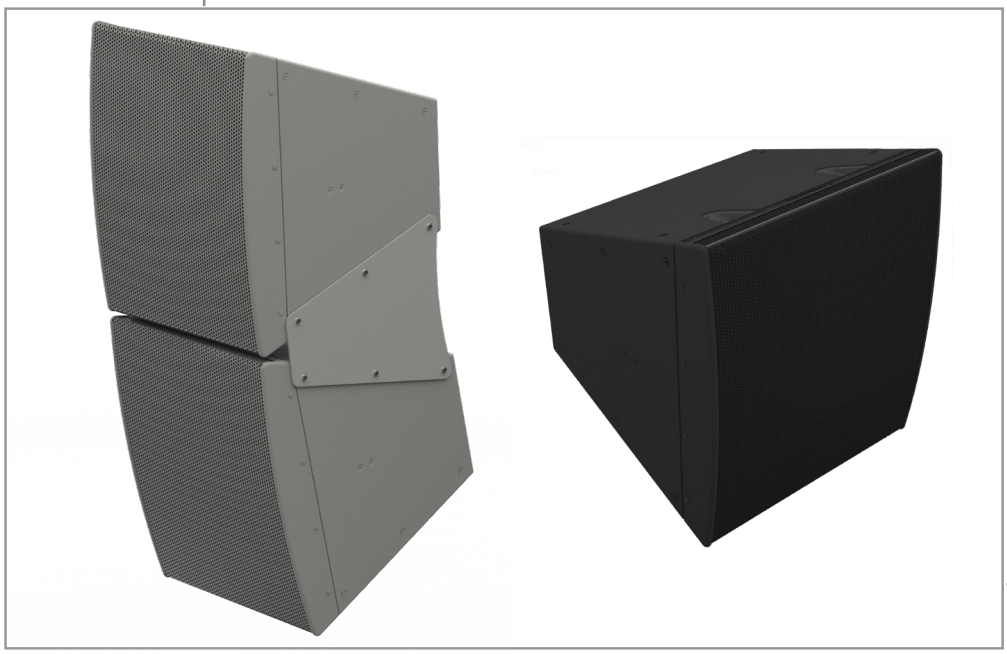
COMMUNITY™
HARDWARE INSTALLATION AND SETUP GUIDE



L SERIES

LVH STEERABLE VENUE HORN

LVH-906
LVH-909
LVH-906WR
LVH-909WR

PRODUCT DESCRIPTION

The Community L SERIES LVH-900 Steerable Venue Horn, combined with the Community Amplified Loudspeaker Controllers (ALCs), precisely tailor the directivity of each loudspeaker, or array of loudspeakers, to meet the sound requirements in any application.

Each LVH-900 model consists of four 12-inch LF drivers, three Community M200E midrange compression drivers, and four 1.5-inch HF compression drivers. All drivers integrate into a single triaxial waveguide spanning the full 36x31-inch face, providing pattern control to below 400Hz, LVH-906 models offer 60" fixed horizontal dispersion: LVH-909 models offer 90"

Using software-controlled steering via VenuePolar™ and FIRmaker, any LVH-900 cabinet can be configured for a very wide range of vertical coverage patterns without physical hardware changes. Both single-cabinet and multi-cabinet arrays are supported. Typical applications include music and speech reinforcement for houses of worship, theaters, auditoriums, sports facilities, and more. Possessing advanced features, highly-focused dispersion patterns, weather-resistant construction, and most importantly sonic excellence, LVH-900 loudspeakers make installations not only fast and simple, but as functionally effective as possible.

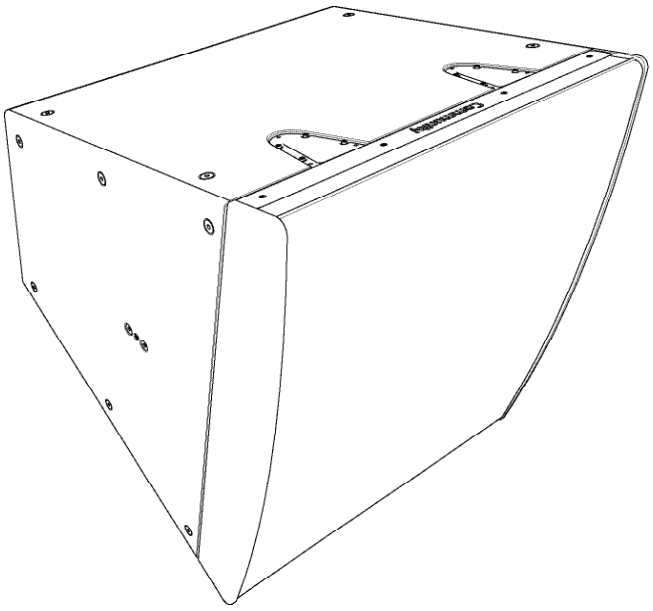
FEATURES

- Software-controlled steerable beamforming via VenuePolar™
- 6-channel or 9-channel amp configuration - tool-free jumper
- Minimal system latency: 6ms
- Null steering: designate acoustic avoidance zones in software
- Cabinet orientation indicator to prevent inverted installations

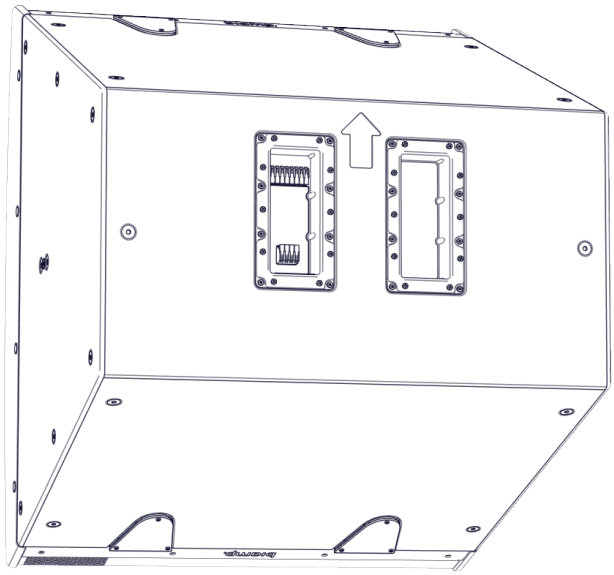
Note: Steerable pattern control replaces all fixed preset configurations previously available on /AS and /AP models.

DEVICE LAYOUT

LVH-900 LOUDSPEAKER LAYOUT



Front



(LVH-900 model shown)

Rear

IMPORTANT: Please note any application restrictions (Indoor vs Outdoor) on the rigging accessories shown in this installation guide. Contact Biamp for information regarding mounting options for multi-cabinet WR (outdoor) LVH loudspeakers.

RIGGING AND ELECTRICAL SAFETY

IMPORTANT: The loudspeakers described in this manual are designed and intended to be mounted to differing building surfaces using a variety of rigging hardware, means and methods. Installation of loudspeakers should only be performed by trained and qualified personnel. All electrical connections must conform to applicable city, county, state, and national electrical codes or standards.

DANGER: It is possible to experience severe electrical shock from a power amplifier. Always make sure that all power amplifiers are in the "OFF" position and unplugged from an AC Mains supply before performing electrical work.

IMPORTANT: Refer to the sections on installation and connections later in this manual for additional information on rigging and electrical safety.

IMPORTANT: Any open threaded inserts in the sides of each enclosure must have threaded fasteners inserted to seal the enclosure from air leaks. If the threaded fittings do not remain sealed, air leaks will occur in the enclosure that may compromise the low-frequency performance with distortion, reduced output, and premature driver failure.

WARNING: This LVH-900 loudspeaker is very heavy (250 lbs, 113.4kg). Use of a rated lifting device and the appropriate hardware is strongly recommended.

IMPORTANT: Please review the safety guide accompanying this product and these installation instructions prior to installing this loudspeaker.

CAUTION: Installation of Biamp loudspeakers should only be performed by trained and qualified personnel. It is strongly recommended that a licensed and certified professional structural engineer approve the mounting. Severe injury and/or loss of life may occur if this product is improperly installed.

IMPORTANT: When installing speakers outdoors, use a support system with enough wind-load strength to comply with applicable codes and standards.

IMPORTANT: (Applicable for outdoor (WR) systems with input panel covers installed) - If electrical and signal connections are made to a non-rigid wiring system (without conduit), then connections shall not be made with rigid conduit, but with flexible conduit or wiring only.

INSTALLATION

INSTALLATION PREPARATION

The LVH-900 is securely packed one to a carton on a pallet.

1. Move the pallets to the assembly area.
2. Remove strapping and wrap to expose the carton.
3. Remove the carton top and cardboard sleeve. The speaker is positioned face (grille) down in the bottom tray.
4. Review the safety information enclosed and reserve the hardware packet for later use.
5. See page 4 for mounting / suspension points.



LVH-900 CONFIGURATION - 6-CHANNEL & 9-CHANNEL RESOLUTION

The configuration is determined by the FIR filter files loaded in the DSP - not by the hardware model ordered. Both configurations use identical cabinets.

- Standard Resolution operation (6-channel) is recommended for most installations. Uses 6 amplifier channels per cabinet. The HF and MF drivers are driven in pairs to achieve the designed beamformed pattern. Set the amp channel selector on the LF1/LF2 input panel to the 6CH position.

- High Resolution array operation (9-channel) provides the highest pattern resolution and maximum output. Requires 9 amplifier channels per cabinet (18 total for a dual array) and appropriate splay bracket hardware. Set the amp channel selector on the LF1/LF2 panel to the 9CH position.

Note: Most multi-cabinet arrays can be addressed successfully using the 6-channel configuration. Single-cabinet deployments often benefit from using High Resolution mode.

EASE FOCUS AND VENUEPOLAR MODELING

Prior to any physical installation, the LVH system must be fully modeled using EASE® Focus 3 and the VenuePolar™ plugin. Without an accurate acoustic model of the venue, correct cabinet splay angles and essential processing parameters cannot be determined, and the system will not function correctly or achieve its intended SPL distribution and coverage pattern. Therefore, before beginning assembly, you must consult the finalized EASE® Focus 3 / VenuePolar™ report from your system designer, as it explicitly specifies the exact splay bracket configuration and inter-cabinet angles required for your venue.

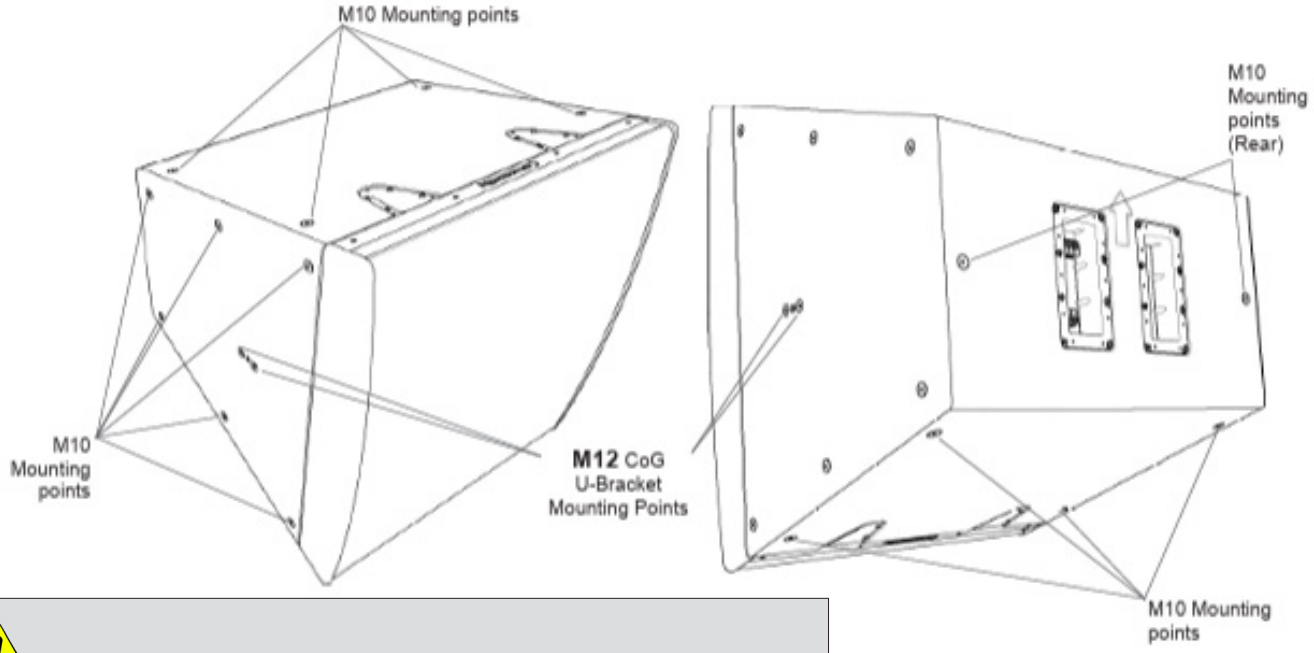
INSTALLATION

MOUNTING POINTS

There are at least four mounting points on each side, top and bottom that may be used for rated eye-bolts, splay brackets, or rigging frames. The existing (M10) flat head bolts may be removed and replaced with M10 mounting hardware (1.5x35mm). Please note that the center larger holes in the side panel take M12 size hardware and represent the center of gravity (CoG) of the cabinets.

CAUTION: Each LVH loudspeaker is very heavy (~250 lbs, 113.4 kg). Please use caution, rated hardware and a lifting device when moving it.

IMPORTANT - Rigging point WLL:
M10 rigging point is 200 lbs (10:1 Safety rating) - recommend 4 suspension points;
M12 rigging point is 250 lbs (10:1 Safety rating) - recommend 2 suspension points.

