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KSLi
Rigging manual 1.1 en

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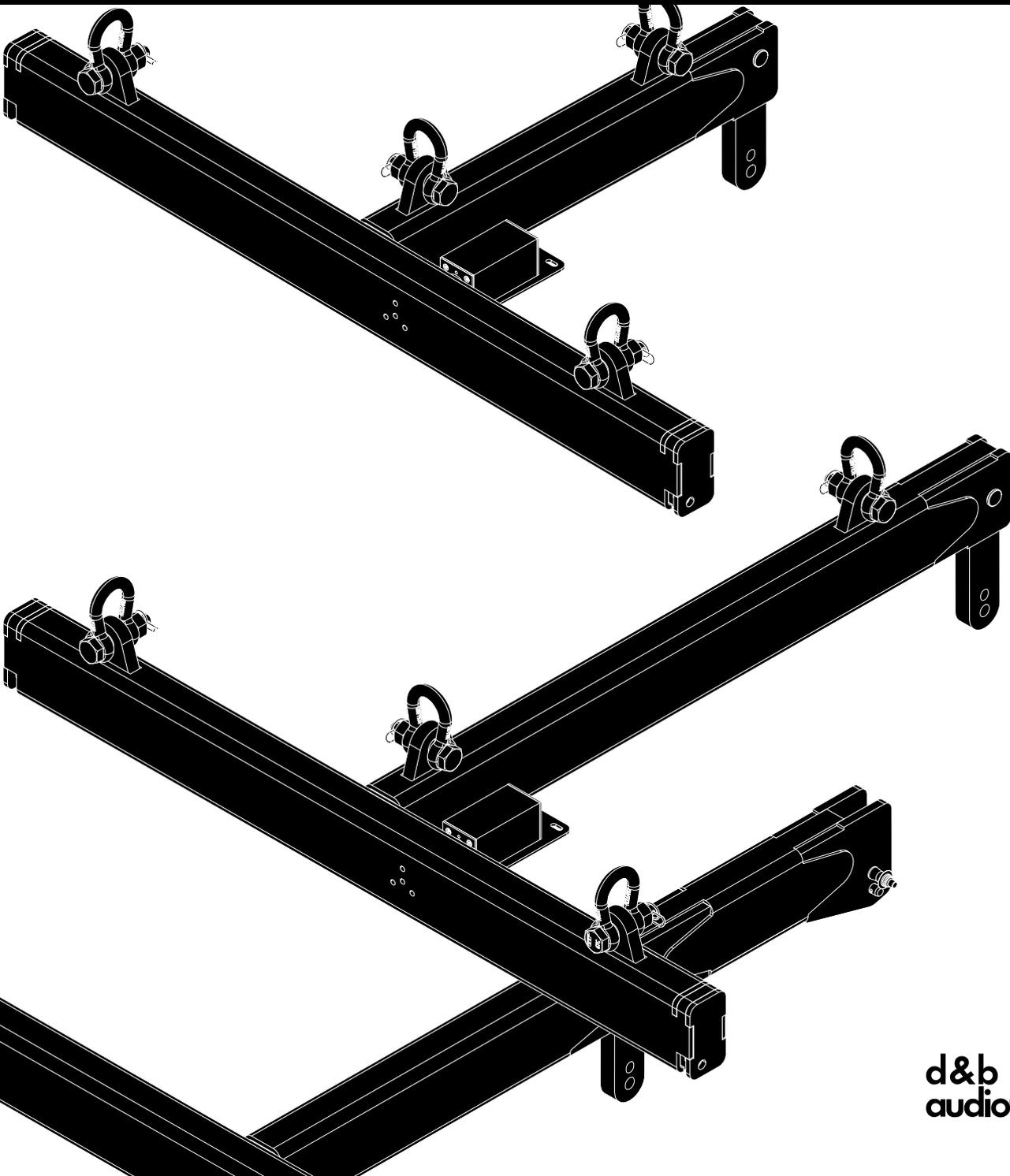
General information

