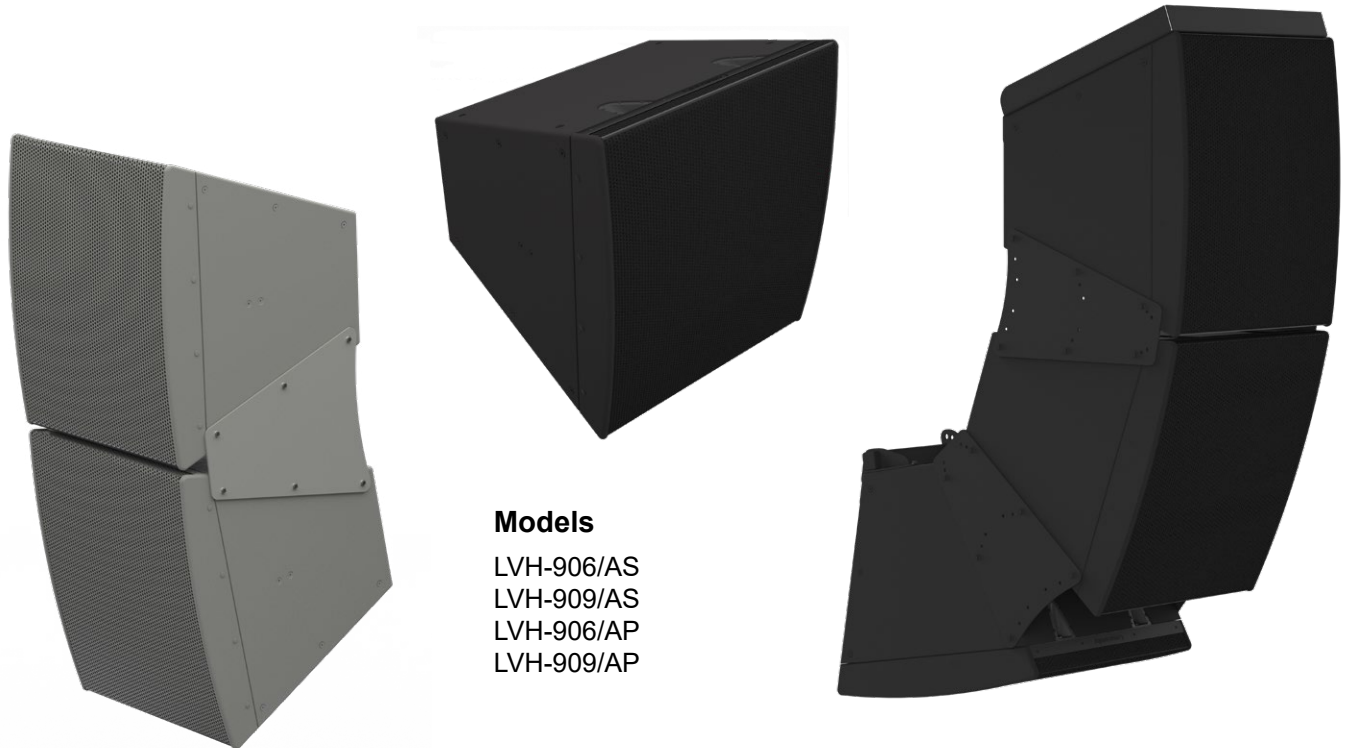


Community L Series LVH-900 Beamforming Venue Horn Installation & Operation Guide



Models

LVH-906/AS
LVH-909/AS
LVH-906/AP
LVH-909/AP

PRODUCT DESCRIPTION

Biamp's Community L SERIES LVH-900 Beamforming 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.

Designed for exceptional performance in large venues, 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. Using patent-pending techniques, all drivers integrate into a single triaxial waveguide that fills the entire 36 x 31-inch face of the enclosure, providing pattern control to below 400 Hz. The LVH-900 models offer 60 or 90 degrees of fixed horizontal dispersion.

The LVH-900 Active Standard (AS) models allow DSP settings and control of individual driver pairs to provide uniform sound to the audience areas. The LVH-900/AS models have presets for vertical dispersion beamforming in 60°, 40°, 20° configurations.

The LVH-900 Active-Plus (AP) models use advanced FIR techniques to seamlessly combine the output of two loudspeakers into one coherent wavefront, providing higher output or wider coverage patterns. LVH-900/AP models have presets for vertical dispersion beamforming in 100°, 80°, 20° configurations.

Typical applications include music and speech reinforcement for large houses of worship, stadiums, theaters, and much 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.

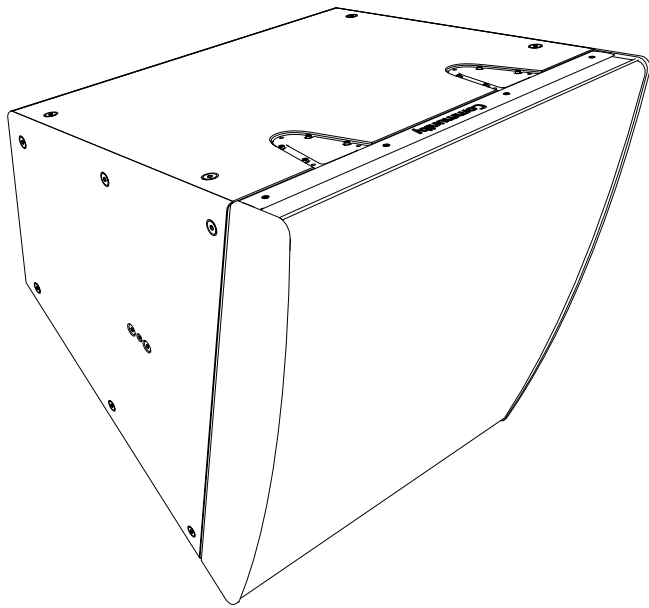
FEATURES

- Designed for extraordinary performance in large venues
- Large format, horn-loaded triaxial design maintains pattern control to below 400 Hz
- Co-linear manifold for HF and MF beamforming
- Indoor or Outdoor weather-resistant (WR) models

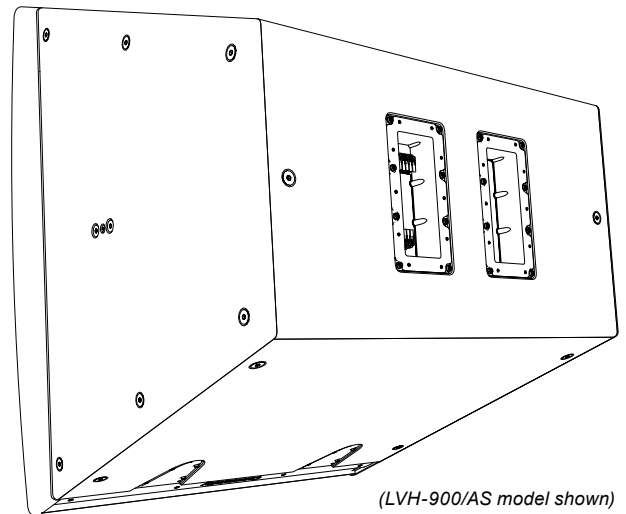
PRODUCT REPRESENTATION

LVH-900 Loudspeaker

Models: LVH-906/AS, LVH-909/AS, LVH-906/AP, LVH-909/AP



Front



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.



The LVH-900 models explained:

There are functional differences between the /AS (Active Standard) and /AP (Active Plus) models described below. It is important to order the appropriate models for your application. Your system designer should have modeled the system using EASE® Focus3 (EF3) software (available free from AFMG® [here](#))*. The latest LVH-900 GLL (loudspeaker file) is available on the Biamp website ([here](#)) The report generated will dictate the models, splay plate types and quantities needed. The WR (weather-resistant) models are designed to comply with, and pass IEC 60068-2-5 Solar Radiation, IEC 60068-2-11 Salt Mist, IEC 60068-2-42 SO2, IEC 60068-2-60 Chlorine, and IEC 60529 IP56 test conditions

LVH-900/AS (Active Standard) models

- Are always used as single cabinet point sources.
- Internally the HF & MF drivers are wired in pairs – outside pairs and inside pairs – each driver pair is driven by different FIR settings, manipulating the phase to create the single cabinet beamformed patterns.
Note: Since there are only 3 MF drivers they are wired to the input panel as MF1&3, and MF2.
- Recommend a total of 6 amplifier channels to drive each cabinet.

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LVH-900/AP (Active Plus) models

- Must be ordered as two (2) /AP cabinets in order to create one dual array.
- Are always deployed in pairs. Two 'AP' cabinets are arrayed together to create one single, larger LVH loudspeaker. The proper mechanical splay between cabinets must be paired with matching FIR settings.
- Provide additional output and/or wider coverage patterns than are available from single 'AS' models.
- The input panels provide wiring access to each HF & MF driver individually. Mirrored FIR settings are sent to the upper and lower cabinets in the pairs, allowing the two cabinets to act as one large loudspeaker.
- Like the 'AS' version, the HF & MF drivers are driven as pairs but in the 'AP' version the drivers in each pair are located in two different cabinets. There are four (4) HF pairs and three (3) MF pairs of drivers driven across the dual 'AP' loudspeaker array.
- 'AP' arrays recommend a total of 11 amplifier channels for each array.
- Use of a single 'AP' cabinet is not currently supported.

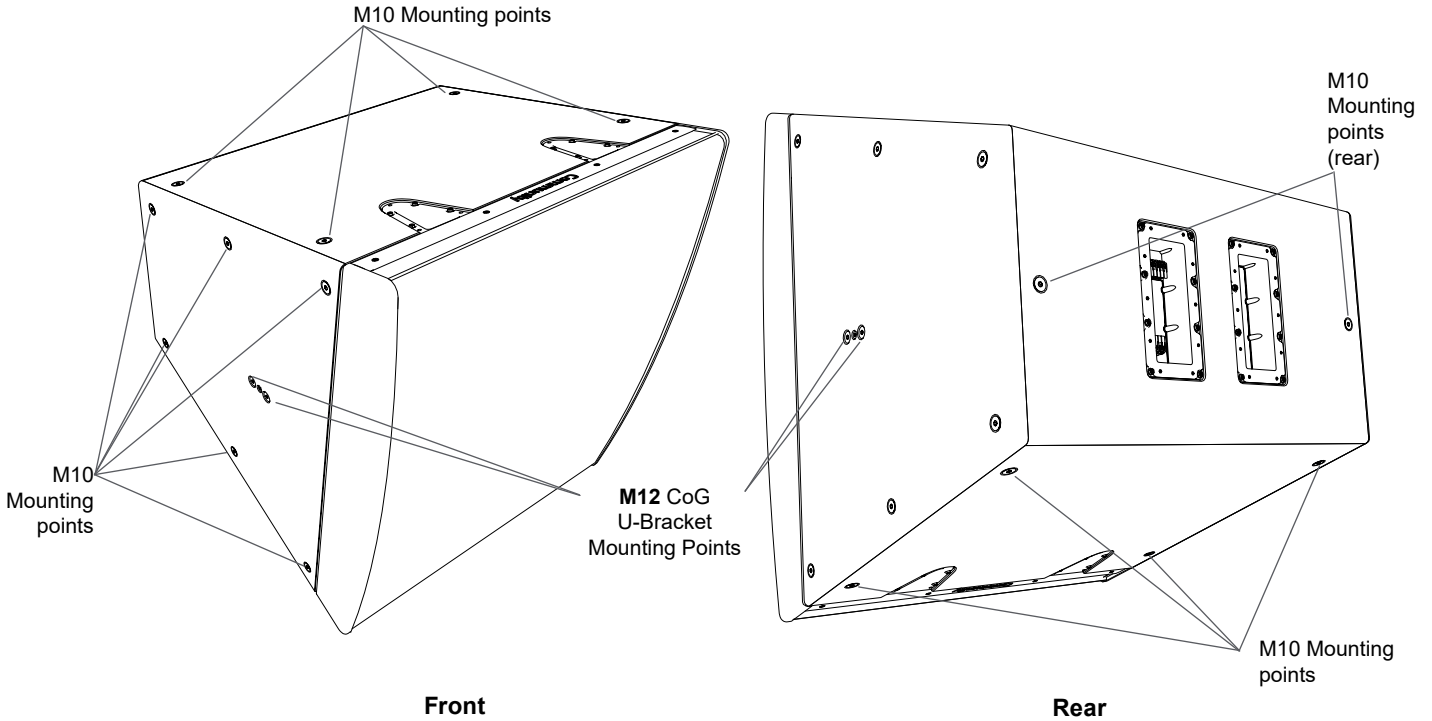
INSTALLATION

Mounting Points

There are at least four mounting points on each side, top and bottom that may be used for rated eyebolts, splay brackets, or rigging frames. The existing (M10) flat head bolts may be removed and replaced with M10 mounting hardware (thread length between 35-45 mm). 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.

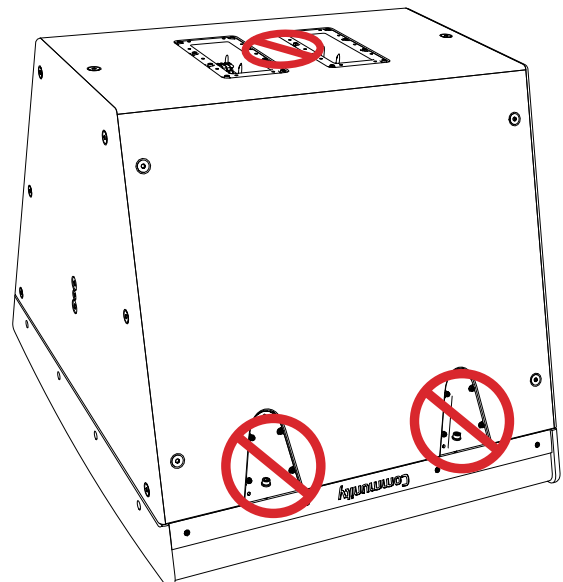
IMPORTANT - Rigging point WLL:
M10 rigging point is 200 lbs (10:1 Safety rating) - recommend 4 suspension points;
M12 rigging point is 250 lbs (10:1 Safety rating) - recommend 2 suspension points



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 (continued)

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; input label text indicates orientation.
- 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 overtighten.

Expected DCR Values (testing)

For **LVH900/AS** models the DCR for each input should read approximately:

- HF 1+4: ~6 ohms
- HF 2+3: ~6 ohms
- MF 1+3: ~3 ohms
- MF 2: ~6 ohms
- LF 1: ~7 ohms
- LF 2: ~7 ohms

For **LVH900/AP** models the DCR on each cabinet individually should read approximately:

- 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.

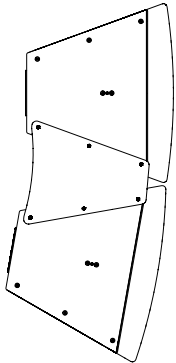
If required, a safety cable(s) must be secured to a suitable load-bearing point separate from the array mounting point, with as little slack as possible, so as not to develop undue kinetic force if the primary array mount were to fail.

Splay Brackets, Cabinet Angles and Beamformed Patterns in LVH-900/AP Dual Cabinet Arrays

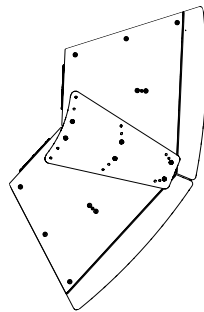
It is important to remember the beamformed patterns that dual cabinet arrays can make are distinct and will dictate the splay between two cabinets. The LVH-900/AP dual-cabinet beamformed patterns require both proper physical splay between cabinets and appropriate FIR filters applied in the DSP. Two LVH-900/AP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

The EASE® Focus report will define any cabinet splay angles in an array.

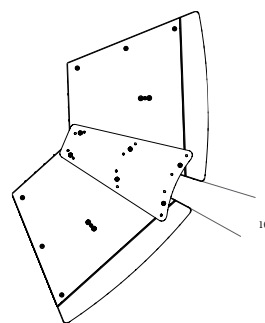
LVH-900/AP Dual cabinet arrays should be configured using the following splay plates and hole sets.



