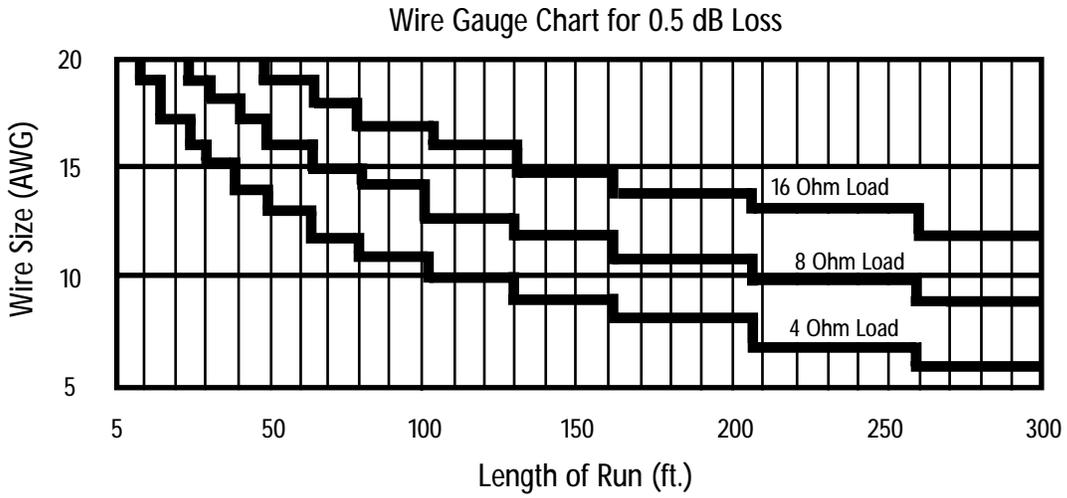
1. Remove all of the grille retaining screws
2. Lift off the grille and turn it over
3. Loosen the nut retaining the logo
4. Rotate the logo to the desired orientation and then firmly tighten the nut back up
5. Replace the grille and reattach using all of the grille screws

Included in the carton with your system you will find a black and silver Logo. This Logo has an adhesive backing and is identical in style and shape to the Grille Logo. If desired the Grille Logo can be adapted in appearance by simply making sure that the surface is clean and free of grease, peeling of the paper backing on the black and silver Logo, and applying it onto the Grille Logo.

# Appendix E

## Appendix E: Wire Gauges

All speaker connections from the amplifier to the speakers should be made with appropriate gauge cable to minimize insertion loss. Use this chart to determine the size wire necessary for the length of the speaker cable run.





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