KSLi Rigging manual

Version: 1.1 en, 07/2020, D2750.EN .01

Keep this document with the product or in a safe place so that it is available for future reference.
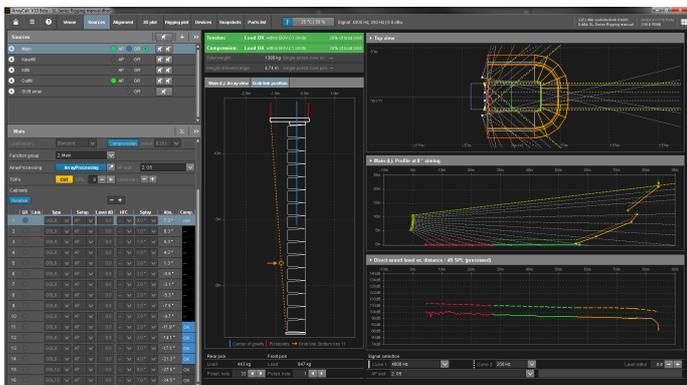
We recommend you to regularly check the d&b website for the latest version of this document.

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

If you supply d&b products, please draw the attention of your customers to this document. Enclose the relevant documents with the systems. If you require additional documents for this purpose, you can order them from d&b.

Contents

1.1 Intended use

The d&b KSLi rigging components must only be used in conjunction with d&b KSLi loudspeakers, as described in this manual.

1.2 d&b ArrayCalc

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 «Help» 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.

d&b ArrayCalc

d&b TI 385

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.

d&b Seminar

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.

d&b Video tutorials

In addition, d&b provides related video tutorials which can also be found on the d&b website at www.dbaudio.com or www.sl-series.com.

1.3 General safety

- 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 there is any doubt as to the proper functioning and safety of the items, these must be withdrawn from use immediately.

Please also refer to ⇒ Chapter 5 "Care and maintenance" on page 29.

System components and weights
Loudspeaker

Z0790/Z0791, KSLi8/KSLi12 cabinets ....57 kg (126 lb)

Z0795 KSLi-SUB ....82 kg (181 lb)

Rigging components

Z5743 KSLi-TOP Mounting frame ....23 kg (50.7 lb)

Z5744 KSLi-SUB Mounting frame ....25 kg (55.1 lb)

Z5745 KSLi-SUB Mounting adapter ....25 kg (55.1 lb)

1.4 System components and weights/Load capacity

Load capacity

NOTICE!

Z5743 KSLi-TOP Mounting frame
The Z5743 KSLi-TOP Mounting frame is designed to support a total system weight of 650 kg (1433 lb) - SWL including all rigging components.
This allows the suspension of a maximum of 10 x KSLi-TOP cabinets.

Z5744 KSLi-SUB Mounting frame
The Z5744 KSLi-SUB Mounting frame is designed to support a total system weight of 550 kg (1212.5 lb) - SWL including all rigging components.
This allows the suspension of a maximum of 6 x KSLi-SUB cabinets. For mixed array setups consisting of a maximum of 6 x KSLi-TOP cabinets below 2 x KSLi-SUB cabinets, the frame supports a total system weight of 600 kg (1322.8 lb) - SWL including all rigging components.

Z5745 KSLi-SUB Mounting adapter
The Z5745 KSLi-SUB Mounting adapter is designed to support a total system weight of 600 kg (1322.8 lb) - SWL including all rigging components.
Together with the Z5744 KSLi-SUB Mounting frame, this allows the suspension of mixed array setups consisting of a maximum of 6 x KSLi-TOP cabinets below 2 x KSLi-SUB cabinets.

1.4.1 Wind loads

⚠ **WARNING!**
Potential risk of personal injury and material damage!

When setting up fixed outdoor installations, unpredictable wind loads must be taken into account.

- For this reason, arrays must not be suspended using hoisting chains or steel wire ropes.
- The arrays must be firmly attached to the onsite roof construction.

1.5 Secondary safety

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

- The secondary safety suspension must be independent of the primary suspension points and capable of carrying the total system weight.
- The additional safety device must be mounted so that, if the primary suspension fails, the array is caught by the safety device without dropping or swinging.