**LVH-900/AP 20°
SP2 - 30° Back Splay**



**LVH-900/AP 80°
SP1 - 0° Back Splay**



**LVH-900/AP 100°
SP1 - 10° Front Splay**



***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.

INSTALLATION (continued)

Splay Bracket Connections (LVH-900SP1)

The angle of the splay brackets should be determined using EF3 modeling software 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. Refer to Figure 1 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. (Figure 2)

⚠ 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

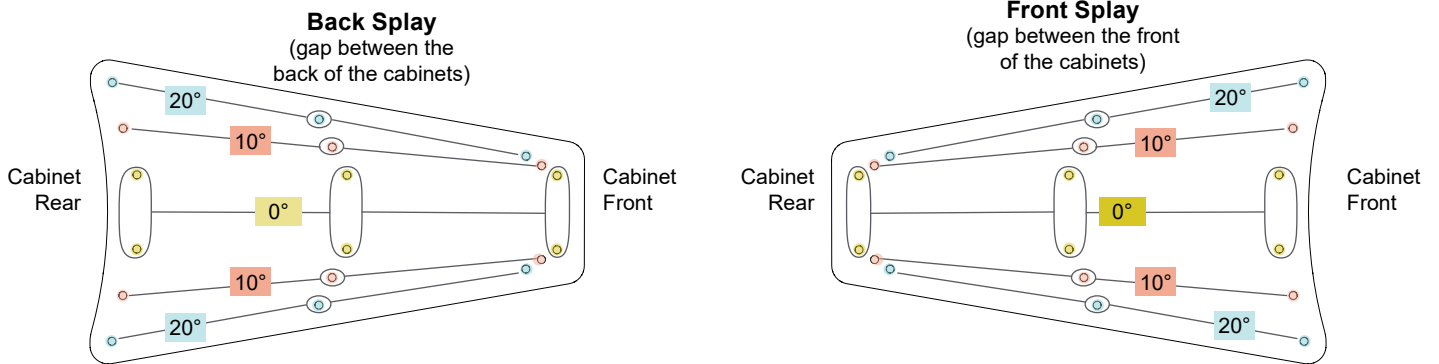


Figure 1. Cabinet to Splay Bracket attachment points to achieve splay angles suggested in EF3

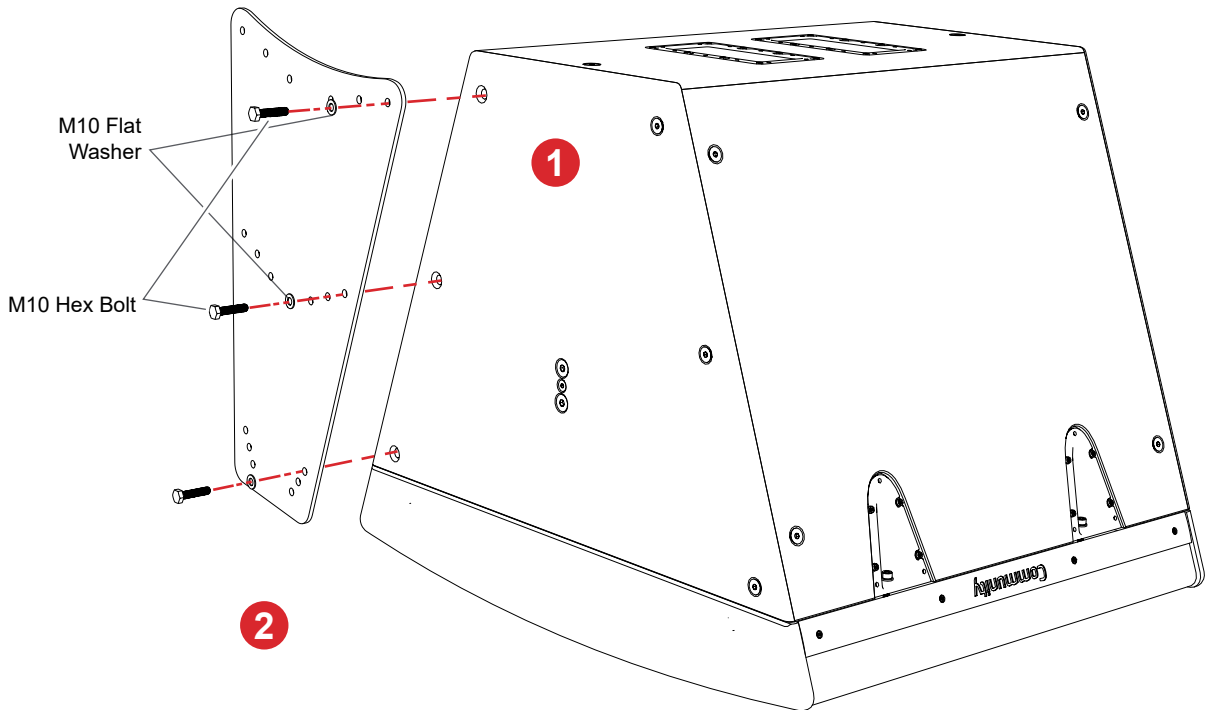


Figure 2. Attach splay bracket to each side of the loudspeaker
Use correct holes to attain desired angle - keep connections loose

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. (Figure 3)
5. Fully tighten all splay bracket connections on both sides of the cabinet.

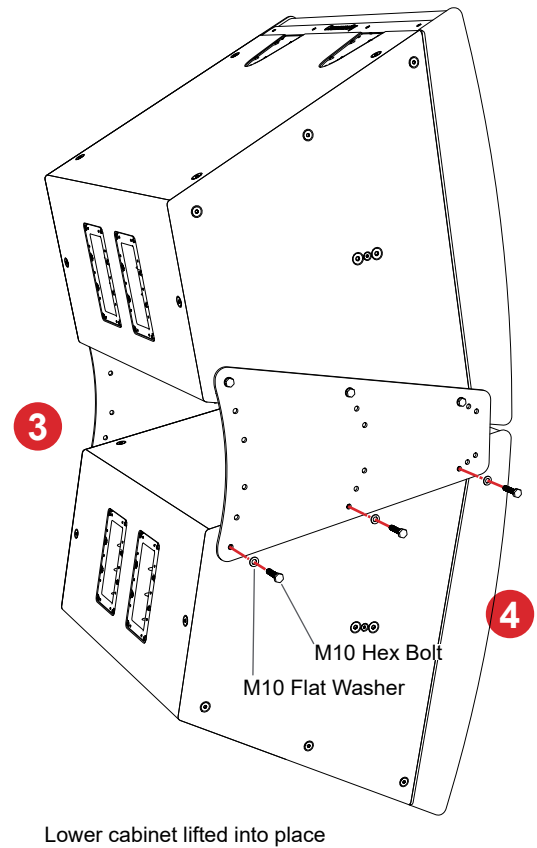
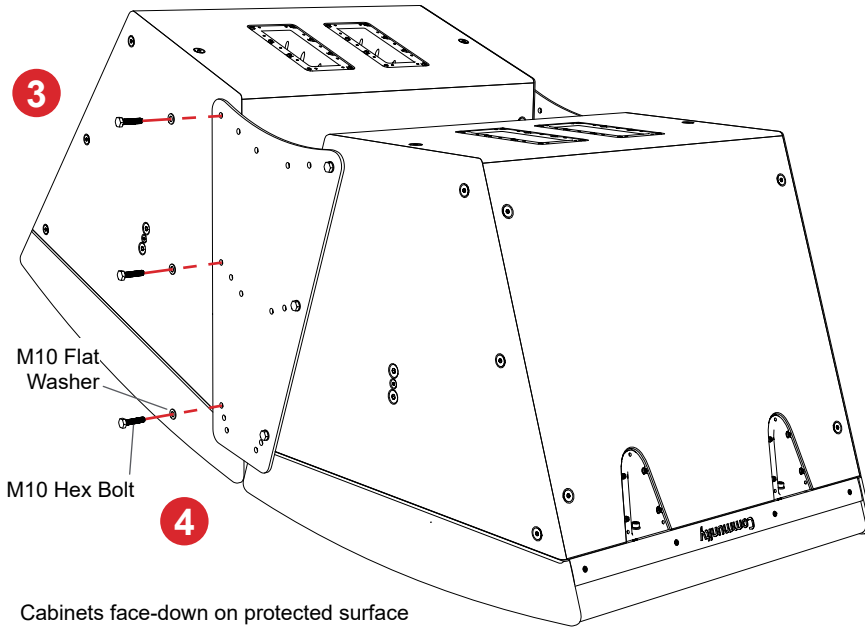


Figure 3. Attach the side plate to the next cabinet - keep all connections loose until all bolts are started. Support the second cabinet until all connections are made and tightened

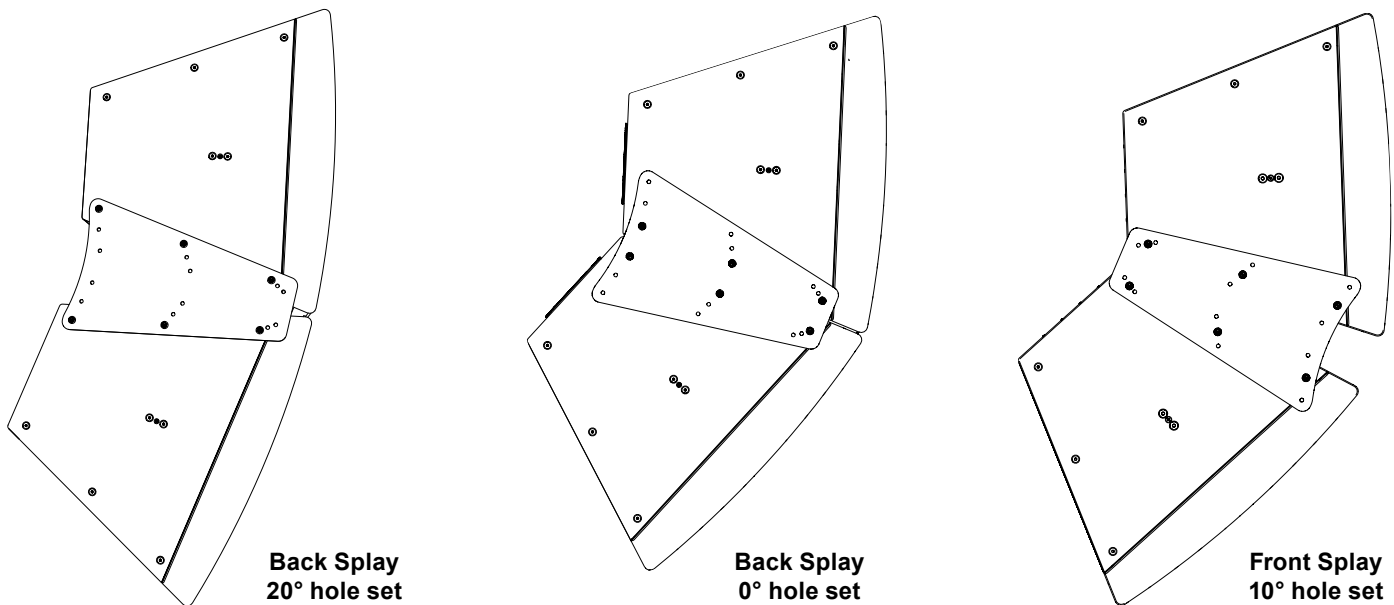



Figure 4. Typical splay bracket orientation - cabinet connection locations are symmetrical on the splay bracket

INSTALLATION (continued)

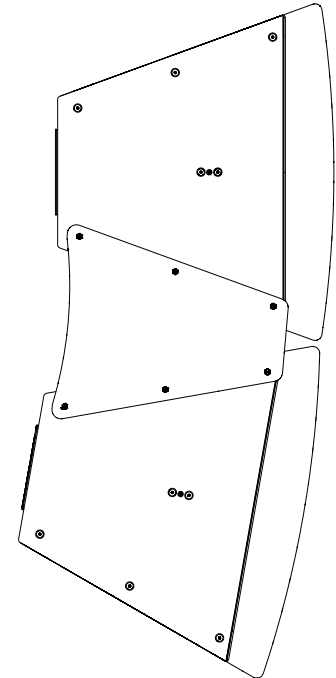
Splay Bracket Connections (LVH-900SP2)

LVH-900SP2 is used for creating a 30° splay between cabinets. Most commonly, it is used as the joining plate in an LVH-900/AP 20° cabinet, creating the proper rear splay angle. Or it can also be used to create a wide splay at the front of an array 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. (Figure 5)

 **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



LVH-900/AP Dual 20° Array

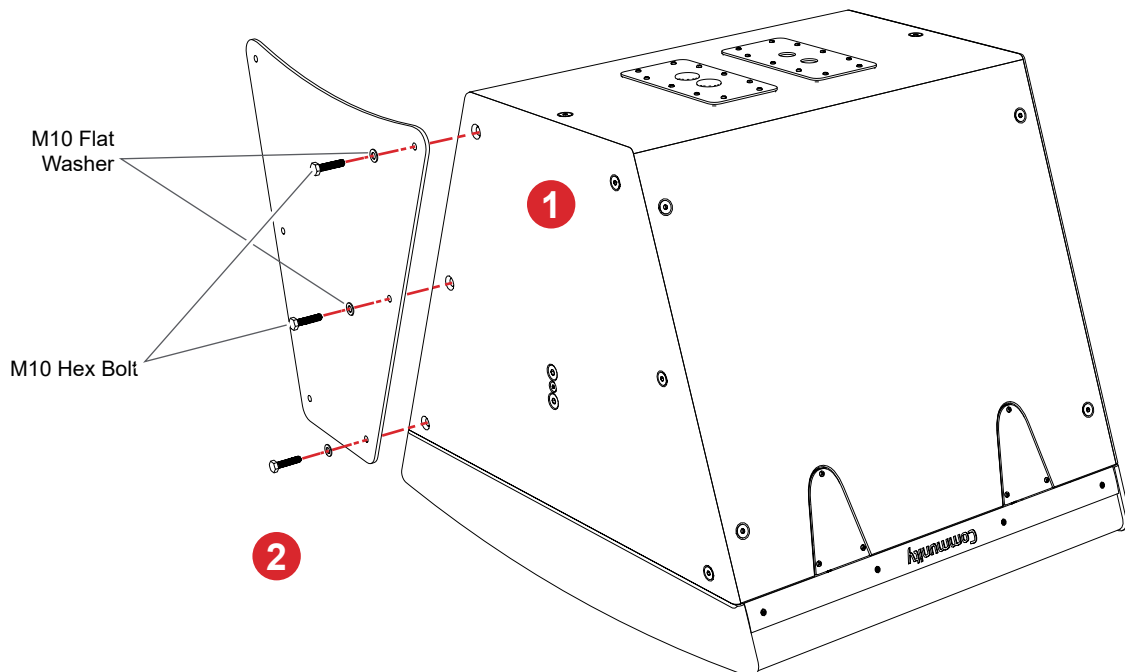
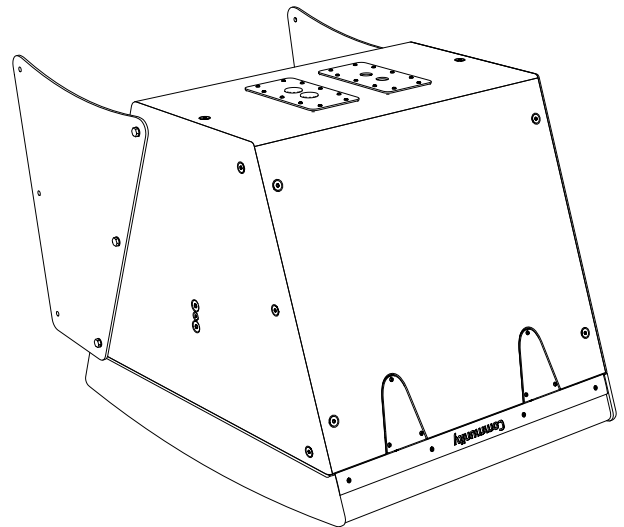


Figure 5. Loosely attach splay bracket

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. (Figure 6)
5. Fully tighten all splay bracket connections on both sides of the cabinet.



Cabinet with splay brackets attached

Hardware Torque Setting

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

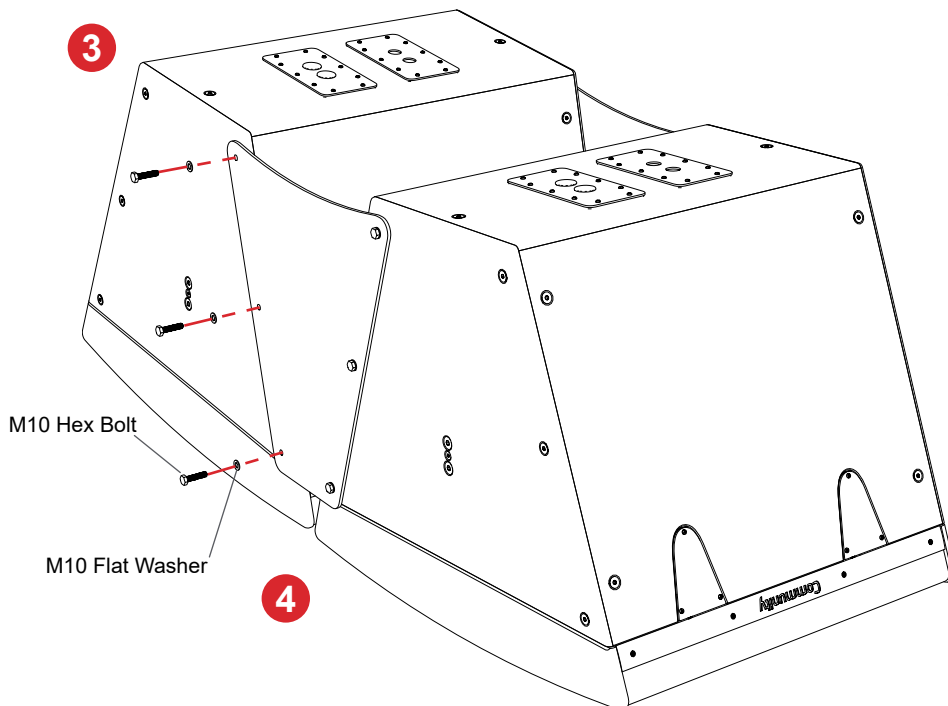
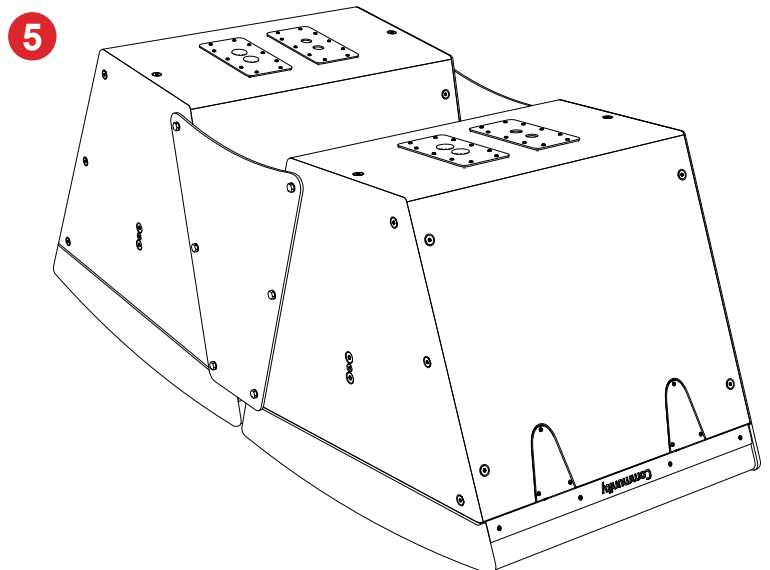


Figure 6. Attach the side plate to the next cabinet - keep all connections **LOOSE** until all bolts are started. Support the second cabinet until all connections are made and tightened



INSTALLATION (continued)

Electrical Connections LVH-900AS (Active Standard)

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.

