

X-LINE ADVANCE install system rigging

X1i | X2i | X12i-128

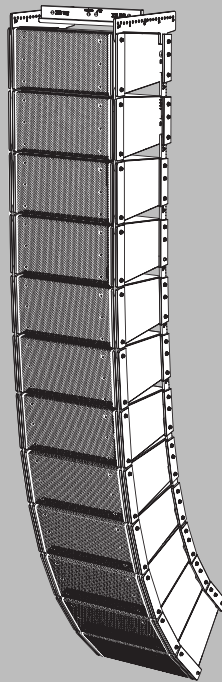


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1 Important safety instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Clean only with a damp cloth. No harsh chemicals or solvents.
6. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

1.1 Suspension



Warning!

Read and fully understand the manual and all safety instructions before attempting to suspend this loudspeaker. Qualified professionals must carry out suspension and installation. Follow all applicable local laws and regulations. Incorrect or improper suspension could expose persons to serious injury or death. Carefully inspect loudspeakers and associated hardware for defects or signs of damage before proceeding to suspend the speakers. Inspect all components at least once per year or as local laws and regulations require. If any parts are damaged or suspect, or if there is any doubt as to the proper functioning and safety of the items, stop using them immediately. It is the responsibility of the person installing the assembly to make sure the wall, ceiling, structure, and any attachments are capable of supporting all objects suspended overhead. Never modify Electro-Voice loudspeakers or rigging components or use a partial assembly of rigging components. Only use rigging components with the loudspeaker models they are designed for. Any hardware not provided by Electro-Voice is the responsibility of others. Electro-Voice assumes no liability for any damage or personal injury resulting from improper use, installation, or operation of the product.



Warning!

Always attach a secondary support mechanism with correctly load rated equipment when speakers are suspended overhead.

In case of failure of the main attachment, the speaker must be prevented from falling without dropping or swinging by a significant amount.

Never modify Electro-Voice loudspeakers or rigging components or use a partial assembly of rigging components.

Only use rigging components with the loudspeaker models they are designed for.



Warning!

Arrays designed for outdoor use must take into account environment effects such as wind loads, snow or any other condition that can add external forces to the array. Always use a qualified professional to certify outdoor arrays for safety to local environmental conditions.

1.2 Chlorine

Environments with high chlorine content, such as indoor swimming pools, can degrade stainless steel over time and reduce its structural performance. X-Line Advance loudspeaker enclosures utilize structural components that are compatible with high chlorine environments, but the optional grids and rigging kits for these loudspeakers ship with fasteners that are not compatible.

Electro-Voice offers alternate fastener kits for the grid and the rigging kit that should be specified for high chlorine environments. In such applications, these fastener kits must be used instead of the stainless steel fasteners that ship with the rigging accessories:

X12I-GRDBLT-HCLB	Chlorine compatible fastener replacements for X1i and X2i Grids, Black
X12I-RIGBLT-HCLB	Chlorine compatible fastener replacements for X1i and X2i Rigging Kits, Black
X12I-RIGBLT-HCLW	Chlorine compatible fastener replacements for X1i and X2i Rigging Kits, White

**Warning!**

These chlorine compatible fastener kits must be used in order to install X-Line Advance loudspeakers in high chlorine environments, instead of the fasteners that ship with the X12I-GRIDKIT and X12I-RIGKIT.

Failure to do so can result in serious injury or death.

Please contact Electro-Voice technical support for more details at www.electrovoice.com/contact.

1.3**Copyright and disclaimer**

All rights reserved. No part of this document may be reproduced or transmitted in any form by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher. For information on getting permission for reprints and excerpts, contact Electro-Voice.

All content including specifications, data, and illustrations in this manual are subject to change without prior notice.

1.4**Symbols****Warning!**

A safety helmet, safety boots, and safety glasses must be used at all times during the installation of the X-Line Advance install system.

Failure to do so can result in injury or death.

**1.5****Declaration of conformity**

Bosch Security Systems Inc.

130 Perinton Pkwy, Fairport, NY 14450 USA

Hereby declares conformity to the following standards:

- RoHS 3 EU 2015/853
- ISO 12100:2010
- DGUV Regulation 17

2 System overview

The X-Line Advance Install loudspeaker is a premium line-array loudspeaker system designed for high performance permanent install applications, such as sports arenas, houses of worship, and performing arts centers. The system represents a culmination of EV's extensive experience in designing large format line array systems for touring applications, as well as deep knowledge in designing ruggedized install loudspeaker systems that can survive in harsh, direct exposure environments.

The X12i-GRID and X12i-RIGKIT are accessories that can suspend up to twelve X1i or X2i elements. The grid connects to the top element in the array and is suspended from the venue. At least one grid is required at the top of the array. A second grid may be used at the bottom of the array to create a pullback point to the venue. The rigging kit is used to suspend each element in the array to the element above, or to the grid. Use one rigging kit for each element in the loudspeaker array. The X12i-GRID and X12i-RIGKIT use aluminum plates and stainless steel hardware to ensure the rigging components will not corrode over time in direct exposure environments.

Follow this manual to attach the grid and rigging kits to X1i and X2i line array systems. For more information about the X1i and X2i models, please consult the X-Line Advance Install User manual, available on www.electrovoice.com.

3 Installation

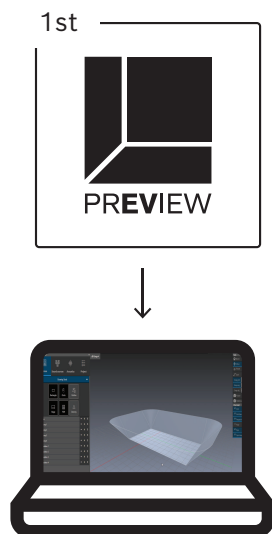
3.1 Attaching grid to top element of array

**Notice!**

A 17 mm socket, a 6 mm hex driver, a medium strength threadlocker (Loctite® 243 or equivalent) and a torque wrench are required for the installation of the line array.

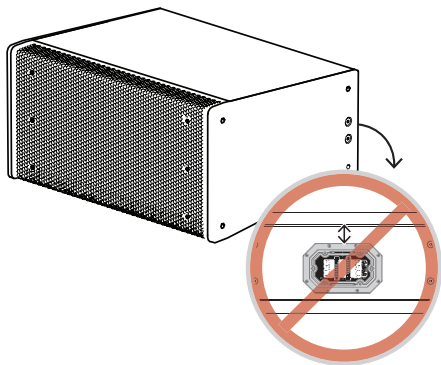
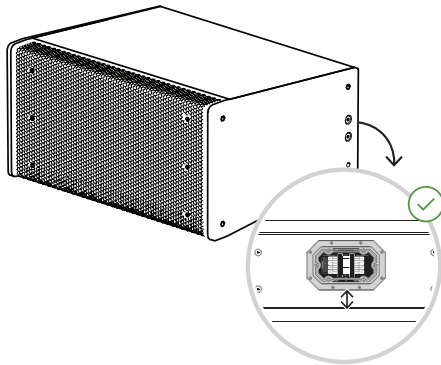
**Warning!**

PREVIEW Loudspeaker Software MUST be used to design the array. **PREVIEW** will state whether the array configuration is valid for use with the X12i-RIGKIT and X12i-GRID accessories. Follow all warnings within the software. Failure to design the array properly may result in serious injury or death.