1.6 Operational safety

- The assembly should always be carried out by two persons.
- During assembly, pay attention to the possible risk of crushing. Wear suitable protective clothing.
- Observe all instructions given on the respective instruction labels of the rigging components, such as load beams, flying and compression frames, touring carts, and loudspeaker cabinets.
- In connection with the d&b Z5711 ArraySight sender unit (laser inclinometer), take precautions to prevent anyone from looking directly into the laser beam, and wear appropriate eye protection.
- Be aware that any object or tool left on the top of the array during setup may fall when the array is operated. Always check that no tools or other objects are left on the array before final hoisting.
- 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.

# 2 Rigging concept and components

2.1 Mounting frames and adapter

The d&b KSLi cabinets are supplemented by two dedicated mounting frames (Z5743 KSLi-TOP Mounting frame and Z5744 KSLi-SUB Mounting frame) and one mounting adapter (Z5745 KSLi-SUB Mounting adapter).
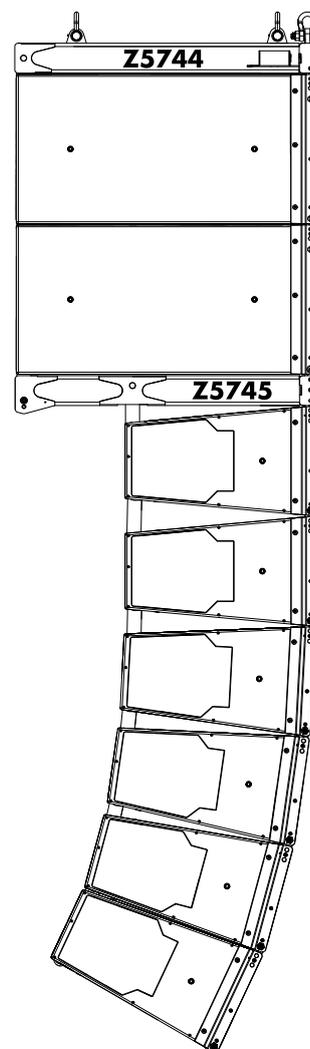
These components allow setting up the following array configurations (maximum number of cabinets):
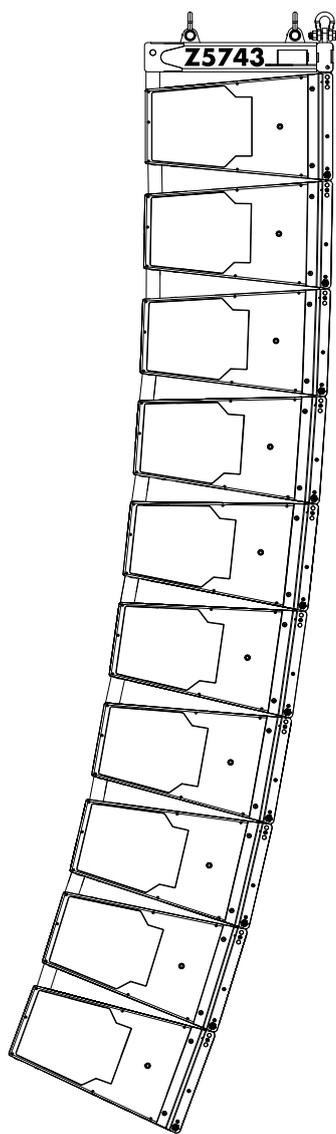
KSLi-TOP array, 10-deep with:
Z5743 KSLi-TOP Mounting frame
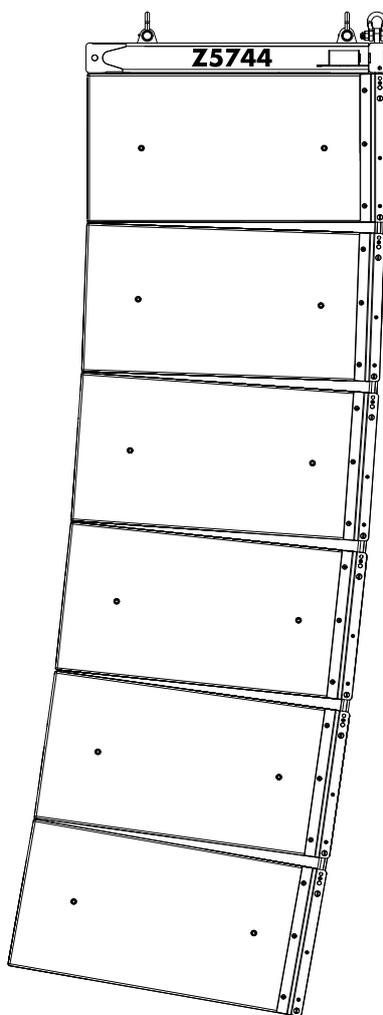
KSLi-SUB column, 6-deep, 2° splay with:
Z5744 KSLi-SUB Mounting frame