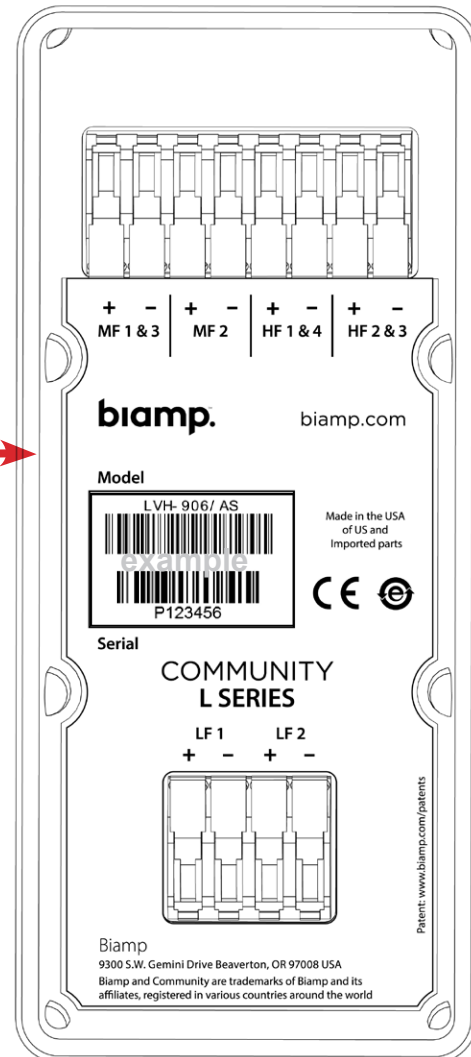
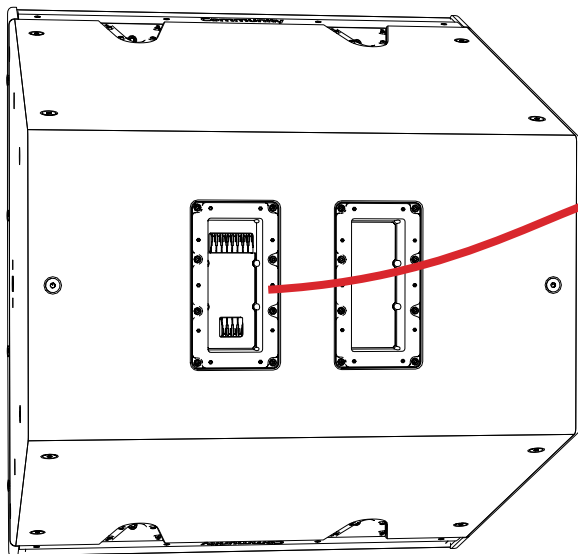


Wire Ferrules

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

Recommended wire size:
0.5 mm² - 2.5 mm²
(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.



Input Panel LVH-900/AS

INSTALLATION *(continued)*

Electrical Connections LVH-900AS *(continued)*

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

1. Wire the Active Standard (LVH900/AS) models as shown below. Six (6) channels recommended.

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

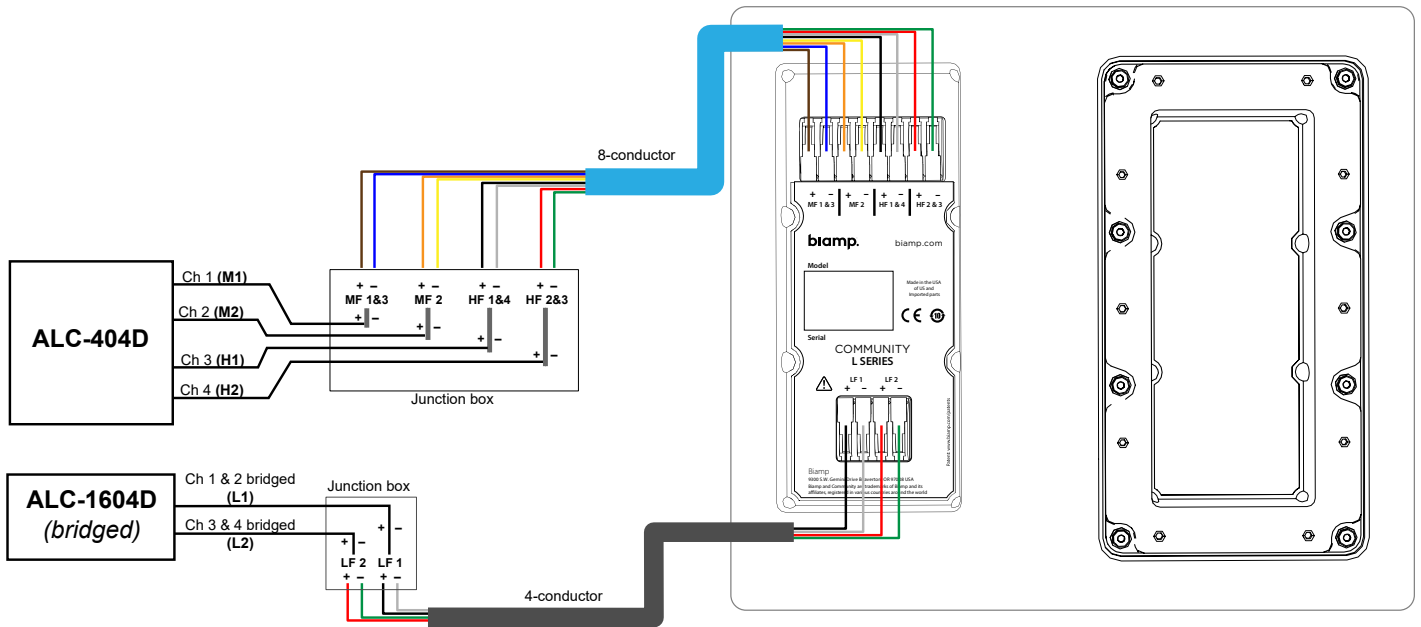


Figure 7. Wiring for LVH-900/AS Input Panel


INSTALLATION *(continued)*

Electrical Connections for LVH-900/AP *(Active Plus)*

Important: To utilize a dual-cabinet pattern, you must have ordered LVH-900/AP (Active Plus) models. Each cabinet will be fitted with input panels that allow individual driver connections.

To achieve those dual-cabinet patterns, you must follow the wiring diagram on the next page to ensure that both cabinets perform as a single unit.

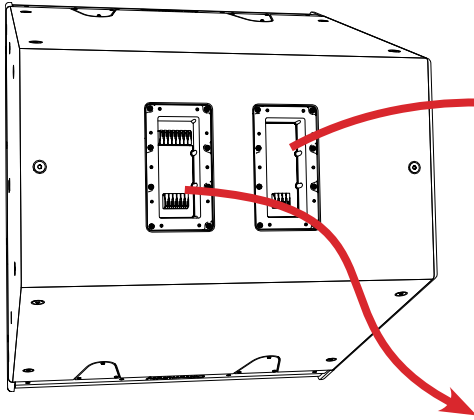
Wire Ferrules



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

Recommended wire size:
0.5 mm² - 2.5 mm²
(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.

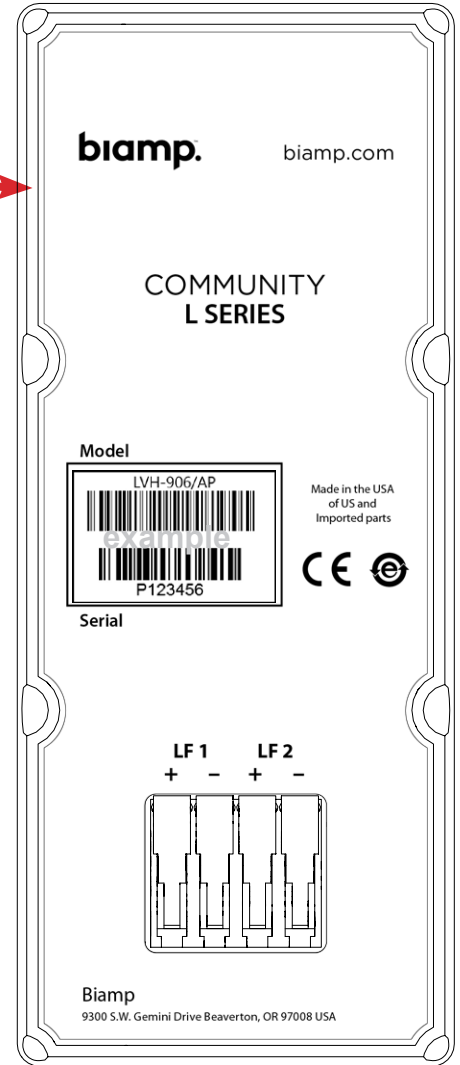


The input panels are fitted with lever-action terminals to make electrical connections to the drivers. Strip the insulation 0.5" (13 mm) from the end of each wire. Lift a lever up and insert the wire fully into the slot. Press the lever back down on the wire to secure the connection. Ensure the lever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



MF/HF Input Panel LVH-900/AP



LF Input Panel LVH-900/AP

INSTALLATION *(continued)*

Electrical Connections for LVH-900/AP *(continued)*

1. The cabinets should be connected mechanically with the splay plates defined by EASE® Focus 3 and be positioned so that the panels can be easily accessed.
2. The HF and MF inputs **MUST** be wired to the same ALC channel as noted in the image below. (Figure 8)
3. **4 ALCs** are recommended to control the dual cabinet array.
 - #1 ALC-404D - 4 HF channels wired as shown below
 - #2 ALC-404D - 3 MF channels wired as shown below
 - #1 ALC-1604D (bridged) - 2 LF channels-top cabinet
 - #2 ALC-1604D (bridged) - 2 LF channels-bottom cabinet

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

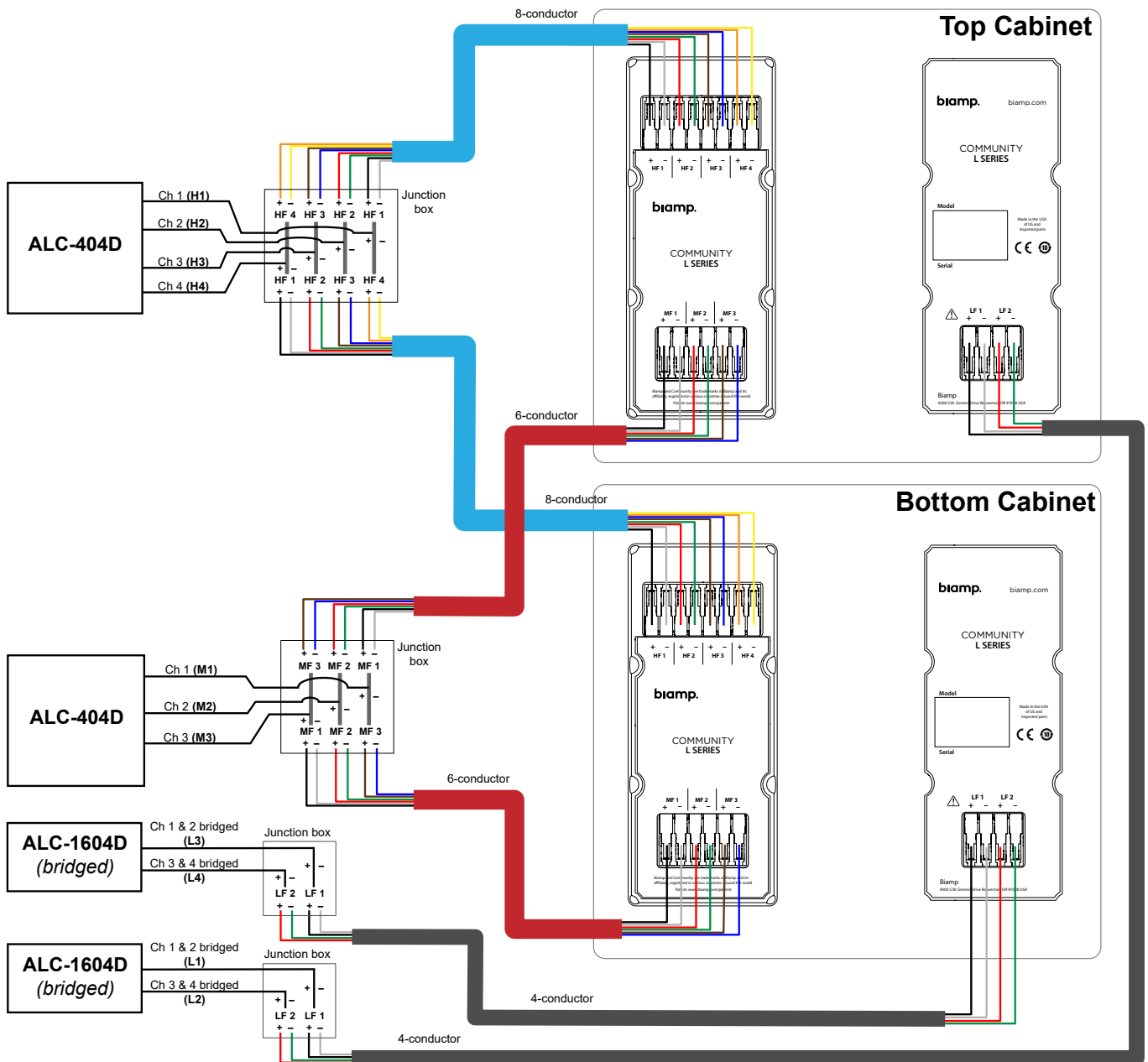


Figure 8. Wiring for LVH-900/AP Input Panels

INSTALLATION (continued)

Electrical Connections for LVH-900ASPTP panel (optional)

The optional LVH-900/ASPTP MF-HF Pass Thru panel allows separate cabling for MF-HF conductors (especially useful for WR models).

Notes:

1. The lower LF terminals are not functional on this panel. See red circle. Do not connect any wires to these terminals.
2. LVH-900ASPTP is only compatible with LVH-900/AS speaker models! Do not attempt to use with LVH-900/AP models.

1. Remove both input panels with a 5 mm Allen wrench, and reserve hardware for reattachment. (Figure 9)

Note: The blank panel cup is a good holder for the hardware, but can be discarded after the pass thru panel is installed.

2. Thread the harness through the cabinet and out the other hole. (Figure 10)

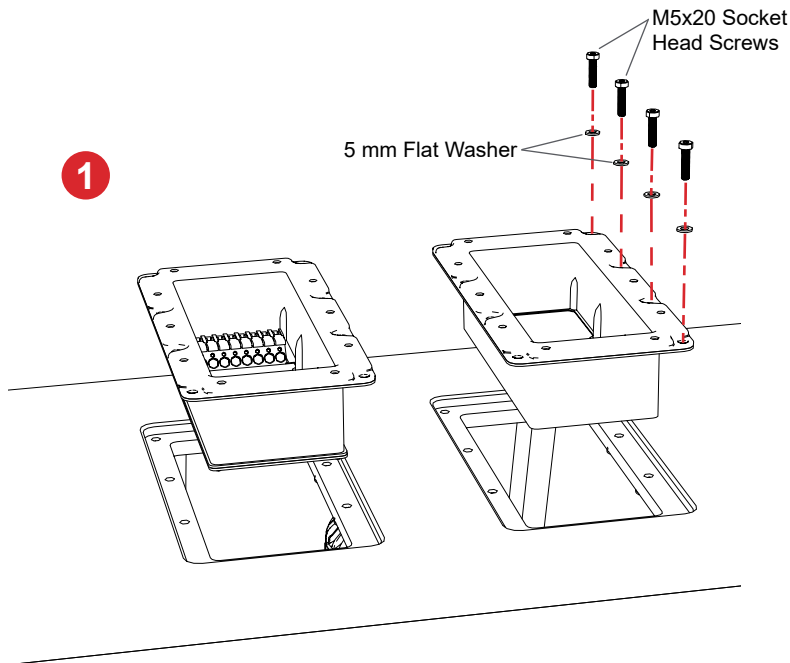
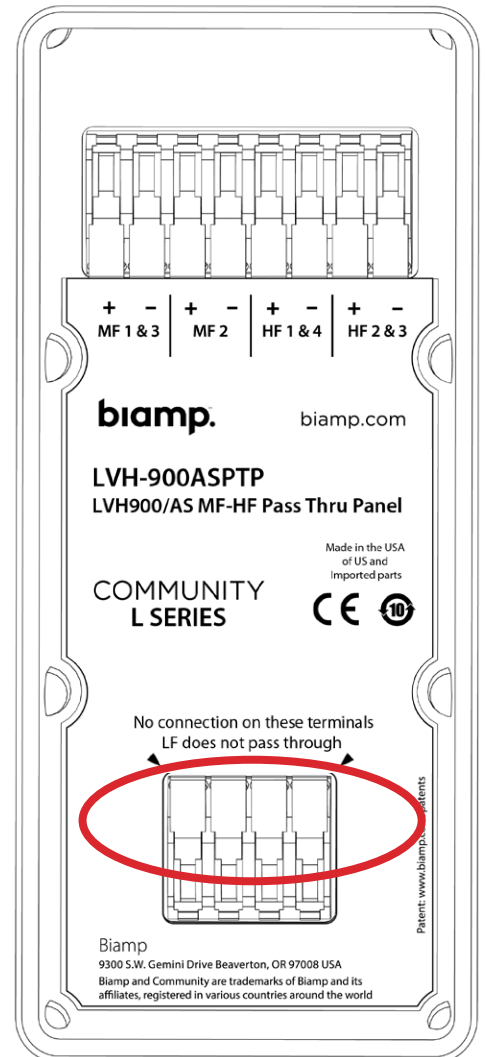


Figure 9. Remove both input panels



Tip: Secure the harness to an interior support with a cable tie to prevent it from moving around during operation.