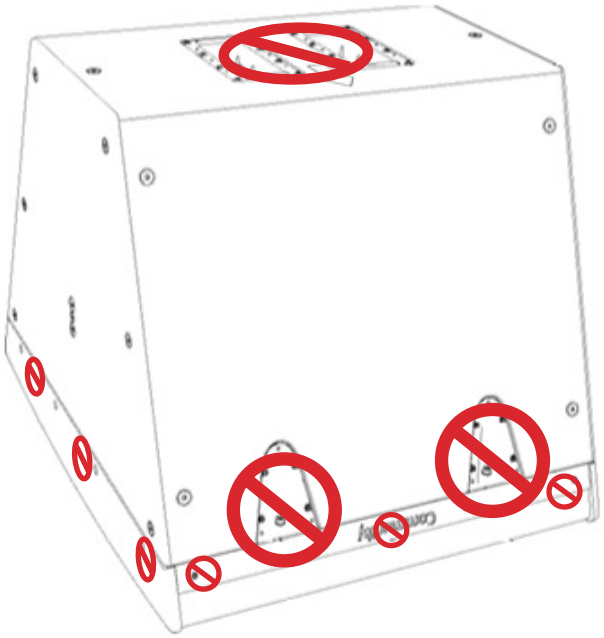


IMPORTANT: The arrow on the back panel points to the top of the device. It is critical that the system be installed correctly (with the arrow pointing up) because beam-forming is based on cabinet orientation.

WARNING: Do not use any hardware connection points other than the M10s or M12s as indicated for lifting, suspension, mounting, or secondary safety-points.

IMPORTANT: Any open threaded inserts in the sides of each enclosure must have threaded fasteners inserted to maintain structural integrity and seal the enclosure from air leaks which may compromise LF performance. Additionally, weather-resistant (WR) models must have hardware fully threaded in all of the holes to prevent moisture from entering and interfering with performance.

CAUTION: Do not disconnect or utilize any hardware in the plastic cups, grille or input panels unless specifically instructed. They are not rigging points and are necessary for cabinet integrity. For the same reason, do not remove the plugs on the curved side panels or the bolts in the Community trim bars.



INSTALLATION

INSTALLATION AND ASSEMBLY TIPS

Test all cabinets before hanging (see expected values at right). Because each cabinet has multiple LF, MF & HF drivers, it can be difficult to confirm all drivers are operating properly by simply passing signal through and listening. We recommend measuring the D.C. Resistance (DCR) of each driver, or driver pairs, via the input panel(s) using a standard, calibrated Ohmmeter.

Arrange cabinets in the order that they will hang, and loosely attach appropriate splay brackets to the bottom of each cabinet.

Use cardboard or packing blankets to protect grilles and enclosure finish while units are on the ground .

Orient cabinets with input panels aligned for ease of wiring. The input panel assembly is intentionally offset - two inches off-center - the panel fits only one way. Ensure the top of the cabinet (marked with an engraved up arrow) is always at the top of the array. Never install a cabinet inverted.

Leave splay bracket connections slightly loose until all cabinet connections are made, then tighten evenly according to indicated torque values.

Have padded wooden materials to support cabinet splay angles if assembling the array (or parts of the array) on the ground.

Tools needed: Allen/hex key wrenches (5, 6, 8 mm); #2 Phillips screwdriver.

Gland nuts are not provided for WR panel covers, holes = 1" (25 mm) - recommended size - 3/4" NPT. Typical 3/4" NPT gland nuts will accept wire sizes up to 0.875" (22.2 mm).

Pallet jack, fork lift and/or portable lifting equipment are recommended to facilitate safe assembly.

When attaching rigging or replacing hardware, please tighten the hardware to the following torque values: 10 mm bolts: 50 Nm (36.88 ft-lbs); 12 mm bolts: 85 Nm (62.69 ft-lbs); 8 mm bolts: 25 Nm (18.44 ft-lbs). Do NOT over-tighten.

Expected DCR Values (testing)

6 channel configuration:

- **HF 1**: 6 ohms | **HF 2**: 6 ohms
- **MF 1**: 3 ohms | **MF 2**: 6 ohms
- **LF 1**: 7 ohms | **LF 2**: 7 ohms

9 channel configuration:

- **HF 1, 2, 3, 4**: 12 ohms each
- **MF 1, 2, 3**: 6 ohms each
- **LF 1**: 7 ohms | **LF 2**: 7 ohms

Safety Cable

The safety cable and associated hardware are not included. Consult all applicable codes for your application. Confer with a structural engineer for the appropriate cable/hardware for the load, application and locale. If required, a safety cable(s) must be secured to a suitable load-bearing point separate from the array mounting point, with as little slack as possible, so as not to develop undue kinetic force if the primary array mount were to fail.

IMPORTANT: If a custom rigging frame is being used (especially with outdoor installations), splay brackets may not be necessary, but the exact cabinet splay geometry must be duplicated in that frame.

SPLAY BRACKETS, CABINET ANGLES AND STEERABLE PATTERNS IN LVH-900 MULTI-CABINET ARRAYS

It is important to remember the beamformed patterns that multi-cabinet arrays can make are distinct and will dictate the splay between multiple cabinets. The LVH-900 multi-cabinet beamformed patterns require both proper physical splay between cabinets and appropriate FIR filters applied in the DSP. LVH-900 loudspeakers and appropriate splay brackets are required for each multi-cabinet array to function properly.

Splay bracket selection for multi-cabinet arrays is determined by the output of VenuePolar in EASE® Focus 3. The software calculates the required inter-cabinet splay angle and specifies the appropriate bracket type for the installation. Refer to your VenuePolar report for all splay angle specifications.

LVH-900 multi cabinet arrays should be configured using the following splay plates and hole sets:

- SP1 (Type 1): supports 0–20° inter-cabinet splay angles.
- SP2 (Type 2): supports 30° inter-cabinet splay angles.

INSTALLATION

SPLAY BRACKET CONNECTIONS (LVH-900SP1)

The angle of the splay brackets should be determined using the VenuePolar report prior to installation. The report detailing the positioning of each cabinet in a multi-cabinet array should be provided by your system designer or integrator. The report will detail splay angles and bracket types for each of the cabinets. See below for which holes to use to achieve those angles.

1. Remove flat head M10 bolts from the holes where the splay bracket will attach to the cabinet.
2. Attach the splay brackets to what will be the upper cabinet - Keep the connections loose so that the next cabinet can be moved between them.

IMPORTANT: Do not use power tools to tighten the bracket hardware - Do NOT cross-thread or strip these bolts.

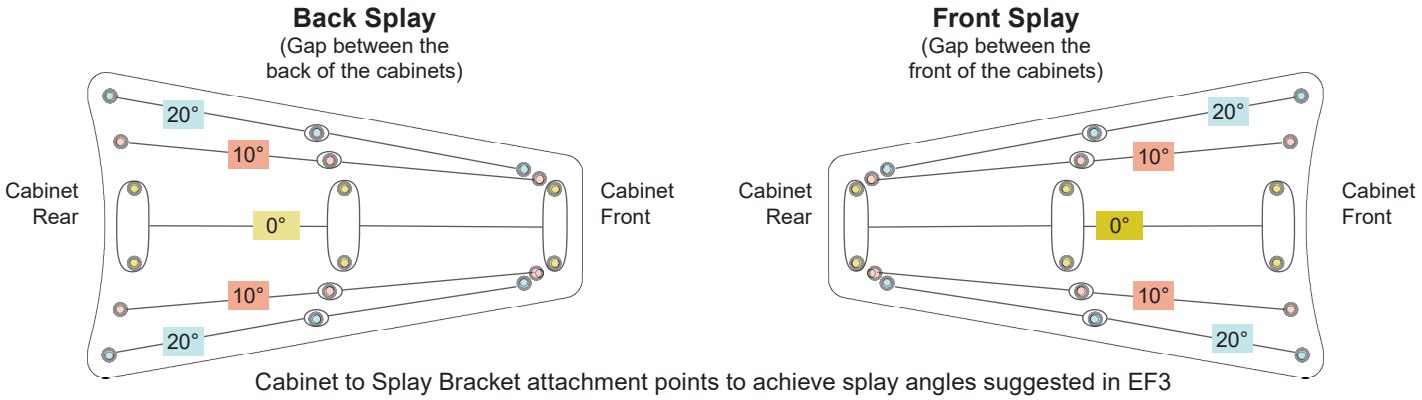
IMPORTANT: Splay bracket to cabinet connections should be symmetrical

Splay Bracket Orientation:
For *back* splay angles 0-20° the smaller end of the splay bracket should be at the front of the LVH
For 10-20° *front* splay angles, flip the bracket so the larger end is at the front of the LVH.

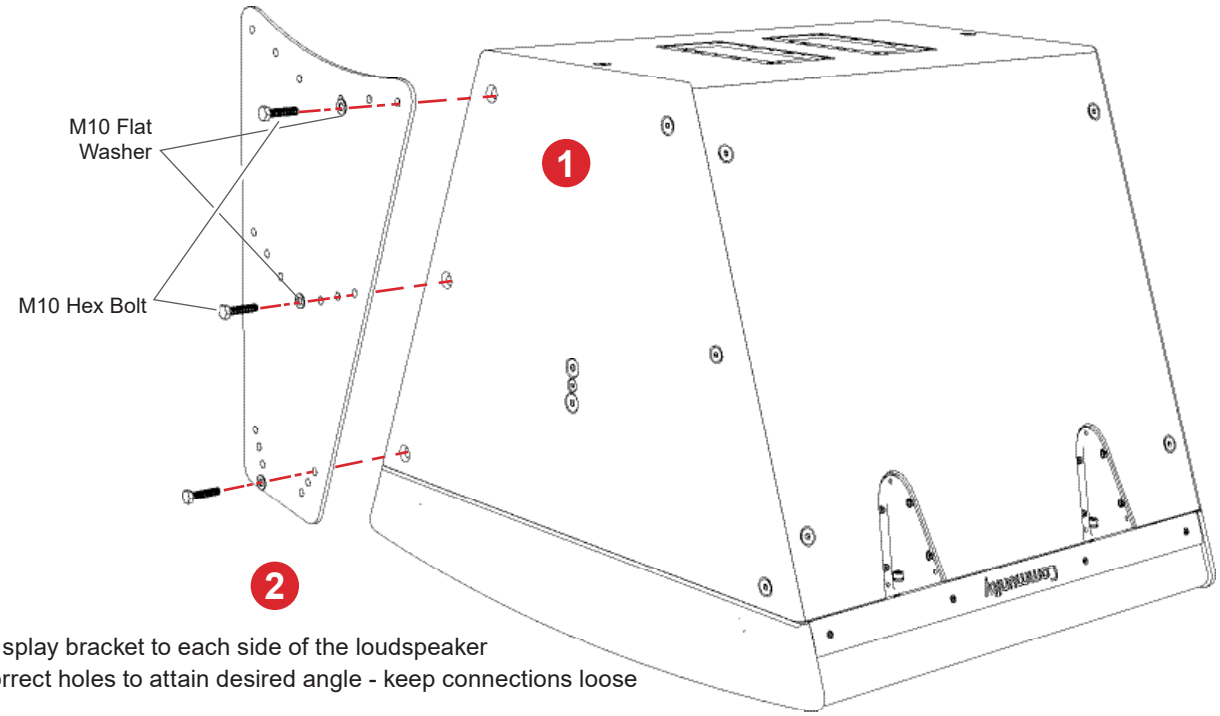
SP1 Pair Weight: 15.6 lbs (7.1 kg
WLL: 1760 lbs (798.3 kg) per pair of brackets

Splay angles between cabinets for multi-box arrays are specified in VenuePolar. Each splay below indicates the angular relationship of the cabinets which have a corresponding angle for the cabinet “aiming line” shown in the EASE Focus report.

Note: Splay brackets are powder-coated and suitable for both indoor and outdoor use.



