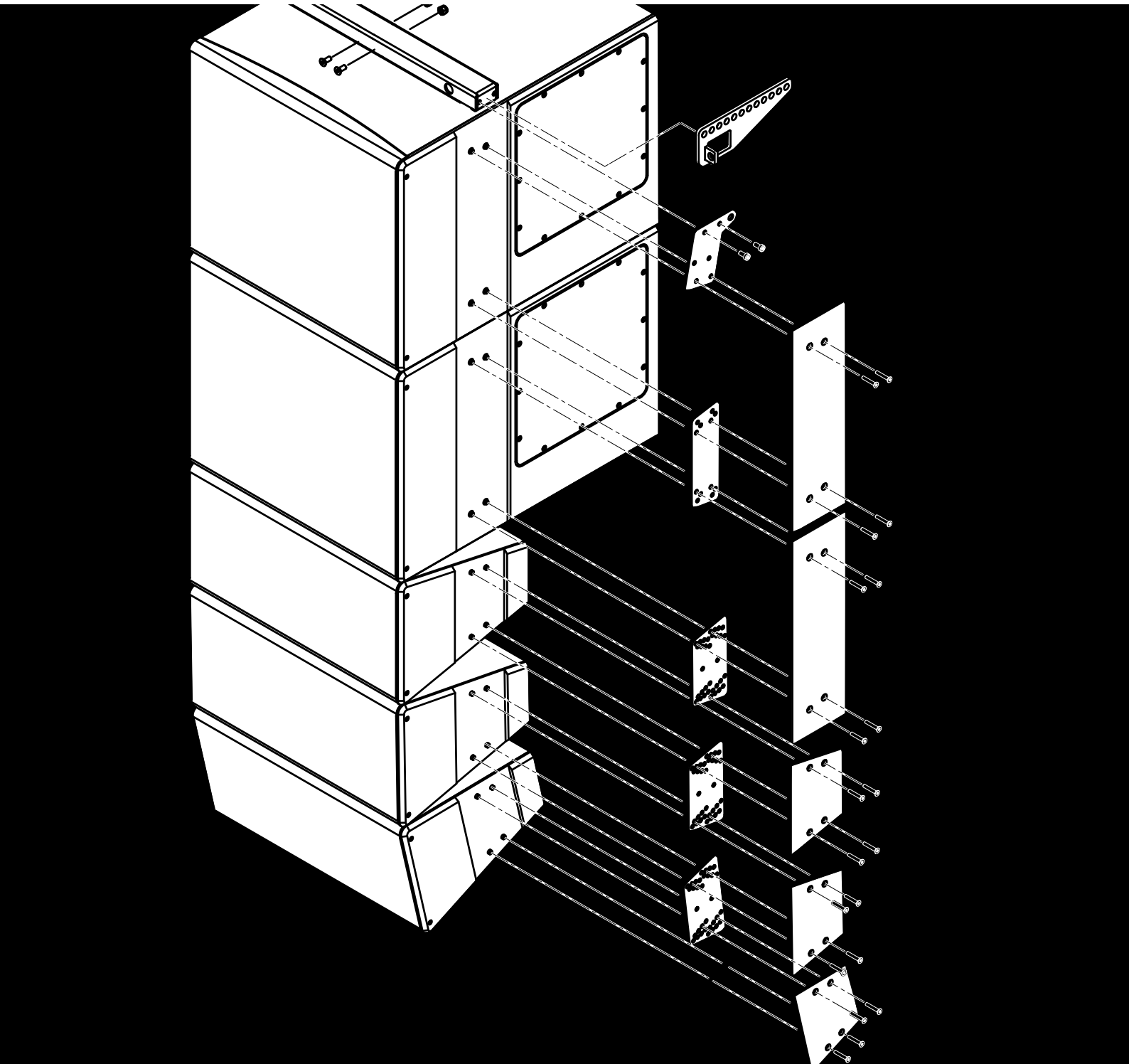
xA

xA-Series
Rigging manual 1.2 en



General information

xA-Series Rigging manual

Version: 1.2 en, 03/2021, D2962.EN .01

Keep this document with the product or in a safe place so that it is available for future reference.

When reselling this product, hand over this document to the new owner.

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Contents

1.1 Intended use

The xA-Series rigging components (Flying bar, Flying bar adapter, Connector plates) must only be used in conjunction with d&b xA-Series loudspeakers as described in this rigging manual.

Installation and setup should only be carried out by qualified and authorized personnel observing the valid national Rules for the Prevention of Accidents (RPA).

It is the responsibility of the person installing the assembly to ensure that the suspension/fixing points are suitable for the intended use.

Always carry out a visual and functional inspection of the items before use. In case you have any doubt as to the proper functioning and safety of the items, these must be withdrawn from use immediately.

1.2 Load capacity

1.2.1 Approved array configurations

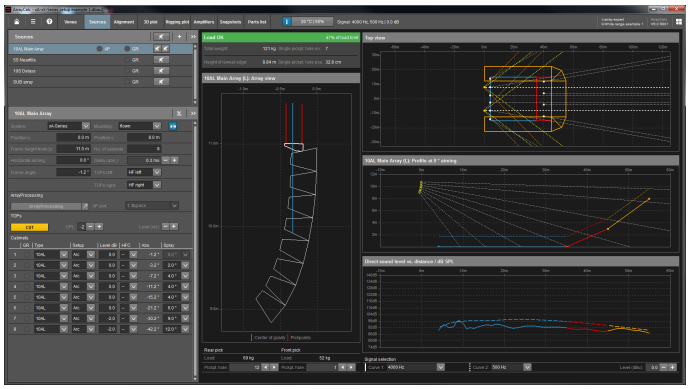
The xA-Series rigging system is designed to allow the following approved array configurations for indoor applications.

Flown arrays	
Array configuration	**Number and type of cabinets**
10AL Line array	▪ Up to 9 x 10AL (-D) cabinets.
10A Vertical array	▪ Up to 6 x 10A (-D) cabinets.
Mixed arrays	▪ Up to 6 x TOP cabinets combined with up to 2 x SUB cabinets at the top of the array. ▪ Up to 3 x cabinets at the top of the array with up to 2 x SUB cabinets in-between and up to 3 x TOP cabinets at the bottom.
SUB column	▪ Up to 4 x 18A subwoofers. ▪ Up to 3 x 27A subwoofers.

Ground stacks	
Configuration	**Number and type of cabinets**
Mixed ground stack	▪ Up to 6 x 10AL (-D) cabinets on top of up to 3 x 18A or 27A subwoofers as ground support.
SUB stack	▪ Up to 4 x 18A or 27A subwoofers.

1.2.2 xA-Series loudspeaker cabinet weights

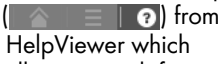
Cabinet	**Weight in kg (lb)**
10A (-D)/10AL (-D)	14 kg (31 lb)
18A-SUB	32 kg (71 lb)
27A-SUB	41 kg (90 lb)



d&b ArrayCalc

1.3 d&b ArrayCalc simulation software / TI 385

For both safety and acoustic reasons, d&b line arrays must be designed using the d&b ArrayCalc simulation software. The software is available as a native stand-alone application for both Microsoft Windows and Mac OS X operating systems and can be downloaded at www.dbaudio.com.

Detailed information on how to use and operate ArrayCalc is provided by the Help system of the software. To access the Help system, press F1 or select the Help button () from the ArrayCalc toolbar. This will launch the HelpViewer which provides an overview of the program as well as a search function and direct access to the related topics.

In addition, ArrayCalc will provide you with typical array configurations within the permitted load limits and will help you get familiar with the mechanical load conditions and limitations.

Further information on line array design can be found in "TI 385 d&b Line array design, ArrayCalc". The TI is supplied with the software or can be downloaded from the d&b website at www.dbaudio.com.