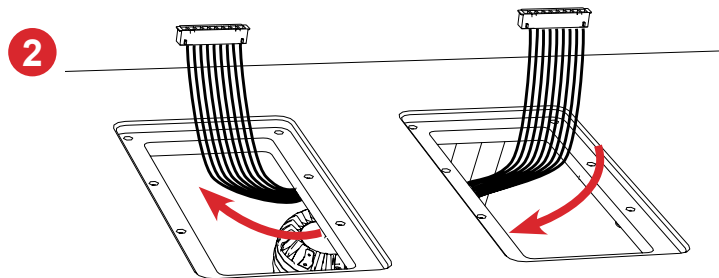


Figure 10. Thread harness through openings

INSTALLATION (continued)

LVH-900ASPTP (continued)

3. Plug the wiring harness into the unoccupied 9 pin socket in the original (active) input panel (left side).
4. Plug the harness into the PTP panel and set both input panels back in the cabinet. (Figure 11)
Note: Ensure the plug orientation matches.
5. Reattach using the original hardware - (8) connections per panel. (Figure 12)

Typical wiring using the Pass-Thru panel is as follows:

- Two cabinets hanging fairly close to each other where the MF/HF settings and pattern is the same (next page - top). Only one (1) Pass-Thru panel is necessary.
- Utilizing the Pass-Thru panel to separate the MF and HF connections using 4-conductor cables (next page - bottom). This is useful for WR models - 3 gland nuts would be needed.

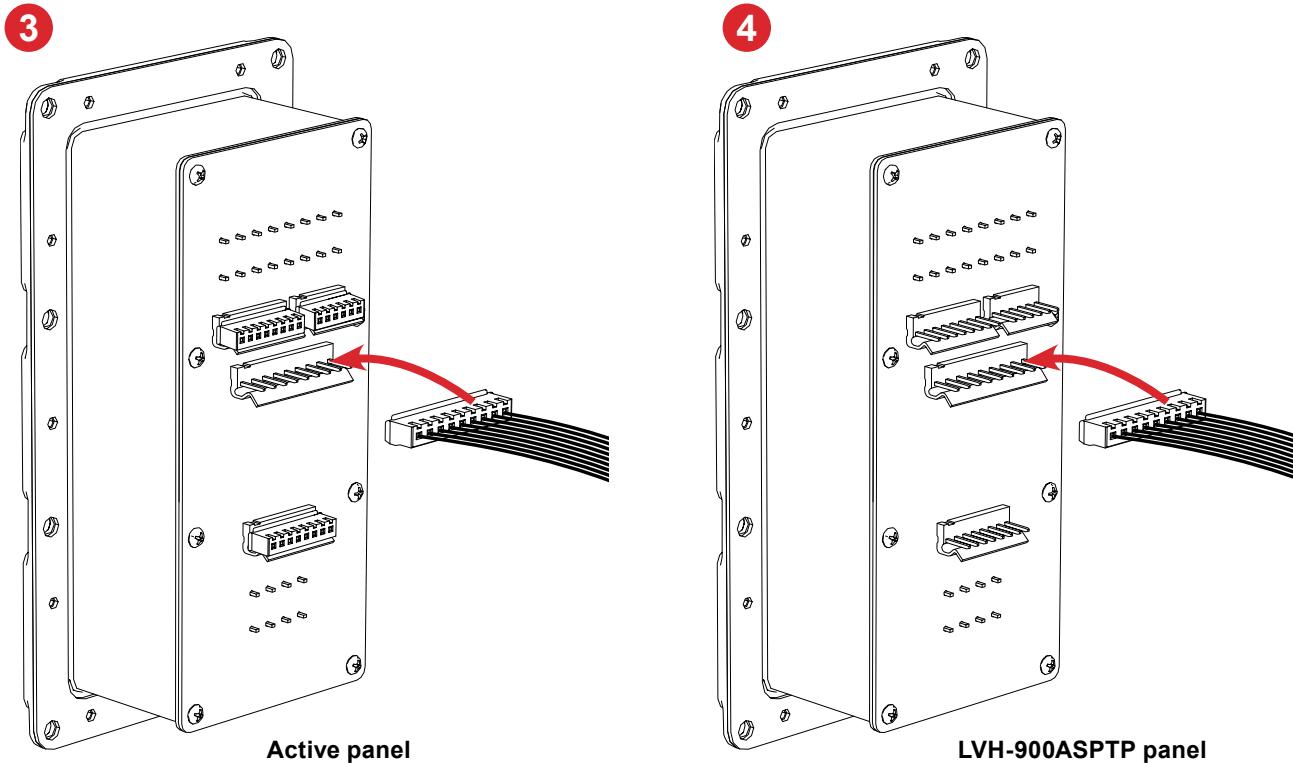


Figure 11. Plug into panels

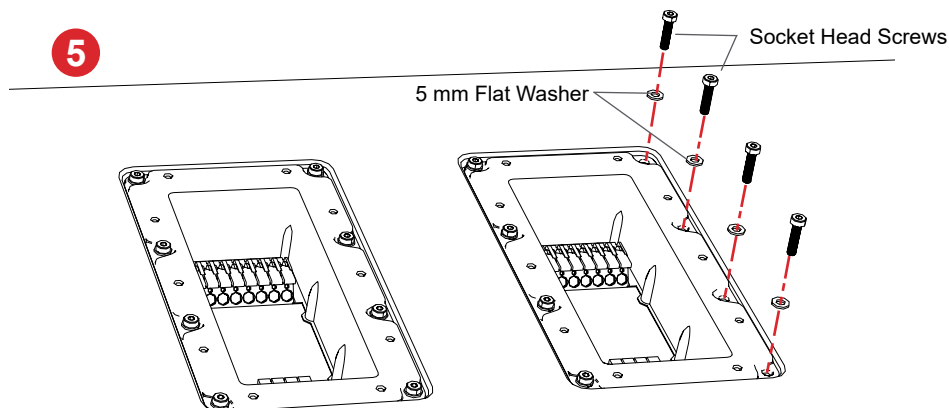
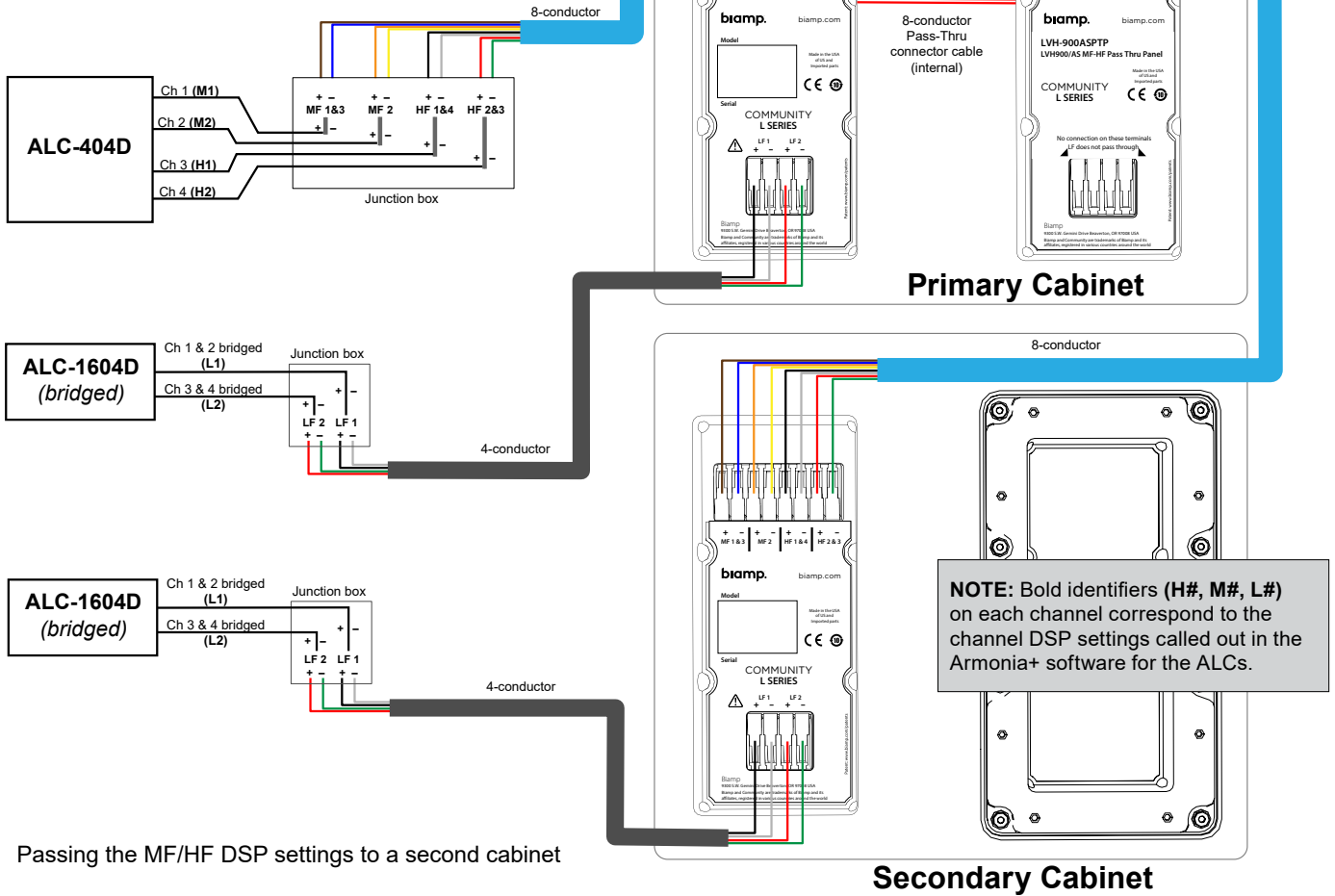


Figure 12. Place and reattach panels

INSTALLATION - WIRING

LVH-900/AS using the LVH-900ASPTP:

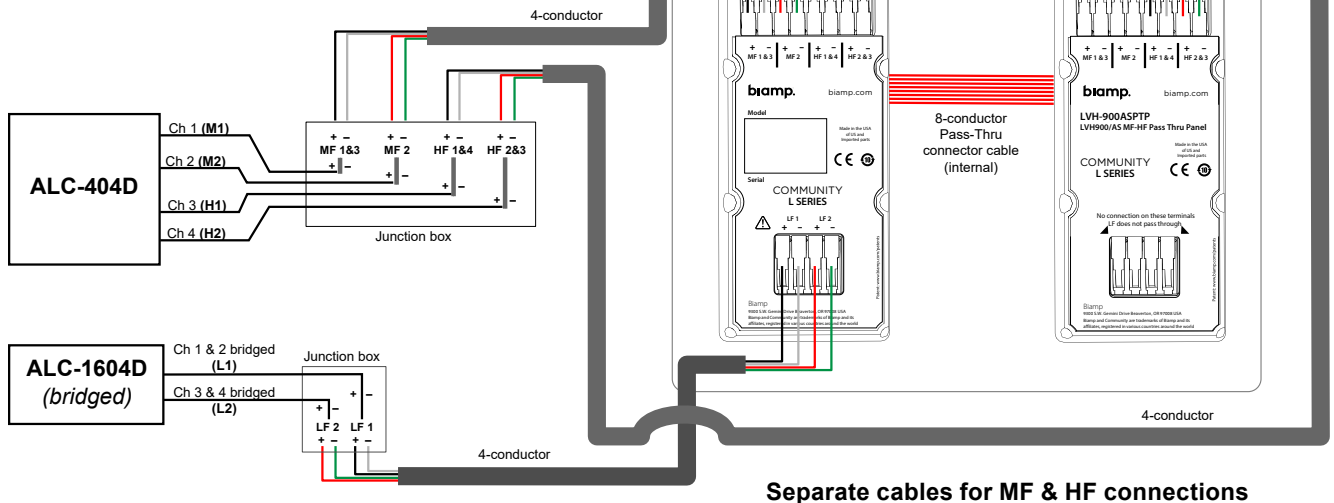
(Option 1) Using the same channels on the ALC-404D to drive MF/HF power and DSP settings to 2 single cabinets installed close to one-another.



Passing the MF/HF DSP settings to a second cabinet

LVH-900/AS using the LVH-900ASPTP:

(Option 2) Using separate 4-conductor wires for each Driver set (HF, MF, LF), especially useful for WR cabinets.



INSTALLATION (continued)

Outdoor (WR) models

Covers are needed to maintain the weather-resistance for the input panels on LVH900WR models. On the LVH-900/AS model, one cover is pre-installed on the empty panel, and the other one, with its hardware, is in a separate bag. The covers have 1" (25 mm) holes to enable the installer to use gland nuts or conduit fittings for a weather-tight seal.

Note: The LVH-900/AP model will have both covers, plugs and hardware in a bag.

Cover installation

1. Install two (2) gland nuts or conduit fittings on the provided cover plate.
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. (Figure 13)
5. In the case of a LVH-900WR/AP cabinet, attach gland nuts or fittings, wire the panel, and install a plug in any unused hole before attaching the covers to the cabinet. (Figure 14)

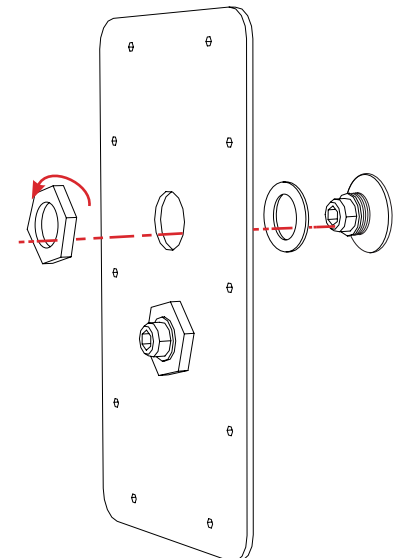
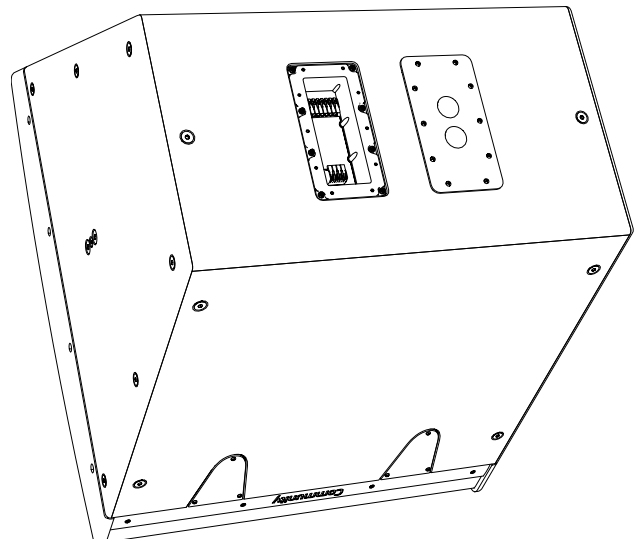


Figure 14. Plug removal on WR input panel cover (if needed) for Pass Thru panel - reverse for plug installation

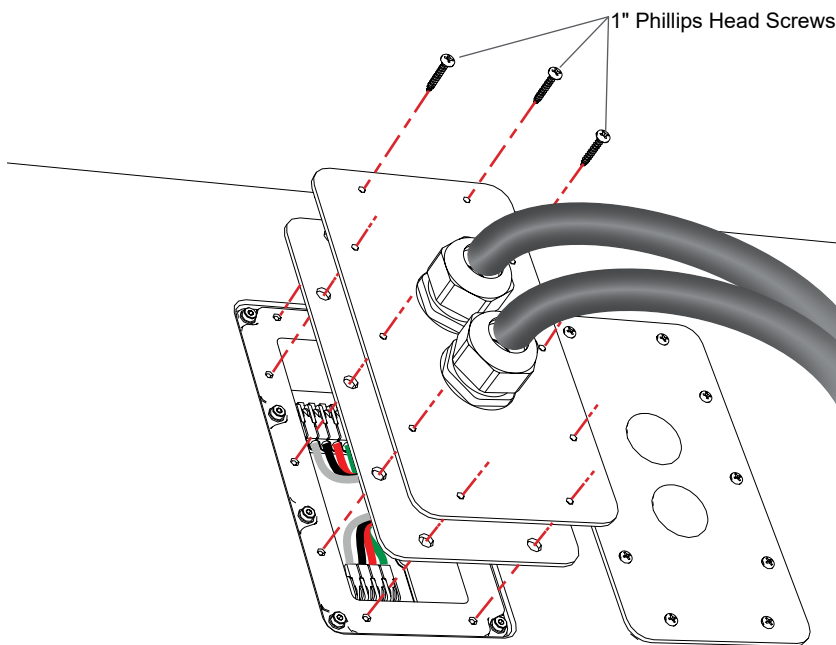


Figure 13. Attach cover to input panel - 10 screws/panel.
Note: gland nuts are not provided

Notes:

1. Gland nuts and conduit fittings are not included and must be provided by the installer. [0.75" NPT gland nuts will fit the holes]
2. An optional pass-thru panel can replace the empty panel on the LVH-900/AS models, and allow the installer to utilize a separate cable to either the HF or MF sections. Installation instructions for that panel is on pages 14-15 of this manual.