Cabinet to Splay Bracket attachment points to achieve splay angles suggested in EF3

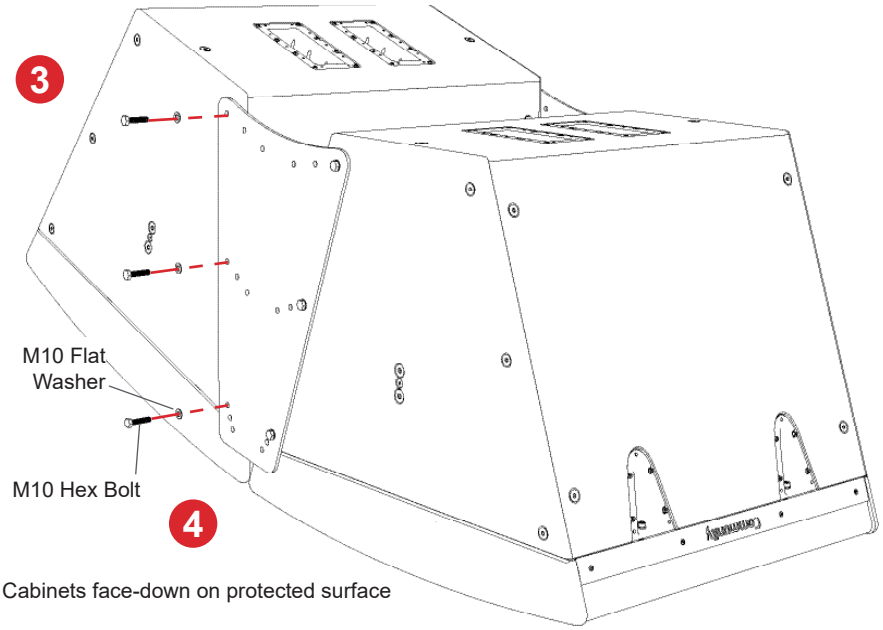


Attach splay bracket to each side of the loudspeaker
Use correct holes to attain desired angle - keep connections loose

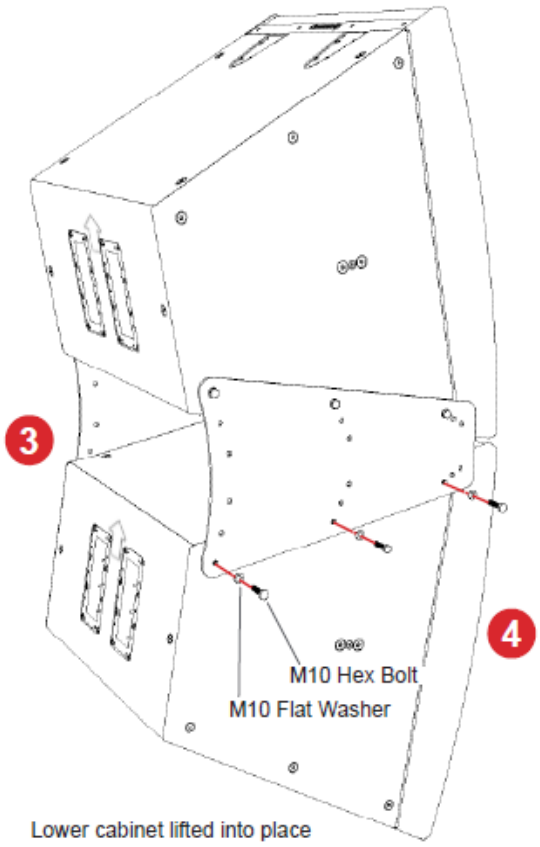
INSTALLATION
CONTINUED

3. With the appropriate M10 screws removed, move the second cabinet into position behind the first and attach the splay bracket.
4. Thread bolts into all splay bracket connections before tightening them.

Fully tighten all splay bracket connections on both sides of the cabinet.

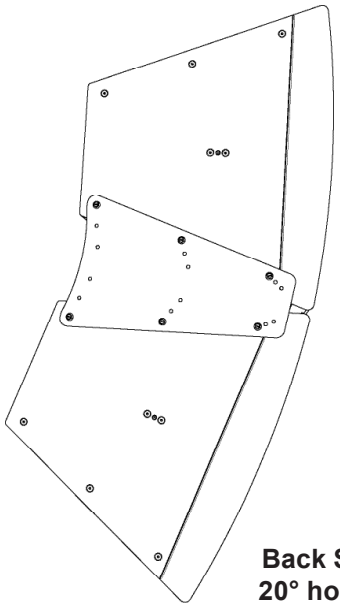


Cabinets face-down on protected surface

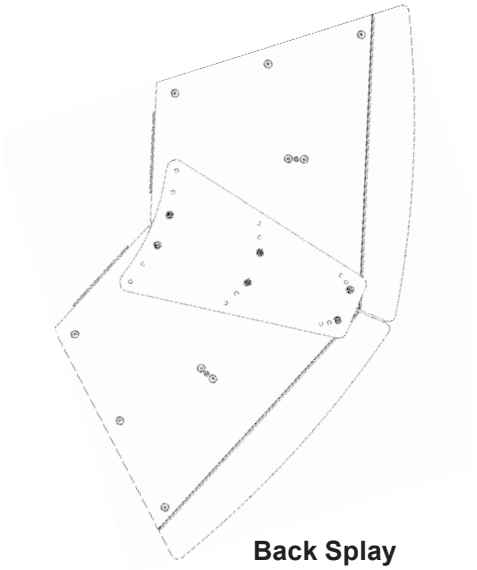


Lower cabinet lifted into place

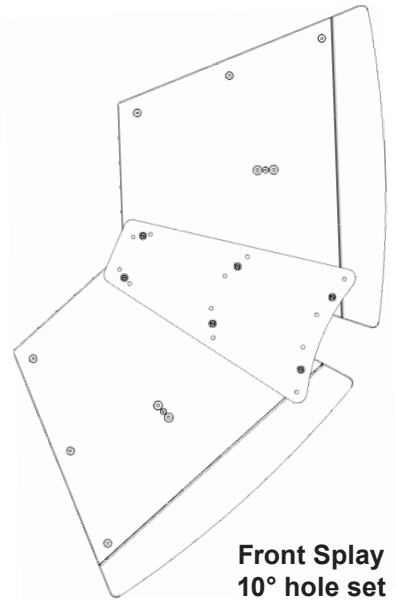
Attach the side plate to the next cabinet - keep all connections loose until all bolts are started. Support the second cabinet until all connections are made and tightened



Back Splay
20° hole set



Back Splay
0° hole set



Front Splay
10° hole set

Typical splay bracket orientation - cabinet connection locations are symmetrical. Splay angle is specified by your VenuePolar report.

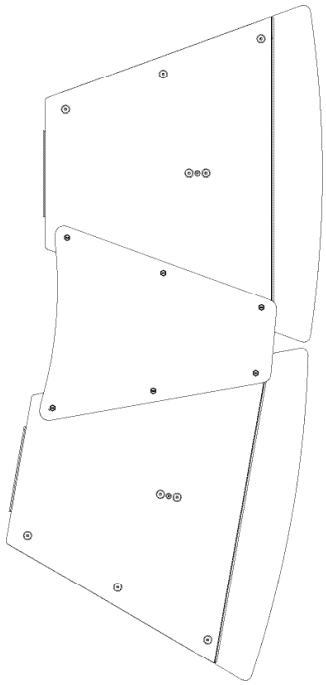
INSTALLATION

SPLAY BRACKET CONNECTIONS (LVH-900SP2)

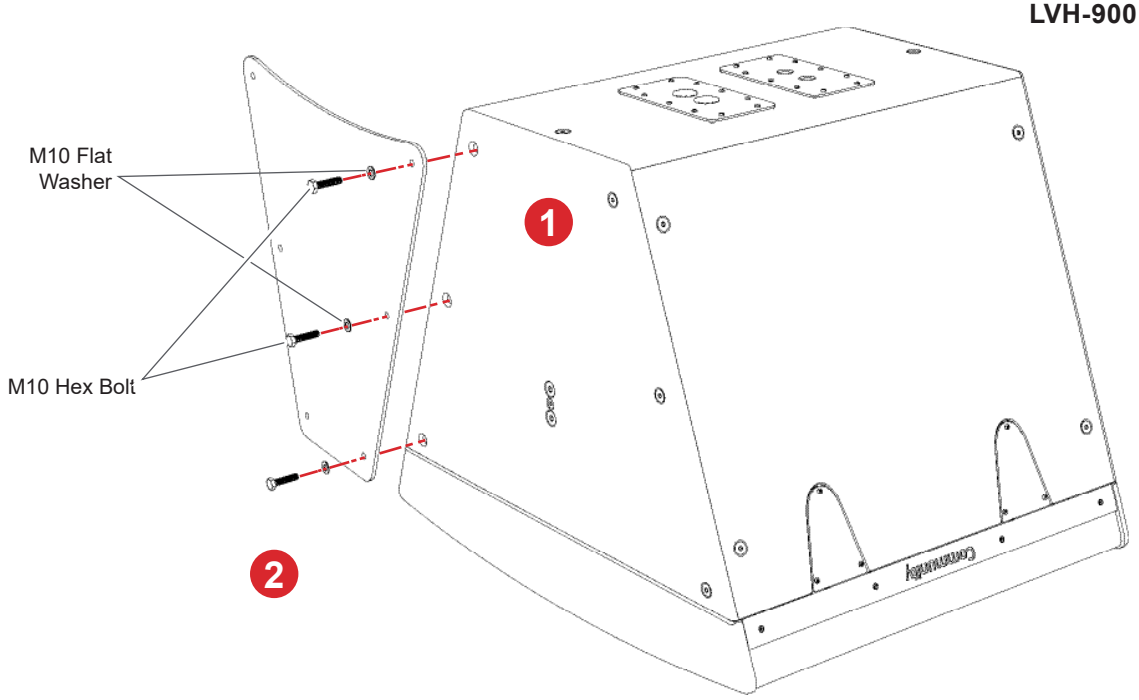
LVH-900SP2 is used for creating a 30° splay between the cabinets top and bottom surfaces. This results in a 10° splay between the centerlines (aiming lines) of the cabinets. Most commonly used when VenuePolar specifies a 30° Inter-cabinet splay in a multi-cabinet array. SP2 can also create a wide front splay when separation between adjacent cabinets is required. Please keep cardboard or other cushioning material under the grilles to protect them from any damage.

1. Remove flat head M10 bolts from the holes where the splay bracket will attach to the cabinet.

2. Attach the splay brackets to what will be the upper cabinet - Keep the connections loose so that the bracket can be moved slightly.



LVH-900 Dual 20° Array



Loosely attach splay bracket

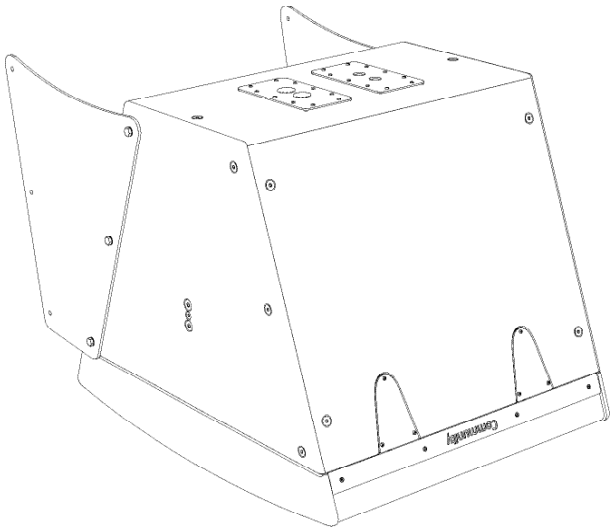
Note: These powder-coated aluminum splay bracket components are suitable for both indoor and outdoor use.

Important: Do not use power tools to tighten the bracket hardware - you do not want to cross-thread or strip these bolts.

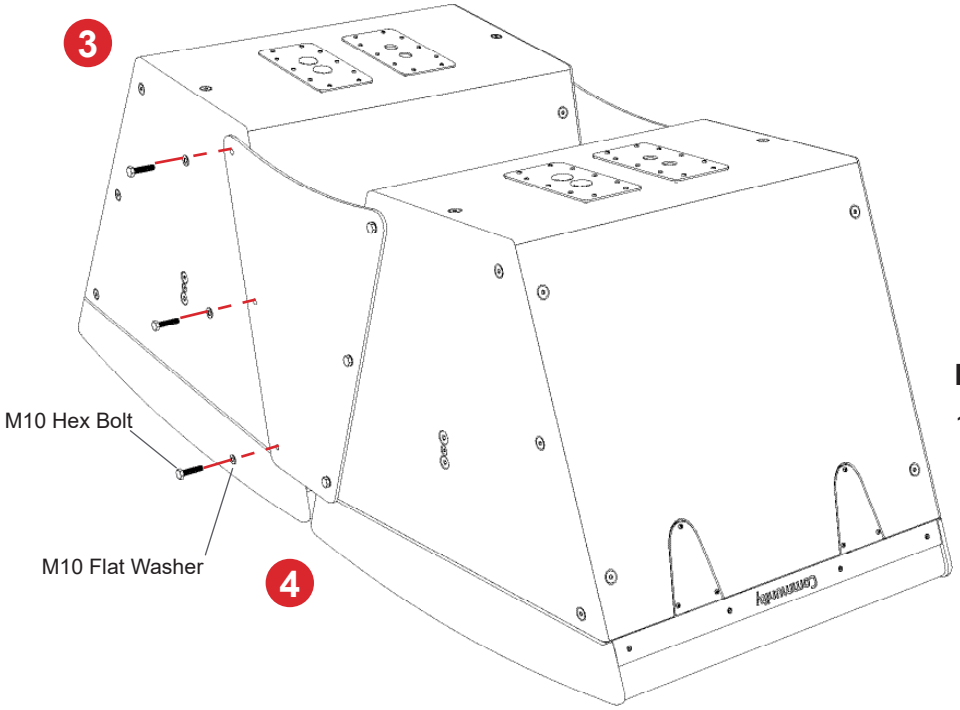
SP2 Pair Weight: 18.3 lbs (8.3 kg)
WLL: 1760 lbs (798.3 kg) per pair of brackets

INSTALLATION
CONTINUED

3. With the appropriate M10 screws removed, move the second cabinet into position behind the first and attach the splay bracket.
4. Thread bolts into all splay bracket connections before tightening them.
5. Fully tighten all splay bracket connections on both sides of the cabinet.



