



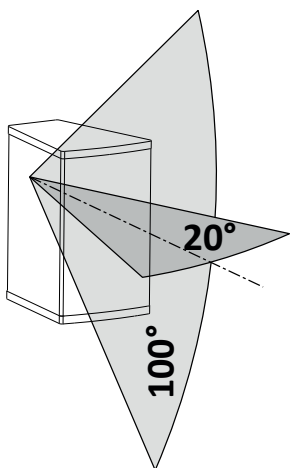
# USER MANUAL

# AX1012P

## passive constant curvature array element

### KEY FEATURES

- 12" woofer, 1.4" HF neodymium compression driver
- Constant curvature Seamless Transition Waveguide (SWT) with 20° H x 100° V dispersion
- Transmission Line back loading for clean mid-bass reproduction and natural cardioid behavior
- Compact size, very good output-to-weight ratio
- Integral suspension hardware for horizontal or vertical array installation
- Pole mounting available for free-standing applications



### INTRODUCTION

AX1012P is a versatile constant curvature full-range element that can be used to create both vertical and horizontal line source arrays and also as a high-directivity point-source loudspeaker.

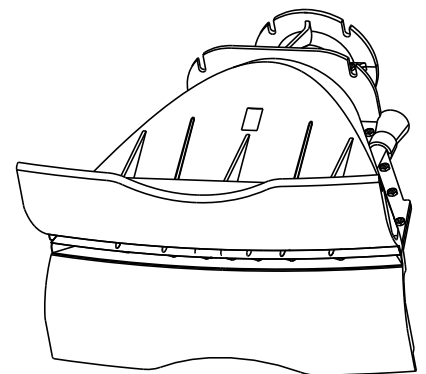
The 1.4" high frequency compression driver is coupled to STW - Seamless Transition Waveguide, which ensures a precise control of mid-high frequencies both on horizontal and vertical axis, for a perfect acoustic coupling between the enclosures that form the array. The unique waveguide design produces vertical line source directivity with a horizontal pattern that is maintained down to approximately 950Hz. This allows to project clean music and vocals evenly around the audience without hot-spots and dead-spots. The sharp SPL off-axis rejection is used to avoid reflecting surfaces in the enclosure coupling plane and perfectly adjusts the acoustic coverage to the audience geometry.

The AX1012P tour-grade 15mm phenolic birch plywood cabinet is fitted with four integrated steel rails, to be used for coupling the cabinets with the KPTAX1012 aluminium coupling bars. A comprehensive set of accessories is available for creating horizontal or vertical arrays and for ground-stacking the systems.

AX1012P is recommended for the use as indoor FOH (Left - Centre - Right systems) or outdoor FOH in small to medium-sized events, as per its predisposition as a passive system it is ideal for permanent fixed installations from

small to large venues such as convention centers, sports halls, stadiums and so on.

It can be used also as a complement to large systems as Out-fill, In-fill or distributed fill applications in a wide range of venue, providing clear sound to areas not fully reached by the main system, while minimizing unwanted interactions and room reflections.



### TECHNICAL SPECIFICATIONS

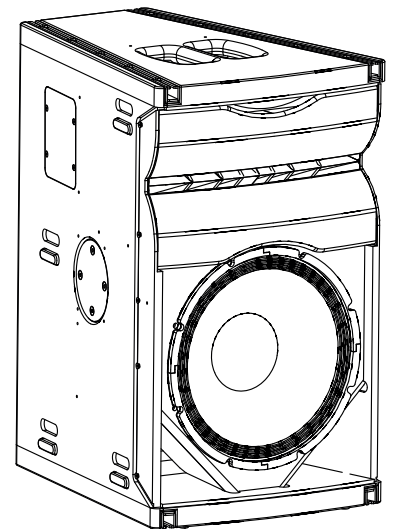
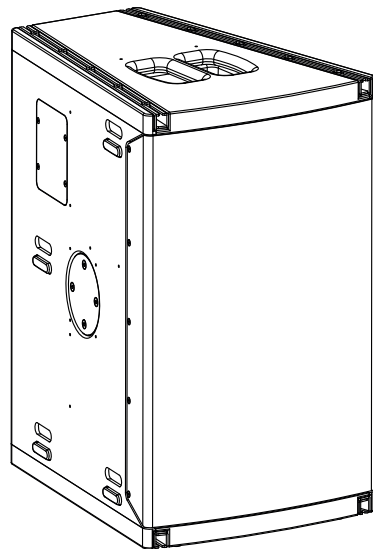
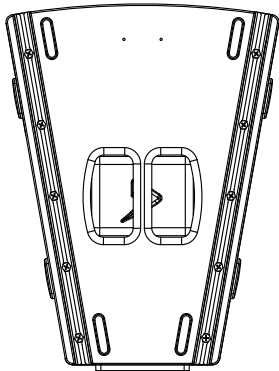
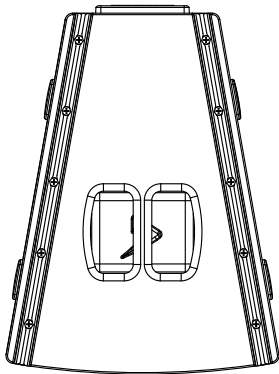
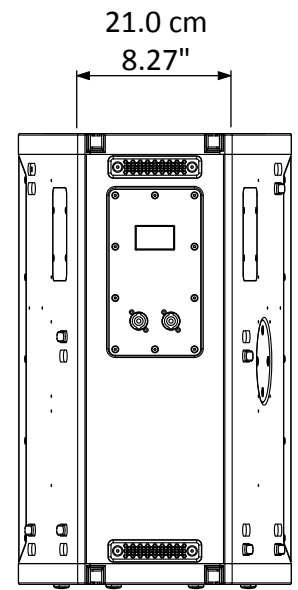
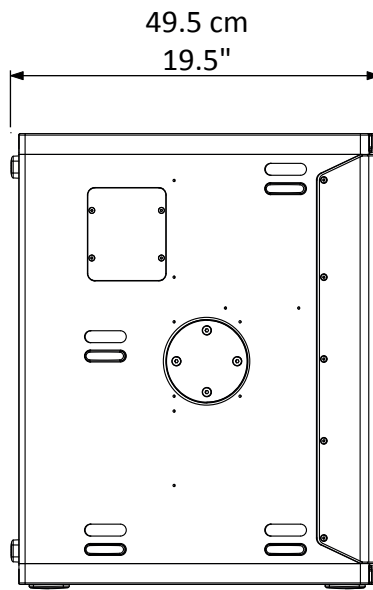
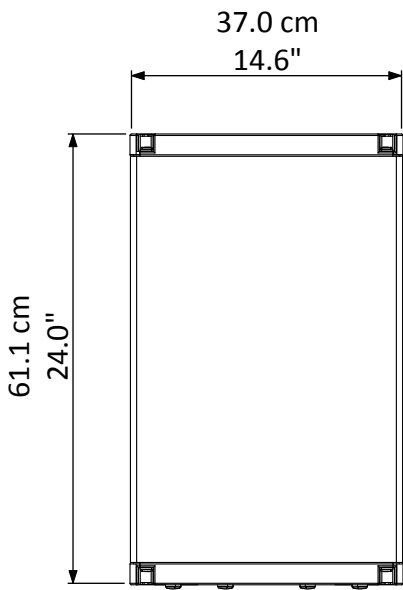
<b>Acoustical</b>				
System type	Passive Constant Curvature Array Element	LF Power Compression (LF)	@ -10 dB Power (120 W) = 0.9 dB	
			@ -3 dB Power (600 W) = 2.8 dB	
			@ 0 dB Power (1200 W) = 3.8 dB	
Low frequency transducer	12" (305 mm) LF driver, 3" (75 mm) ISV aluminium voice coil, 8Ω	<b>Connectors</b>		Neutrik® Speakon® NL4 x 2
High frequency transducer	1.4" (35.5 mm) HF compression driver, 2.4" (61 mm) aluminium voice coil, Titanium diaphragm, 8Ω	Connector Type		LF = Pin 1+/1-; HF = Pin 2+/2-
Frequency response (-6 dB)	65 Hz – 17 kHz (Processed)	Input Wiring		
Sensitivity (2.83 V @ 1m, 2 Pi)	97 dB <sub>SPL</sub> (LF) + 109 dB <sub>SPL</sub> (HF)	<b>Mechanical</b>		370 mm (14.6")
Horizontal Coverage Angle (-6 dB)	20° (1KHz-17KHz)	Width		611 mm (24")
Vertical Coverage Angle (-6 dB)	100° (1KHz-17KHz)	Height		495 mm (19.5")
Maximum Peak SPL @ 1m	134 dB	Depth		10°
		Taper angle		15mm, reinforced phenolic birch
		Construction		High resistance, black water based paint
		Paint		
<b>Electrical</b>		<b>Rigging system</b>		
Nominal Impedance	8Ω (LF) + 8Ω (HF)	Suspension		Captive suspension system
Minimum Impedance	6.2 Ω @ 250Hz (LF) + 8 Ohm at 3000 Hz (HF)	Net Weight		31 Kg (68.3 lbs)
Power Handling (AES)*	600W (LF) + 75 (HF)			
Power Handling (prgm)	1200W (LF) + 150 (HF)			