RIGGING ACCESSORIES - ARRAY FRAME

LVH-900AF (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 eyebolts [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 EF3 report to locate the mounting option.

IMPORTANT:

- Different lifting hardware has different loading considerations. Eyebolt 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 eyebolts, it will be easier (but not necessary) to install them before the array frame is attached to the LVH-900 cabinet.

Eyebolt Installation:

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

LVH-900AF

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: Eyebolts should be turned so that the load is in the plane of the eye. See Eyebolt Loading Considerations at right.

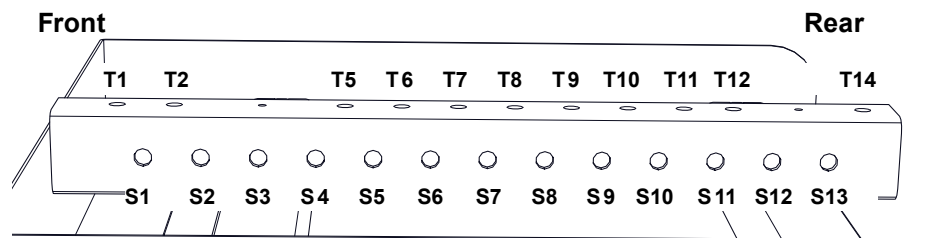
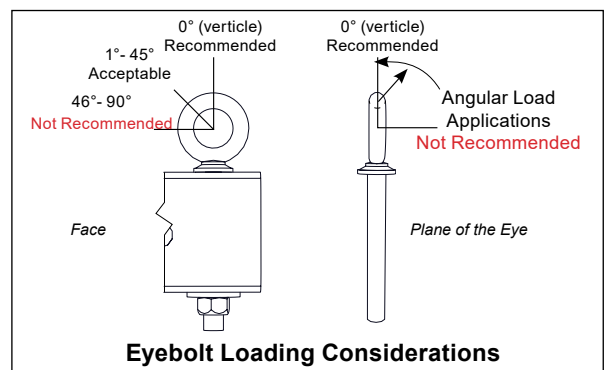
***Note:** Please heed and do not exceed any Global Safety Warnings generated by the Rigging Calculator in the VenuePolar Loads tab in EASE® Focus 3.

Safety Cable

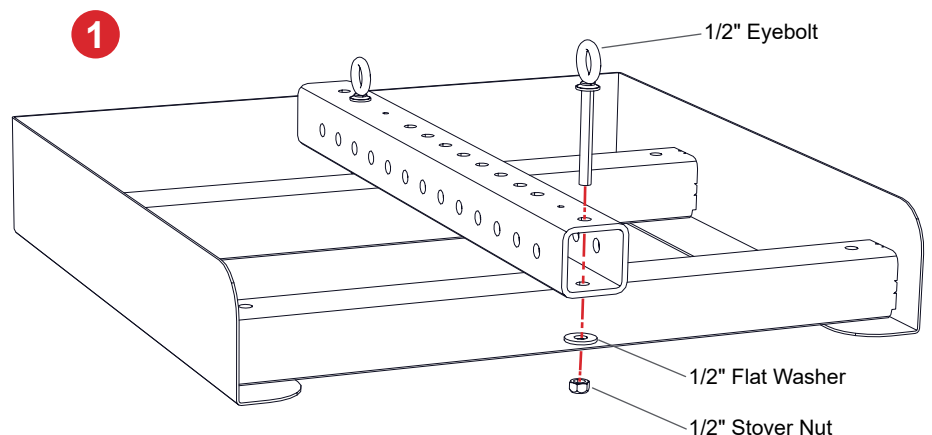
The safety cable and associated hardware are not included. Consult all applicable codes for your application. Confer with a structural engineer for the appropriate cable/hardware for the load, application and locale. If required, the safety cable must be secured to a suitable load-bearing point separate 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-900AF)

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



Pinpoint designations on the spine



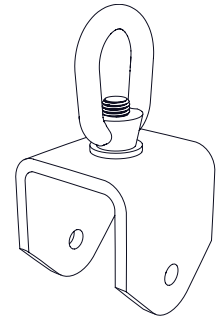
Attach eyebolts in appropriate top holes
Do NOT use the side holes in the spine for eyebolts

RIGGING ACCESSORIES - ARRAY FRAME *(continued)*

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.

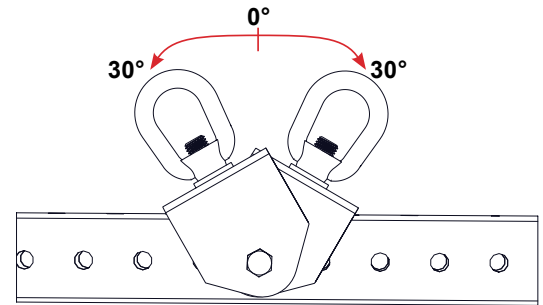
1. Determine the side lift point closest to the array's CoG (per the pinpoint EF3 report). Attach to the spine on the LVH-AF with the carriage bolt, nut and locking ring.



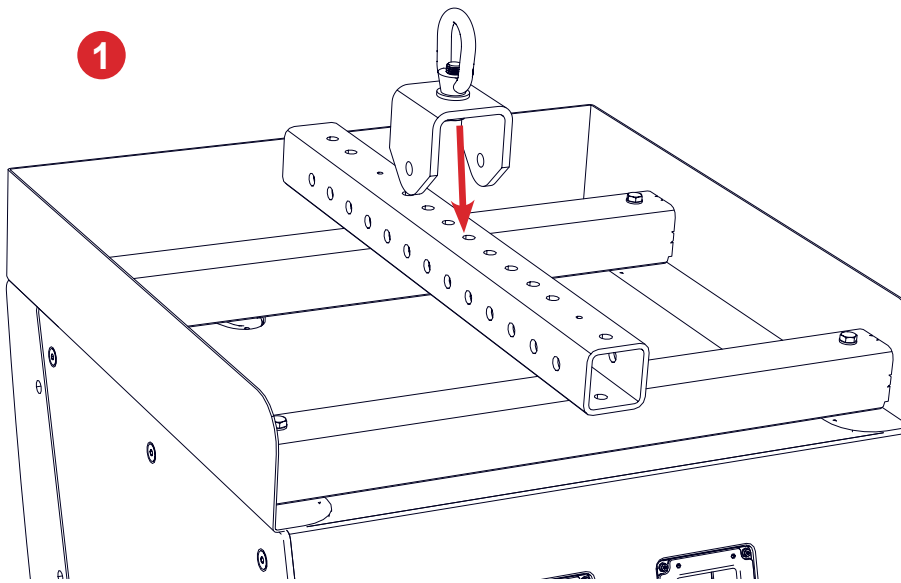
PY1-EN750-1550

Kit Weight: 6 lbs (2.7kg)

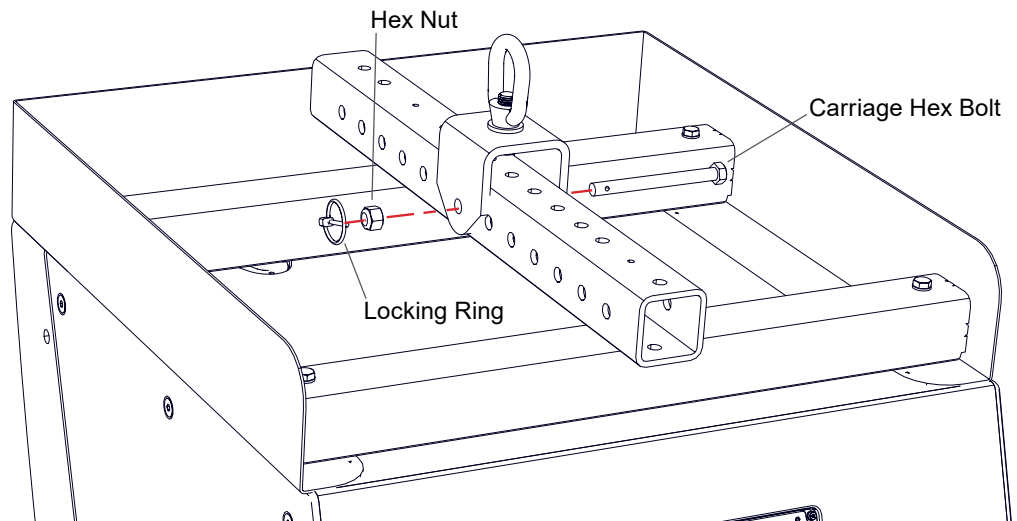
Working Load Limit: 1550 lbs (703.1 kg)
(10:1 safety factor)



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

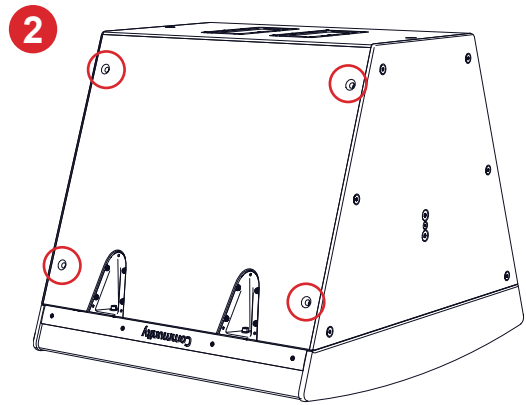
RIGGING ACCESSORIES - ARRAY FRAME *(continued)*

LVH-900-AF Installation

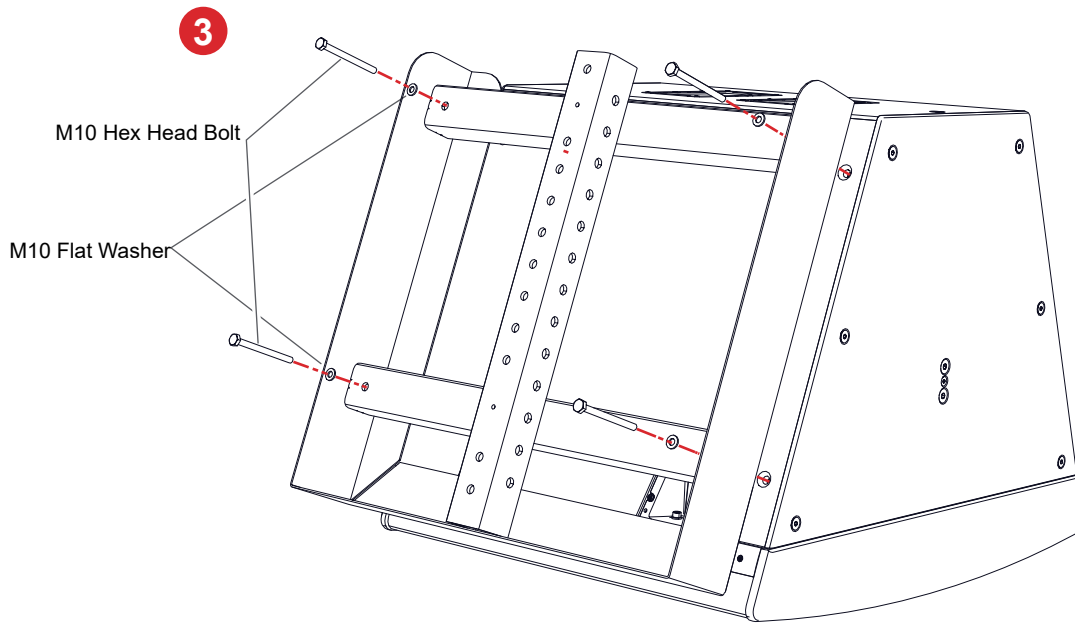
2. Remove the four (4) M10 flat head bolts as shown from the top of the cabinet.
3. Place the frame on the cabinet as shown, align holes and install hardware.
4. Tighten to torque values below - Do not over-tighten!

Hardware Torque Setting

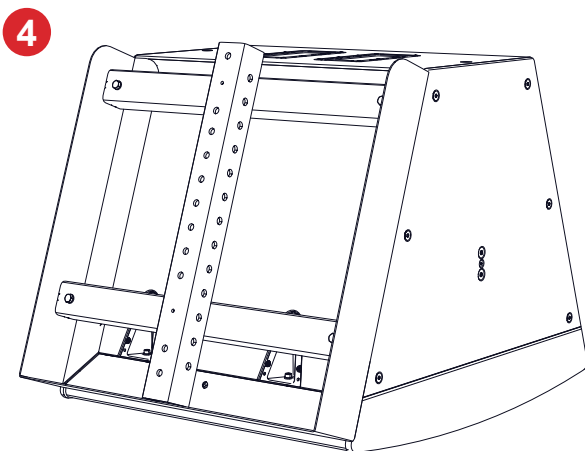
10mm bolts: 50Nm (36.88 ft-lbs)



Hardware removed



Attach array frame to the cabinet



Array frame attached

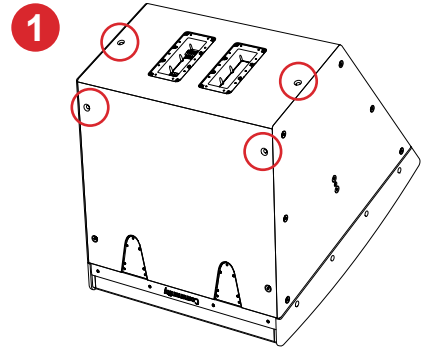
RIGGING ACCESSORIES - PULL BACK BAR

LVH-900PB (Indoor use only)

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 removed

Hardware Torque Setting

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

LVH-900PB

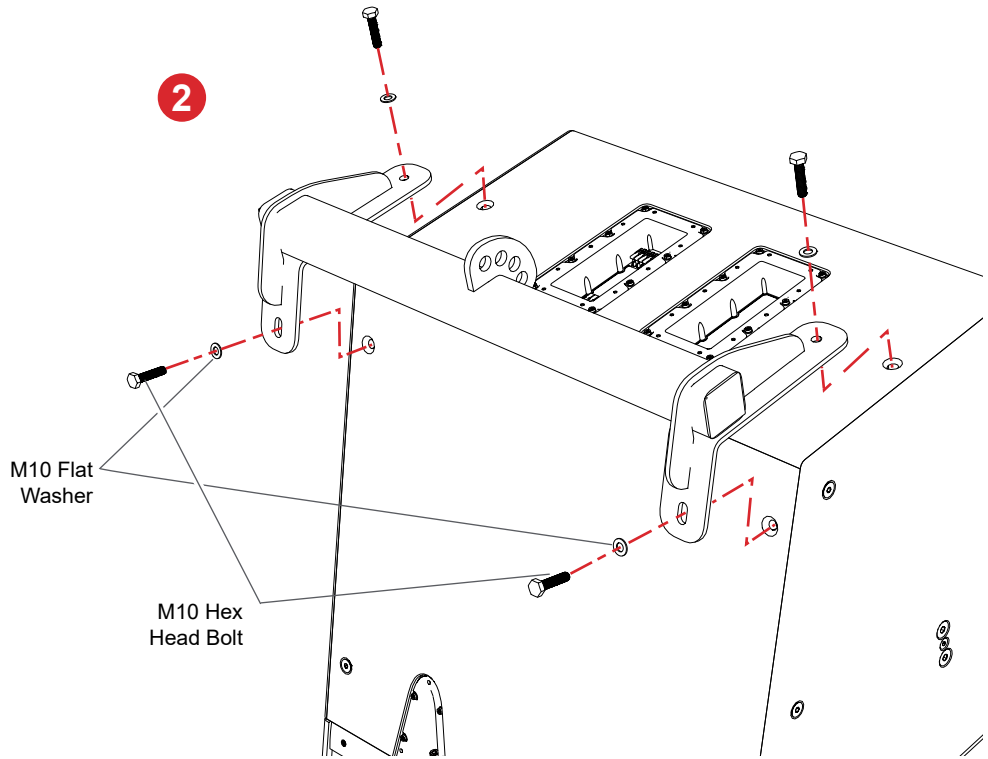
Hardware:

Qty	Description
4	M10 Hex Head Bolts
4	M10 Flat Washers

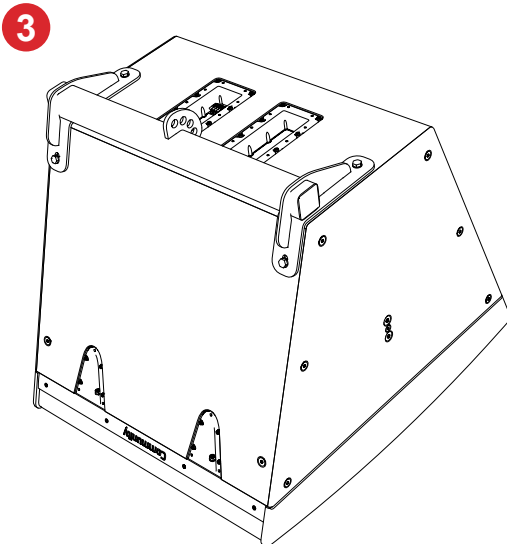
Kit Weight: 26.1 lbs (11.8 kg)

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.