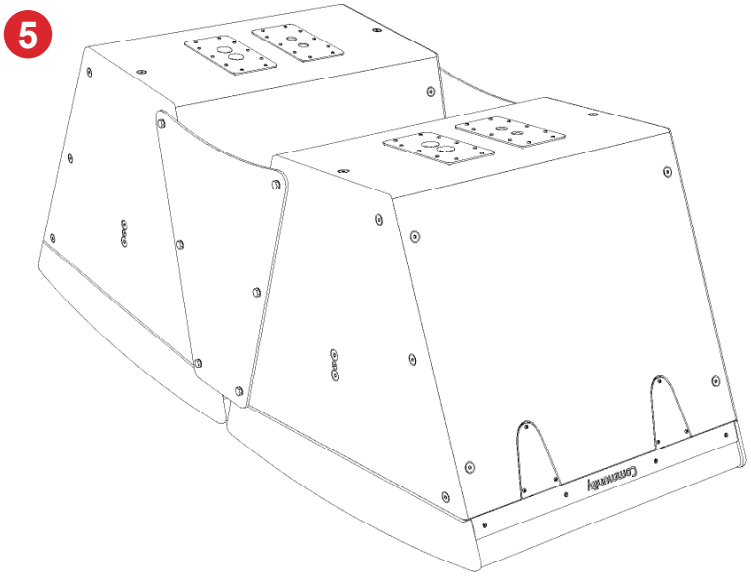
Cabinet with splay brackets attached



Attach the side plate to the next cabinet - keep all connections LOOSE until all bolts are started. Support the second cabinet until all connections are made and tightened

Hardware Torque Setting

10mm bolts: 50Nm (36.88 ft-lbs)

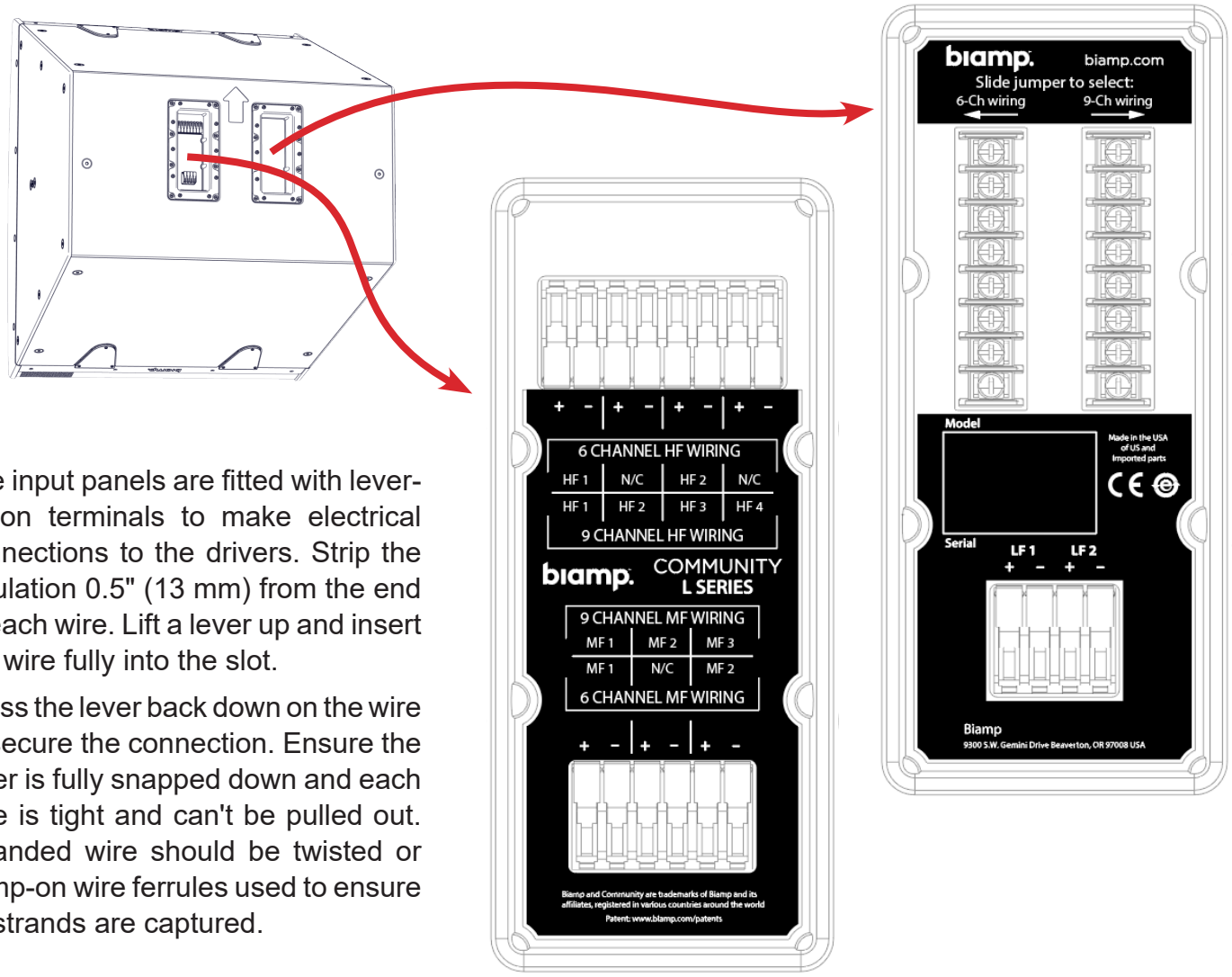


INSTALLATION

ELECTRICAL CONNECTIONS LVH-900

All LVH-900 cabinets ship with a unified input panel set consisting of two panels:

- **LF1/LF2 Panel**: Connects to all four LF drivers. Includes the Amp Channel Selector jumper for 6ch vs 9ch configuration.
- **MF/HF Panel**: Connects to all MF and HF drivers. Individually for 9ch operation or in pairs for 6ch operation.



The input panels are fitted with lever-action terminals to make electrical connections to the drivers. Strip the insulation 0.5" (13 mm) from the end of each wire. Lift a lever up and insert the wire fully into the slot.

Press the lever back down on the wire to secure the connection. Ensure the lever is fully snapped down and each wire is tight and can't be pulled out. Stranded wire should be twisted or crimp-on wire ferrules used to ensure all strands are captured.

Note: The levers are stiff: take care when lifting or pressing them down.

INSTALLATION

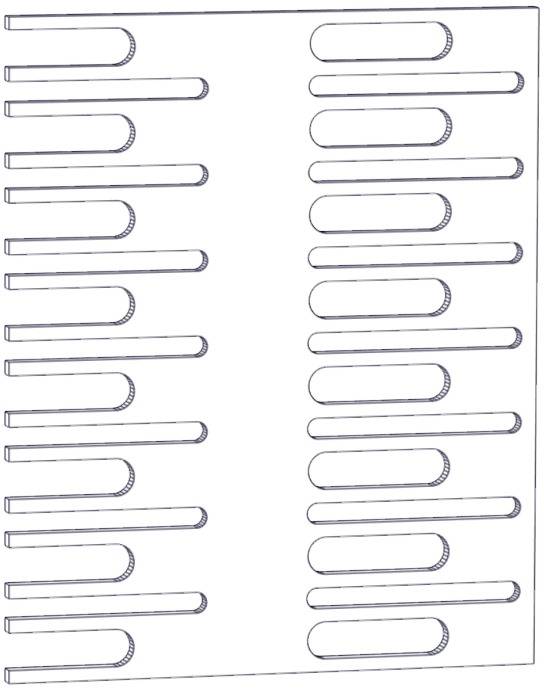
ELECTRICAL CONNECTIONS LVH-900

The LF1/LF2 panel includes an integrated jumper connector (shorting plug) that sets the internal driver wiring topology. The jumper is accessible without removing the panel from the cabinet. A label on the panel face shows the active mode (6 channel or 9 channel, see below).

To switch modes, slightly loosen all 16 screws, slide the jumper to the desired mode, then tighten the screws again.

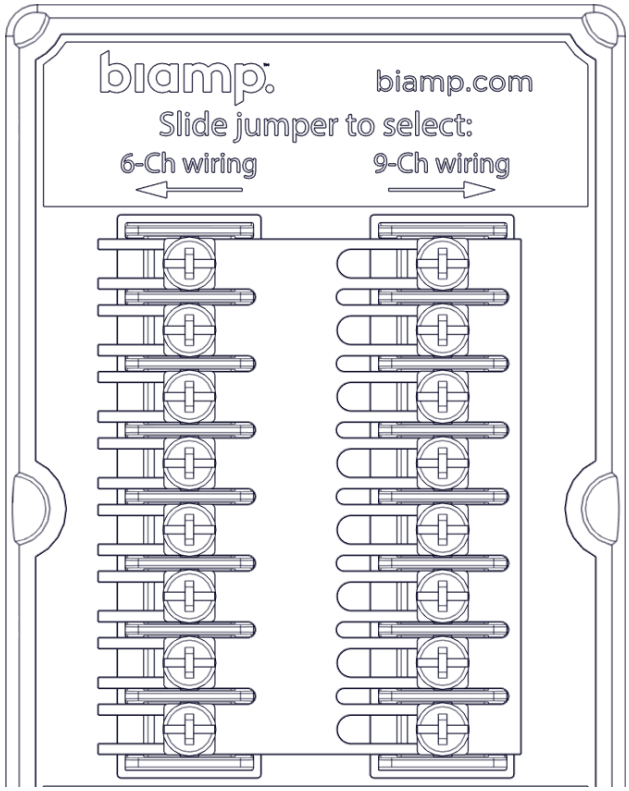
Replace the clear plastic protective cover to the terminal strip screw heads to maintain all electrical safety ratings.

CAUTION: Never attach any wires to the screw terminals. These are meant only for the included jumper PC board.



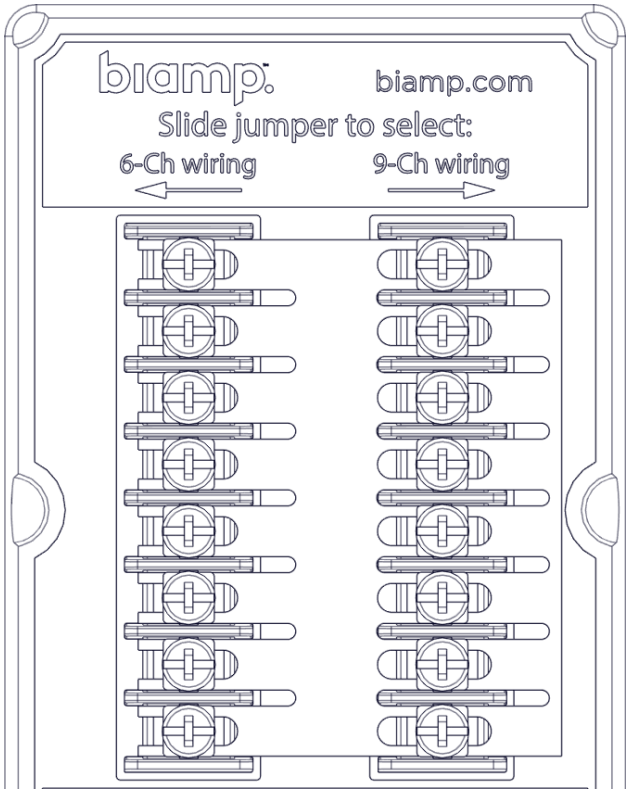
6 Channel Mode

HF and MF drivers wired in pairs. Requires 6 amplifier channels per cabinet. Standard for most multi-cabinet beamforming installations.



9 Channel Mode

Each HF and MF driver wired independently. Requires 9 amplifier channels per cabinet. Required for maximum steering resolution.



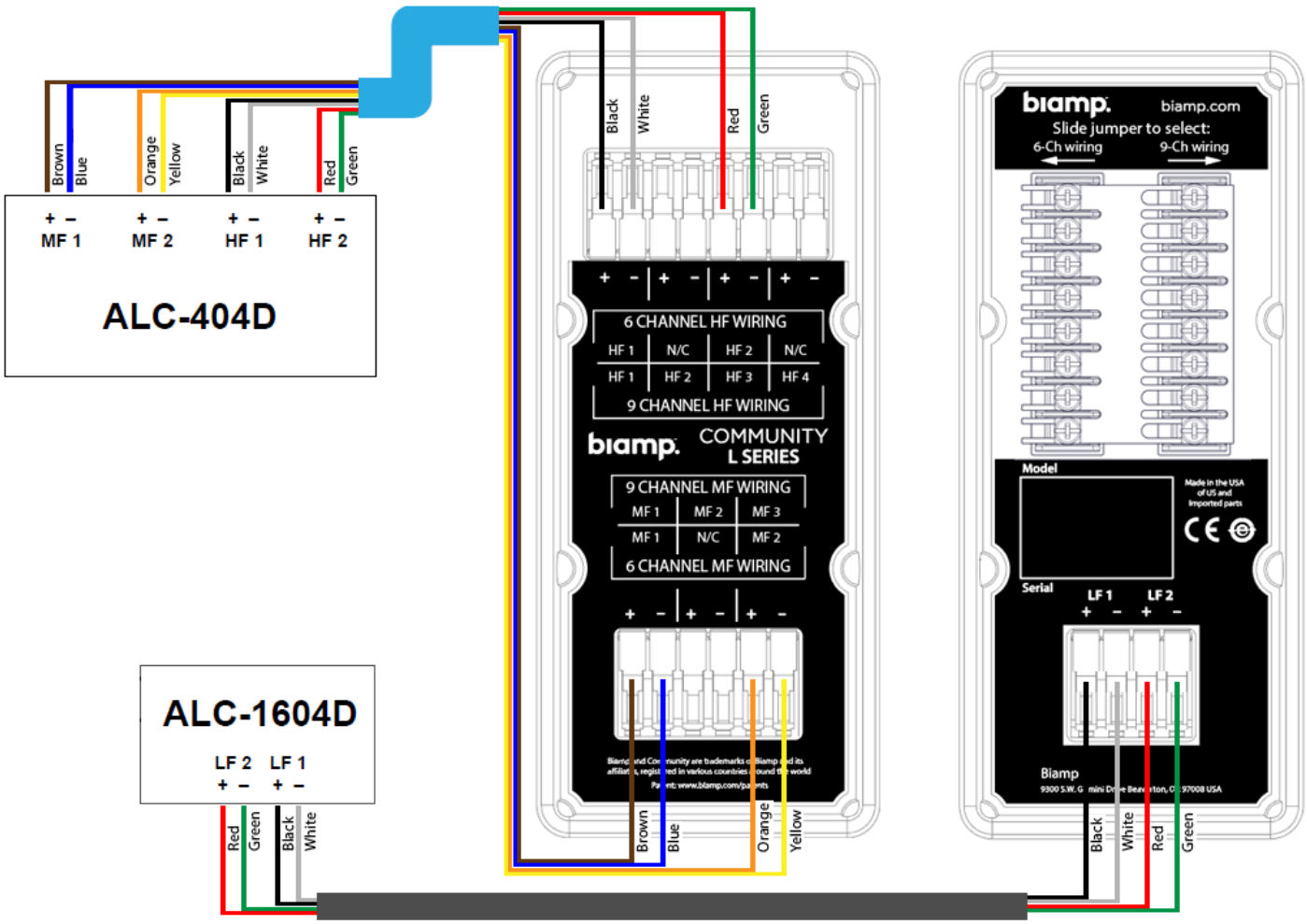
INSTALLATION

ELECTRICAL CONNECTIONS LVH-900

Wire the LVH-900 models as shown below for a 6 channel wiring configuration on a single cabinet.