\* AES Pink Noise Continuous Power





**MECHANICAL DRAWING**



**SPARE PARTS**

- NL4MP Neutrik Speakon® panel socket
- 91CRASUB Dual Speakon PCB Assembly
- 91CBL300036 Internal Cabling

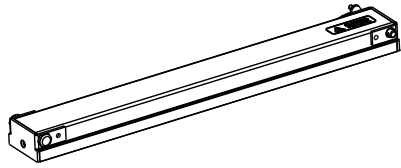
- 98ED120WZ8 12" woofer - 3" VC - 8 ohm
- 98DRI2065 1.4" - 2.4" VC compression driver - 8 ohm
- 98MBN2065 titanium diaphragm for 1.4" driver



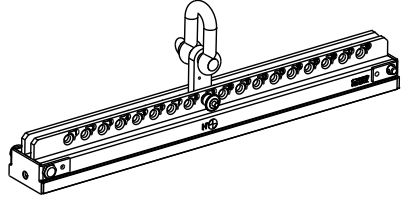


## RIGGING ACCESSORIES

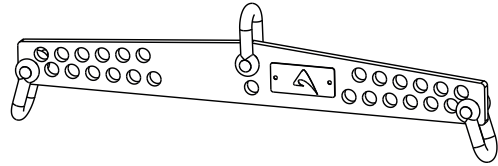
**KPTAX1012**      **Coupling bar**  
weight = 0.75 Kg



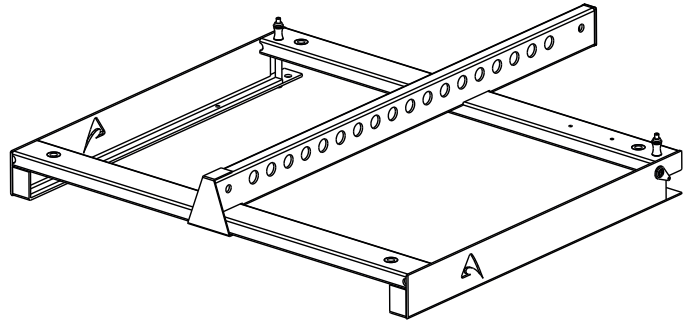
**KPTAX1012H**      **Horizontal array flying bar**  
weight = 0.95 Kg  
note: the bar is supplied with 1 straight shackle.



**KPTAX1012T**      **Suspension bar**  
weight = 2.2 Kg  
note: the bar is supplied with 3 straight shackles.



**KPTAX1012V**      **Vertical array flying bar**  
weight = 8.0 Kg  
note: the bar is supplied with 1 straight shackle.



## OTHER ACCESSORIES

**PLG714**      Straight Shackle 14 mm for Fly bar weight = 0.35 Kg



**AXFEETKIT**      Kit of 6pcs BOARDACF01 M10 foot for stacked installation  
**94SPI85770**      8x63 mm Locking Pin (used on KPTAX1012, KPTAX1012H, KPTAX1012T)  
**94SPI826**      8x22 mm Locking Pin (used on KPTAX1012H)  
**QC2.4**      4000W 2Ch Digitally Controlled Power Amplifier with DSP  
**USB2CAN-D**      PRONET network converter

see <http://www.axiomproaudio.com/> for detailed description and other available accessories.

## REAR PANEL

**INPUT** - Power input for the external amplifier.


No internal passive crossover for filtering the signal to be sent to the LF and HF transducers is included, so for powering the AX1012P the AXIOM QC2.4 4000W 2Ch Digitally Controlled Power Amplifier with DSP, with a proper preset loaded, it is required.

The INPUT and LINK connections are the following:

INPUT - LINK	
NL4 pin number	internal connection
1+	+ LF (woofer)
1-	- LF (woofer)
2+	+ HF (comp.driver)
2-	- HF (comp. driver)

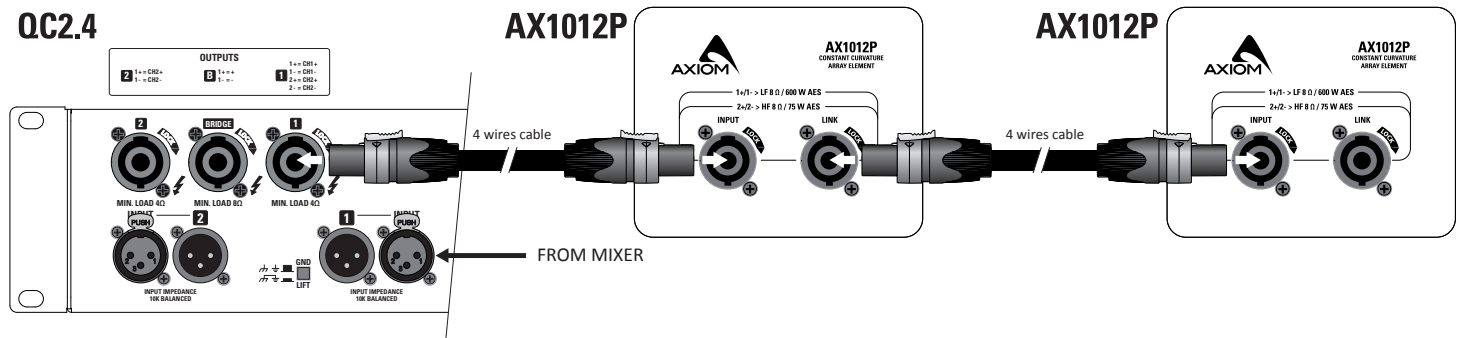
**LINK** - Power output in parallel with the INPUT socket for connecting another AX1012P speaker.

### WARNING:

 Use only the AXIOM QC2.4 amplifier with the proper presets for powering AX1012P. Each AXIOM QC2.4 amplifier can power up to two AX1012P.

### QC2.4: AX1012P TYPICAL CONNECTION

The figure below shows the typical connection between QC2.4 amplifier and two AX1012P boxes:



### QC2.4: PRESET FOR AX1012P

For a complete set of instructions refer to the proper QC2.4 user manual and to the PRONETAX user manual.

The dedicated AX1012P for QC2.4 can be downloaded from the AXIOM website at <http://www.axiomproaudio.com/> in the download section of the product page, or downloading the latest version of PRONETAX available after registering at MY AXIOM.

**AX1012P\_SINGLE.pcf** Suited for a typical use of a single loudspeaker standalone or in combination with a subwoofer, typically in a front fill or side fill applications.

**AX1012P\_MID-THROW.pcf** Suited for the use of the loudspeakers in an array configuration when the distance between the array centre and the audience area is about 25mt or less.

**AX1012P\_LONG-THROW.pcf** Suited for the use of the loudspeakers in an array configuration when the distance between the array centre and the audience area is about 40mt.

 **IMPORTANT NOTE:** The AX1012P system is conceived as a CONSTANT CURVATURE ARRAYS loudspeaker so ALL AX1012P units that belong to the same array must be have the same PRESET to work well together.