1. Use **PREVIEW Loudspeaker Software** to design the array. **PREVIEW** will determine whether the array can be suspended with the optional grid and rigging kits for your particular application, with the safety factor that you determine based on local laws and regulations.
2. If **PREVIEW** states the array configuration is valid, the optional grid and rigging kit may be used to suspend the array.
3. If **PREVIEW** determines that the desired array configuration is not valid or not possible, a custom rigging solution is needed. Please consult the X-Line Advance Install User manual, available at www.electrovoice.com.

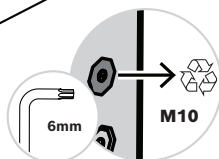
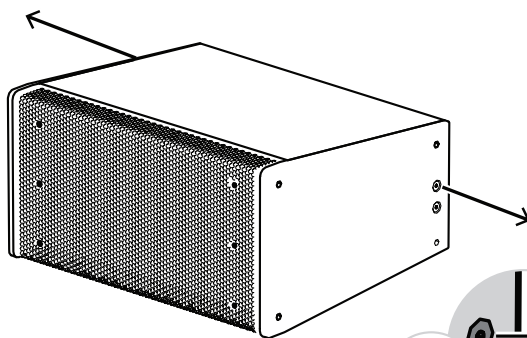
4. Orient the first enclosure as determined in **PREVIEW**. The element is right side up when the input cup is towards the top of the element. The element is upside down when the input cup is towards the bottom of the element.



Notice!

A mirror image array may be assembled by inverting all the elements in that array. All elements in a single array must be oriented in the same direction. Rigging installation is the same in either orientation.

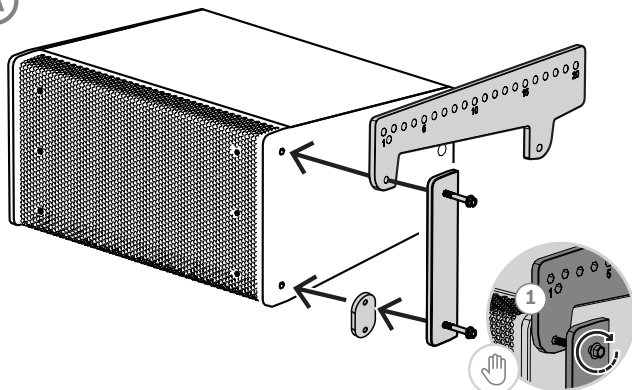
5. Add a flat washer onto each M10 bolt.
6. Add the nylon sleeve until the end of the sleeve is flush with the end of the M10 bolt.



7. Remove the top M10 flat head screw on each side of the element.
8. Set screws aside to be properly recycled later.

**Notice!**

The side arms can be installed in the standard orientation (Orientation A) or in reverse orientation (Orientation B). Use the reverse orientation when the array needs to be suspended with the top element at an upward angle. Consult PREVIEW to determine whether the side arms need to be reversed to achieve the desired coverage. Always attach both side arms in the same orientation.

A

9. Orientation A (standard): Align the front plate of the rigging kit with the front mounting hole of the grid side arm. The front mounting hole is located below the hole marked with a "1".

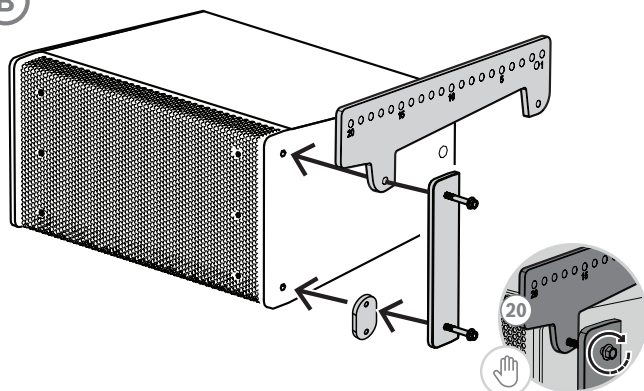
Orientation B (reverse): Align the front plate of the rigging kit with the rear mounting hole of the grid side arm. The rear mounting hole is located below the holes marked with a "15" and "20".

10. Apply threadlocker to the M10 bolt and insert through the top hole of the front plate, the front mounting hole of the grid sidearm, and into the top front suspension point in the element.

11. Tighten by finger for now.

12. Apply threadlocker and insert the M10 bolt through the lower front plate hole, the link bar, and the into the front bottom suspension point in the element.

13. Tighten by finger for now.

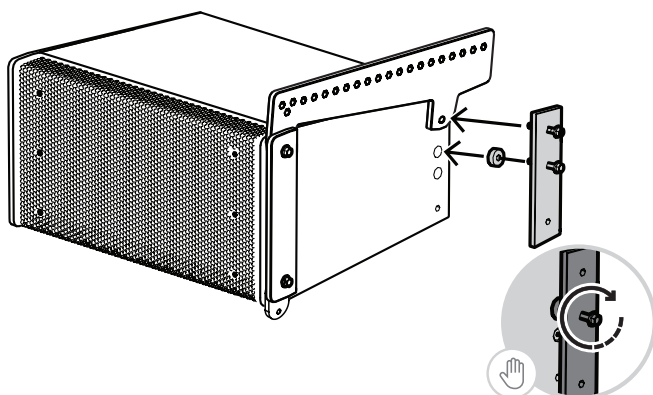
B

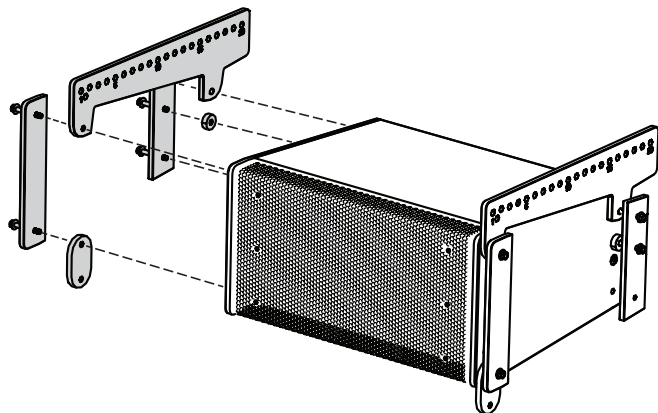
14. Apply threadlocker and insert the M10 bolt through the top hole of the rear plate, through the rear-mounting hole of the grid sidearm, and into the top rear suspension point of the element.