We also recommend you to attend the regularly hosted d&b Line array training seminars. Further information regarding the d&b seminars and a seminar schedule can also be found on the d&b website at www.dbaudio.com.

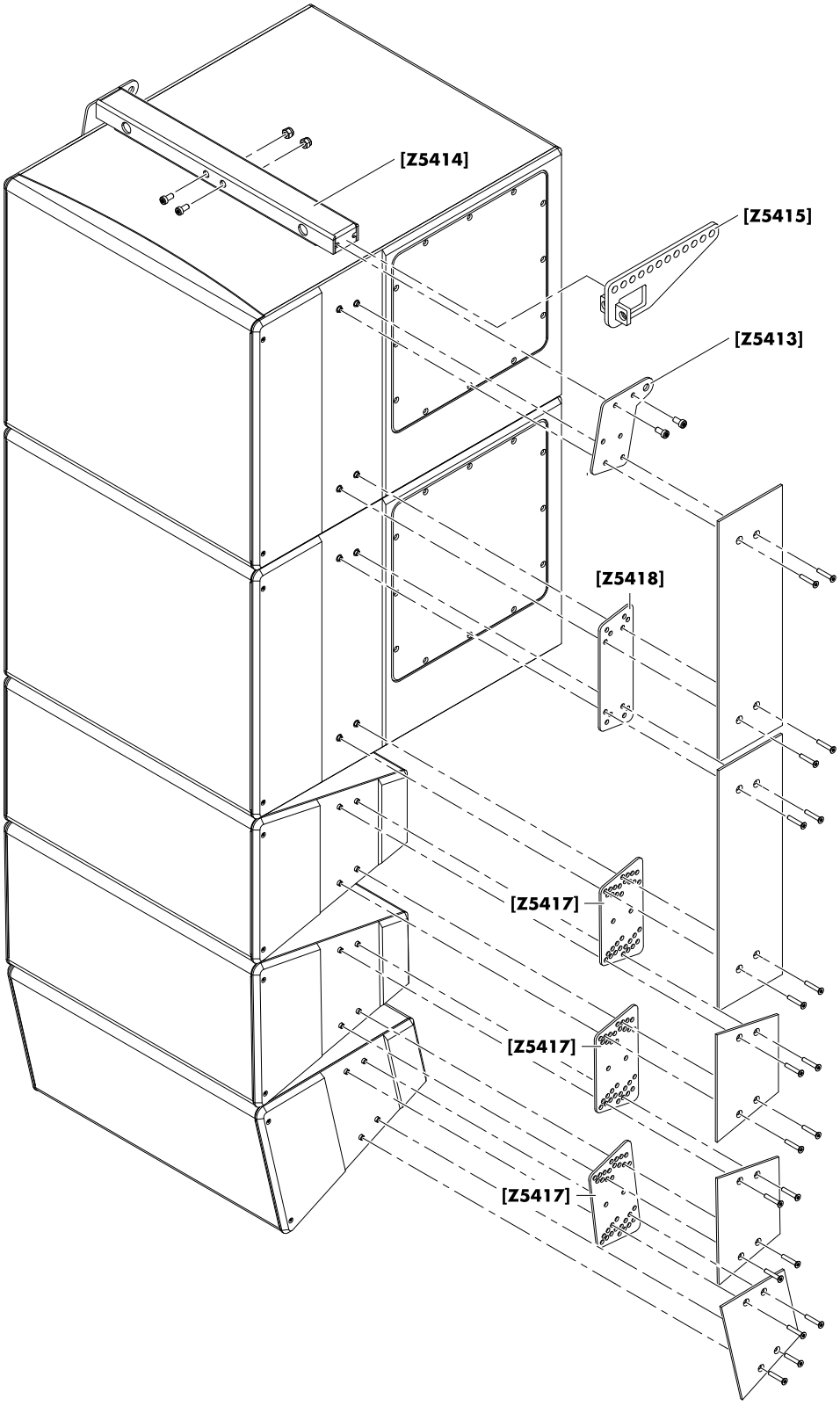
1.4 Operational safety

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 who is not involved in the setup.

Do not under any circumstances climb on the array



2.1 Tool box

- Hex head socket wrench (Torque wrench) #13 mm.
- Screw driver with torx bit TX30.
- Torx socket wrench (Torque wrench) with torx bit TX45.

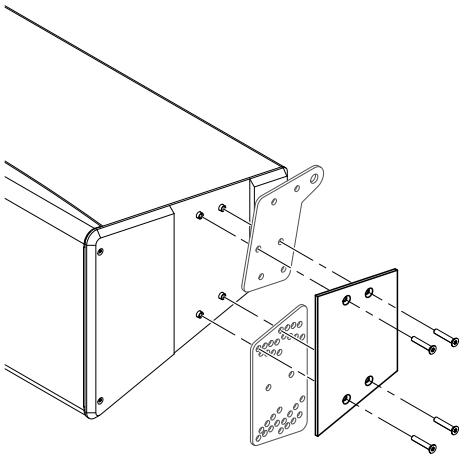
- Allen hex key 5 mm.
- Securing glue (such as Loctide®).

2.2 xA-Series rigging components

The xA-Series loudspeaker cabinets together with the xA-Series rigging components allow the setup of various array configurations, either flown or ground stacked.

The following overview provides a basic description of the intended use of each component.

2.2.1 xA-Series loudspeaker cabinets

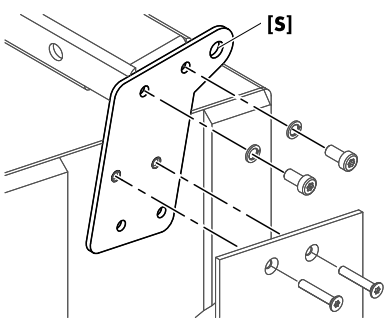


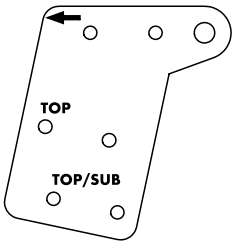
The cabinet side panels are equipped with integrated rigging points to accept the corresponding xA connector plates.

To attach the connector plates, the rigging points can easily be accessed by removing the cover plates.

Once the respective connector plates are attached to both sides of the cabinets, the cover plates are refitted to build a solid mechanical connection between the cabinets or to the flying bar.

2.2.2 Z5413 Flying bar connector plate xA





Intended use

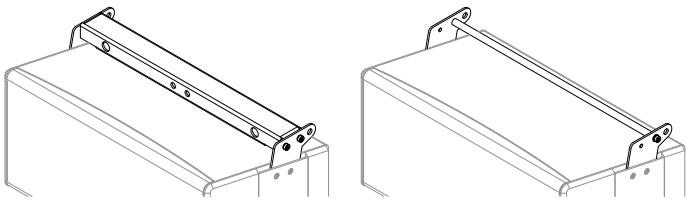
The Flying bar connector plate xA is used to connect the flying bar to the entire array. For this purpose, the connector plate is equipped with two pairs of holes.

The lower pair is used to connect the flying bar to SUB cabinets, if these are integrated at the top of the array.

To connect the flying bar to 10A (-D) or 10AL (-D) cabinets, either the lower or the upper pair can be used. Using the upper pair allows the flying bar to be connected as close as possible to the first cabinet of the entire array.

The connector plate is equipped with an additional suspension hole of 12.5 mm [0.5"] **[S]** to allow the suspension of the array (dual pickpoint operation) using a 1t Shackle (e.g. d&b E6507) instead of the flying bar adapter.

The connector plate can also be used to attach a second pickpoint at the end of the array to act as a pullback anchor device, if required.