40 m LONG-THROW

25 m MID-THROW

AUDIENCE FLOOR



## PRONET AX

PRONET AX software has been developed in collaboration with sound engineers and sound designers, in order to offer an “easy-to-use” tool to setup and manage your audio system composed by QC2.4 and AX1012P units. With PRONET AX you can visualize signal levels, monitor internal status and edit all the parameters of each connected device, more details are available on the correspondent user manual.

Download the PRONET AX app from the AXIOM website at <http://www.axiomproaudio.com/> clicking on downloads section of the product.

## PREDICTION: EASE Focus 3

To aim correctly a complete system we suggests to use always the Aiming Software - EASE Focus 3:

The EASE Focus 3 Aiming Software is a 3D Acoustic Modelling Software that serves for the configuration and modelling of Line Arrays and conventional speakers close to reality. It only considers the direct field, created by the complex addition of the sound contributions of the individual loudspeakers or array components.

The design of EASE Focus is targeted at the end user. It allows the easy and quick prediction of the array performance in a given venue. The scientific base of EASE Focus stems from EASE, the professional electro- and room acoustic simulation software developed by AFMG Technologies GmbH. It is based on the EASE GLL loudspeaker data file required for its use, please note that there are multiple GLL files for the AX1012P systems. Each GLL file contains the data that defines the Line Array with regard to its possible configurations as well as to its geometrical and acoustical properties that are different from vertical or horizontal applications.

Download the EASE Focus 3 app from the AXIOM website at <http://www.axiomproaudio.com/> clicking on downloads section of the product.

Use the menu option **Edit / Import System Definition File** to import the GLL files about **AX1012P** configurations from the installation Data folder, the detailed instructions to use the program are located in the menu option **Help / User's Guide**.

*Note: Some windows system can require the .NET Framework 4 that can be download from microsoft website at <http://www.microsoft.com/en-us/download/default.aspx>.*



### WARNING! CAREFULLY READ THE FOLLOWING INSTRUCTIONS AND CONDITION OF USE:

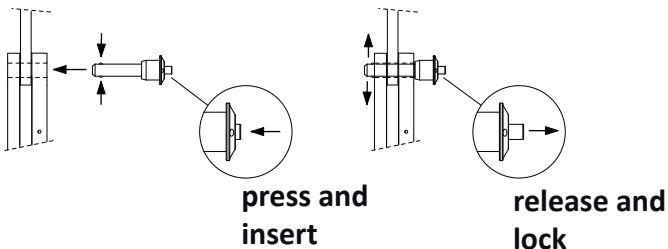
- This loudspeaker is designed exclusively for Professional audio applications. **The product must be installed by qualified personal only.**
- Proel strongly recommends that this loudspeaker cabinet be suspended taking into consideration all current National, Federal, State and Local regulations. Please contact the manufacturer for further information.
- Proel do not accept any liability for damage caused to third parties due to improper installation, lack of maintenance, tampering or improper use of this product, including disregard of acceptable and applicable safety standards.
- During assembly pay attention to the possible risk of crushing. Wear suitable protective clothing. Observe all instructions given on the rigging components and the loudspeaker cabinets. When chain hoists are in operation ensure that there is nobody directly underneath or in the vicinity of the load. Do not under any circumstances climb on the array.

## Pin locking set up

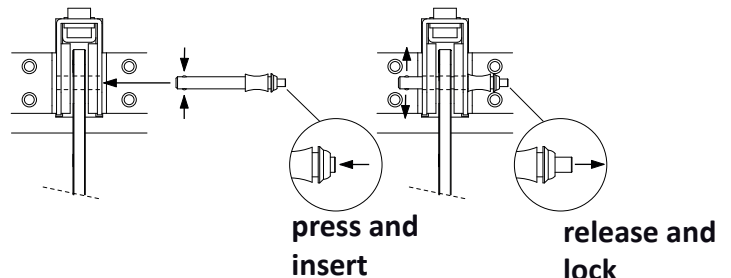
This figure shows how to insert correctly the locking pin.

## LOCKING PINS INSERTION

### short locking pin



### long locking pin





## RIGGING INSTRUCTIONS

AX1012P arrays deliver seamless coverage only to desired areas minimizing unwanted reflections of walls and surfaces or avoiding interactions with other sound systems, with the stage or with other areas. Multiple units in horizontal or vertical array allow to shape the radiation pattern in slices of 20°, providing exceptional flexibility in the construction of the desired coverage angle.

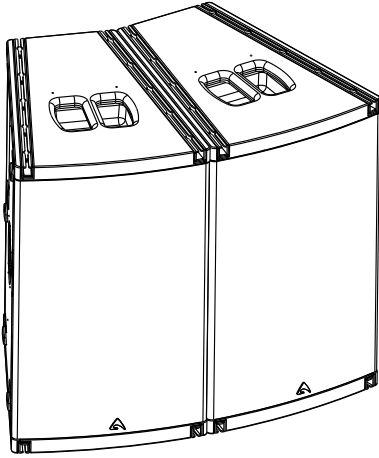
The AX1012P cabinet is provided with four integrated steel rails, to be used for coupling the cabinets with the KPTAX1012 aluminium coupling bars. A comprehensive set of accessories is available for rigging horizontal or vertical arrays, for ground-stacking the systems and also for pole mounting one or two units. The rigging system does not require additional adjustments, since the aiming angle of the array is determined only by using the proper hole in the flying bars with the use of the predicting software.

The following instructions show how to proceed to assemble the speakers in order to form various type of array, starting from a simple 2 units horizontal array to more complex ones: please read all of them carefully.

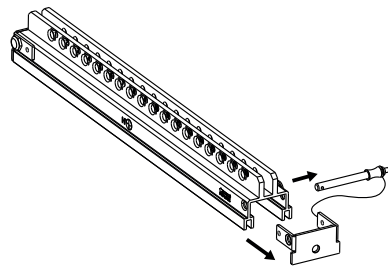
### 2-UNIT HORIZONTAL ARRAY

Follow the sequence below to couple two AX1012P units in an horizontal array: you can use the same procedure for assembling all horizontal arrays. Each AX1012P has several bumpers on each side of the box that fits in the slots of the adjacent box: this allows to arrange the boxes perfectly aligned for inserting easily the coupling and flying bars.

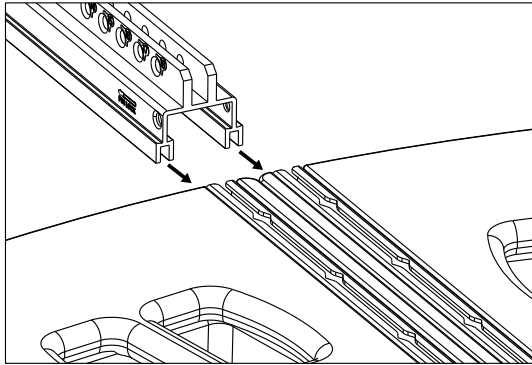
**1) Place the box on the floor exactly under the lifting point.**



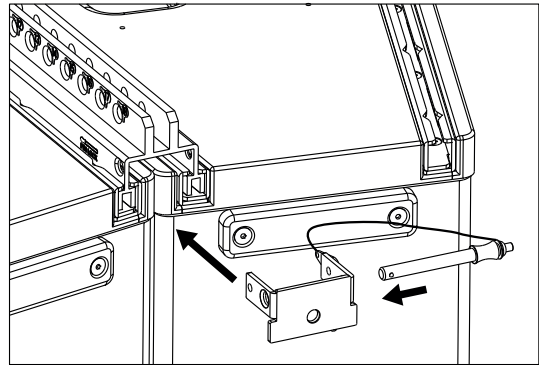
**2) Remove the locking plate at the end of the flying bar.**



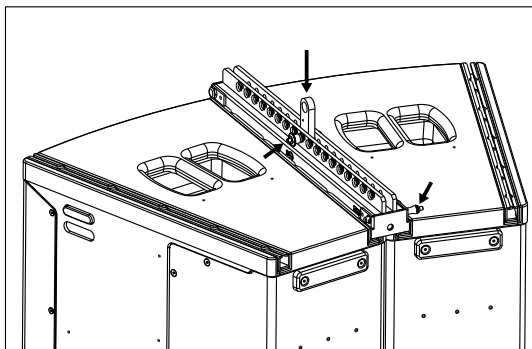
**3) Insert the bar in the rails from the front of the speakers.**