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.

RIGGING ACCESSORIES U-BRACKET

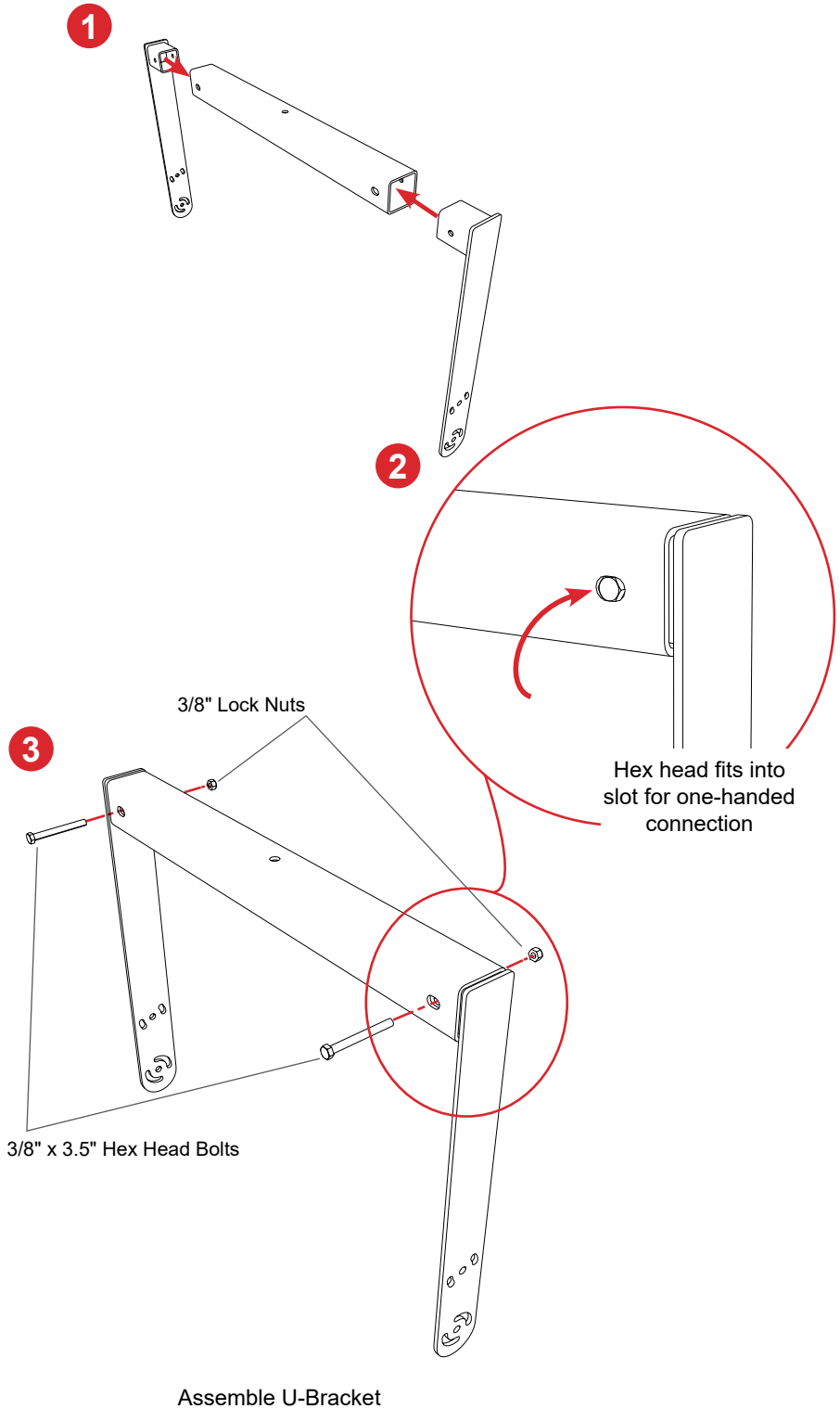
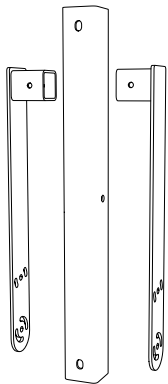
LVH-900UB (Indoor use only)

The U-Bracket must be assembled prior to attaching to the cabinet. It can ONLY suspend a single LVH-900/AS 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)

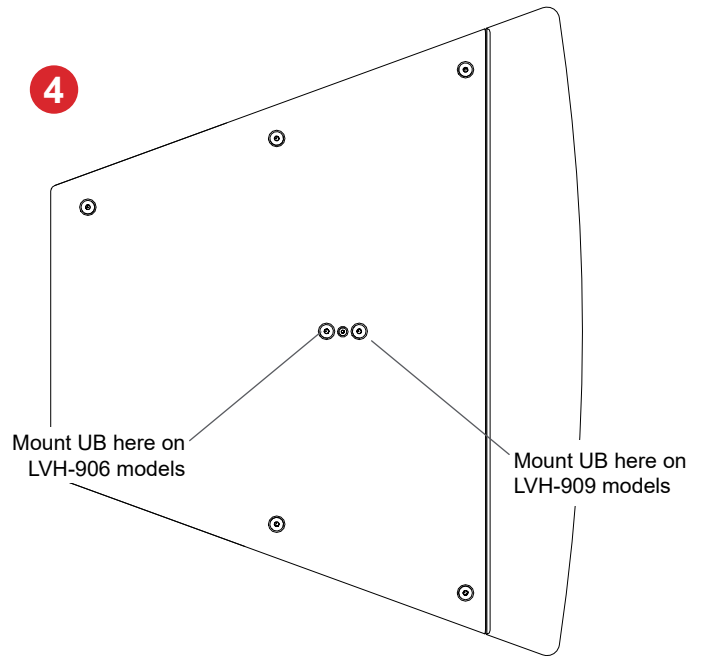
Working Load Limit: 250 lbs (113.4 kg)
(10:1 safety factor)

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

RIGGING ACCESSORIES U-BRACKET *(continued)*

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



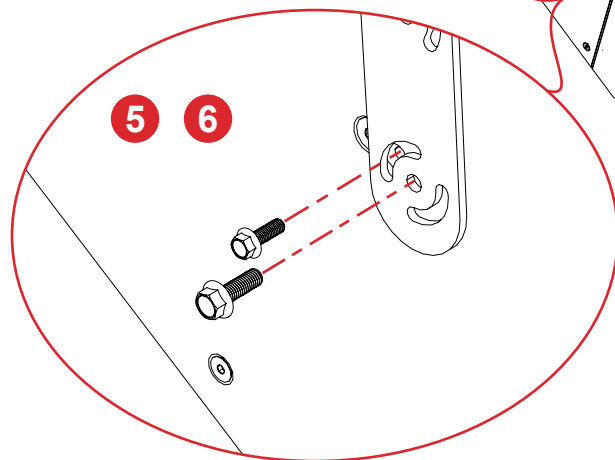
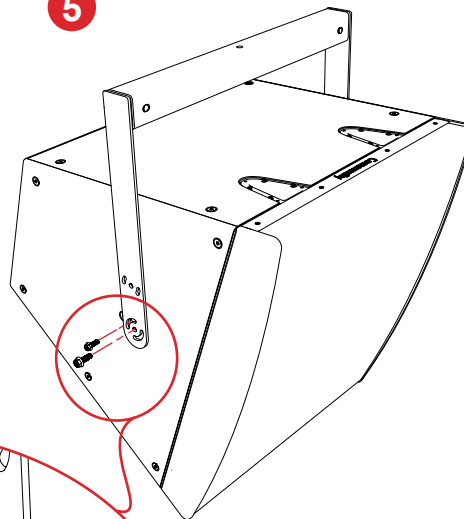
The center of gravity (CoG) point varies slightly between models. Use the one corresponding to the model.
 Forward-LVH-909/AS; Rear-LVH-906/AS

Hardware Torque Setting

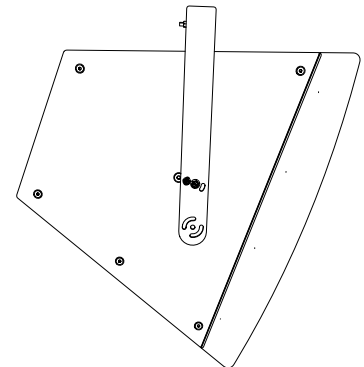
12mm bolts: 85Nm (62.69 ft-lbs)

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

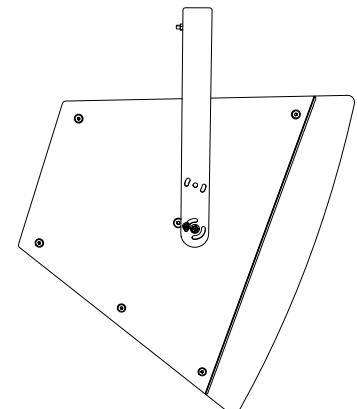
5



Attach U-Bracket and set the angle

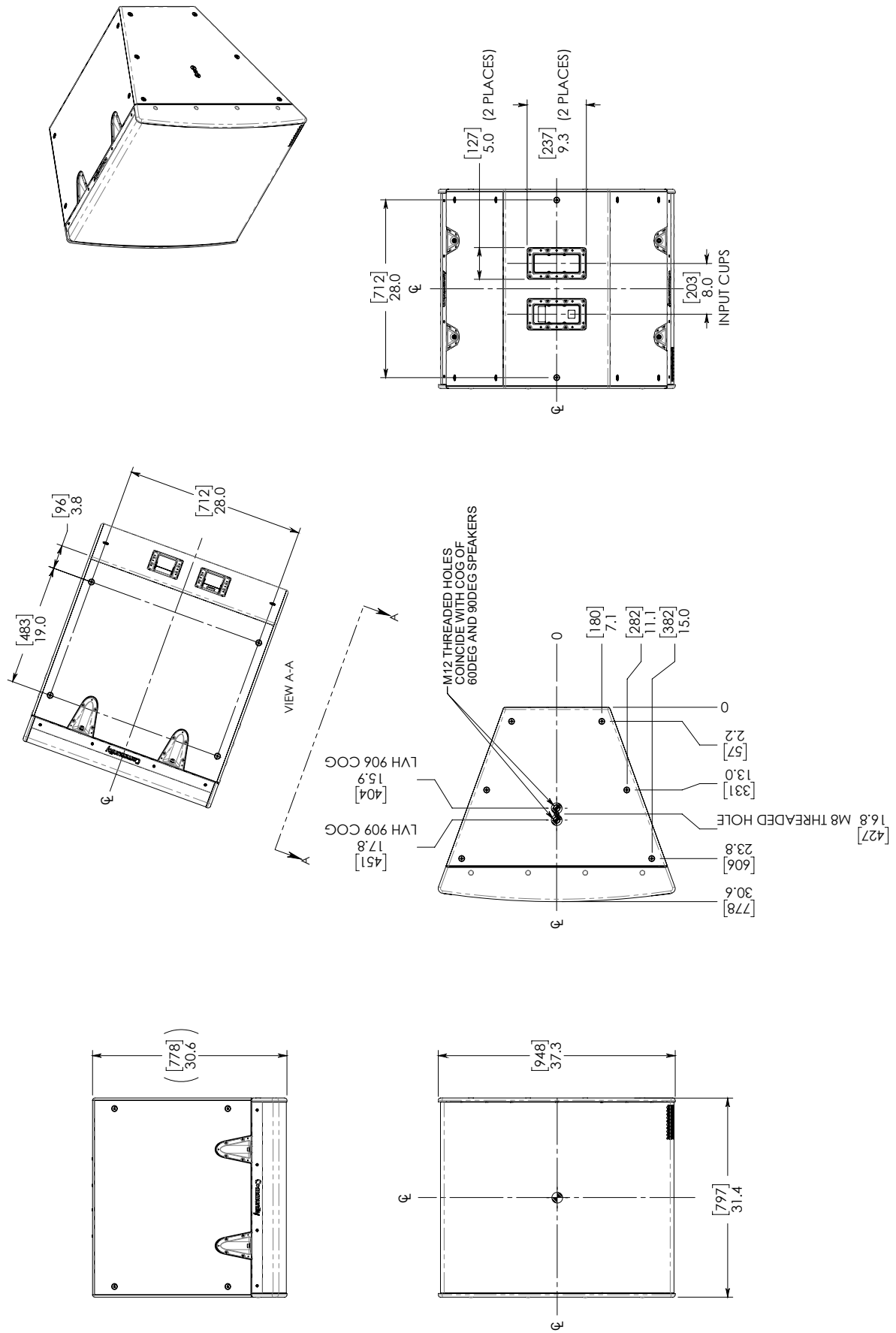


Low Profile mounting position with 30° of rotation (-5° to 35° aiming down)
 Shown mounted in LVH-909 CoG



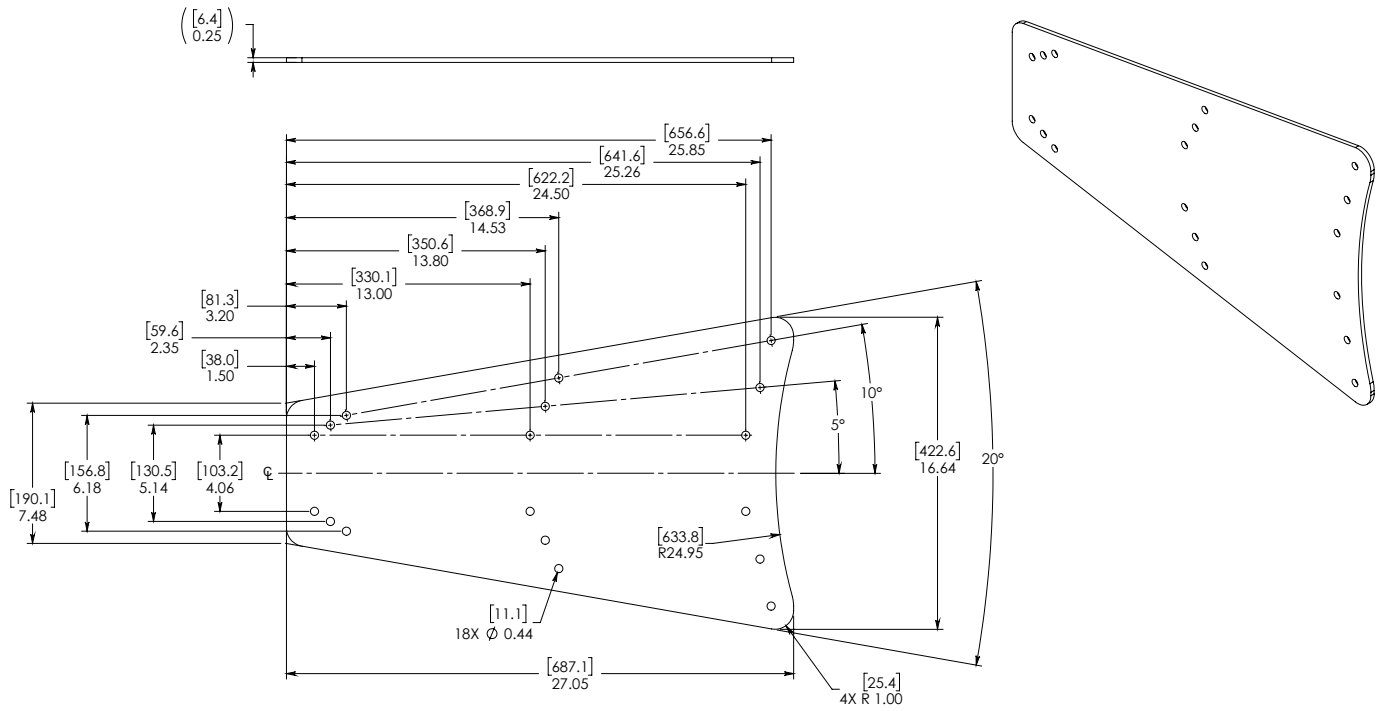
Regular mounting position with 100° of rotation (-5° to 95° aiming down)
 Shown mounted in LVH-909 CoG