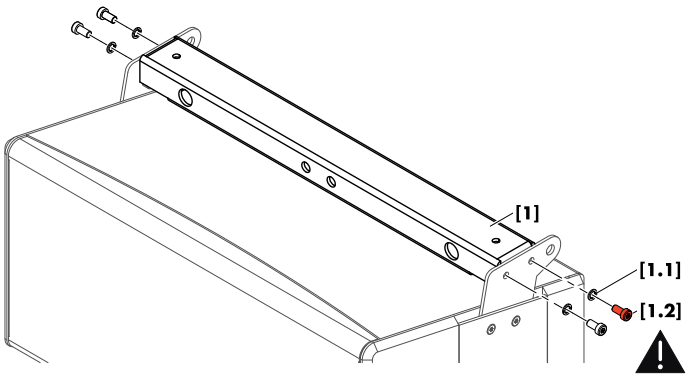


NOTICE!
Risk of damage to the rigging components.

When using the additional suspension hole of the connector plate to suspend and/or lash the array, the Z5414 Flying bar xA must be used as supporting device between the two connector plates.

Alternatively, the Z5419 Load bar xA can be used for this purpose. It is recommended to attach the load bar to the rear fixing hole of the connector plate as shown in the graphic opposite.

A detailed description of the various suspension options is given in ⇒ Chapter 3 "Suspension options" on page 15.



2.2.3 Z5414 Flying bar xA

Scope of supply

Qty.	d&b Code	Description
1	**Z5414**	d&b Flying bar xA **[1]**
Including:		
4		Spring washer **[1.1]**
4		Pan head bolt M8 x 18/12.9 **[1.2]** (torx #T45)

Intended use

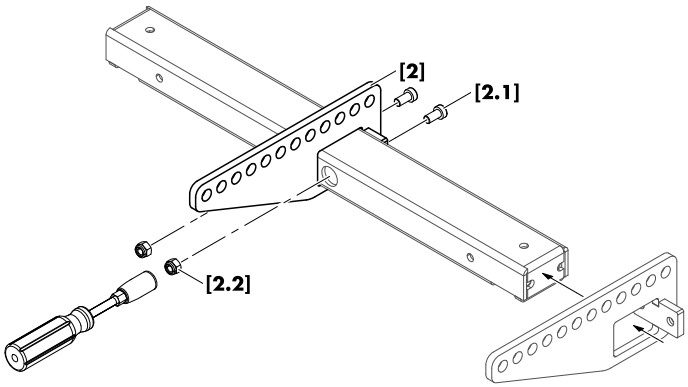
CAUTION!
Risk of damage to the rigging components.

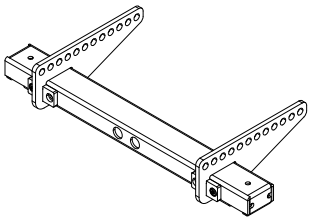
Only use the supplied and specified pan head bolts **[1.2]** with a quality **grade** of **12.9**.

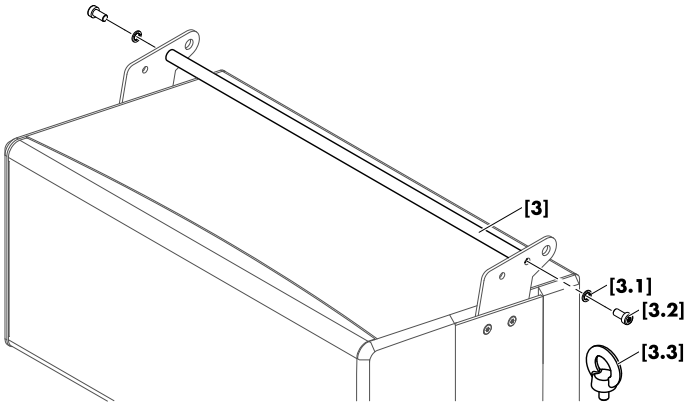
The Flying bar xA is used to suspend xA arrays with the following options:

- Either single or dual pickpoint operation in conjunction with the Z5415 Flying bar adapter xA. In this combination the flying bar can be attached in two directions to provide an extended hole grid using the flying bar adapter.
- Dual pickpoint operation in conjunction with the Z5413 Flying bar connector plate xA.
- It can also be used to attach a second pickpoint between adjacent cabinets in the lower part of the array or at the end of the array acting as a pullback anchor device, if required.
- The flying bar is also used as supporting device for horizontal array configurations in conjunction with the Q9031 M8 Safety eyebolt.

A detailed description of the various suspension options is given in ⇒ Chapter 3 "Suspension options" on page 15.







2.2.4 Z5415 Flying bar adapter xA
Scope of supply

Qty.	d&b Code	Description
1	**Z5415**	d&b Flying bar adapter xA **[2]**
Including:		
2		Pan head bolt M8 x 16, torx T45 **[2.1]**
2		Self-securing nut M8 **[2.2]**

Intended use

The Flying bar adapter xA is used in conjunction with the Z5414 Flying bar xA and allows single or dual pickpoint operation.

It is attached to the flying bar by simply sliding it onto the bar and fixing it at the center position using the pan head screws **[2.1]** and self-securing nuts **[2.2]**.

The flying bar also allows the attachment of two flying bar adapters at each end of the bar, which are fixed using one pan head screw **[2.1]** and self-securing nut **[2.2]** for each adapter.

A detailed description of the various suspension options is given in ⇒ Chapter 3 "Suspension options" on page 15.

2.2.5 Z5419 Load bar xA
Scope of supply

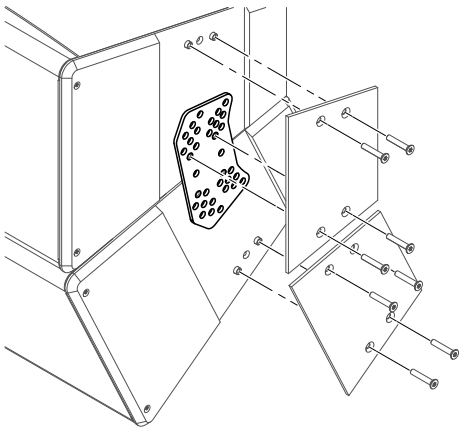
Qty.	d&b Code	Description
1	**Z5419**	d&b Load bar xA **[3]**
Including:		
2		Spring washer **[3.1]**
2		Pan head bolt M8 x 18, torx T45 **[3.2]**
2	Q9031	M8 Safety eyebolt **[3.3]**

Intended use

The Z5419 Load bar xA can be used in different ways:

- as supporting device instead of using the Z5414 Flying bar xA.
- to suspend vertical arrays in conjunction with the Z5420 Load eye bolt.
- as supporting device for horizontal array configurations in conjunction with the supplied Q9031 M8 Safety eyebolt.
- to attach a second pickpoint between adjacent cabinets in the lower part of the array or at the end of the array acting as a pullback anchor device together with the Z5420 Load eye bolt, if required.
- to attach a second pickpoint to fix the horizontal aiming of the array using the Q9031 M8 Safety eyebolt and appropriate steel wire ropes.

A detailed description of the various suspension options is given in ⇒ Chapter 3 "Suspension options" on page 15.

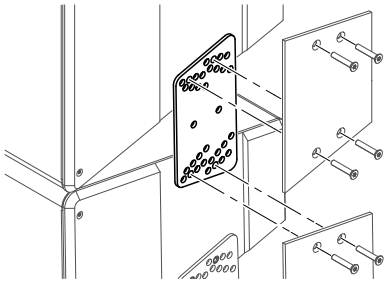


2.2.6 Z5416 Connector plate 10A

The connector plate is used to interconnect 10A (-D) cabinets and set them to different splay angles.

Splay angles between adjacent cabinets can be set in the range from 25° to 60° in 5° steps.