15. Tighten by finger for now.

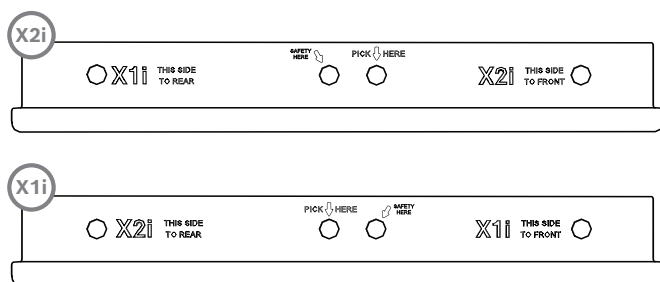
16. Apply threadlocker and insert the M10 bolt through the middle hole of the rear plate, through the small round spacer, and into the suspension point from step 7.

17. Tighten by finger for now.

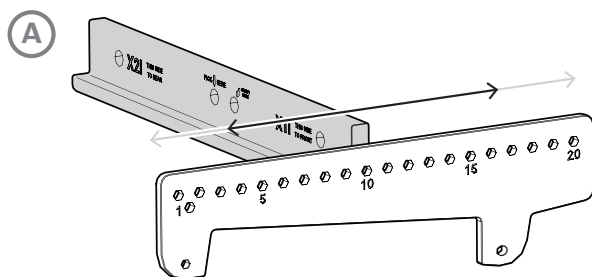




18. Repeat steps 9 through 17 on the opposite side of the element.

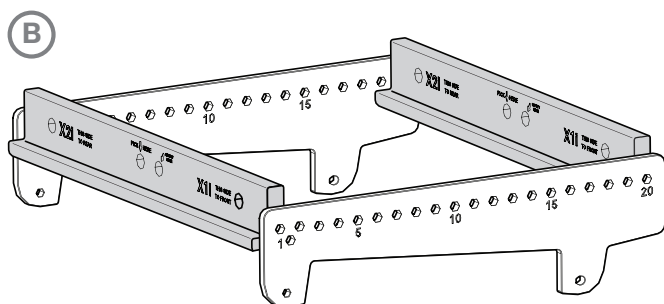


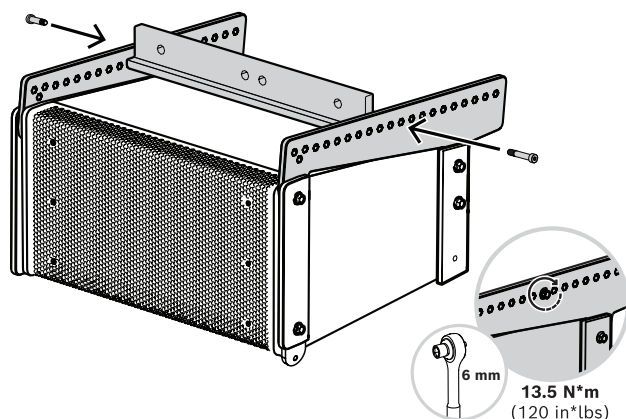
Note the orientation of the spreader bar if using a single suspension point. The spreader bar needs to be oriented differently for X1i and X2i elements to ensure that the array suspends properly. The spreader bar must be oriented as shown while looking at the front of the array.



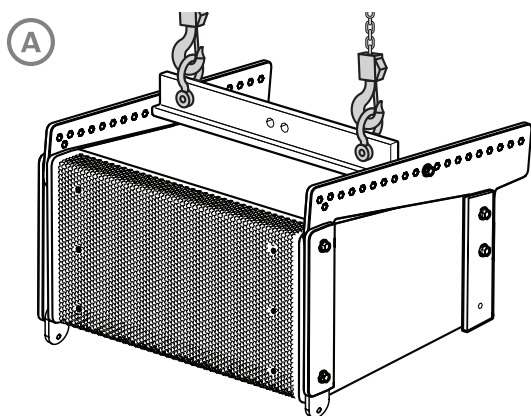
19. Option A: Align the grid spreader bar with the holes on the grid side arms as indicated in **PREVIEW**.

20. Option B: If a second spreader bar is required, place the front spreader bar in the "1" hole, and the rear spreader bar in the "20" hole. (The second spreader bar is sold separately.)





21. Press a 12mm nylon sleeve onto the M12 shoulder bolts.
22. Apply threadlocker and insert the shoulder bolt through the grid sidearm and into the end of the spreader bar. Torque to 13.5 N*m (120 in*lbs) using a torque wrench.

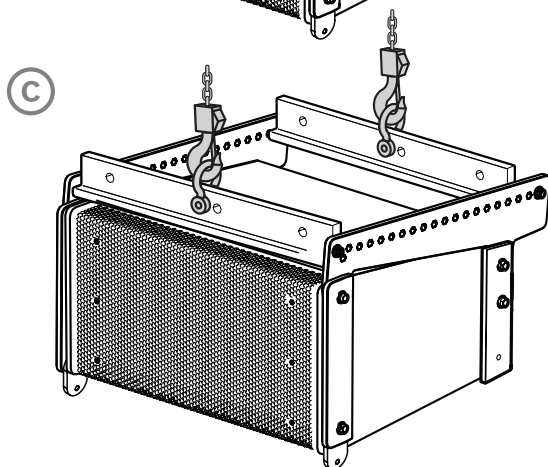
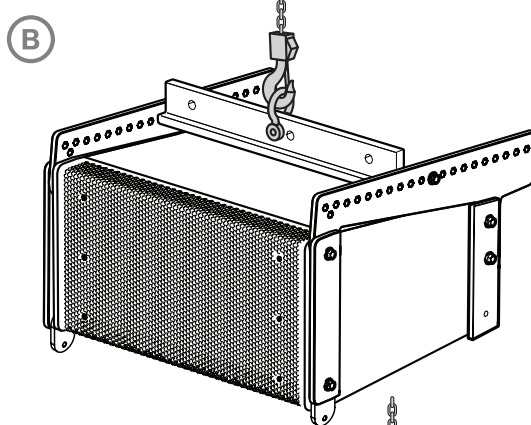


23. Attach the grid and top element to the venue using options A, B, or C, as indicated in **PREVIEW**. Suspend the grid and top element off the ground surface.

Option A: Two lift points on a single spreader bar.