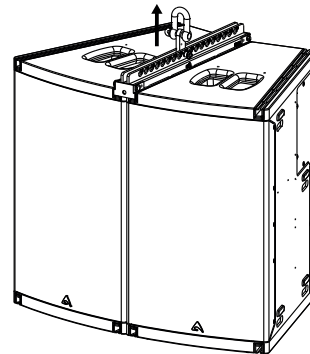
**4) Put back in place the locking plate and lock it with the pin.**



**5) Place the cam into the hole chosen for lifting: always be sure that all pins are firmly inserted in their position.**

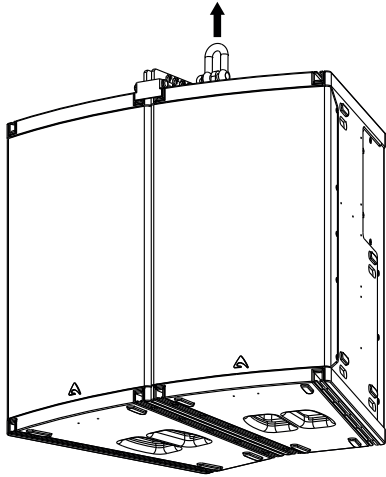


**6) Connect the lifting system using the supplied shackle.**





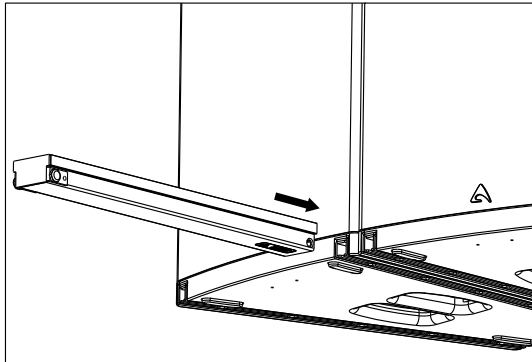
7) Lift the system to an height that allows to insert the coupling bar into the cabinet's bottom.



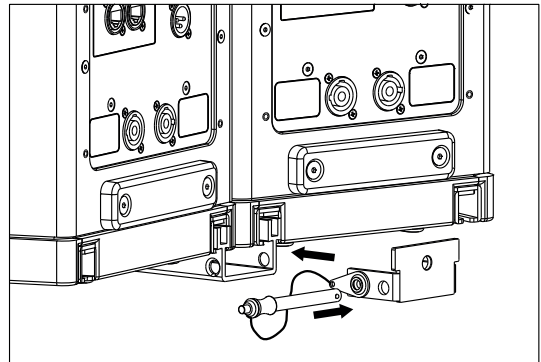
8) Remove the locking plate at the end of the coupling bar.



9) Insert the coupling bar in the rails from the front of the speakers.



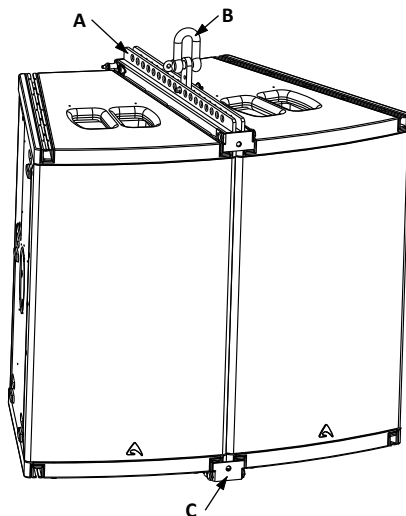
10) Put back in place the locking plate and lock it with the pin.



### HORIZONTAL ARRAY EXAMPLES

For more complex horizontal arrays made of from 3 to 6 units you can proceed in a similar way, assembling the whole system to the ground and raising it up all together. The following figures show how to arrange 2 to 6 units horizontal arrays.

**NOTE:** remember that one **PLG714** shackle is supplied with each **KPTAX1012H** horizontal flying bar and three **PLG714** shackles are supplied with each **KPTAX1012T** suspension bar.

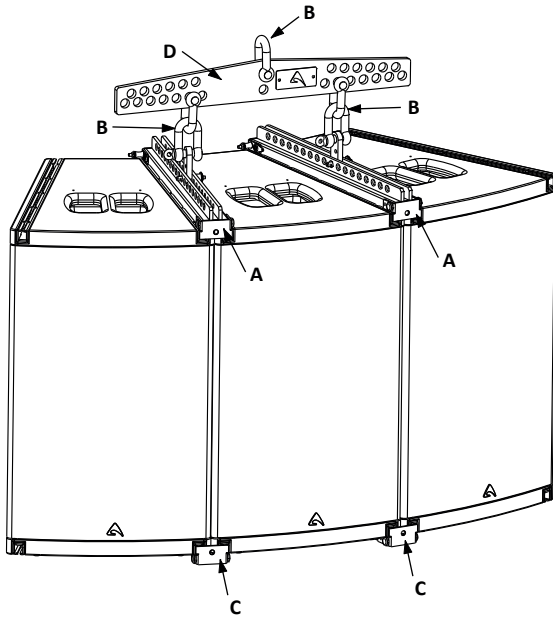


**2x AX1012P HOR. ARRAY**  
**40° x 100° coverage**  
**65 Kg total weight**

list of rigging material:

- A) 1x KPTAX1012H
- B) 1x PLG714
- C) 1x KPTAX1012

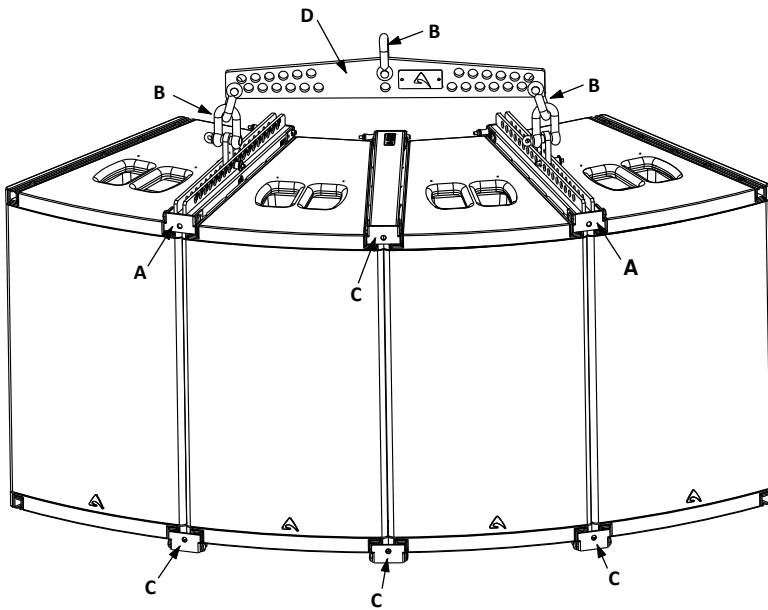




**3x AX1012P HOR. ARRAY**  
**60° x 100° coverage**  
**101 Kg total weight**

list of rigging material:

- A) 2x KPTAX1012H
- B) 5x PLG714
- C) 2x KPTAX1012
- D) 1x KPTAX1012T



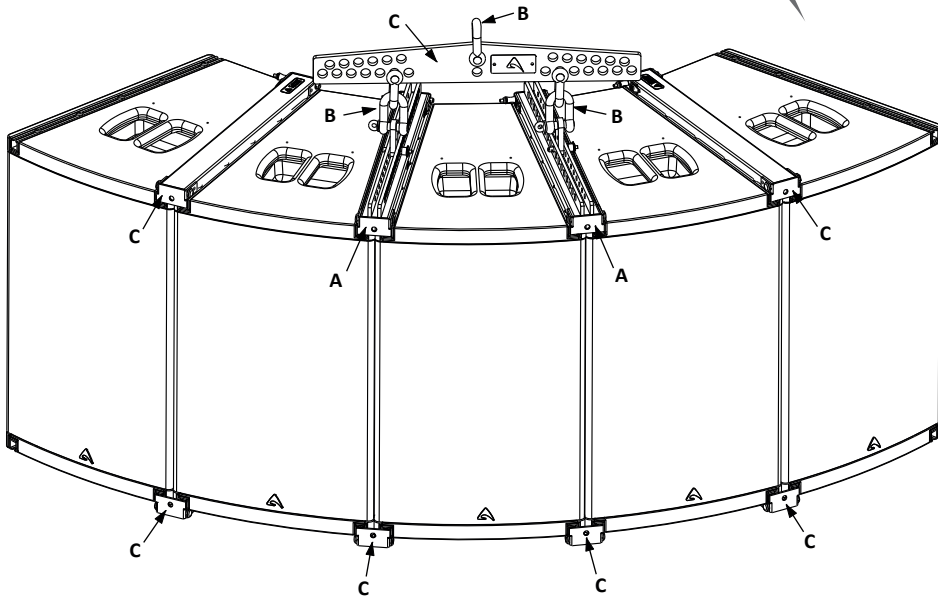
**4x AX1012P HOR. ARRAY**  
**80° x 100° coverage**  
**133 Kg total weight**

list of rigging material:

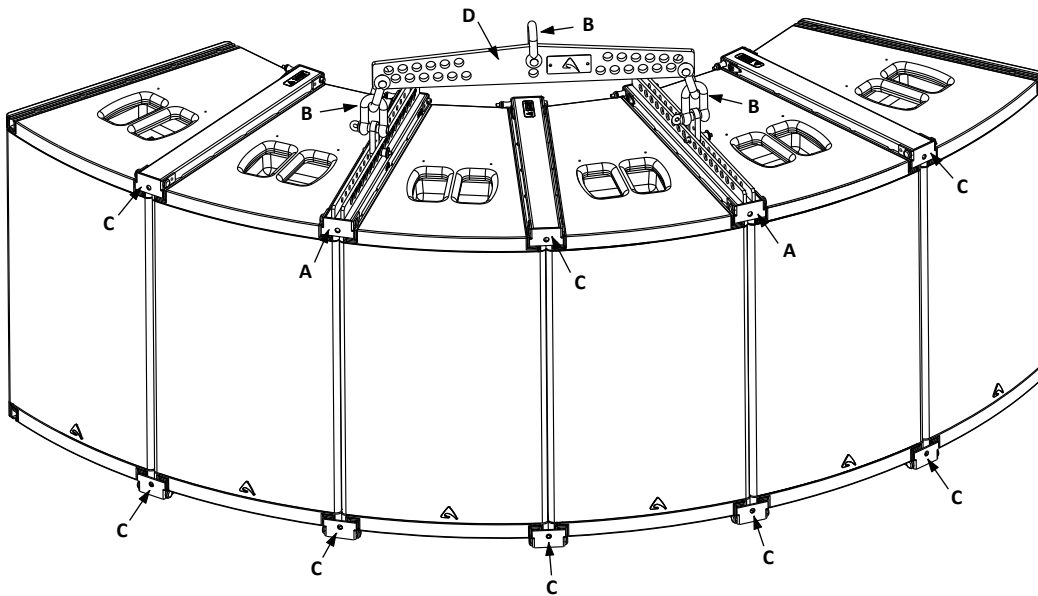
- A) 2x KPTAX1012H
- B) 5x PLG714
- C) 4x KPTAX1012
- D) 1x KPTAX1012T





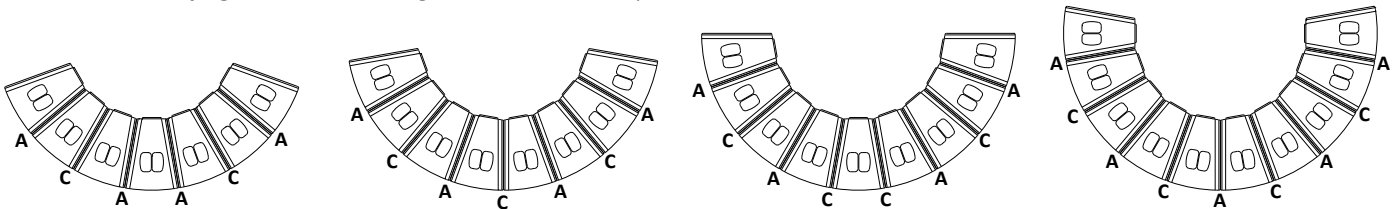


**5x AX1012P HOR. ARRAY**  
**100° x 100° coverage**  
**166 Kg total weight**  
 list of rigging material:  
 A) 2x KPTAX1012H  
 B) 5x PLG714  
 C) 6x KPTAX1012  
 D) 1x KPTAX1012T



**6x AX1012P HOR. ARRAY**  
**120° x 100° coverage**  
**196 Kg total weight**  
 list of rigging material:  
 A) 2x KPTAX1012H  
 B) 5x PLG714  
 C) 8x KPTAX1012  
 D) 1x KPTAX1012T

For horizontal arrays made of more than 6 loudspeakers, as a rule of thumb **one KPTAX1012H flying bar** should be used at most **every two or three boxes**, as in the following examples. When flying arrays with more than 6 units, it is advisable to use **multiple lifting points connected directly to the KPTAX1012H flying bars**, without using the KPTAX1012T suspension bars.