> **Note:** When setting up horizontal arrays consisting of 10A (-D) cabinets, set the minimum splay angle between adjacent cabinets to 30° to allow for the attachment of the Z5419 Load bar xA or Z5415 Flying bar adapter xA as supporting and suspension device.



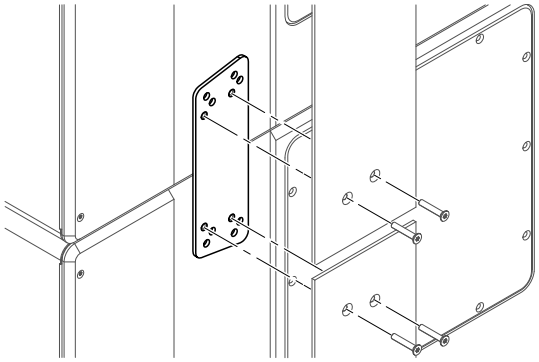
2.2.7 Z5417 Connector plate 10AL

Intended use

The connector plate is used to interconnect 10AL (-D) cabinets and set them to different splay angles.

Splay angles between adjacent cabinets can be set to 0°, 1°, 2°, 4°, 6°, 9°, 12° or 15°.

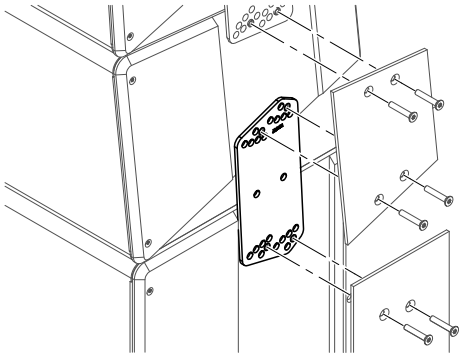
> **Note:** The connector plate can also be used in a mixed vertical array when adding 10A (-D) cabinets below a SUB cabinet.



2.2.8 Z5418 Connector plate xA-SUB

Intended use

The connector plate is used to interconnect xA-SUB cabinets and allows splay angle settings between adjacent SUB cabinets of 0°, 2.5° or 5°.



2.2.9 Z5421 Connector plate xA, neg. splay

Intended use

The connector plate is used in ground stack setups to apply a downtilt (negative splay) to the first TOP cabinet.

The connector plate can also be used in mixed vertical arrays to apply either an uptilt to the first TOP cabinet below a SUB cabinet or a downtilt to the first TOP cabinet above a SUB cabinet.

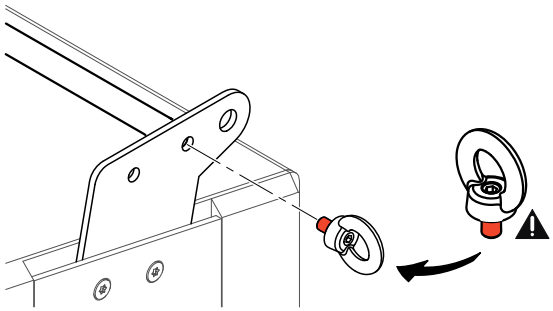
Angles can be set to 0°, 1°, 2°, 4°, 6° or 9°.

2.2.10 Z5420 Load eyebolt

Intended use

The Z5420 Load eye bolt is rotatably supported and is used to suspend the array in conjunction with the Z5413 Flying bar connector plate xA and the Z5419 Load bar xA.

It can also be used to attach a second pickpoint between adjacent cabinets in the lower part of the array or at the end of the array acting as a pullback anchor device together with the Z5419 Load bar xA, if required.

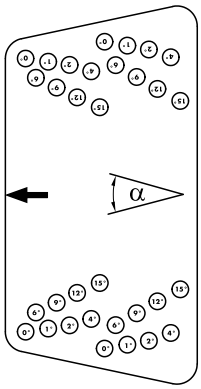


Assembly

CAUTION!
Potential risk of loosening of the fixing screw.

The integrated fixing screw of the eyebolt is rotatably supported and therefore cannot be secured against loosening using a spring or lock washer. To prevent the screw from loosening, an appropriate securing glue such as "Loctide®" must be used.

When attaching the eyebolt, handtighten the screw using a 5 mm Allen hex key. Do not use any extension tool as this might apply too much torque and cause an overload on the fixing screw.



2.3 Setting the splay angle

The procedure of setting the splay angles between adjacent cabinets (TOP or SUB cabinets) is the same for all connector plates of the xA-Series. For this purpose, the connector plates are equipped with a hole grid at each end.

To set the desired splay angle, use the respective pair of holes on the connector plate for the upper and for the lower cabinet.

A correspondingly labeled diagram of the connector plate's hole grids and possible angle settings is provided in the following section (⇒ Chapter 2.4 "Connector plate hole grids" on page 13.

The following graphics show example settings for each of the connector plates, indicating the holes to be used and the set splay angles.

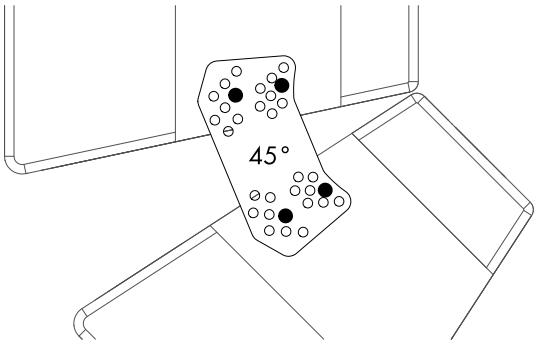


Fig. 1: Z5416 Connector plate 10A, angle setting

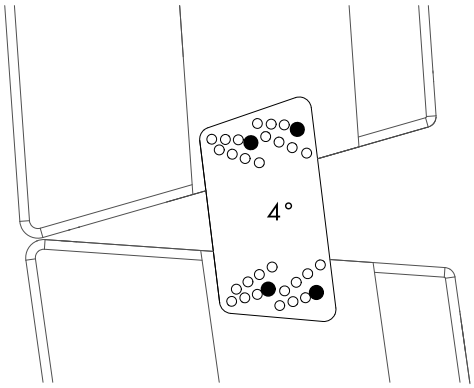


Fig. 2: Z5417 Connector plate 10AL, angle setting

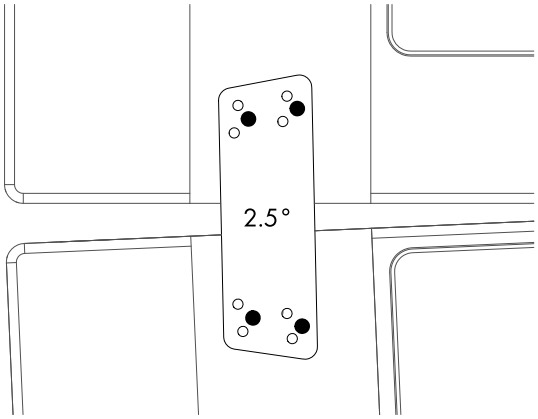


Fig. 3: Z5418 Connector plate xA-SUB, angle setting

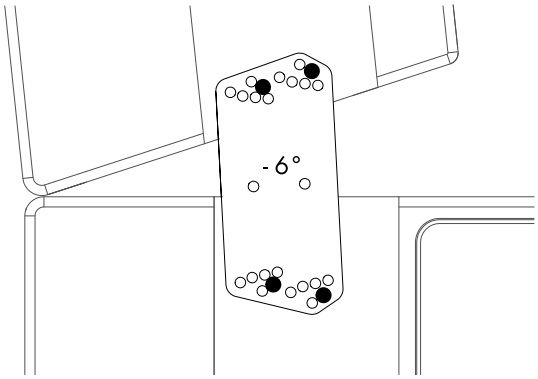


Fig. 4: Z5421 Connector plate xA, neg. splay, angle setting

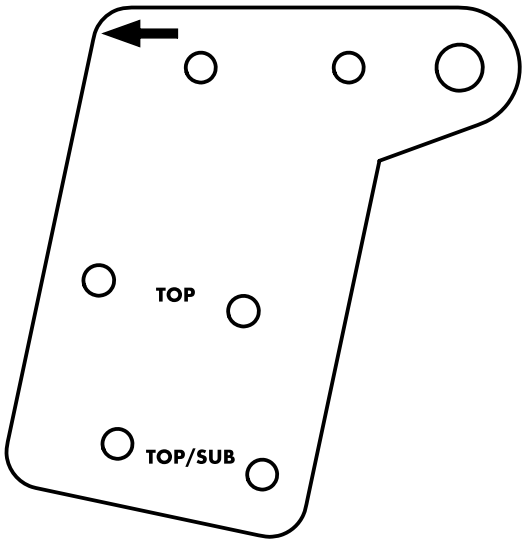


Fig. 5: Z5413 Flying bar connector plate xA

2.4 Connector plate hole grids

In the following, the hole grids of the xA connector plates are labeled with the corresponding angle settings.