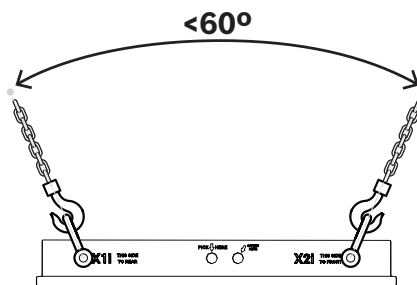
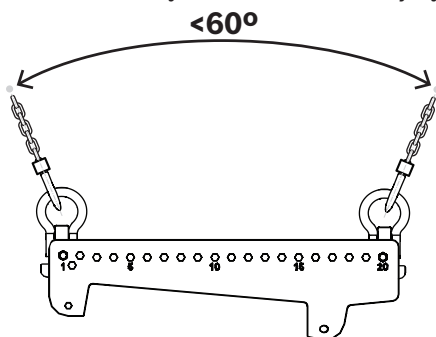
Option B: A single lift point.

Option C: Two lift points on dual spreader bars.



Warning!

Do not exceed an included angle of 60° between each lift point on the spreader bars. Failure to do so may result in serious injury or death.

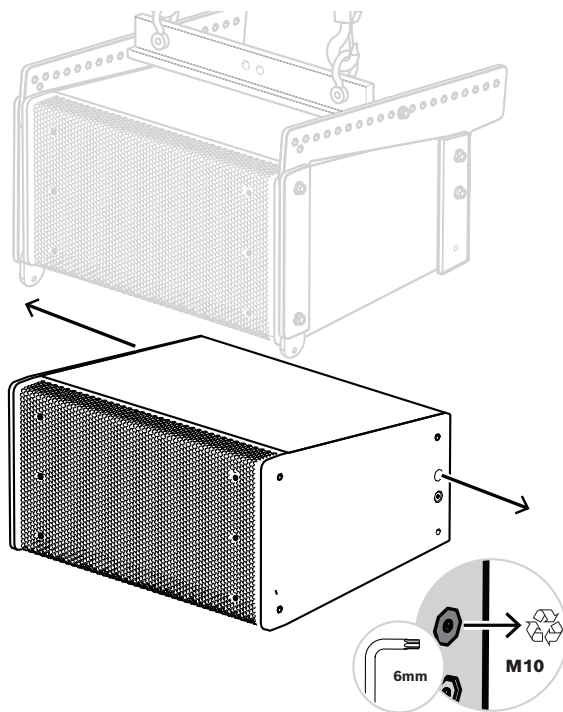


3.2 Attaching elements under the top element

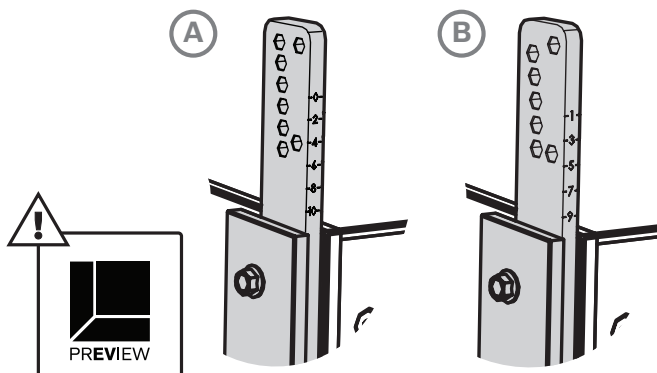


Warning!

Only use hardware with a working load limit that exceeds the total weight of the array. Any hardware used to connect between the grid spreader bars and the venue not provided by Electro-Voice is the responsibility of others.



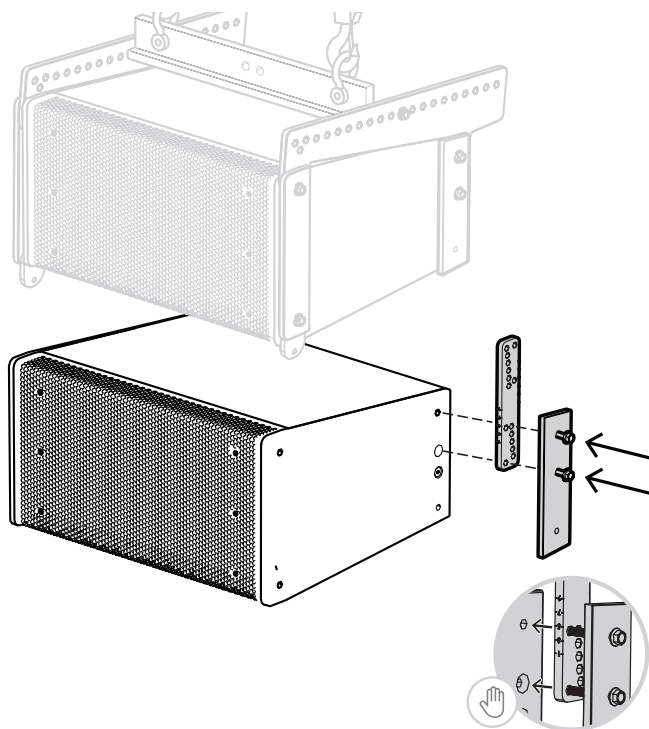
1. Place the next element in the array underneath the previously assembled element. The orientation of the next element must be the same as the previous assembled elements.
2. Remove the top M10 flat head screw on each side of the next element in the array.
3. Set aside screws to be properly recycled later.



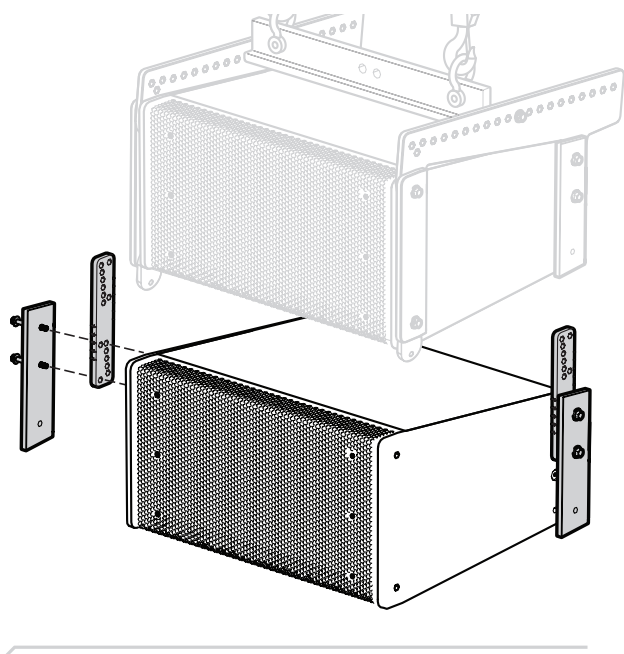
4. Determine whether the splay angle on the next element is an even or odd number in **PREVIEW**.