TECHNICAL DRAWINGS - LVH-900 CABINET

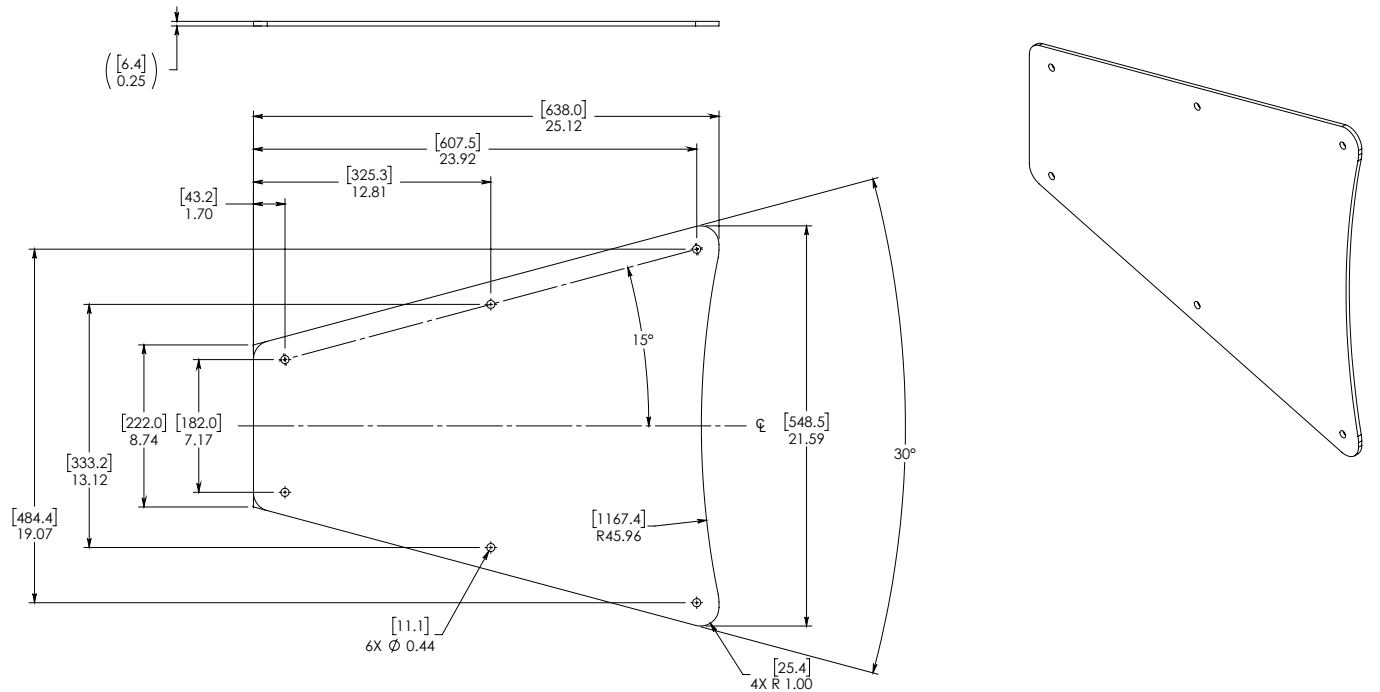


TECHNICAL DRAWINGS - RIGGING

LVH-900SP1 Splay Bracket Type 1

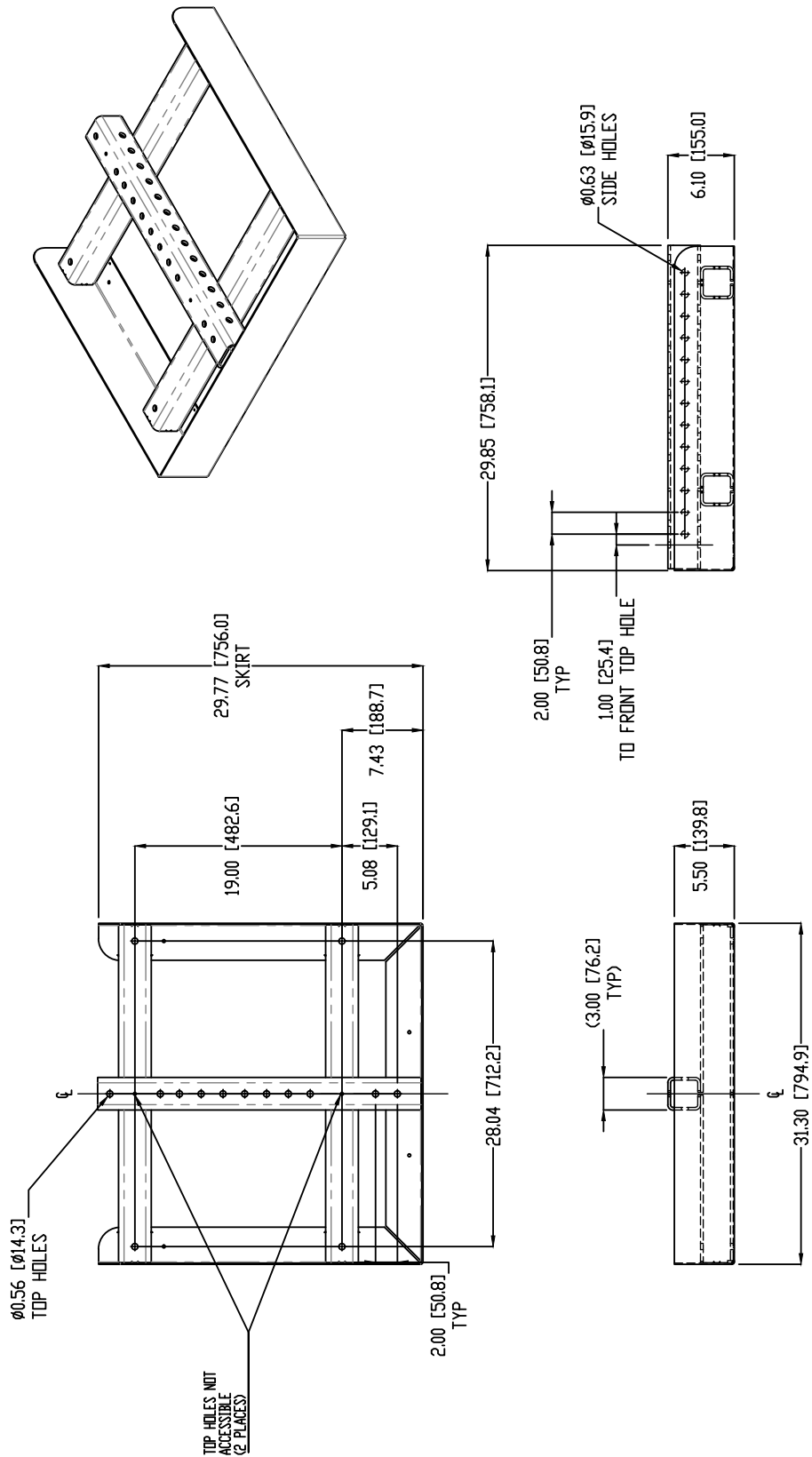


LVH-900SP2 Splay Bracket Type 2



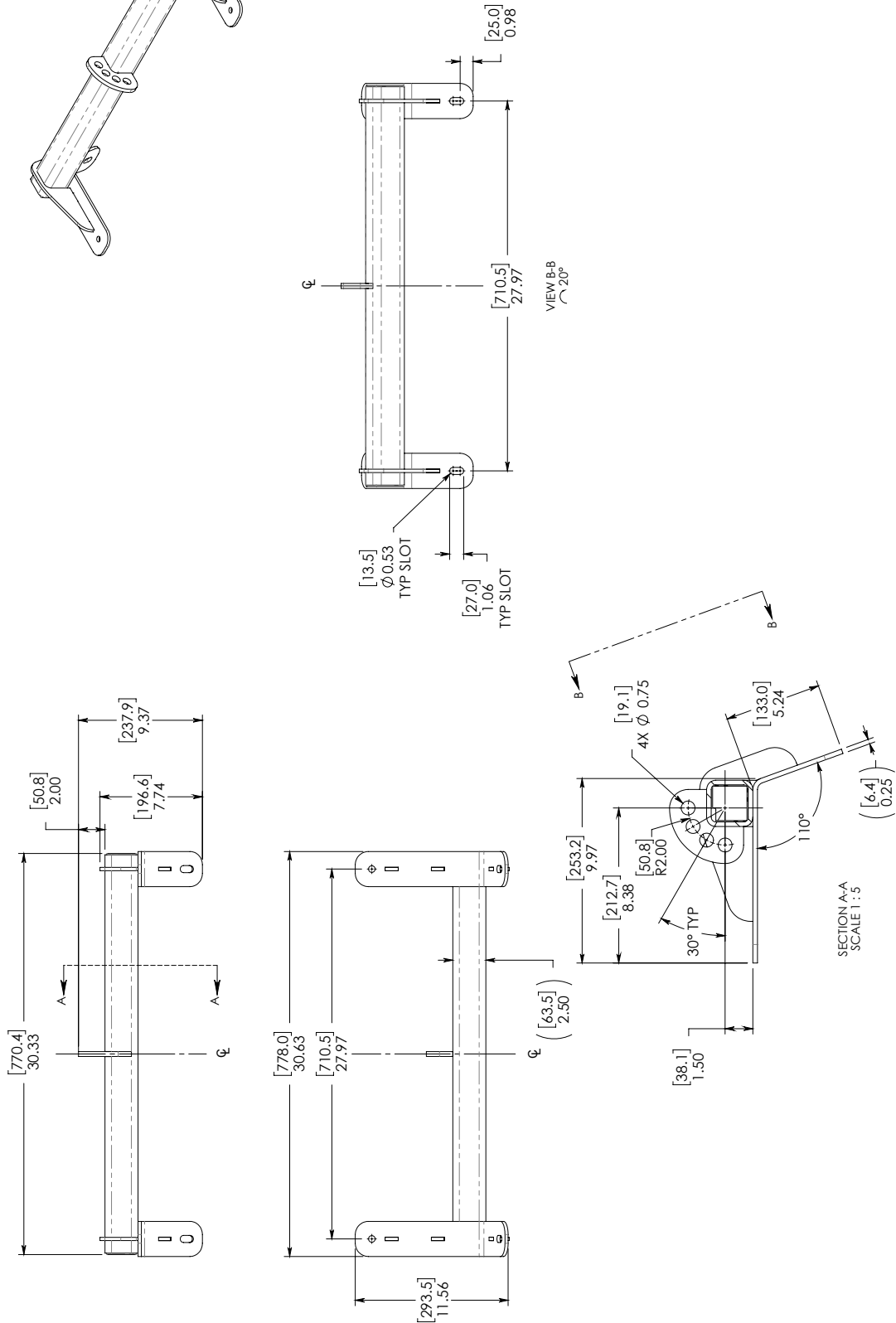
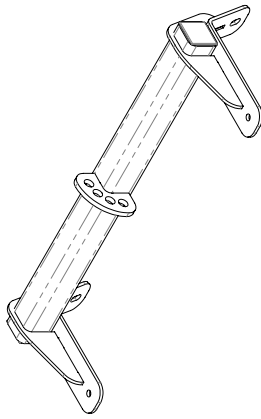
TECHNICAL DRAWINGS - RIGGING (continued)

LVH-900AF Array Frame



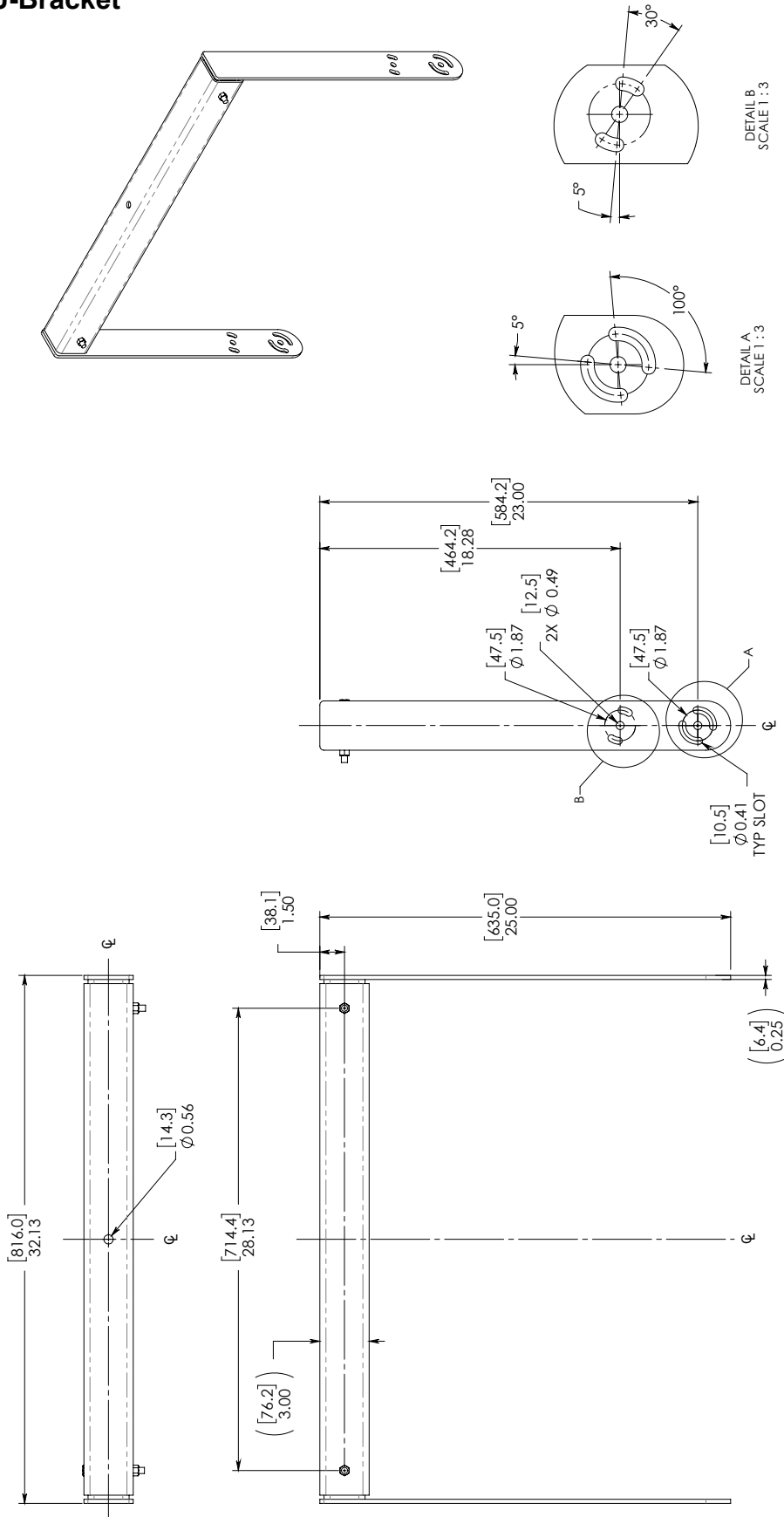
TECHNICAL DRAWINGS - RIGGING (continued)

LVH-900PB Pull Back Bar



TECHNICAL DRAWINGS - RIGGING (continued)

LVH-900UB U-Bracket



ACCESSORY BRACKET REFERENCE

Available from Polar Focus

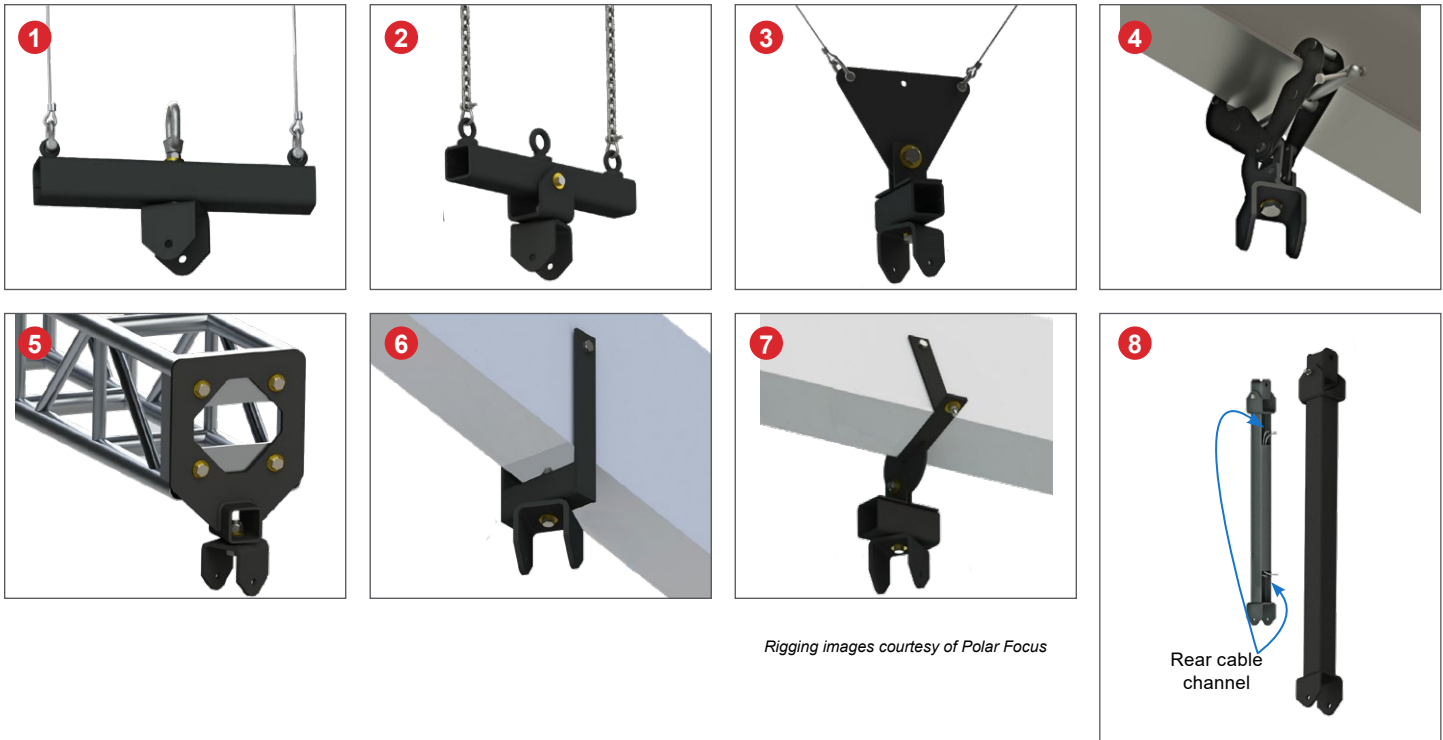
Polar Focus offers additional brackets for other mounting applications.