Note:

- The graphics are not to scale.
- The arrow indicates the mounting direction of the connector plate toward the front of the respective cabinet.

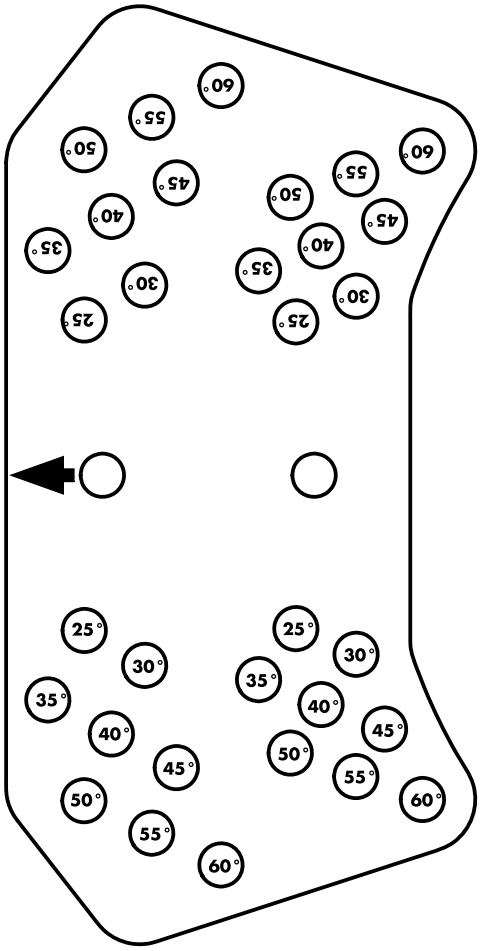


Fig. 6: Z5416 Connector plate 10A

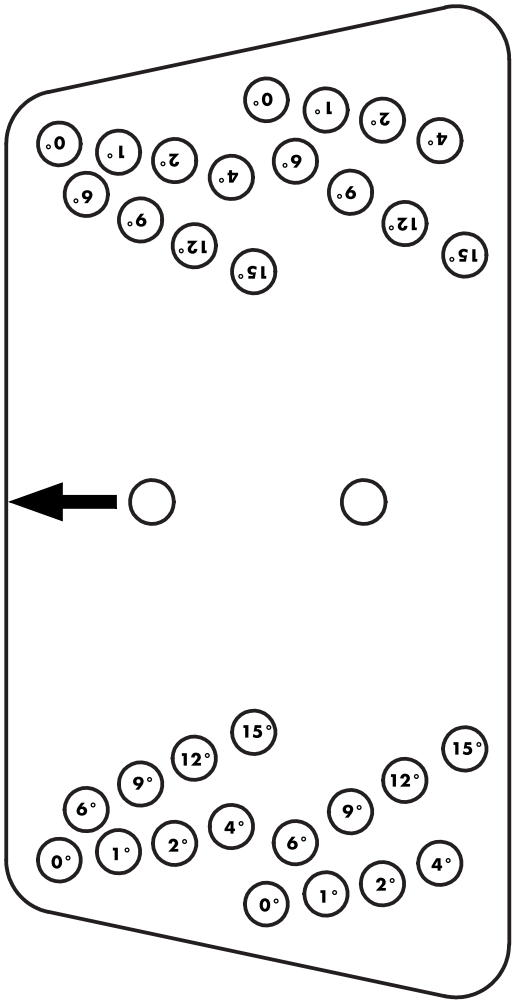


Fig. 7: Z5417 Connector plate 10AL

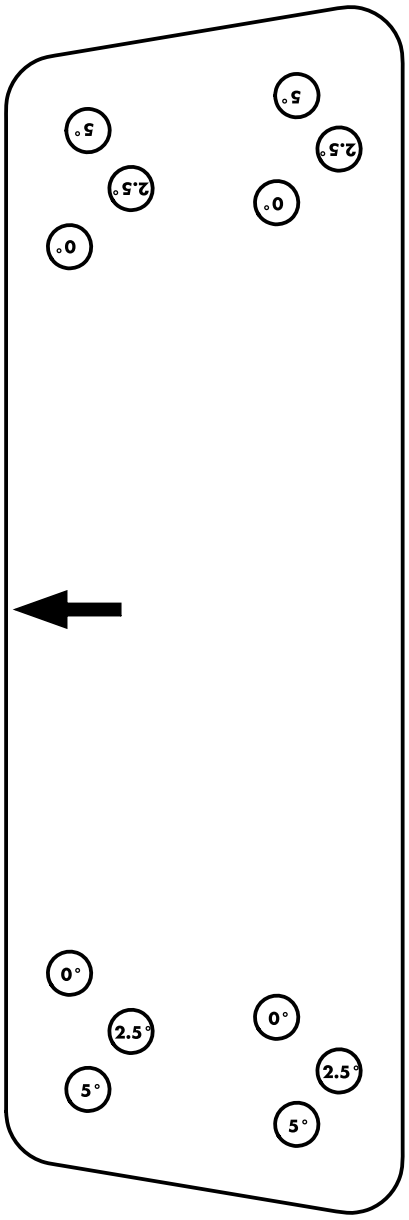


Fig. 8: Z5418 Connector plate xA-SUB

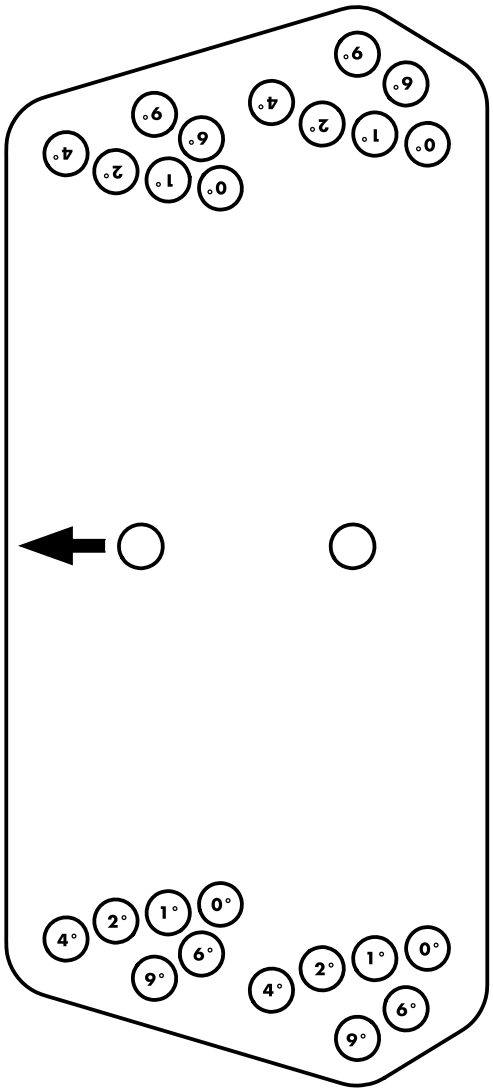


Fig. 9: Z5421 Connector plate xA, neg. splay

The xA-Series rigging system provides several options to suspend xA-Series arrays depending on the various requirements on-site.