Option A: If the splay angle is an even number, orient the rear link bar so that the even numbers are above the next element and facing the rear of the element.

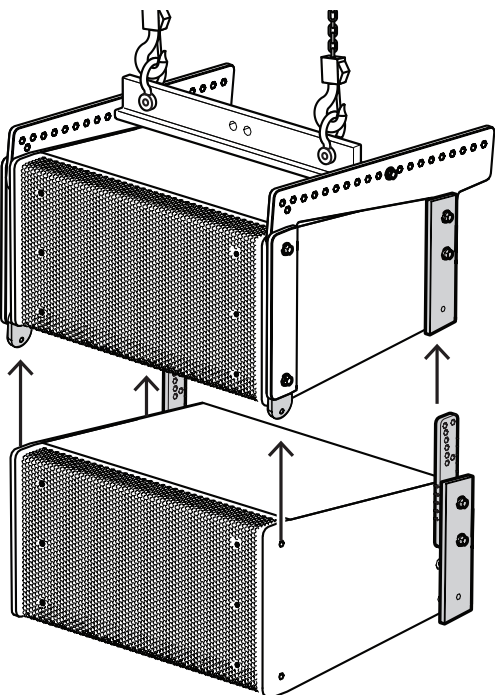
Option B: If the splay angle is an odd number, orient the rear link bar so that the odd numbers are above the next element and facing the rear of the element.



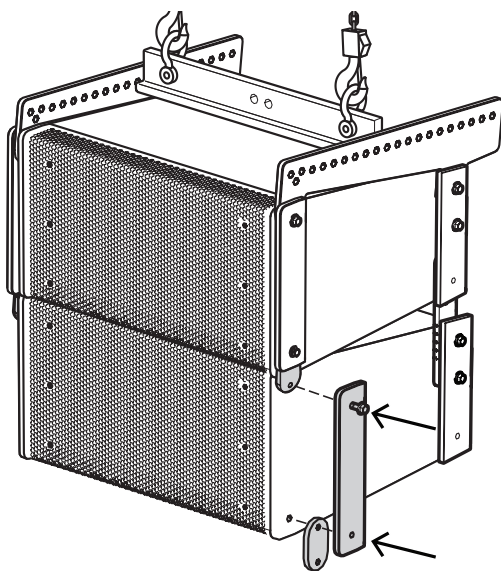
5. Apply threadlocker and insert the 2 M10 bolts through the rear plate, the front 2 holes of the rear link bars, and the top 2 suspension points in the next element.
6. Tighten by finger for now.



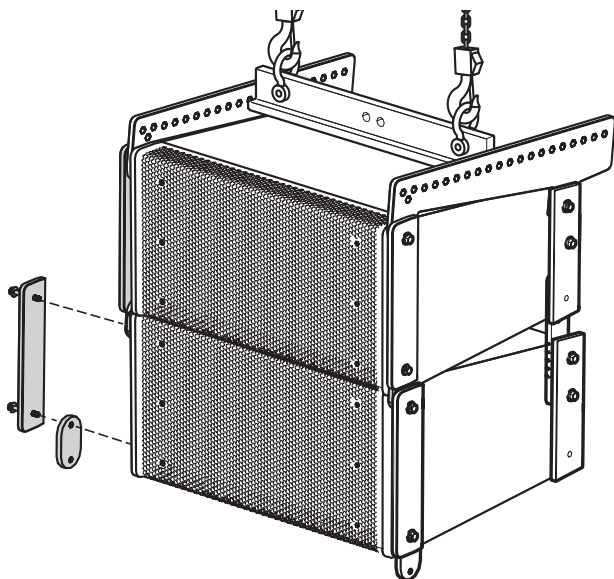
7. Repeat step 5 on the opposite side of the element.



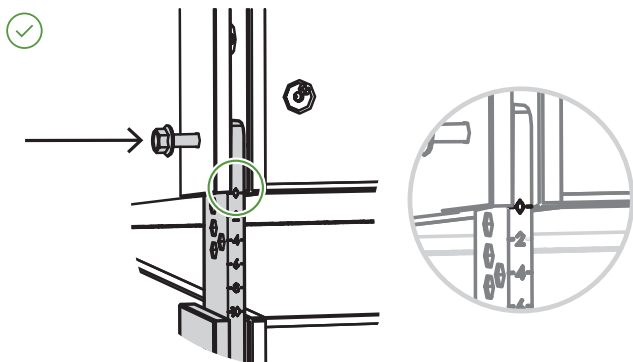
8. Align the next element in the array with the previous element. The front link bars should be aligned with the top front holes in the next element.



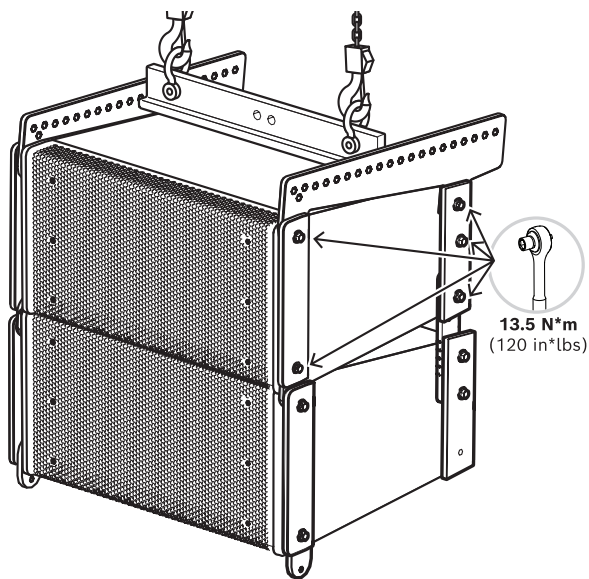
9. Apply threadlocker and insert the M10 bolt through the top hole of the front plate, through the link bar of the previous element and into the top front suspension point of the next element.
10. Apply threadlocker and insert the M10 bolt through the bottom hole of the front plate, through the front link bar, and into the bottom suspension point of the next element.
11. Tighten by finger for now.



12. Repeat steps 9 through 11 on opposite side of element.



13. Align the rear link bar on the next element so that the bottom of the rear plate aligns with the desired splay angle.
Note: 0° splay angle shown.
14. Apply threadlocker and insert the M10 bolt through the bottom hole of the rear plate, through the correct hole on the rear link bar, and into the bottom rear suspension point on the previous element.
15. Tighten by finger for now.



16. Torque all M10 bolts on the previous element to 13.5 N*m (120 in*lbs).
17. Repeat steps 1 through 16 for each element in the array except the last element.