Below is a quick reference table to choose from. The model numbers are also hyperlinks to the associated pages on Polar Focus's [website](#) noted below.

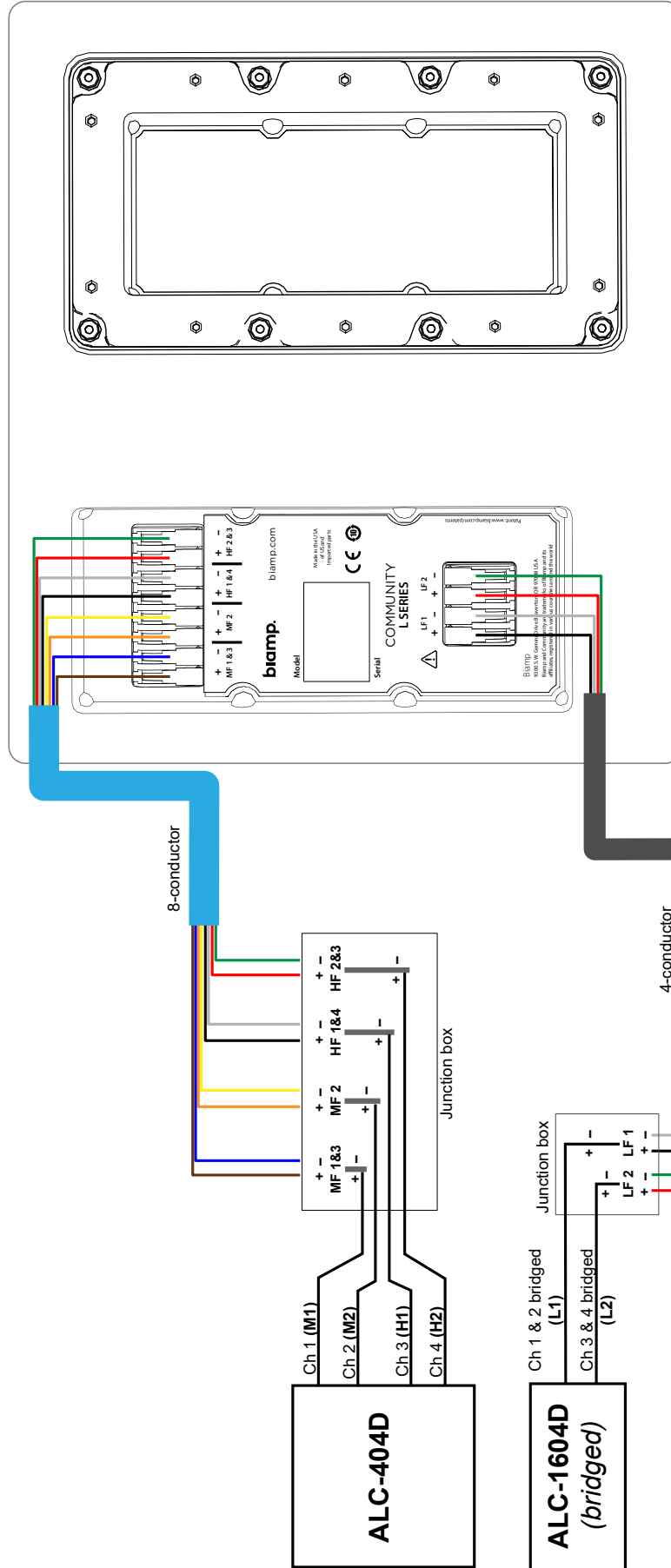
Contact Polar Focus (linearrayframes.com) for additional information.

Off the Shelf		
1	PY1-ZBH-1550	Two Point Permanent Install Mount with Center Service Pick Point
2	PY1-ZBR-1550Q	Self-Leveling Dual Hoist Mount
3	PY1-SLH	Self-Leveling Two Point Bridle Mount (1200lbs. WLL)
4	PY1-RBC-1-1100	Level, Steel I-Beam Mount
5	PY1-BTP1212-1550	12" x 12" Box Truss Plate Mount
Semi-Custom		User-defined dimensions required
6	PY1-CBA-3	Custom Sized Mount for Level or Sloped Wood-Based Beams (500lbs. WLL)
7	PY1-CBA-4	Custom Sized Mount for Rolled Wood-Based Beams (450lbs. WLL)
8	PY1-UJEXT-POST	Custom Length Ceiling Extension Post (available from 2ft. to 16ft.)

All PY0/PY1 brackets shown are infinitely adjustable, and will connect to the carriage hang points on the LVH-AF.



Wiring Guides LVH-900/AS
Standard wiring



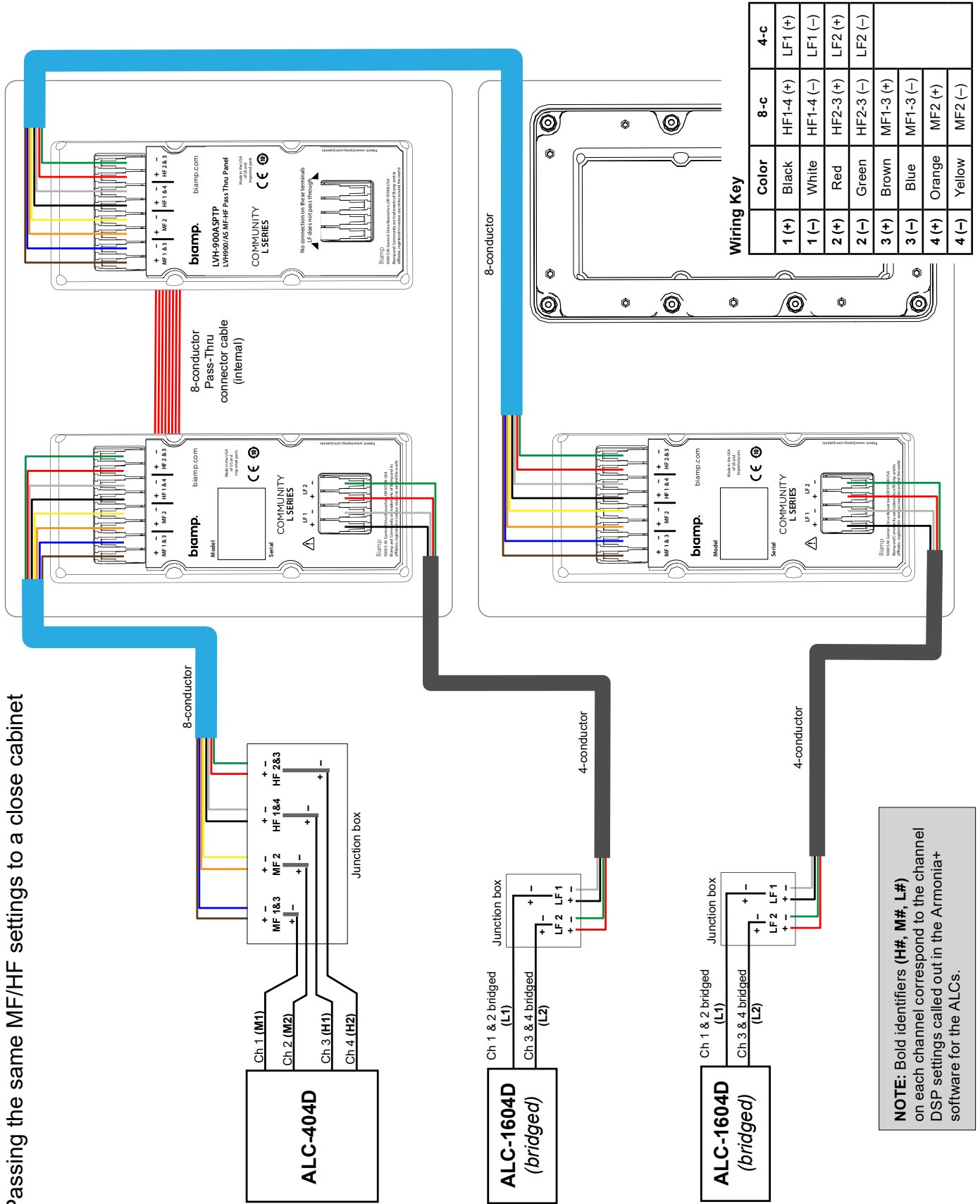
Wiring Key

	Color	8-c	4-c
1 (+)	Black	HF1-4 (+)	LF1 (+)
1 (-)	White	HF1-4 (-)	LF1 (-)
2 (+)	Red	HF2-3 (+)	LF2 (+)
2 (-)	Green	HF2-3 (-)	LF2 (-)
3 (+)	Brown	MF1-3 (+)	
3 (-)	Blue	MF1-3 (-)	
4 (+)	Orange	MF2 (+)	
4 (-)	Yellow	MF2 (-)	

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

Wiring Guides LVH-900/AS with Pass-Thru (Option 1)

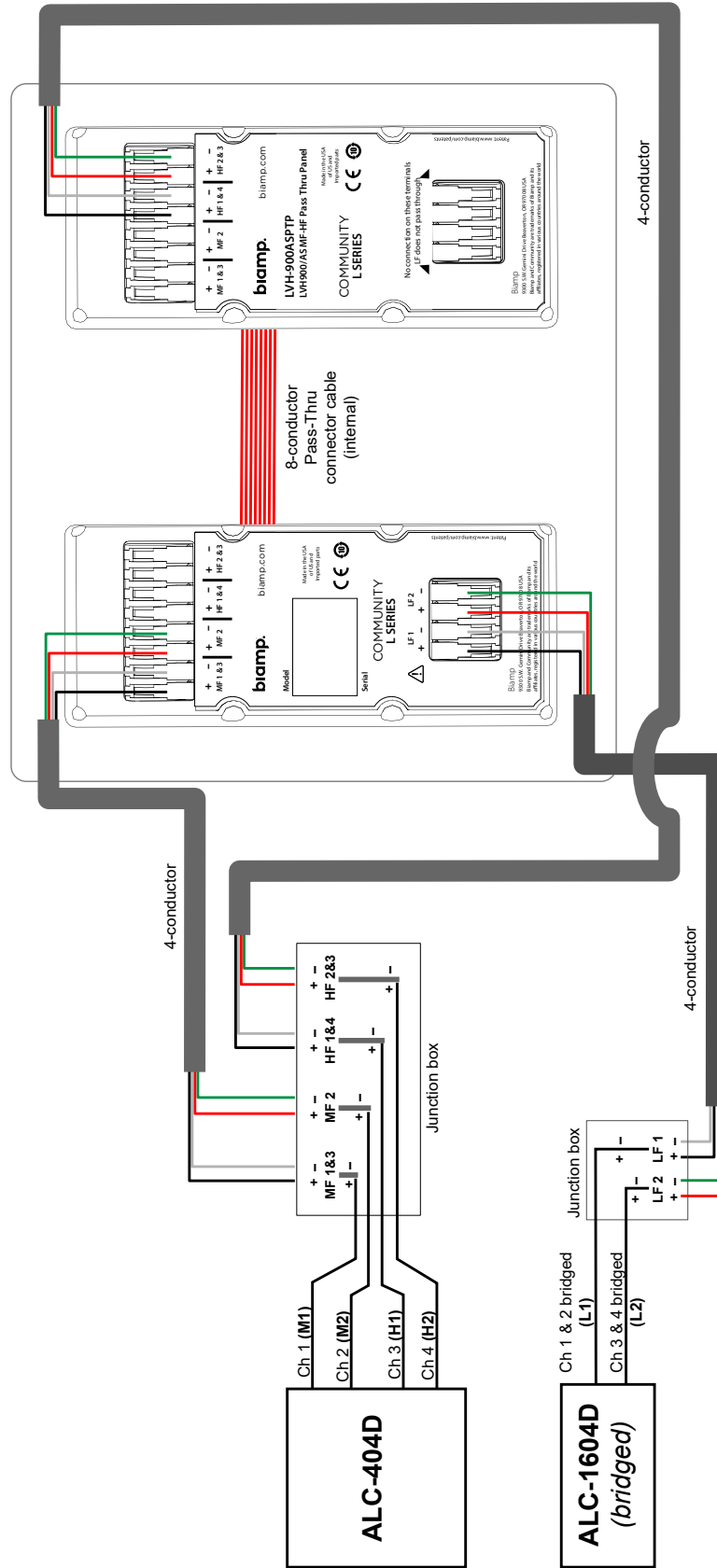
Passing the same MF/HF settings to a close cabinet



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

Wiring Guides LVH-900/AS with Pass-Thru (Option 2)

Using only 4-conductor wiring



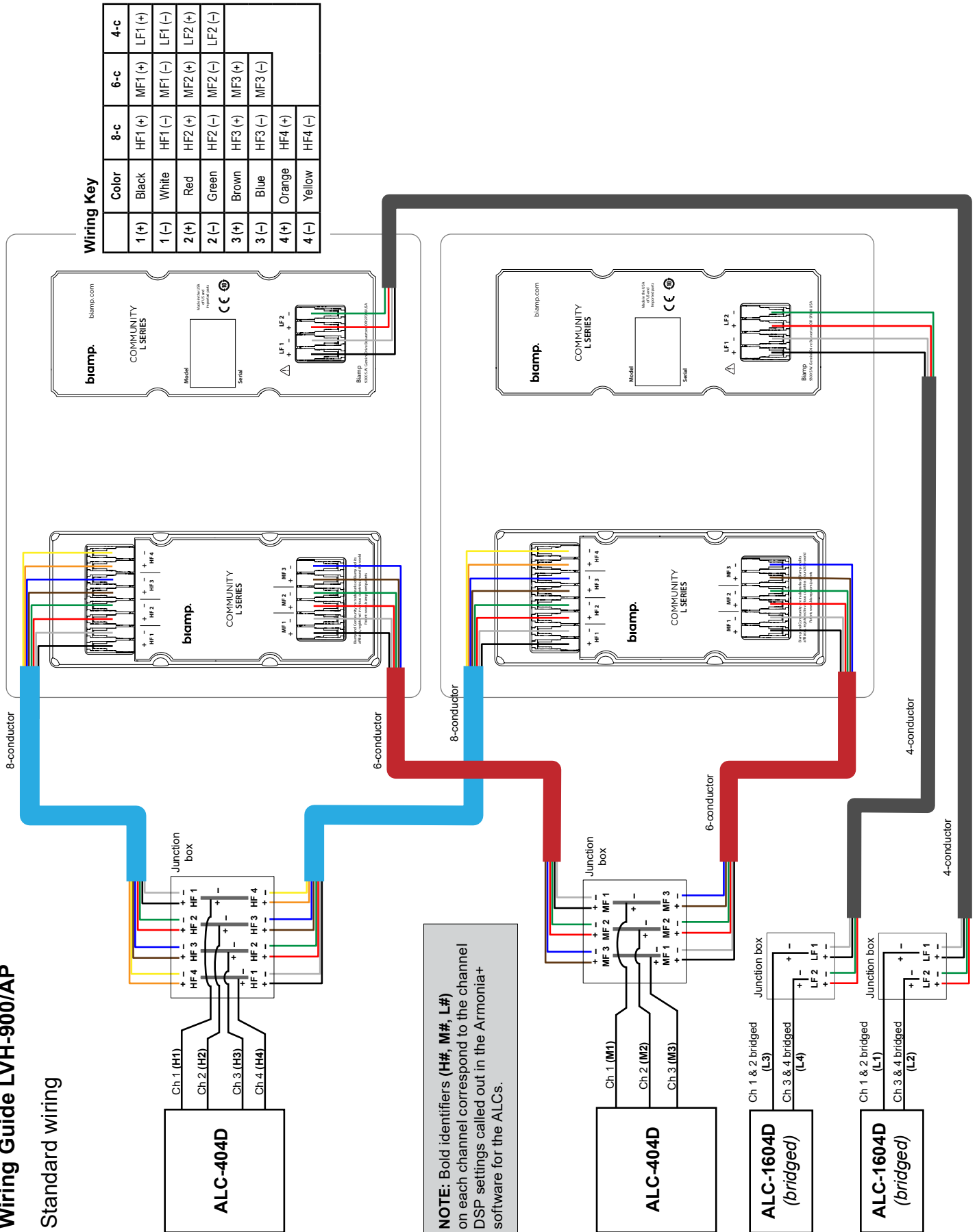
Wiring Key

	Color	AS pnl 1 (Lft)	PTP pnl 2 (Rt)
1 (+)	Black	MF1-3 (+)	HF1-4 (+)
1 (-)	White	MF1-3 (-)	HF1-4 (-)
2 (+)	Red	MF2 (+)	HF2-3 (+)
2 (-)	Green	MF2 (-)	HF2-3 (-)
1 (+)	Black	LF1 (+)	
1 (-)	White	LF1 (-)	
2 (+)	Red	LF2 (+)	
2 (-)	Green	LF2 (-)	

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

Wiring Guide LVH-900/AP

Standard wiring



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 (<i>Indoor only</i>)	91.1 lbs (41.3 kg)	1200 lbs (544.3 kg)
LVH-900PB (<i>Indoor only</i>)	26.1 lbs (11.8 kg)	735 lbs (333.4 kg)
LVH-900UB (<i>Indoor only</i>)	30.7 lbs (13.9 kg)	250 lbs (113.4 kg)

CONTACT US

Email: support@biamp.com or communitysupport@biamp.com

Web: support.biamp.com

Warranty: biamp.com/legal/warranty-information

Note: Every effort has been made to ensure that the information contained in this manual was complete and accurate when printed. However, due to ongoing technical advances, changes or modifications may have occurred that are not covered in this manual. The latest version is available at: bia.mp/LVH900_pubs