A) KPTAX1012H HORIZONTAL ARRAY FLYING BAR  
 C) KPTAX1012 COUPLING BAR

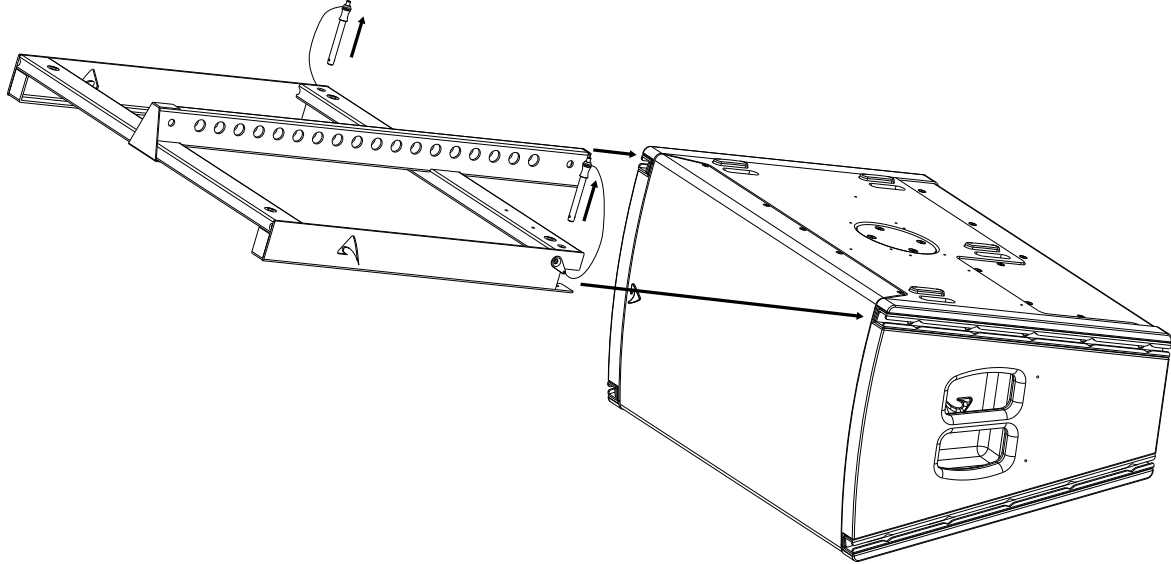




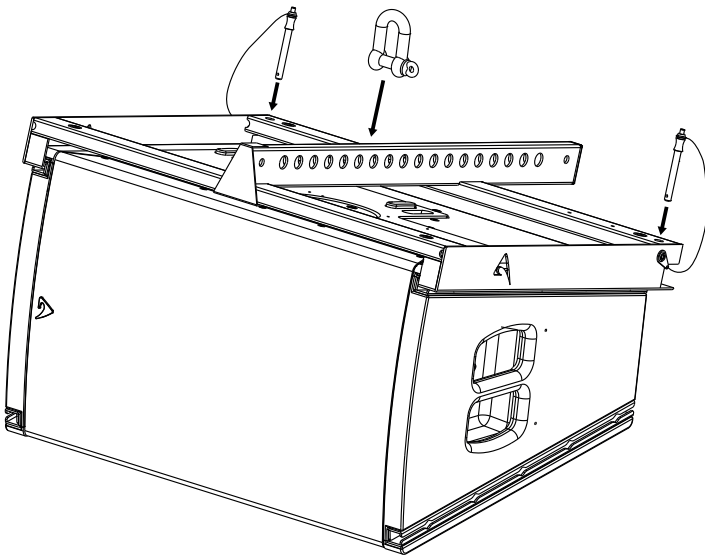
## 2-UNIT VERTICAL ARRAY

Follow the sequence below to assemble up to four AX1012P units into a vertical array. Each AX1012P has several bumpers at each side of the box that fits in the slots of the adjacent box: this allows to arrange the boxes perfectly aligned for inserting easily the coupling bars. The first step before lifting up the system is to assemble the fly bar to the first box. Be careful to insert properly all the bars and their locking pins, with the shackle in the right hole as specified by the aiming software. When lifting and releasing the system, always proceed slowly and gradually step by step, being careful to correctly assemble all the rigging hardware and to avoid endangering yourself and your hands from being crushed. **NOTE:** remember that one **PLG714** shackle is supplied with the **KPTAX1012V** vertical flying bar.

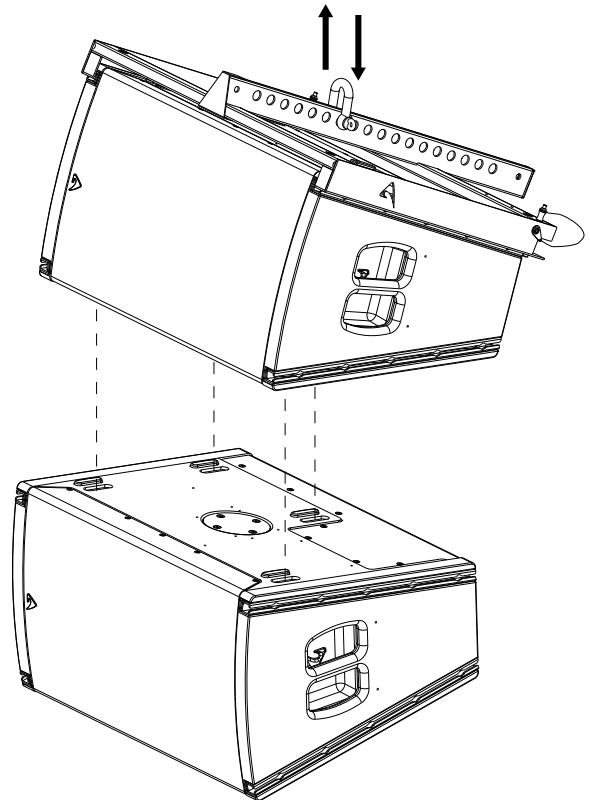
1) Remove the pins at the end of the flying bar, insert the flying bar into the rails of the first box.



2) Put back in place the pins in their hole, making sure that they are inserted correctly. Fix the shackle in the chosen hole and link the lifting system.

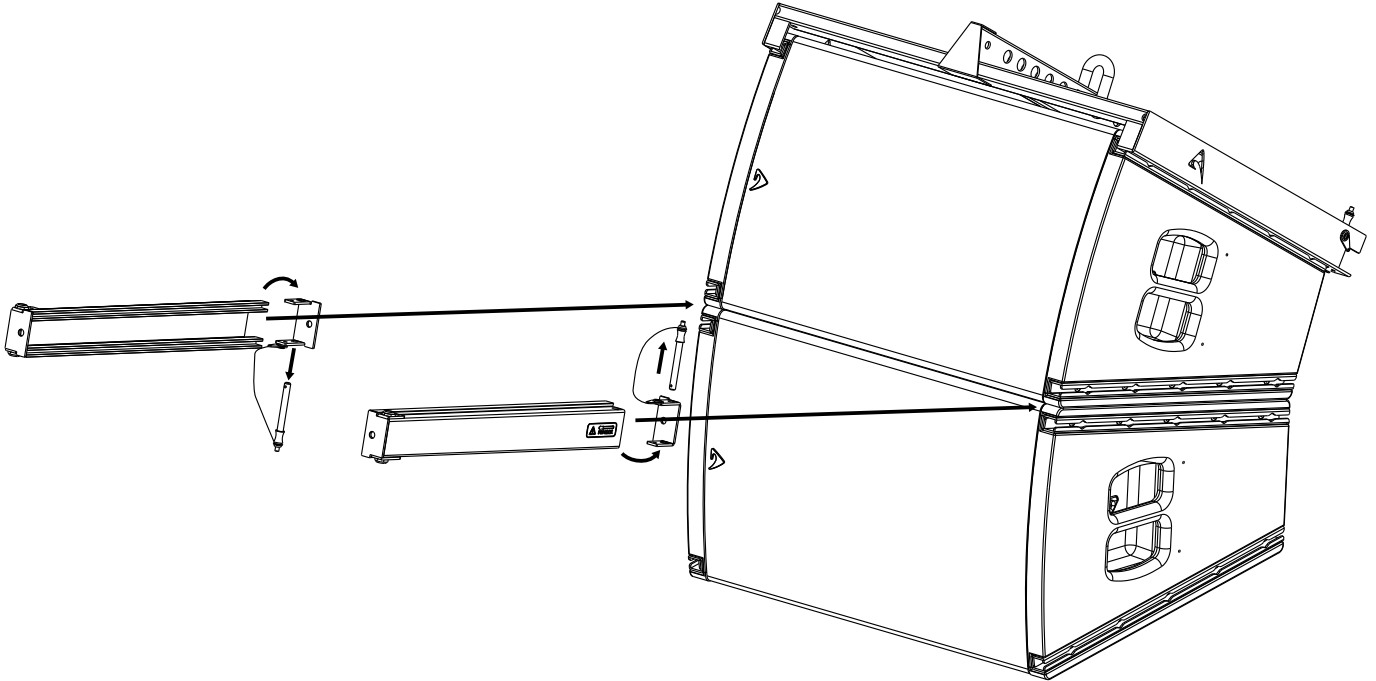


3) Lift the first box, place the second box on the floor just underneath the first one. Let down slowly the first box over the second one, aligning the bumpers and the slots of the two loudspeakers. Note: a proper wedge placed between the cabinet to be linked and the floor can be useful.

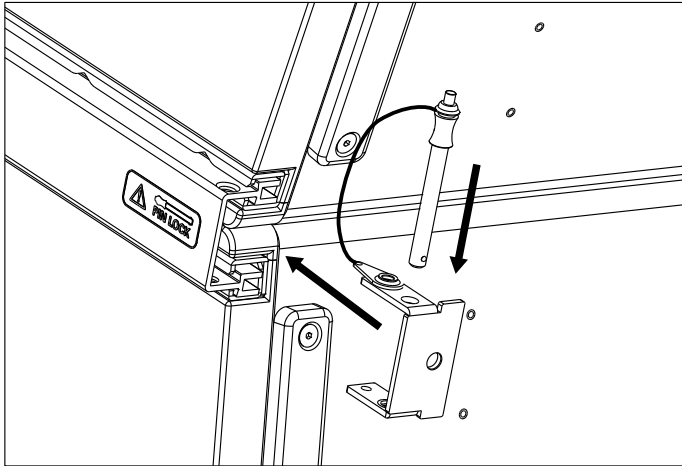




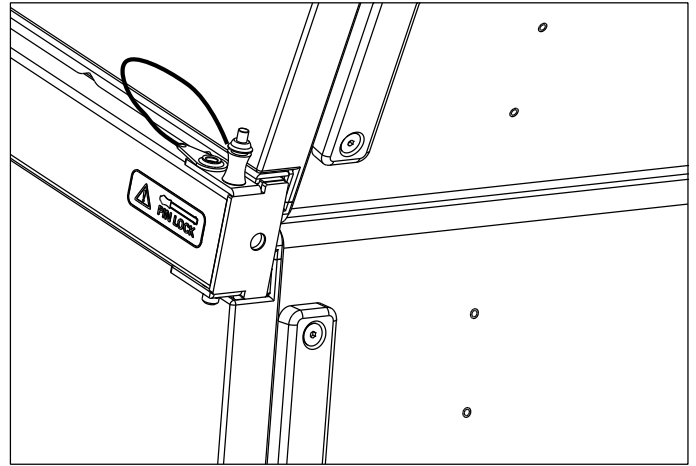
4) Link the first box to the second box using two coupling bars: remove the pins and the locking plates and insert the bars into the cabinet rails from the front.