3.3 Attaching the bottom element and bottom grid kit

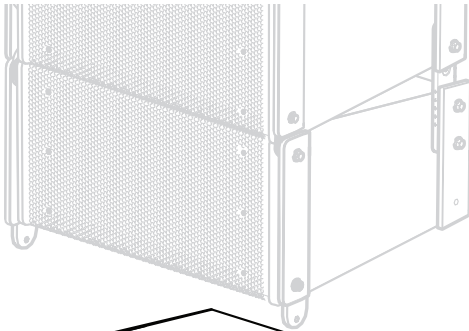


Notice!

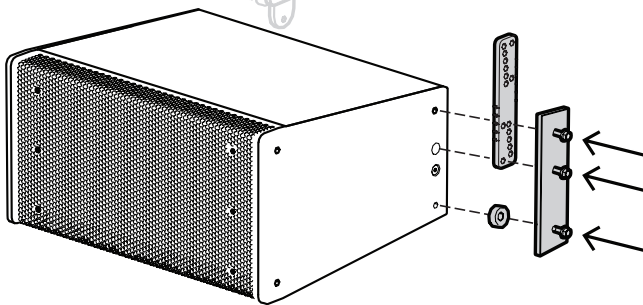
If **PREVIEW** determines that a bottom grid kit is necessary, follow *Attaching the bottom element without a bottom grid kit*, page 17.

If **PREVIEW** determines that a bottom grid kit is not necessary, follow *Attaching the bottom element with a bottom grid kit*, page 19.

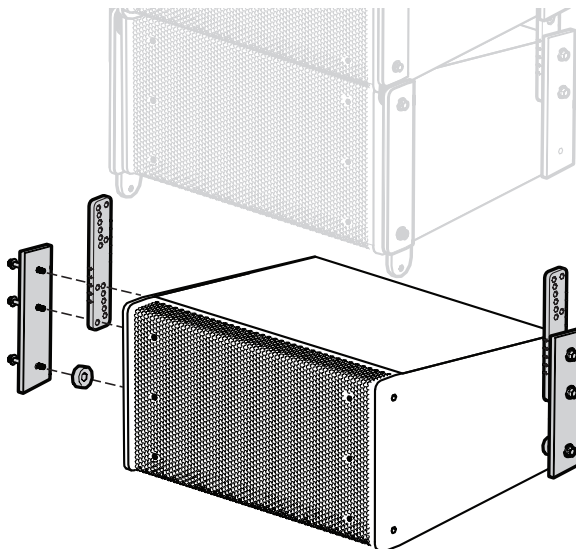
3.3.1 Attaching the bottom element without a bottom grid kit

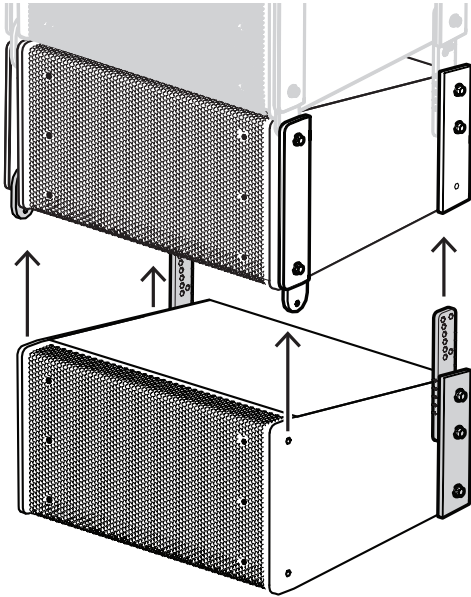


1. Repeat steps 1 through 4 in *Attaching elements under the top element*, page 13.
2. Apply threadlocker, and insert three M10 bolts through the rear plate, the rear link bar, the large round spacer, and into the bottom rear holes in the bottom element.
3. Tighten by finger for now.

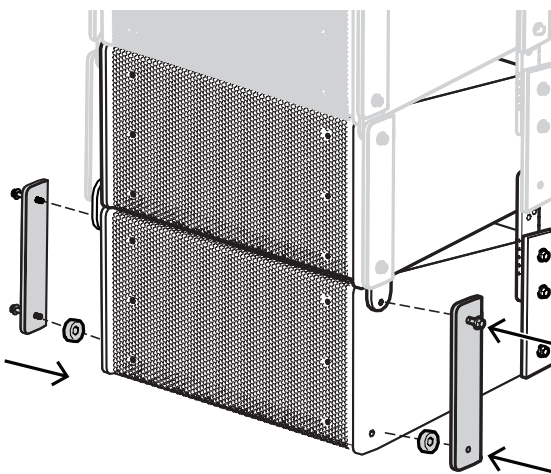


4. Repeat steps 1 through 3 on the other side of the bottom element.

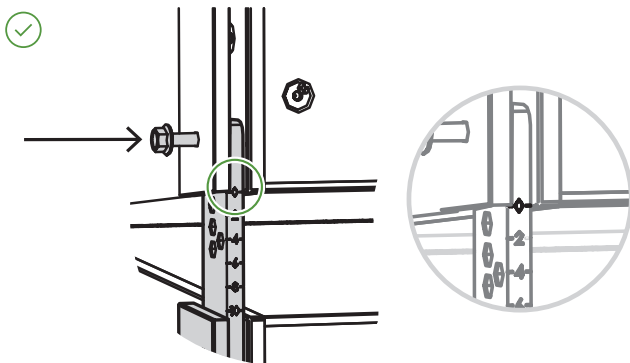




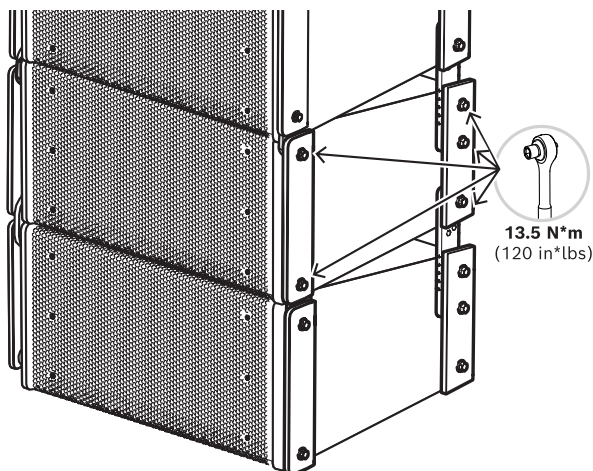
5. Align the bottom element in the array with the previous element. The front link bars should be aligned with the top front holes in the bottom element.



6. Apply threadlocker and insert the M10 bolt through the top hole of the front plate, through the link bar of the previous element, and into the top front suspension point of the bottom element.
7. Tighten by finger for now.
8. Apply threadlocker and insert the M10 bolt through the bottom hole of the front plate, through the top hole of the large round spacer, and into the bottom suspension point of the bottom element.
9. Tighten by finger for now.
10. Repeat steps 6 through 9 on the opposite side of the array.