WARNING!

The array must be suspended using appropriate steel wires or hoisting chains or using the d&b Z5147 Rota clamp (single pickpoint operation). Any other type of suspension of the array is not allowed.

The working load limits of the steel wires or chain hoists and their suspension points must be high enough to carry the total system weight.

Each of the suspension points must be able to carry the total system weight.

3.1 Vertical arrays

Vertical xA-Series arrays may consist of 10AL (-D) or 10A (-D) cabinets in combination with 18A or 27A subwoofers. This section describes the suspension options for 10AL (-D) line arrays planned using ArrayCalc.

3.1.1 Z5415 Flying bar adapter xA

The array is suspended using the Z5414 Flying bar xA together with the Z5415 Flying bar adapter xA. Single or dual pickpoint operation is possible.

On the upper edge of the flying bar adapter twelve 12.5 mm [0.5"] holes are provided to accept:

- 1t Shackle (e.g. d&b E6507)
- d&b Z5147 Rota clamp
  ⇒ single pickpoint operation to allow the attachment to overhead bars or truss with a tube diameter of up to 50 mm (2").

The adapter can be aligned in two directions (rearward **[R]** or forward **[F]**) by simply turning the flying bar through 180°.

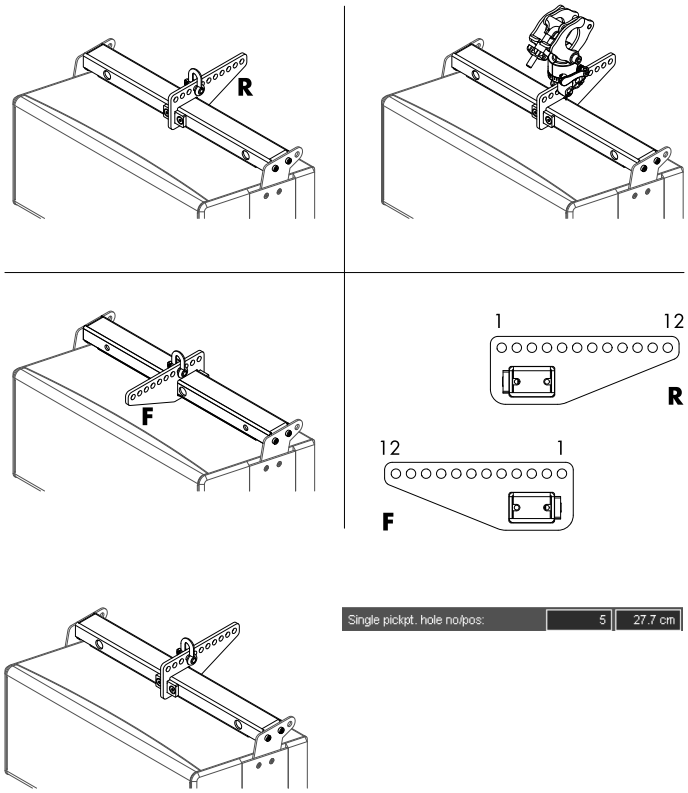
The corresponding hole positions for either single or dual pickpoint operation are calculated using ArrayCalc.

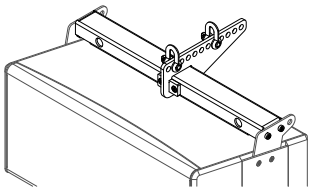
> **Note:** The calculated hole positions also apply when two flying bar adapters are attached to the flying bar.

Single pickpoint operation

In single pickpoint operation, the position of the chosen hole defines the overall vertical aiming of the entire array.

Within ArrayCalc the orientation of the adapter changes according to the center of gravity of the array. If both orientations are possible, the rearward orientation **[R]** is chosen. The direction in which the holes are counted changes correspondingly.





Dual pickpoint operation

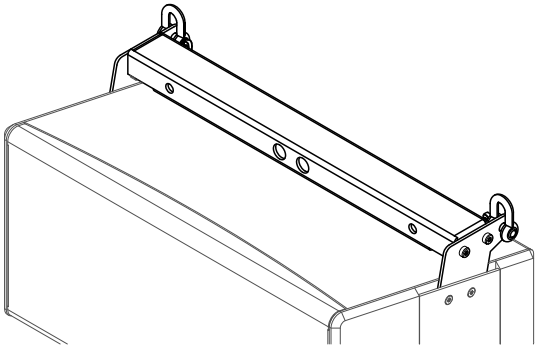
With dual pickpoint operation the overall vertical aiming of the entire array is set by trimming the hoist motors after the array has been fully assembled and lifted to its operating position.

3.1.2 Additional suspension options

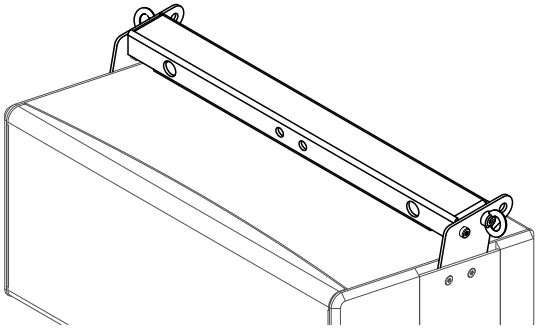
In addition to the standard suspension option using the Flying bar xA together with the Flying bar adapter xA, vertical arrays can be suspended using one of the following options.

> **Note:** All these options require a second pickpoint acting as a pullback anchor device to set the overall vertical aiming of the entire array. This second pickpoint is attached in the lower part of the array between adjacent cabinets or at the end of the entire array. Refer to .

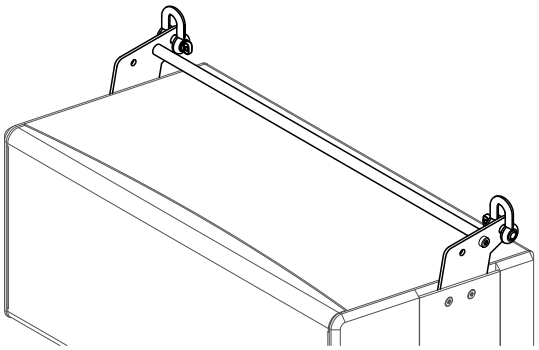
Option 1: Suspension of the array using the Z5414 Flying bar xA together with 2 x 1t shackle, e.g. d&b E6507.



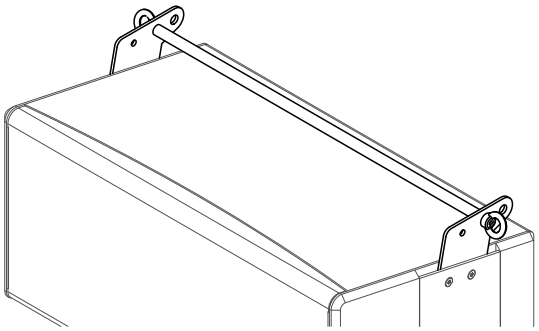
Option 2: Suspension of the array using the Z5419 Load bar xA together with 2 x Z5420 Load eye bolt.



Option 3: Suspension of the array using the Z5419 Load bar xA together with 2 x 1t shackle, e.g. d&b E6507.



Option 4: Suspension of the array using the Z5419 Load bar xA together with 2 x Z5420 Load eye bolt.