IMPORTANT: Make sure that all cables and conductors are labeled to prevent problems.

Note: Bold identifiers **(H#, M#, L#)** on each channel correspond to the channel DSP settings called out in the Armonia+ software for the ALCs.



Multi-cabinet Array Configurations:

All LVH-900 cabinets are typically wired identically using the 6-channel wiring shown above. Ensure that the 6/9-channel selection connector is in the 6-channel positions on all cabinets.



Wire Ferrules

Note: It is strongly recommended to use wire ferrules with stranded wire.

Recommended wire size:
0.5 mm^2 - 2.5 mm^2
(AWG 20 ga - 10 ga)

Use the appropriate gauge and length of wire to avoid appreciable signal loss based on the number of devices per run.

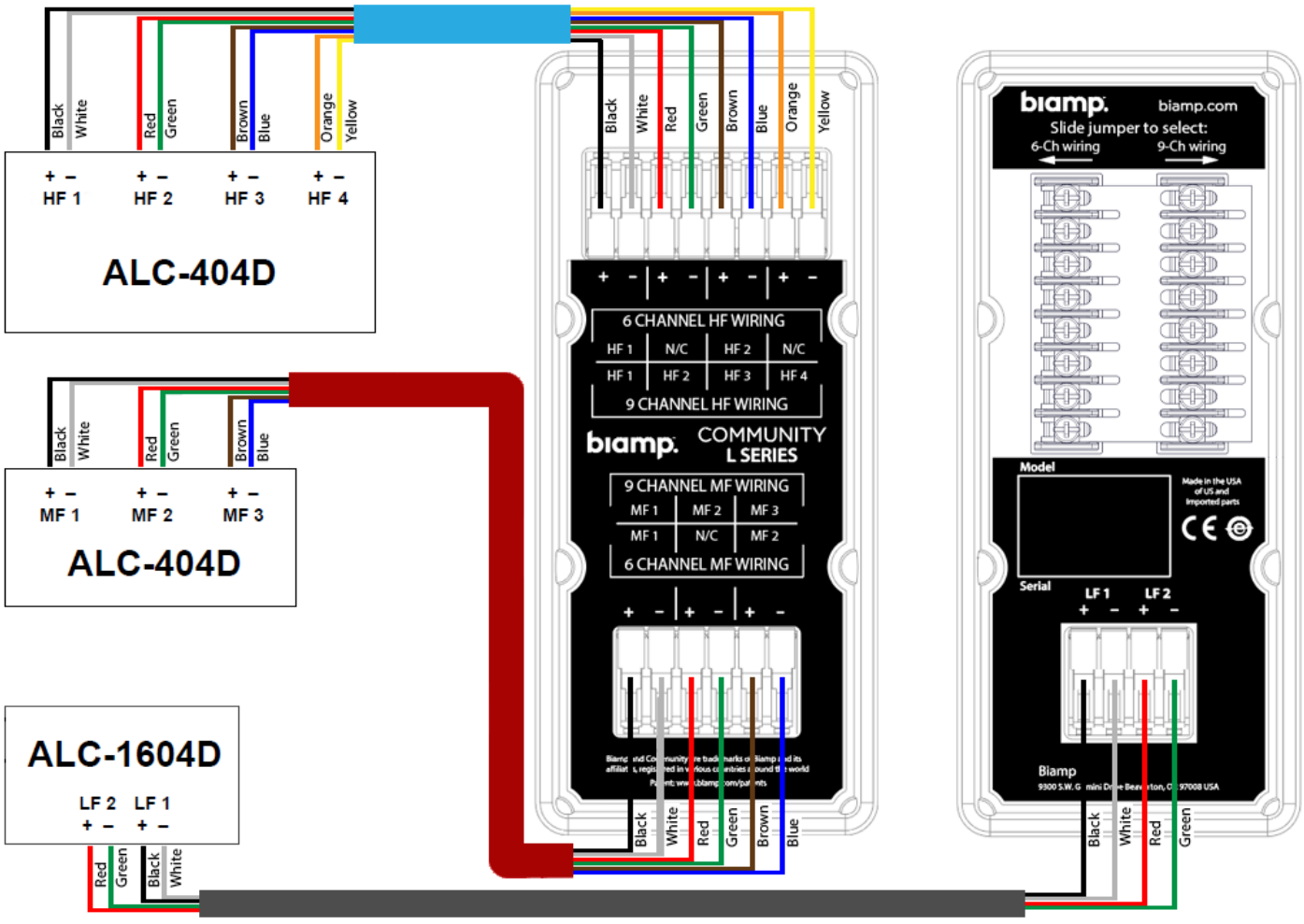
INSTALLATION

ELECTRICAL CONNECTIONS LVH-900

Wire the LVH-900 models as shown below for a 9 channel wiring configuration on a single cabinet.

IMPORTANT: Make sure that all cables and conductors are labeled to prevent problems.

Note: Bold identifiers **(H#, M#, L#)** on each channel correspond to the channel DSP settings called out in the Armonia+ software for the ALCs.



Wire Ferrules



Note: It is strongly recommended to use wire ferrules with stranded wire.

Recommended wire size:
0.5 mm^2 - 2.5 mm^2
(AWG 20 ga - 10 ga)

Use the appropriate gauge and length of wire to avoid appreciable signal loss based on the number of devices per run.

INSTALLATION

ELECTRICAL CONNECTIONS

DCR TESTING

Before hanging the cabinet, perform a D.C. Resistance (DCR) test on each cabinet to confirm that the internal drivers are functional after shipment and are in good working order.

Note: Test all cabinets before hanging.

Because each cabinet has multiple LF, MF & HF drivers, it can be difficult to confirm all drivers are operating properly by simply passing signal through and listening. We recommend measuring the D.C. Resistance (DCR) of each driver, or driver pairs, via the input panel(s) using a standard, calibrated Ohmmeter.

6 channel configuration:

- HF 1: 6 ohms | HF 2: 6 ohms
- MF 1: 3 ohms | MF 2: 6 ohms
- LF 1: 7 ohms | LF 2: 7 ohms

9 channel configuration:

- HF 1, 2, 3, 4: 12 ohms each
- MF 1, 2, 3: 6 ohms each
- LF 1: 7 ohms | LF 2: 7 ohms

TRACING CABLES

Trace the cables by following each run from the cabinet's input terminal back toward the amplifier, verifying that each cable matches the wiring diagram for either the 6 or 9 channel configuration.

Confirming, for example, that the cable connected to the HF2 terminal is the correct cable type and routed to the correct amplifier channel.

VERIFICATION

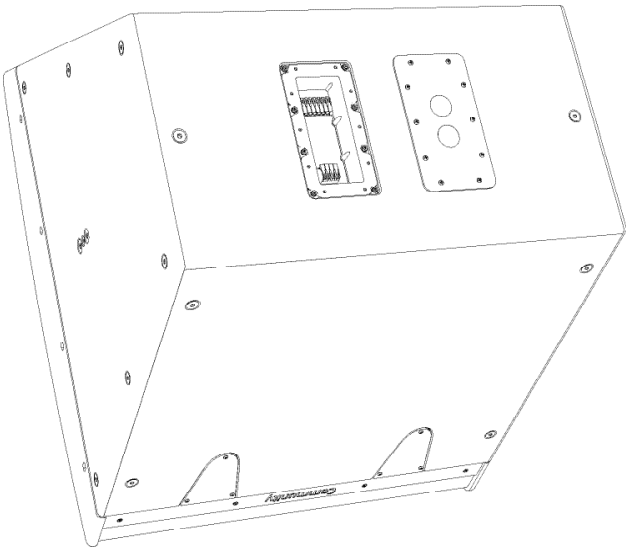
Before terminating the cable at the amplifier end, repeat the DCR test at the cabinet's input terminals to confirm the readings are still as expected. This ensures both that the correct cable type is being used and that the amplifier is not in the circuit to skew the results.

INSTALLATION

OUTDOOR (WR) MODELS

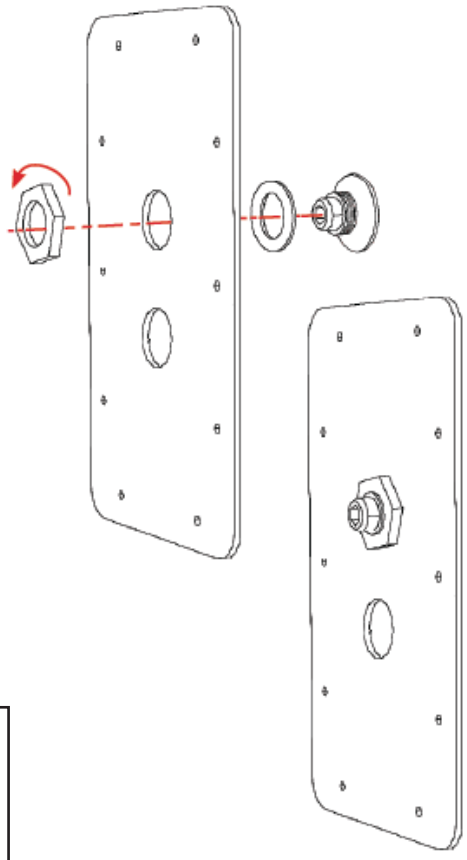
Covers are needed to maintain the weather-resistance for the input panels on LVH900WR models. The covers have 1" (25 mm) holes to enable the installer to use gland nuts or conduit fittings for a weather-tight seal.

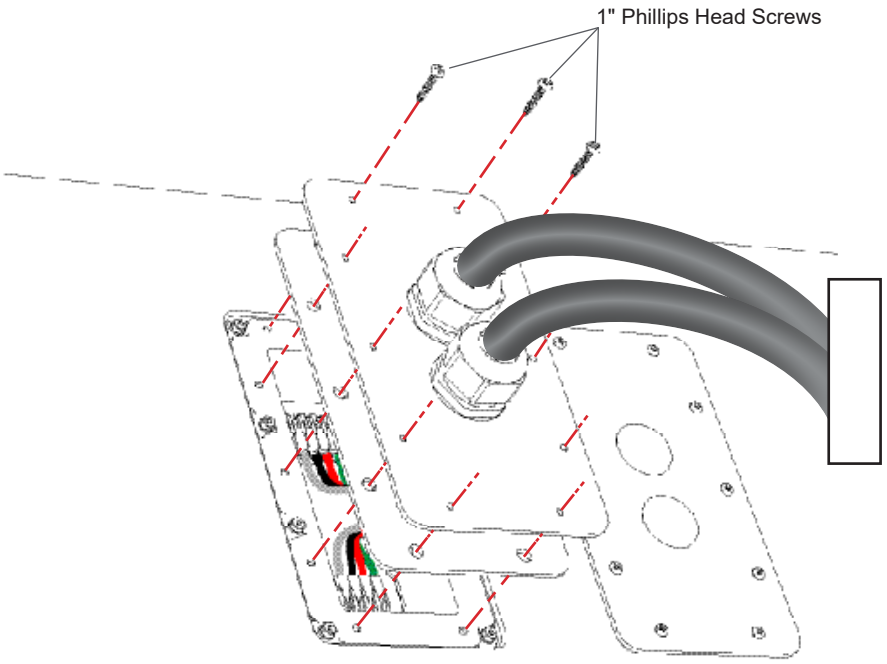
Note: Each LVH-900 model ships with a single plug installed on the upper hole of the LF cover plate.



Cover installation

1. Install gland nuts or conduit fittings on the provided cover plates.
2. With the cables threaded through the fittings, wire the panel.
3. Align gasket with the plate and place gasket side down on the input panel and align holes.
4. Attach the cover using the ten (10) Phillips head screws. Fully tighten to compress the gasket without stripping the screw in the cabinet.
5. In the case of a LVH-900WR cabinet, attach gland nuts or fittings, wire the panel, and install a plug in any unused hole before attaching the covers to the cabinet.





Attach cover to input panel - 10 screws/panel.
Note: gland nuts are not provided

Note: Gland nuts and conduit fittings for the three other cover plate holes are not included and must be provided by the installer. [0.75" NPT gland nuts will fit the holes]

INSTALLATION

RIGGING ACCESSORIES - ARRAY FRAME (INDOOR USE ONLY)

The array frame is designed to support an array of LVH-900 indoor cabinets per the Rigging Calculator.* The frame is attached to the top of the top cabinet in an array. The frame can be suspended by eye-bolts [top spine holes: T1-T14], the PY1-EN750-1550 [side spine holes: S1-S13], or other appropriate load-rated hardware. Refer to the designated top or side pinpoint(s) from the Ease Focus 3 report to locate the mounting option.

IMPORTANT:

- Different lifting hardware has different loading considerations. Eye-bolt working load limits reduce as the angle between the thread axis and cable increases (see image at right). Also, the PY1-EN750-1550 Lift Point can only rotate about 30° on the spine of the array frame (see Angle Limitations on next page).
- If using eye-bolts, it will be easier (but not necessary) to install them before the array frame is attached to the LVH-900 cabinet.