5) Put back in place the locking plates and fix them reinserting the pins in their hole.



6) Be sure that all hardware is firmly fixed before lifting the system and proceeding to link the third and fourth boxes (if required).



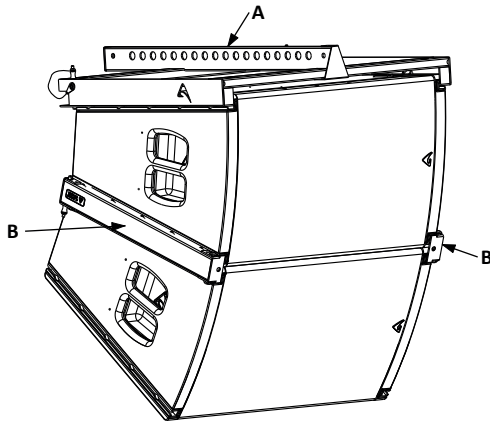
**Note:** in a vertical array, since the first unit can be connected to the flybar indifferently from either side of the box, the HF horn can result either to the left or to the right side of the array. In a small venue, could be a good choice to place the HF horns of each left and right array symmetrically to the external, to obtain a more coherent stereo image in the centre of the venue. In medium or large venues the symmetrical HF horn placement is less important due to the bigger distance between the left and right arrays.



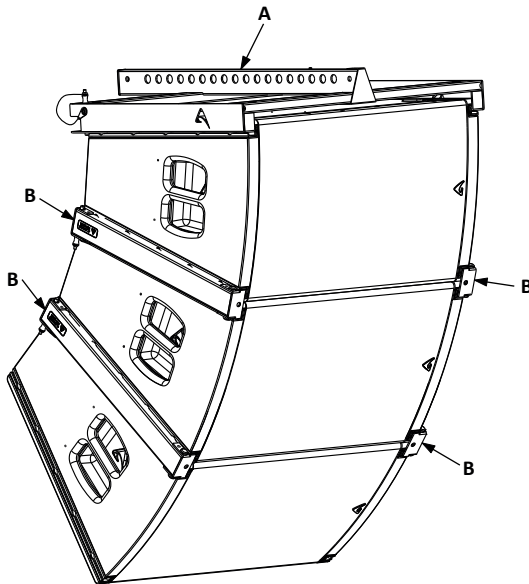


## VERTICAL ARRAY EXAMPLES

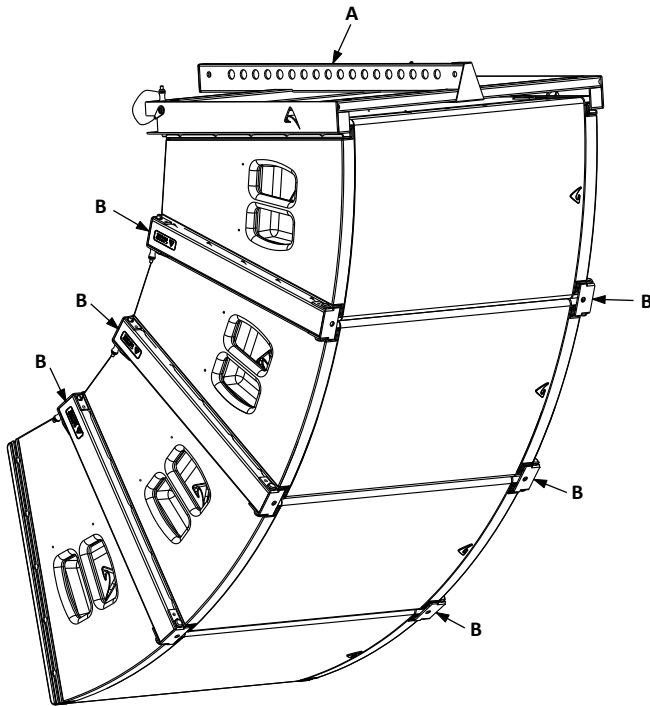
The following figures are examples of vertical arrays made of from 2 to 4 units. **NOTE: 4 is the maximum number of units in a vertical array.**



**2x AX1012P VER. ARRAY**  
**100° x 40° coverage**  
**71.5 Kg total weight**  
list of rigging material:  
A) 1x KPTAX1012V  
B) 2x KPTAX1012



**3x AX1012P VER. ARRAY**  
**100° x 60° coverage**  
**104 Kg total weight**  
list of rigging material:  
A) 1x KPTAX1012V  
B) 4x KPTAX1012



**4x AX1012P VER. ARRAY**  
**100° x 80° coverage**  
**136.5 Kg total weight**

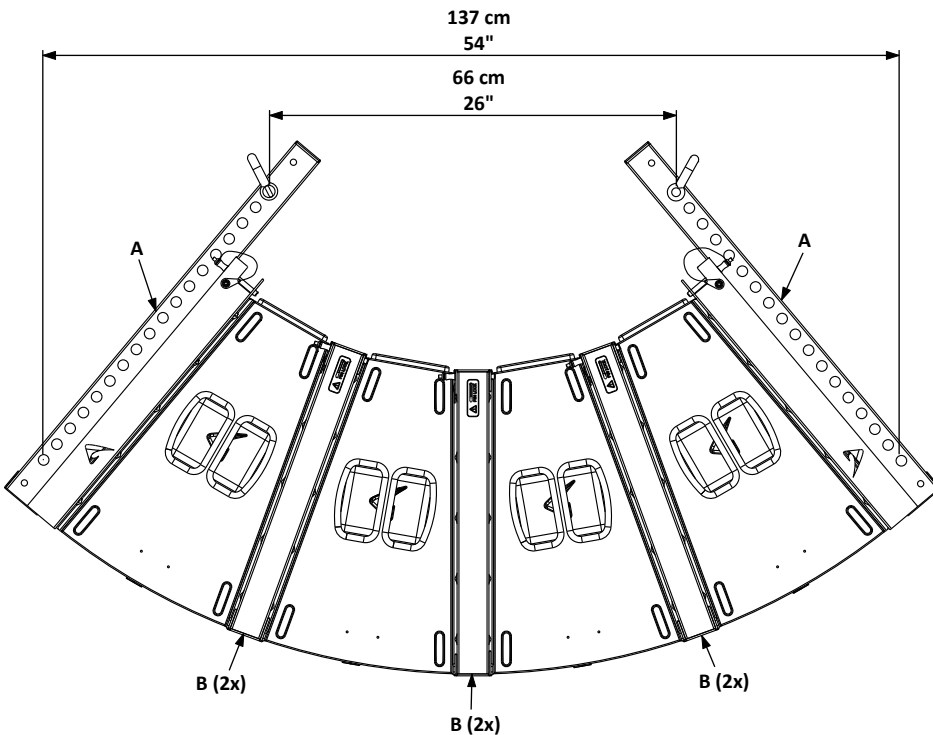
list of rigging material:

A) 1x KPTAX1012V

B) 6x KPTAX1012

### DOWN-FIRING ARRAY EXAMPLE

One additional use of AX1012P in vertical array configuration is as down-firing system, with a maximum of 4 units. In this case two KPTAX1012V flying bars are used, one at each side of the array, so the array can be suspended from two points and aimed to be completely on the vertical axis, as in the figure below:



**4x AX1012P DOWN-FIRING VERTICAL ARRAY**  
**100° x 80° coverage**  
**144.5 Kg total weight**

list of rigging material:

A) 2x KPTAX1012V

B) 6x KPTAX1012

Any hole of both flybar can be used in the range of the two quotes specified in the drawing.