4.1 xA-Series array configurations

xA-Series arrays can be assembled in the following ways.

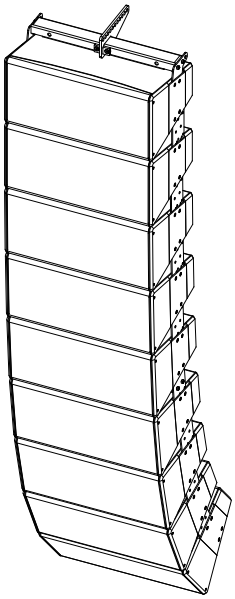


Fig. 10: 10AL line array 9-deep

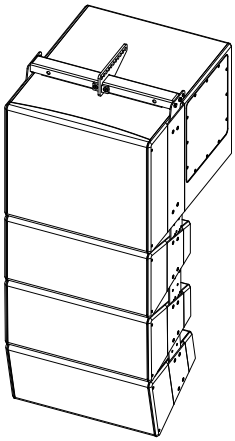


Fig. 11: xA-Series mixed array, type 1

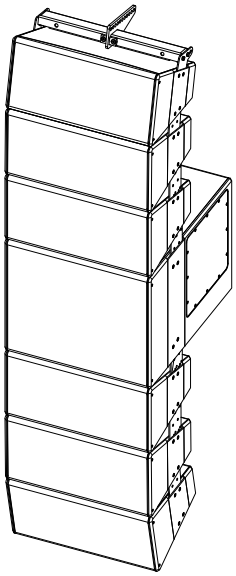


Fig. 12: xA-Series mixed array, type 2

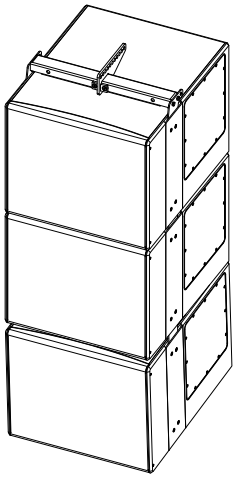


Fig. 13: xA-SUB column

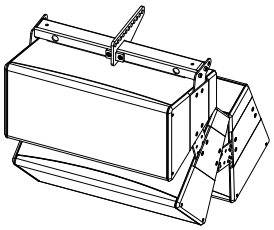


Fig. 14: 10A array 3-deep

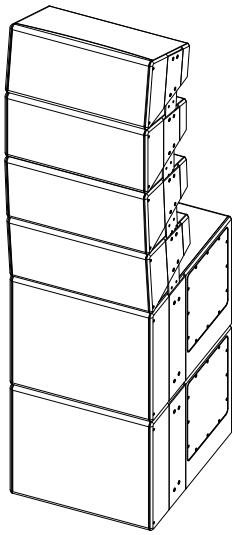


Fig. 15: xA-Series ground stack

4.2 Assembly preparations

xA-Series arrays are mainly assembled horizontally on the ground. Assembly may be carried out by a single person. However, as during assembly the array needs to be rotated through 180° and depending on the size of the array, a second person should assist in the work.

4.2.1 Tools required

- Screw driver with torx bit TX30.
- Torx socket wrench (Torque wrench) with torx bit TX45.
- 13 mm hex head socket wrench.

4.2.2 Assembly area

To carry out the assembly on the ground, make sure:

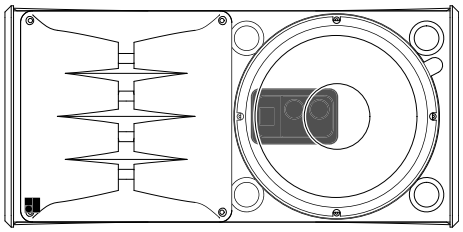
- the surface is flat and clean.
- there is enough space for the overall dimensions of the array.
- to provide an additional protective underlay for assembly to prevent the cabinets from scratching or other damage during assembly.

4.2.3 Orientation of the HF section

Before starting to assemble the array, you must define the orientation of the HF section of the TOP cabinets.

The xA-Series TOP cabinets have a biaxial design. In default orientation, the HF waveguide is located to the left, viewed from the audience side. To enable a symmetrical setup for stereo systems, the cabinet orientation may be reversed.

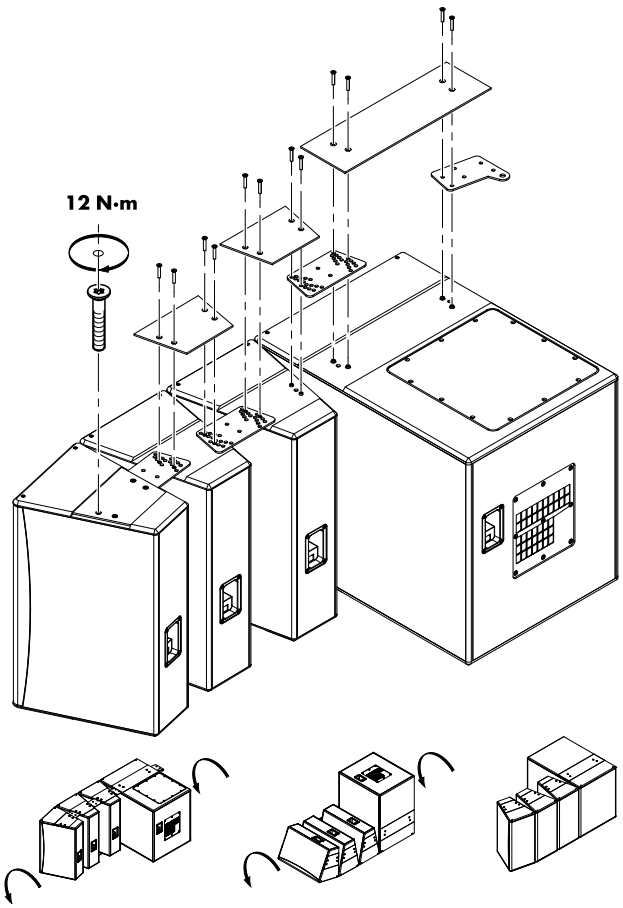
The cabinet's connector plate at the rear may serve to indicate the orientation of the HF section, as shown in the graphic opposite.

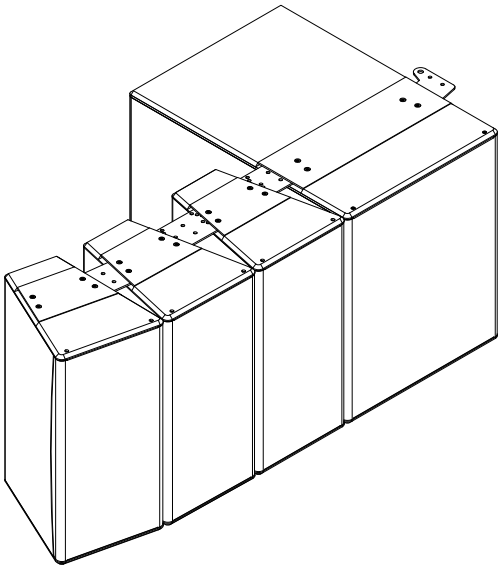


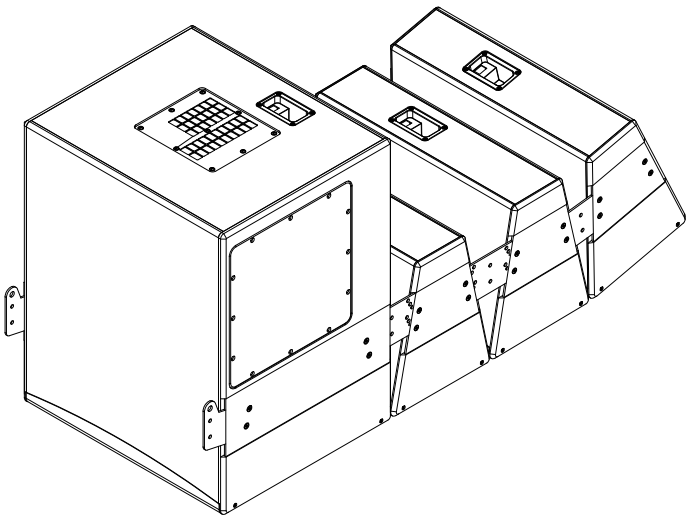
4.3 Vertical arrays

4.3.1 Horizontal assembly on the ground

This section describes the assembly of a mixed 10AL line array. The same procedure applies to the assembly of 10A arrays. SUB columns may, most appropriately, be assembled vertically.