Eye-bolt Installation:

Eye-bolts are included - any other lifting hardware should be rated to hold the combined weight of the array.
Eye-bolt size: 1/2"-13 x 4" shank. Typical hole diameter for the top holes is 0.56" (14mm).
If using the top holes and eye-bolts, we recommend suspending the array from two points whenever possible (defined as Double Hang pinpoints in the report).

Hardware:

Qty	Description
2	Eye Bolt 1/2"-13 x 4" shaft
2	1/2" Washer
2	1/2" Stover Nut
4	M10 x 120 Hex Head Bolts
4	M10 Flat Washers
1	Carriage 3/16" Hex Bolt
1	3/16" Hex Nut
1	Locking Ring

Kit Weight: 91.1 lbs (41.3 kg)

Working Load Limit: 1200 lbs (544.3 kg) (10:1 safety factor)

The technical drawings including dimensions and hole diameters are on page 26 of this guide.

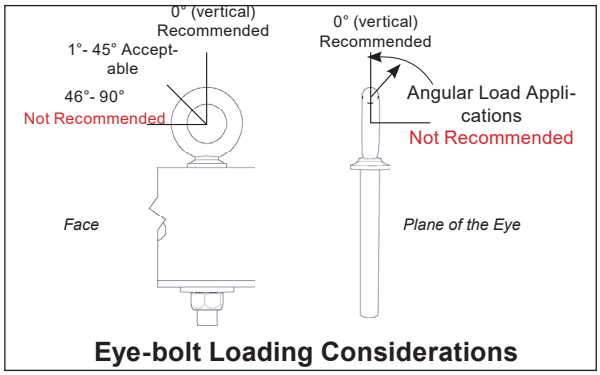
IMPORTANT: Eye-bolts should be turned so that the load is in the plane of the eye. See Eye-bolt Loading Considerations at right.

Note: Please heed and do not exceed any Global Safety Warnings generated by the Rigging Calculator in the VenuePolar Loads tab in EASE® Focus 3.

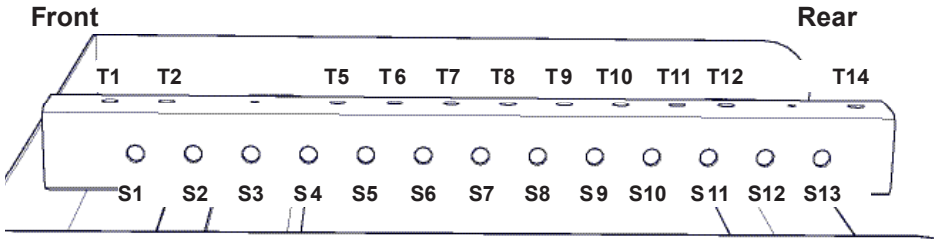
Safety Cable

The safety cable and associated hardware are not included. Consult all applicable codes for your application. Confer with a structural engineer for the appropriate cable/hardware for the load, application and locale. If required, the safety cable must be secured to a suitable load-bearing point separate from the array mounting point, with as little slack as possible, so as not to develop undue kinetic force if the primary array mount were to fail.

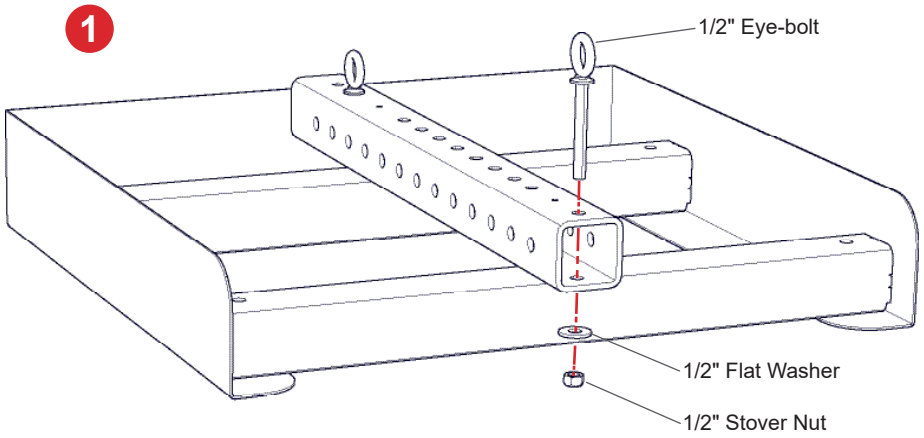
Array Frame (LVH-900)
When required, a secondary safety cable can be attached to an eye-bolt in an unused hole(s) on the spine.



Eye-bolt Loading Considerations



Pinpoint designations on the spine



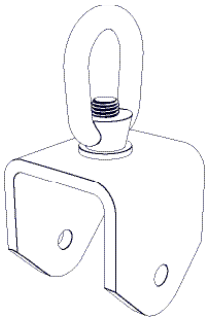
Attach eye-bolts in appropriate top holes
Do NOT use the side holes in the spine for eye-bolts

INSTALLATION

RIGGING ACCESSORIES - ARRAY FRAME (INDOOR USE ONLY)

PY1-EN750-1550 Lift Point option: This lift point (PY1) can be installed before or after the array frame is attached to the LVH cabinet.

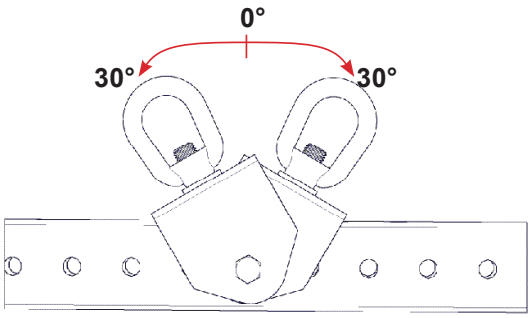
1. Determine the side lift point closest to the array's CoG (per the pinpoint EF3 report). Attach to the spine on the LVH with the carriage bolt, nut and locking ring.



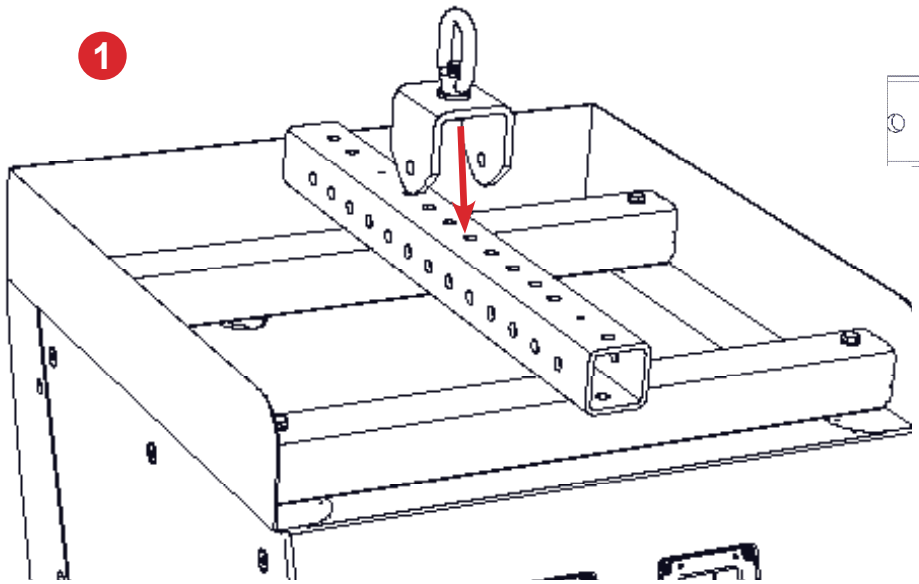
PY1-EN750-1550

Kit Weight: 6 lbs (2.7kg)

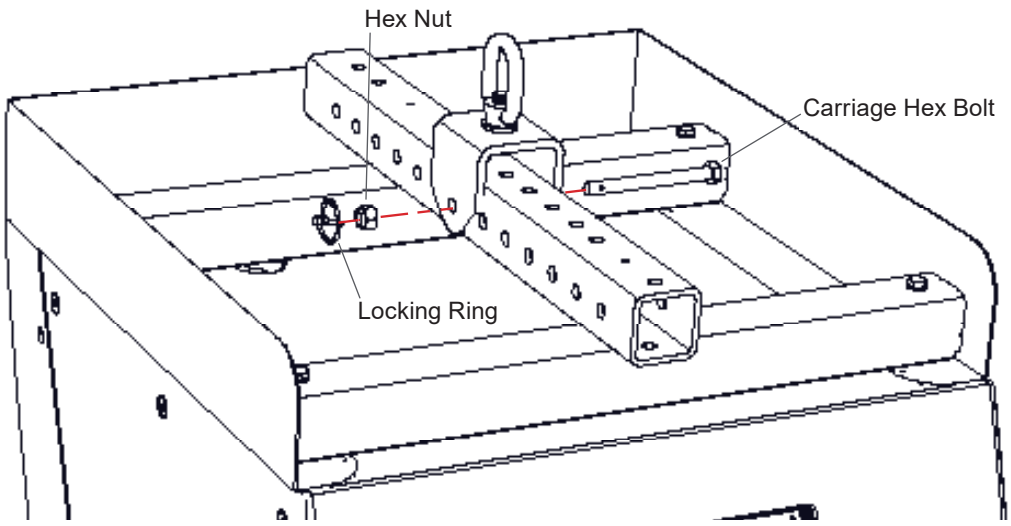
Working Load Limit: 1550 lbs (703.1 kg)
(10:1 safety factor)



PY1 to Spine Angle Limitations



Place PY1 on the spine closest to the designated pinpoint (CoG) and align with designated side holes



Attach with carriage bolt and hex nut, and secure with the locking ring

INSTALLATION

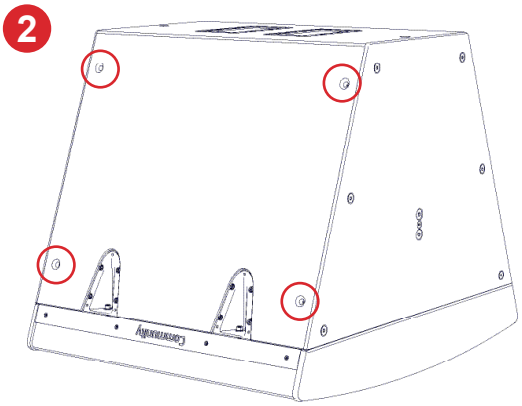
RIGGING ACCESSORIES - ARRAY FRAME (INDOOR USE ONLY)

LVH-900 Installation Continued:

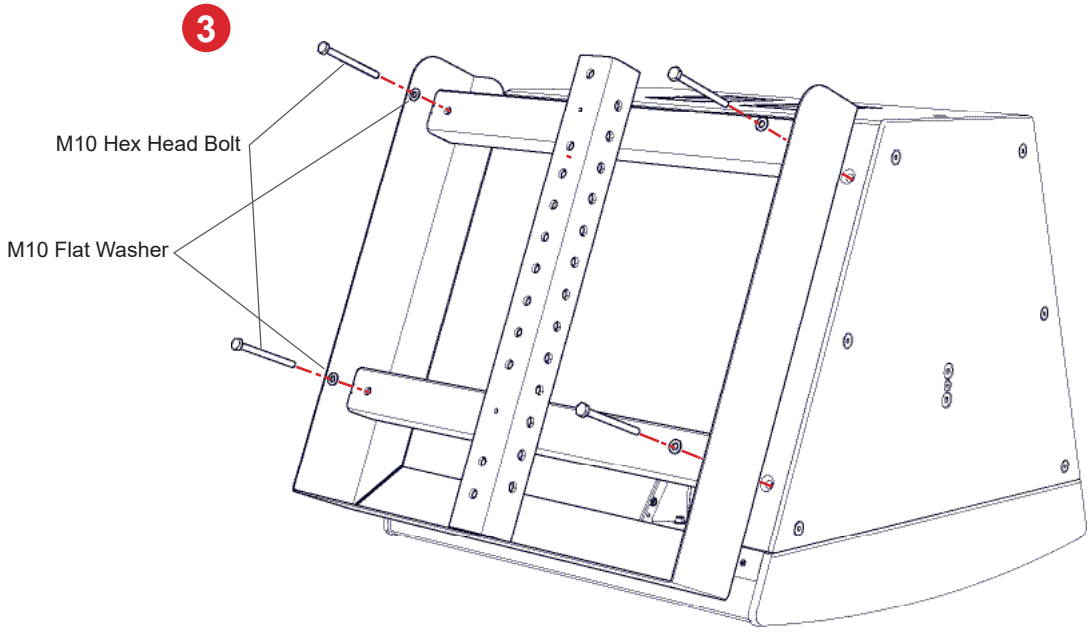
2. Remove the four (4) M10 flat head bolts as shown from the top of the cabinet.
3. Place the frame on the cabinet as shown, align holes and install hardware.
4. Tighten to torque values below - Do not over-tighten!