## WIND LOADS

When planning an open-air event it is essential to obtain current weather and wind information. When loudspeaker arrays are flown in an open-air environment, possible wind effects must be taken into account. Wind load produces additional dynamic forces acting on the rigging components and the suspension, which may lead to a dangerous situation. If according to the forecast wind forces higher than 5 bft (29-38 Km/h) are possible, the following actions have to be taken:

- The actual on-site wind speed has to be monitored permanently. Be aware that wind speed typically increases with height above ground.
- Suspension and securing points of the array should be designed to support double the static load in order to withstand any additional dynamic forces.



### WARNING!

Flying loudspeakers overhead at wind forces higher than 6 bft (39-49 Km/h) is not recommended. If the wind force exceeds 7 bft (50-61 Km/h) there is a risk of mechanical damage to the components which may lead to a dangerous situation for persons in the vicinity of the flown array.

- Stop the event and make sure that no person remains in the vicinity of the array.
- Lower and secure the array.

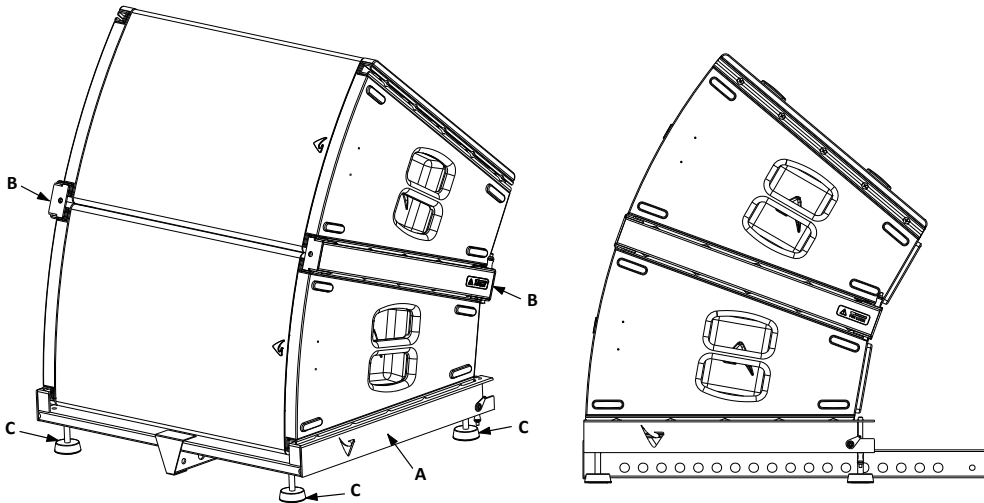
## STACKED SYSTEMS



### WARNING!

- The ground where the KPTAX1012V flying bar serving as ground support is placed must be absolutely stable and compact.
- Adjust the feet so to put the bar in a perfectly horizontal position.
- Always secure ground stacked setups against movement and possible tipping over.
- A maximum of 3 x AX1012P cabinets with the KPTAX1012V flying bar serving as ground support are allowed to be set up in a ground stack.

For the stack configuration you must use four optional BOARDACF01 feet and the fly bar must be mounted upside down to the ground.



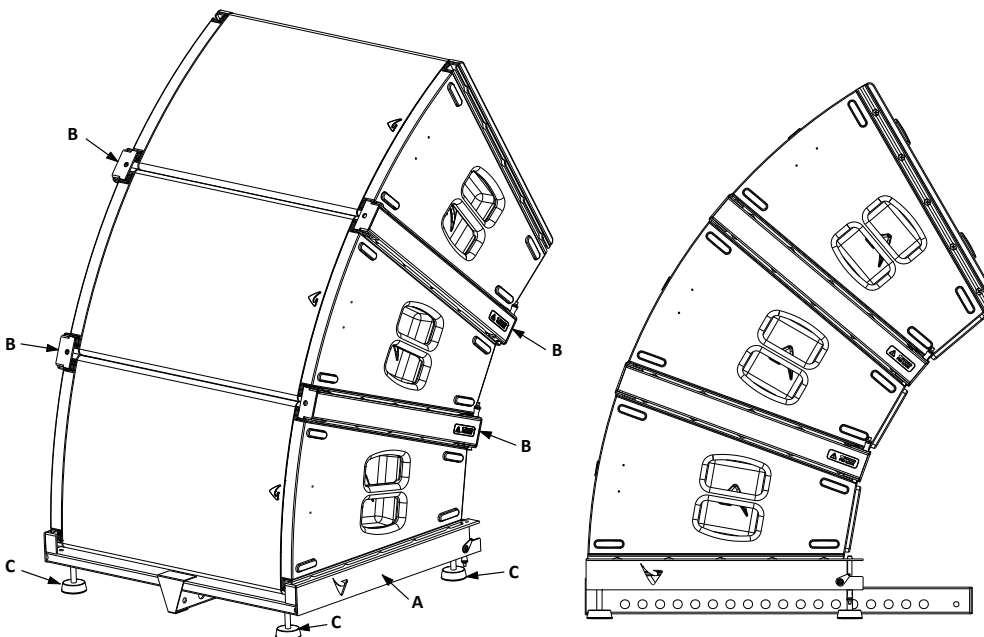
### 2x AX1012P STACKED VER. ARRAY

**100° x 40° coverage**

**71.5 Kg total weight**

list of stacking material:

- A) 1x KPTAX1012V
- B) 2x KPTAX1012
- C) 4x BOARDACF01



### 3x AX1012P STACKED VER. ARRAY

**100° x 60° coverage**

**104 Kg total weight**

list of stacking material:

- A) 1x KPTAX1012V
- B) 4x KPTAX1012
- C) 4x BOARDACF01





## LIMITED WARRANTY

Proel warrants all materials, workmanship and proper operation of this product for a period of two years from the original date of purchase. If any defects are found in the materials or workmanship or if the product fails to function properly during the applicable warranty period, the owner should inform about these defects the dealer or the distributor, providing receipt or invoice of date of purchase and defect detailed description. This warranty does not extend to damage resulting from improper installation, misuse, neglect or abuse. Proel S.p.A. will verify damage on returned units, and when the unit has been properly used and warranty is still valid, then the unit will be replaced or repaired. Proel S.p.A. is not responsible for any "direct damage" or "indirect damage" caused by product defectiveness.

- This unit package has been submitted to ISTA 1A integrity tests. We suggest you control the unit conditions immediately after unpacking it.
- If any damage is found, immediately advise the dealer. Keep all unit packaging parts to allow inspection.
- Proel is not responsible for any damage that occurs during shipment.
- Products are sold "delivered ex warehouse" and shipment is at charge and risk of the buyer.
- Possible damages to unit should be immediately notified to forwarder. Each complaint for package tampered with should be done within eight days from product receipt.

## SAFETY INSTRUCTIONS

- To reduce the risk, close supervision is necessary when the product is used near children.
- Protect the apparatus from atmospheric agents and keep it away from water, rain and high humidity places.
- This product should be site away from heat sources such as radiators, lamps and any other device that generate heat.
- This product should be located so that its location or position does not interfere with its proper ventilation and heating dissipation.
- Care should be taken so that objects and liquids do not go inside the product.
- The product should be connected to a power supply mains line only of the type described on the operating instructions or as marked on the product. Connect the apparatus to a power supply using only power cord included making always sure it is in good conditions.
- WARNING: The mains plug is used as disconnect device, the disconnect device shall remain readily operable.
- Do not cancel the safety feature assured by means of a polarized line plug (one blade wider than the other) or with a earth connection.
- Make sure that power supply mains line has a proper earth connection.
- Power supply cord should be unplugged from the outlet during strong thunderstorm or when left unused for a long period of time.

## CE CONFORMITY

Proel products comply with directive EMC 2014/30/CE and with directive LVD 2014/35/CE.

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