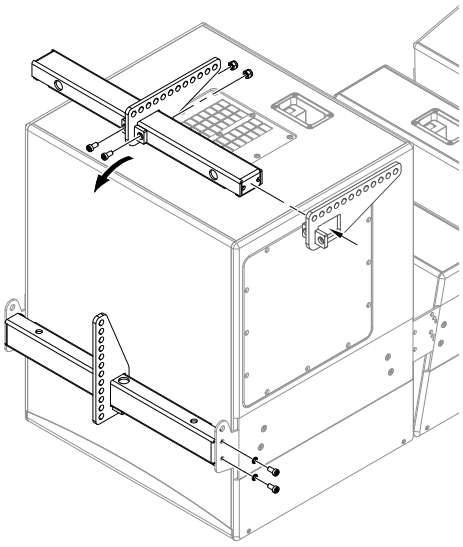
4.3.1.1 Assembly procedure

Joining the cabinets together

The procedure applies to both sides of the cabinets.

1. Place the cabinets with their side panels next to each other in the right order and with the right orientation of the HF sections.
2. Remove the cover panels.
3. Attach the respective connector plates and set the desired splay angles.
4. Refit the cover panels and tighten the screws to a torque of 12 N·m.
5. Recheck your work.
6. Carefully turn the array through 180°.
   ⇒ Depending on the size (length) of the array, a second person should assist you.
7. Complete the assembly by proceeding in the same manner.
8. Carefully turn the array over onto the front of the cabinets.
9. Recheck all your work:
   - Check the splay angles.
   - Ensure all screws are properly tightened.

   ↳ The array is now ready for the attachment of the desired suspension device.



Attaching the suspension device

Depending on the suspension option chosen, attach the suspension device correspondingly.

NOTICE!

Observe all safety instructions applicable for the respective suspension option given in ⇒ Chapter 3 "Suspension options" on page 15.

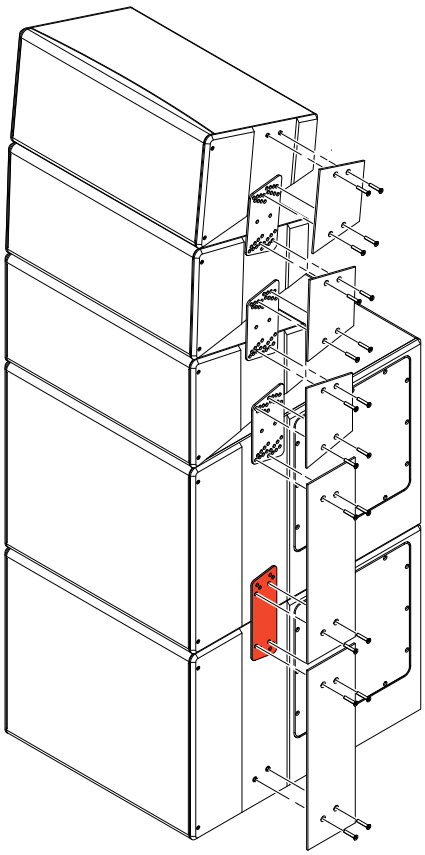
Before hoisting the array to its operating position, recheck all your work. In particular, make sure that all screws are properly tightened.

Hoisting the array

When all the mechanical adjustments, system checks and safety checks have been performed, the array can be hoisted up to its operating position.

Depending on the total system weight and overall size (length) of the array, adequate precautions must be taken during the hoisting procedure. For this purpose, refer to ⇒ Chapter 5 "Hoisting the array" on page 21.

4.4 Ground stacks



WARNING!
Potential risk of personal injury and/or damage to material!

Always secure ground stacked setups against movement and possible tipping over.

When xA-Series subwoofers 18A- and 27A-SUB are stacked, the cabinets must be interconnected on both sides using the Z5418 Connector plate xA-SUB.

It is also recommended to place the entire ground stack onto an appropriate additional non-slip mat to prevent the ground stack from moving.

Assembly

When assembling mixed ground stacks, the same requirements regarding the assembling area, orientation of the HF section and safety precautions apply as described in ⇒ Chapter 4.2 "Assembly preparations" on page 18.

The assembly of mixed ground stacks is carried out in the same manner as described in ⇒ Chapter 4.3.1 "Horizontal assembly on the ground" on page 18.

SUB stacks may be assembled in vertical order.

Due to the various array configurations and on-site conditions an applicable hoisting procedure is not possible in general. Depending on the array configuration, system weight and on-site conditions the persons hoisting the array must review the on-site situation and decide an applicable hoisting procedure respectively.

In addition observe the following safety guidelines.

5.1 Safety guidelines

CAUTION!
Unpredictable dynamic forces and swing.

When hoisting the array, unpredictable dynamic forces as well as swinging of the array must be taken into account. This may lead to personal injury and/or damage to the rigging components and loudspeaker cabinets.

Ensure that there is nobody directly underneath or in the vicinity of the load who is not involved in the setup.

xA-Series arrays with a total system weight of up to 140 kg (309 lb) may be lifted directly from their horizontal assembly position (i.e. the arrays were assembled horizontally on the ground).

- Before starting to hoist the array, make sure to prevent the cabinets from scratching or other possible damage.
- Ensure the array's pickpoint is in line with the rigging point and hoisting devices.
- When changing over from horizontal to vertical position, observe the following (depending on the size (length) and weight of the array):
  - Two persons, one on each side of the array, should support you to prevent unpredictable lateral tensile forces from acting on the array.
  - It is advisable that all persons involved in hoisting the array are in close proximity so that you will be able to give instructions, if necessary.
- When the array is about to leave the ground, make sure there is enough support to prevent the array from unpredictable movement and swinging.
- During the further hoisting procedure raise the array slowly and evenly so that it does not swing or move from side to side.

6.1 EU conformity (CE symbol)

This declaration applies to:

d&b xA-Series loudspeaker cabinets

- Z1555/56, 10A/10A-D
- Z1557/58, 10AL/10AL-D
- Z1571, 18A-SUB
- Z1581, 27A-SUB

d&b xA-Series rigging components

- Z5413 Flying bar connector plate xA
- Z5414 Flying bar xA
- Z5415 Flying bar adapter xA
- Z5416 Connector plate 10A
- Z5417 Connector plate 10AL
- Z5418 Connector plate xA-SUB
- Z5419 Load bar xA
- Z5420 Load eye bolt
- Z5421 Connector plate xA, neg. splay

manufactured by d&b audiotechnik GmbH & Co. KG.

All product variants are included, provided they correspond to the original technical version and have not been subject to any later design or electromechanical modifications.

We herewith declare that said products are in conformity with the provisions of the respective EC directives including all applicable amendments.

A detailed declaration is available on request and can be ordered from d&b or downloaded from the d&b website at www.dbaudio.com.

6.2 Disposal

When out of use the rigging components must be disposed of in accordance with the national environmental regulations.

Ensure that damaged rigging components are disposed of in a way that they cannot be used again.

www.dbaudio.com

d&b audiotechnik