Hardware Torque Setting

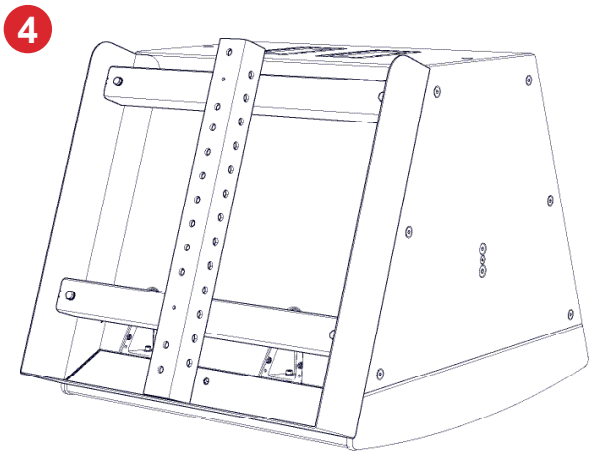
10mm bolts: 50Nm (36.88 ft-lbs)



Hardware removed



Attach array frame to the cabinet



Array frame attached

INSTALLATION

RIGGING ACCESSORIES - PULL BACK BAR (INDOOR USE ONLY)

LVH-900PB

The pull back bar can be attached to the last cabinet in an indoor array. It provides another lift point for curved arrays, or can be used as a pull-back to provide additional downward tilt for any array.

Installation:

1. Remove the flat head bolts from the back and bottom of the cabinet as shown.
2. Attach the pull back bar. Keep bolts loose until they are all started.
3. Tighten to torque values below - Do not over-tighten!

Hardware Torque Setting

10mm bolts: 50Nm (36.88 ft-lbs)

LVH-900PB

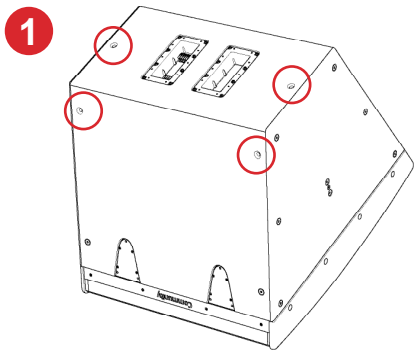
Hardware:

Qty	Description
4	M10 Hex Head Bolts
4	M10 Flat Washers

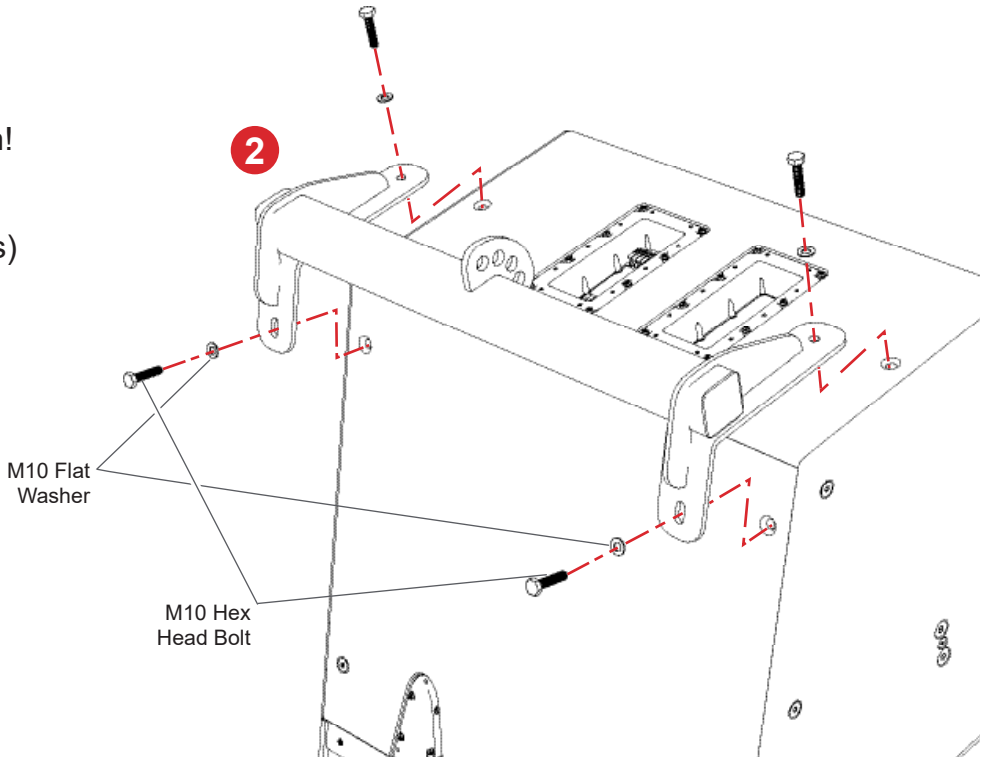
Kit Weight: 26.1 lbs (11.8 kg)

Working Load Limit: 735 lbs (333.4 kg) (10:1 safety factor)

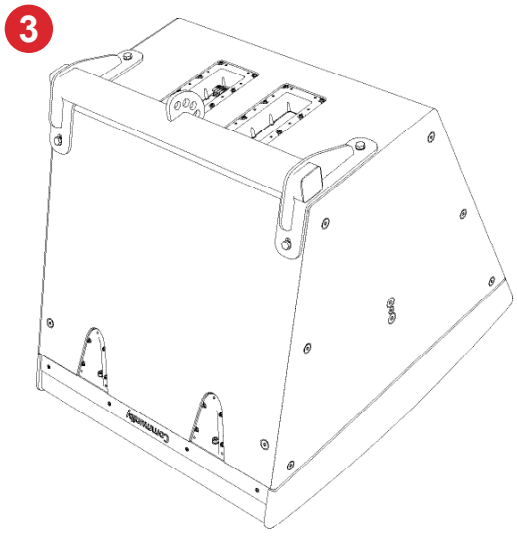
The technical drawings including dimensions and hole diameters are on page 27 of this guide.



Hardware removed



Attach pull back bar



Pull back bar attached

Safety Cable

The safety cable and associated hardware are not included. Consult all applicable codes for your application. Confer with a structural engineer for the appropriate cable/hardware for the load, application and locale. If required, the safety cable must be secured to a suitable load-bearing point separate from the array mounting point, with as little slack as possible, so as not to develop undue kinetic force if the primary array mount were to fail.

Pull Back Frame (LVH-900PB)

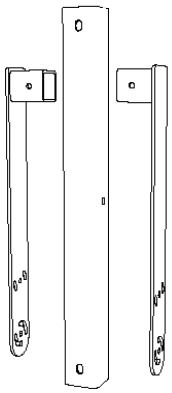
When required, a secondary safety cable can be attached to an unused hole(s) on the center tab.

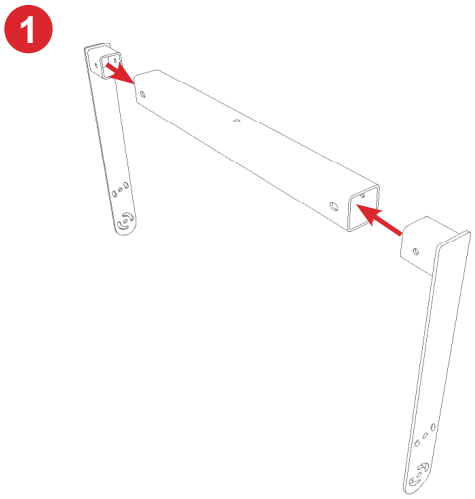
INSTALLATION

RIGGING ACCESSORIES - U-BRACKET (INDOOR USE ONLY)

LVH-900UB

The U-Bracket must be assembled prior to attaching to the cabinet. It can ONLY suspend a single LVH-900 cabinet. No other devices can be suspended below this cabinet. Two mounting positions are available - use the low profile holes to mount the LVH closer to the building structure.

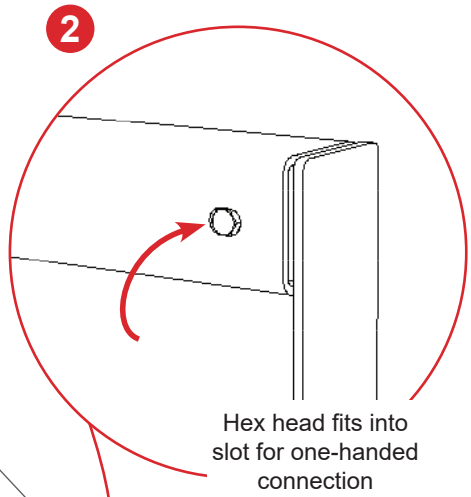




U-Bracket assembly

1. Insert each end into the cross bar and align holes.
2. Insert each bolt so that the hex head nests inside the slot. This allows you to thread the nut on easily.
3. Secure with the lock nut and fully tighten.

Note: If you are using the low profile mounting position, attach any center mounting hardware to the U-Bracket, or mount it to the building structure prior to connecting it to the cabinet.



LVH-900UB

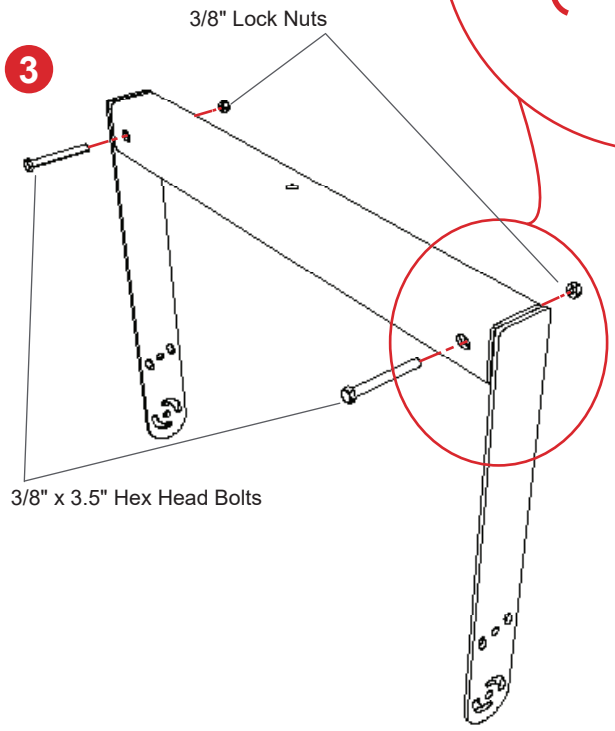
Hardware:

Qty	Description
2	3/8"-16 x 3.5" Hex head bolts
2	3/8"-16 Nylon lock nuts
2	M12 Hex Head Bolts
2	M12 Flat Washers
2	M8 Hex Head Bolts
2	M8 Flat Washers

Kit Weight: 30.7 lbs (13.9 kg)

Working Load Limit: 250 lbs (113.4 kg) (10:1 safety factor)

The technical drawings including dimensions and hole diameters are on page 28 of this guide.



Assemble U-Bracket

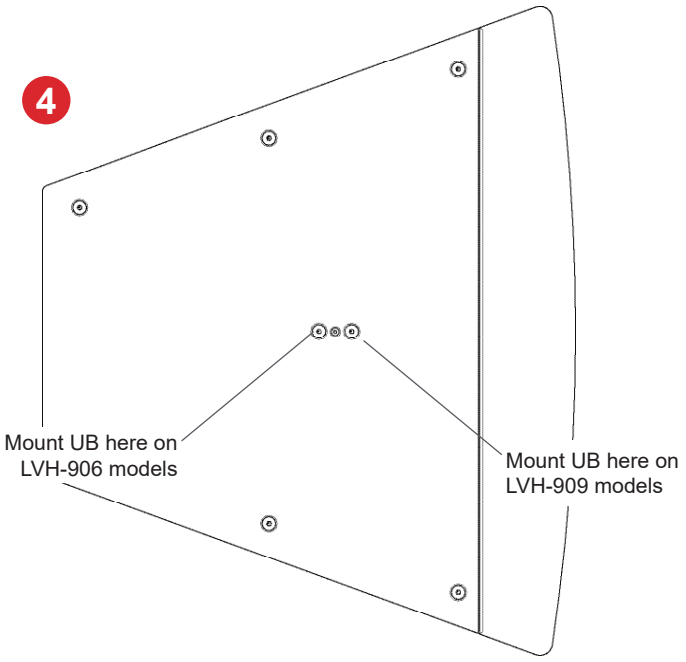
INSTALLATION

RIGGING ACCESSORIES - U-BRACKET

U-Bracket Installation:

4. Remove 2 flat head bolts from the middle of each side panel - the 8mm bolt and the 12mm that corresponds to the cabinet model CoG.
5. Place the U-Bracket in position and align the larger center holes and thread the 12mm hex bolts into both sides. Finger tighten the connections, but allow the U-Bracket to move (without marring the finish).
6. Rotate the U-Bracket to approximate the desired angle, and thread the 8mm bolts in the slot and tighten until snug. The cabinet angle may still be adjusted.

Once the correct angle is achieved, tighten to torque values below - Do not over-tighten!