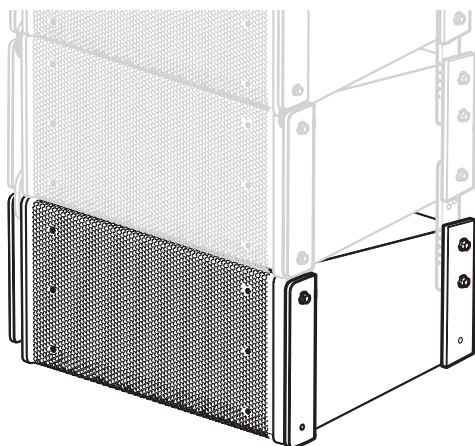


11. Align the rear link bar on the bottom element so that the bottom of the rear plate aligns with the desired splay angle.
Note: 0° splay angle shown.
12. Apply threadlocker and insert the M10 bolt through the bottom hole of the rear plate, through the correct hole on the rear link bar, and into the bottom rear suspension point on the previous element.
13. Tighten by finger for now.

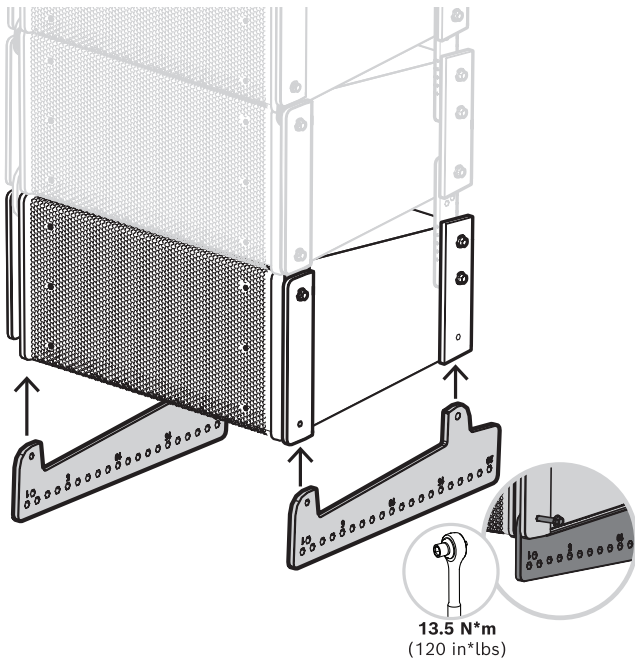


14. Torque all M10 bolts from the previous element and the bottom element to 13.5 N*m (120 in*lbs).

3.3.2 Attaching the bottom element with a bottom grid kit



1. Follow the steps 1 through 16 in *Attaching elements under the top element*, page 13, except do NOT install the front link bars on the bottom element.

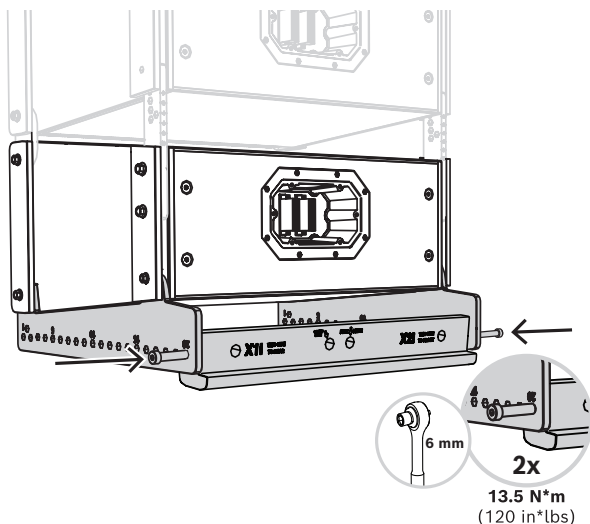
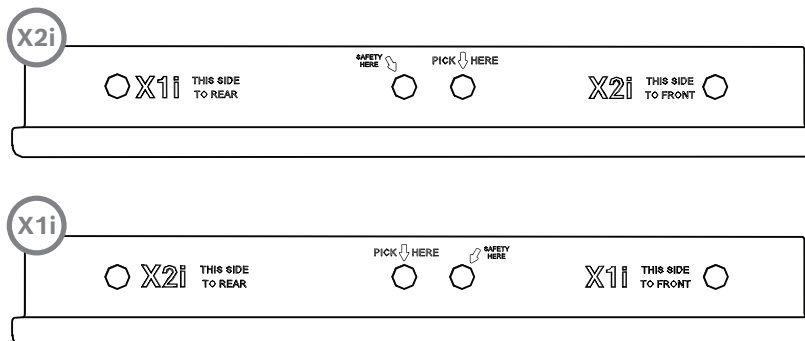


2. Apply threadlocker and insert the M10 bolt through the bottom holes in the plate, through the grid side arm, and into the bottom suspension points of the bottom element.
3. Torque to 13.5 N*m (120 in*lbs.)
4. Repeat on the opposite side of the array.

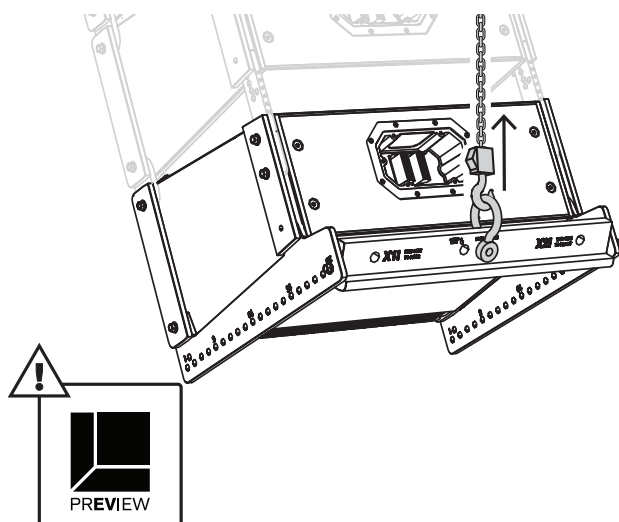
Notice!

Note the orientation of the spreader bar. The spreader bar needs to be oriented differently for X1i and X2i elements to ensure that the array suspends properly.

The spreader bar must be oriented as shown, while looking at the front of the array.