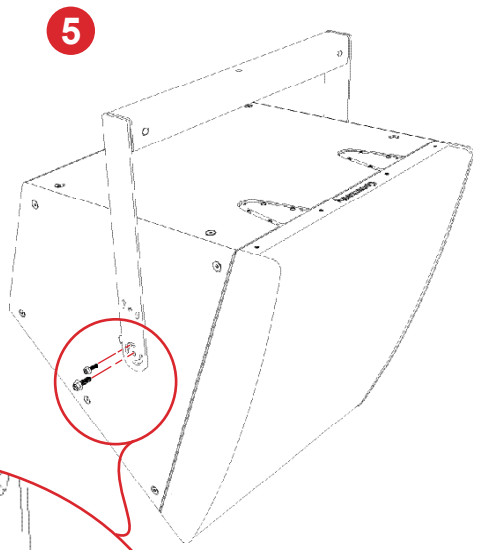
The center of gravity (CoG point varies slight between models. Use the one corresponding to the model. Forward–LVH-909; Rear–LVH-906

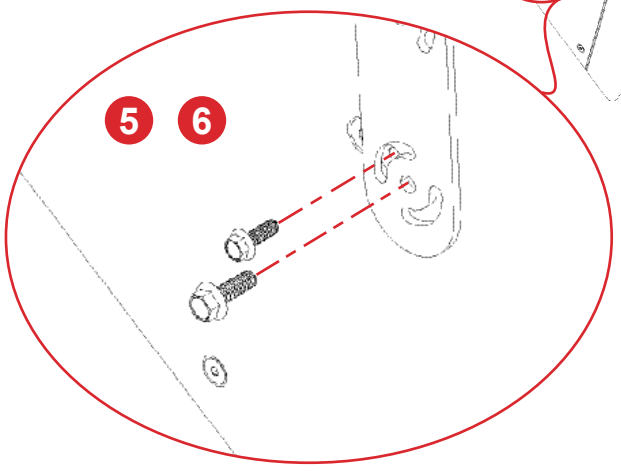
Hardware Torque Setting

12mm bolts: 85Nm (62.69 ft-lbs)

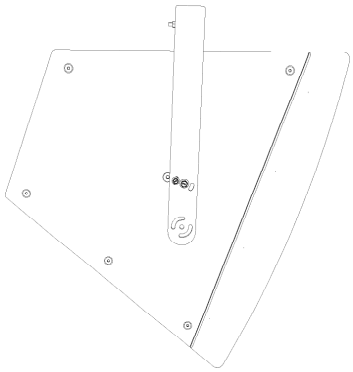
8mm bolts: 25Nm (18.44 ft-lbs)

Important: Orient the yoke correctly during U-Bracket installation, or the LVH will only tilt upward.

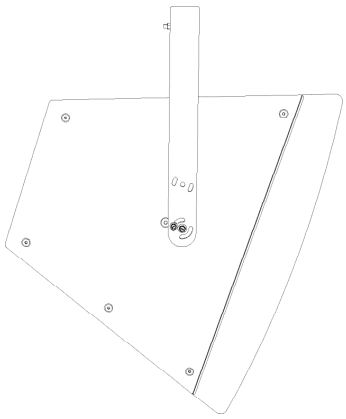




Attach U-Bracket and set the angle



Low Profile mounting position with 30° of rotation *(5° to 35° aiming down)*
Shown mounted in LVH-909 CoG



Regular mounting position with 100° of rotation *(-5°to 95° aiming down)*
Shown mounted in LVH-909 CoG

SOFTWARE & DSP REFERENCE

STEERABLE LVH-900 VENUEPOLAR REFERENCE GUIDE

VenuePolar is a custom plugin for EASE® Focus 3 that streamlines LVH-900 loudspeaker array design. The plugin is included within the LVH GLL (v5.01 or later). Download the latest LVH GLL from the downloads page at biamp.com.

The designer enters acoustic goals for their audience areas; VenuePolar calculates the number and type of speakers, frame angle, vertical coverage patterns, and splay angles to provide the most uniform coverage. Integration with FIRmaker filter optimization enables the LVH-900 to deliver high-performance coverage in any application. VenuePolar provides the speaker configuration files (SPK3) needed for use in Armonia Plus to configure the ALC DSP Amplifiers.

IMPORTANT: This software design work is not optional and SPK3 files are required to make the array functional.

WORKFLOW OVERVIEW

Follow the workflow steps in order. Performing steps out of sequence, particularly around FIRmaker and AutoEQ, can produce invalid results without any warning from the software.

1. Add and name the LVH array in EASE Focus 3 (*Object Properties*)
2. Set input channel configuration to 9-channel or 6-channel (*Filter Settings*)
3. Define target audience areas and array characteristics; calculate the array (*Start Tab*)
4. Synchronize the array to EASE Focus 3 (VP → EF3) (*Array Tab*)
5. Run FIRmaker optimization and save the XGLC configuration file (*Object Properties & Top View*)
6. Run AutoEQ (*Array Tab*)
7. Create ALC Profiles (SPK3 files) for use in Armonia+ (*Array Tab*)

IMPORTANT: The following VenuePolar overview is organized by software section, the associated workflow steps are displayed with a **(Step #)** in each section where applicable. This guide is for reference and will only cover the main steps with minimal details. For additional infromation on this process, See the VenuePolar Webhelp and the LVH section of the Biamp Cornerstone Knowledge Base.

SOFTWARE & DSP REFERENCE

STEERABLE LVH-900 VENUEPOLAR REFERENCE GUIDE

INITIAL SETUP

Name the Array (Step 1)

Choose a descriptive name for the array. The name becomes the default filename for the .xglc and .spk3 files and carries through to Armonia+.

Input Channel Configuration (Step 2)

Set Filter Settings before running FIRmaker:

- 6-Channel: recommended for most installations.
- 9-Channel: provides the highest pattern resolution and maximum output.

Note: Changing from 9-channel to 6-channel after running FIRmaker creates a channel mismatch that produces erroneous results without warning.

Mounting Options

Select in Object Properties:

- LVH-900AF: Includes frame and pull back bar in the BoM. Loads calculations available.
- Custom Frame: Cabinets only. No loads calculations or pull back bar. BoM includes cabinets and splay angles only.

START TAB

Target Audience Areas (Step 3)

Select audience areas to include in coverage. Grayed-out areas do not intersect the speaker aiming line and will not be calculated even if checked. Right-click to Check All with Intersections or Uncheck All. Do not check areas intended as FIRmaker Avoidance zones.

Array Characteristics

- Horizontal Coverage: LVH-906 (60°) or LVH-909 (90°). LVH-906 is default and typically yields ~1–2 dB higher SPL.
- Min. Target SPL (dBA): Minimum broadband A-weighted SPL across all selected areas. VenuePolar will suggest a lower value if the target cannot be met.
- Restrict Quantity to: Forces a specific cabinet count (max 6). A message appears if an optimal result cannot be achieved.

Press Calculate Array. When complete, the tab automatically switches to the Array Tab.

SOFTWARE & DSP REFERENCE

STEERABLE LVH-900 VENUEPOLAR REFERENCE GUIDE

ARRAY TAB

Synchronize Array (Step 4)

The calculated result appears as a “Recommended Array Configuration” with a red ”Array not synced” message. Press Write VP to EF3 to sync to EASE Focus 3. A green confirmation message will appear.

LVH FIRMAKER OPTIMIZATION

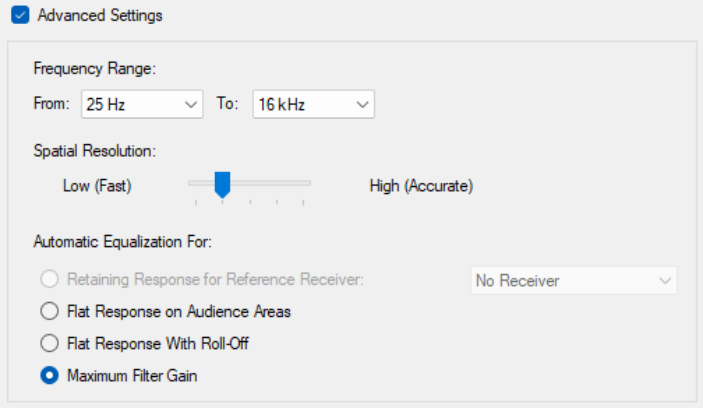
FIRmaker optimization (Step 5)

With the array selected, click Compute FIR Preset in the Object Properties panel. Name each optimization descriptively.

Advanced Settings

For specific recommendations on these settings see Biamp Cornerstone.

- Frequency Range: Change the low-frequency default from 63 Hz to 25 Hz.
- Automatic Equalization: Change to Maximum Filter Gain.
- Spatial Resolution: SR2–SR3 for iterative work; SR4–SR5 for final filter generation. Run this setting as high as possible (without getting an error message)



Before proceeding to AutoEQ, right-click the array in the Top View and select Save Configuration File. Append the FIRmaker label to the filename.

A LVH-900 FIRmaker license is required to export FIR files. To request one contact:

[VenuePolar@biamp.com](mail to:VenuePolar@biamp.com)

SOFTWARE & DSP REFERENCE

STEERABLE LVH-900 VENUEPOLAR REFERENCE GUIDE

ARRAY TAB

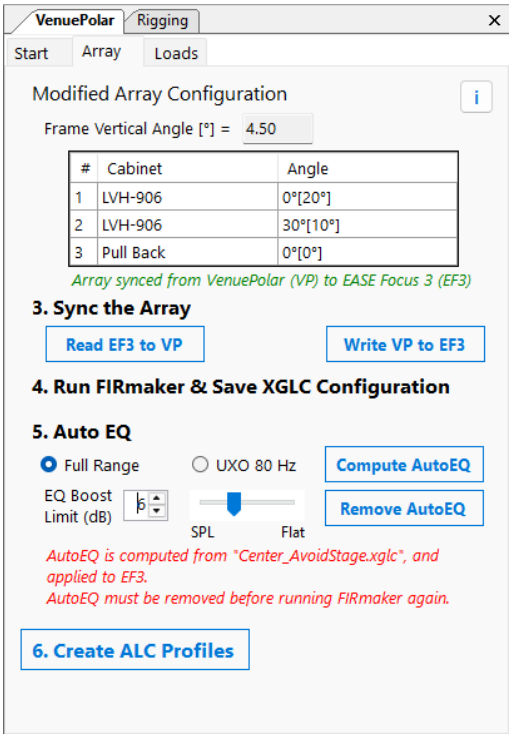
AutoEQ (Step 6)

Use FIRmaker before computing Auto EQ.

Linearizes the array's frequency response using the saved .xglc file.

- Full Range (default) or UXO 80 Hz (when using Biamp subwoofers).
- EQ Boost Limit (3–12 dB, default 6 dB): Lower values favor higher SPL; higher values favor a flatter response.

If you re-run FIRmaker after applying AutoEQ, you must first remove AutoEQ using the Remove AutoEQ button. EASE Focus 3 does not warn you to do this.



Create ALC Profiles (Step 7)

Once FIRmaker and AutoEQ are finalized, click Create ALC Profiles to generate SPK3 files for each cabinet (ordered top to bottom) for use in Armonia+.

Note: Run FIRmaker at Spatial Resolution 4 or 5 before creating ALC Profiles.

LOADS TAB

The Rigging Calculator calculates cable and fastener forces based on array orientation and cable position.

- Double Hang (default): Pinpoints selected over the Center of Gravity (CoG).
- Single Hang: Used when a pull back bar is present. Returns the closest valid pinpoint in front of the CoG. Review the Loads tab after any aiming adjustment.

Note: If the aiming is altered in the Loads Tab (for example, by switching from Double Hang to Single Hang) the entire VenuePolar workflow must be repeated.

The Loads tab reports total array weight, use this value for all rigging and suspension purposes.

Note: The Rigging Calculator does not account for the WLL of user-selected lifting hardware. Assess independently. If suspension is anything other than vertical, consult a licensed engineer or certified rigging professional.

T (Top) or S (Side) pinpoints are available for both hang options. Each S pinpoint adds a PY1-1550 to the BoM.

SOFTWARE & DSP REFERENCE

The LVH-900 integrates with a powerful suite of software tools designed to streamline system configuration, DSP optimization, and venue-specific coverage control. From prediction and FIR filter generation to amplifier control and remote management, every stage of the signal chain is supported by purpose-built applications that work together seamlessly.

VENUEPOLAR™ PLUGIN (EASE FOCUS 3)

Download the latest LVH-900 GLL from biamp.com to access the VenuePolar steerable beamforming plugin. VenuePolar generates all FIR filter files automatically.

For additional infromation on VenuePolar, See the VenuePolar Webhelp.

FIRMAKER

Integrated in EASE Focus 3. Generates optimized FIR filter coefficients for your specific venue geometry and coverage targets.

ARMONIA+

Load exported SPK3 files from VenuePolar/FIRmaker directly into the ALC loudspeaker library. The default location for Armonia Plus is:

C:\Users\Public\Documents\Powersoft\ArmoniaPlus\SpeakerLibrary

SYSTEM LATENCY

6 ms (via Time Traveler FIR optimization)

PATTERN SWITCHING

Pre-configured coverage presets are switchable in seconds via Armonia+ for multi-purpose venue applications.

Weights		
LOUDSPEAKERS	**Indoor [lbs (kg)]**	**Outdoor / WR [lbs (kg)]**
LVH-906, LVH-909 (single)	250.0 lbs (113.4 kg)	210.0 lbs (95.3 kg)
ACCESSORIES (Available from Biamp)	**Kit Weight [lbs (kg)]**	**Working Load Limit [lbs (kg)]**
LVH-900SP1	15.6 lbs (7.1 kg)	1760 lbs (798.3 kg) / pair
LVH-900SP2	18.3 lbs (8.3 kg)	1760 lbs (798.3 kg) / pair
LVH-900AF *(Indoor only)*	91.1 lbs (41.3 kg)	1200 lbs (544.3 kg)
LVH-900PB *(Indoor only)*	26.1 lbs (11.8 kg)	735 lbs (333.4 kg)
LVH-900UB *(Indoor only)*	30.7 lbs (13.9 kg)	250 lbs (113.4 kg)

EN54-24 Certification Information

The Biamp products bearing the CE label comply with the following directives:
Low Voltage Directive 2014/35/EU
Waste from Electrical Equipment Directive 2012/19/EU.
Restriction of Hazardous Substances (RoHS) Directive 2011/65/EU

Biamp LVH-906 and LVH-909 models are EN54-24 compliant and meet the standards for EN54-24 TYPE B Loudspeakers for Voice Control and Indicating Equipment.

Refer to EN54-24 Certificate Numbers 2797 CPR 809097 & 0086 CPR 824300

Performance can be reviewed by contacting the Biamp Compliance Department and referencing Declaration of Performance (DoP) LVH-900-002.

The manufacturer is:
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EN54-24:2008
ISO 7240-24:2016

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Warranty: Biamp.com/legal/warranty-information

Safety & Compliance: biamp.com/compliance

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