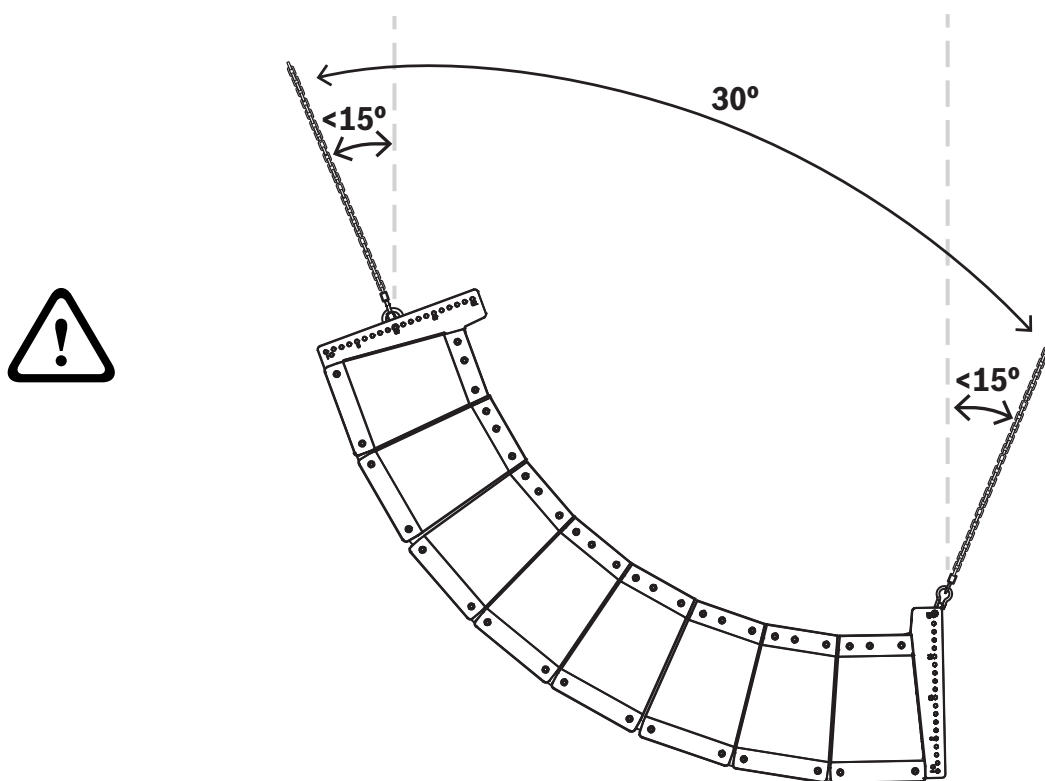
5. Apply threadlocker and insert the shoulder bolts through hole 20 of the side arms, into the ends of the spreader bar.
6. Torque to 13.5 N*m (120 in*lbs.)



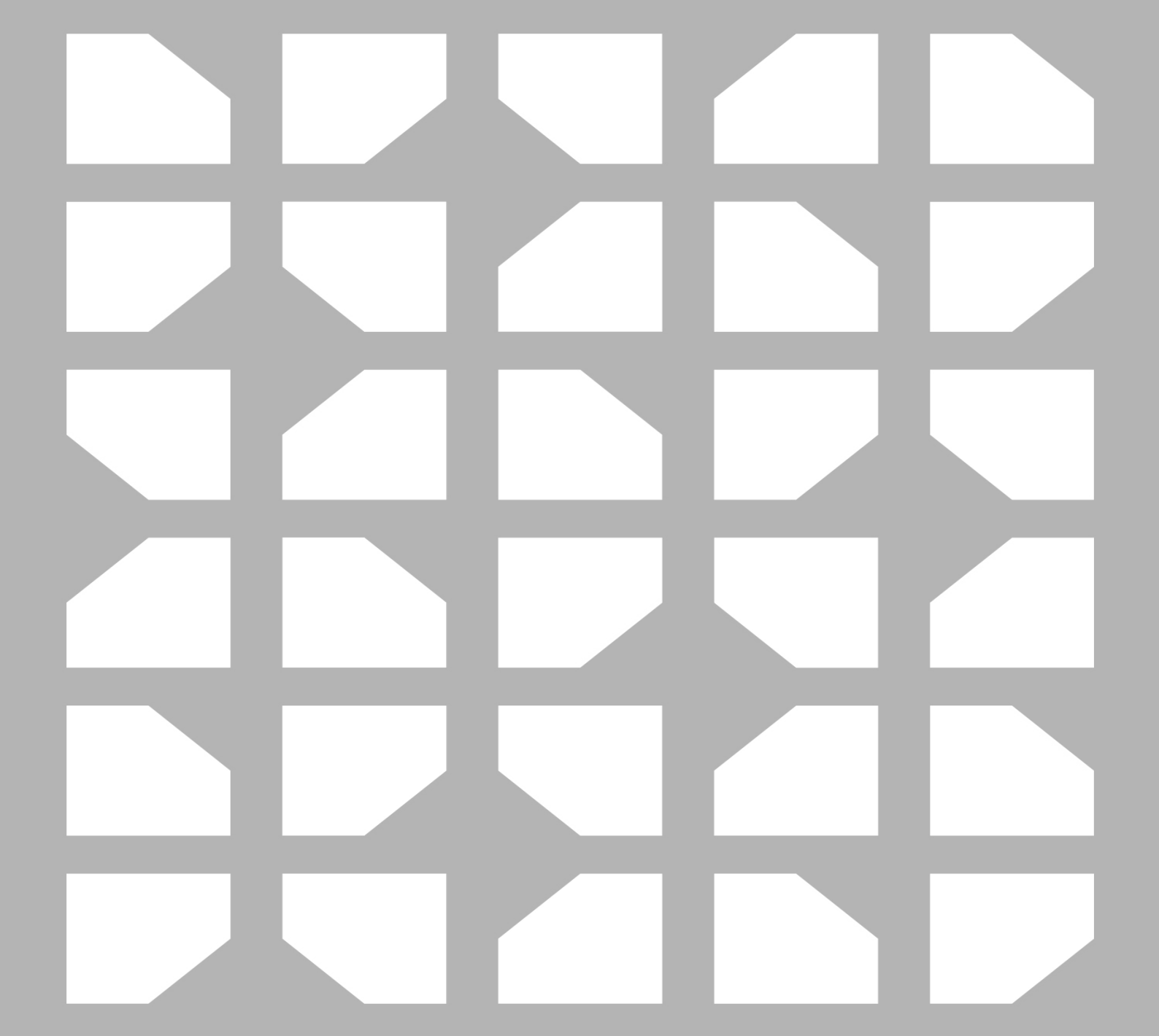
7. Lift the bottom of the array from the pick point hole on the spreader bar to the desired down angle of the array, as determined in **PREVIEW**.

Warning!

The pull back to venue shall not exceed 30° from vertical, 15° maximum on the top grid, and 15° maximum on the bottom grid.



4 Notes



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