Mixed array with:
Z5744 KSLi-SUB Mounting frame
Z5745 KSLi-SUB Mounting adapter
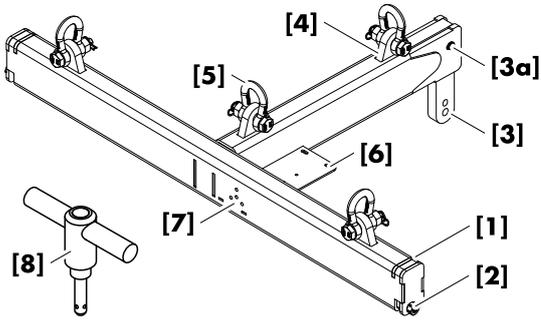
2.1.1 Z5743 KSLi-TOP Mounting frame

Intended use
The Z5743 KSLi-TOP Mounting frame is designed to support a total system weight of 650 kg (1433 lb) - SWL including all rigging components.
This allows the suspension of a maximum of 10 x KSLi-TOP cabinets.
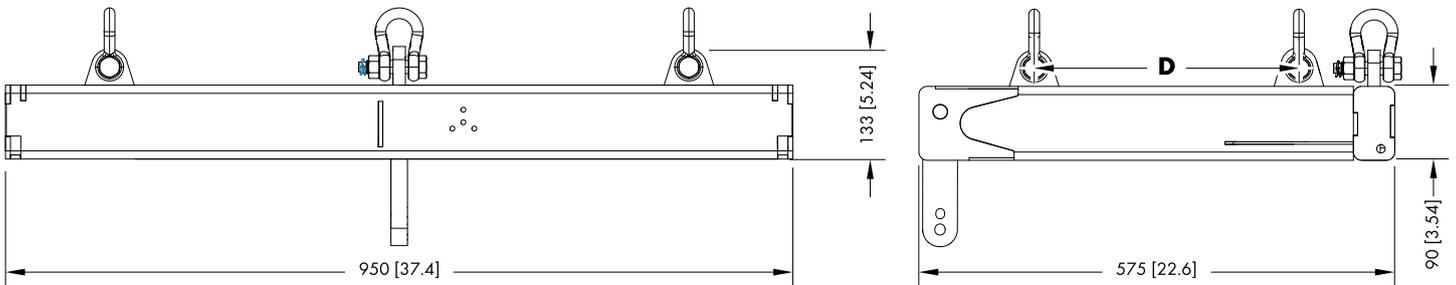
Scope of supply
Please verify the shipment for completeness and proper condition of the items.

The Z5743 KSLi-TOP Mounting frame is equipped and supplied with the following rigging components:

Pos.	Component	Description
[1]	Z5743	KSLi-TOP Mounting frame.
[2]	Locking pin	Locking pin (type D, 10 x 35mm).
[3]	Rear link	Rear link including fixing bolt **[3a]**.
[4]	Fixing points	The Mounting frame is equipped with four fixing points for suspension using shackles.
[5]	Shackle	Four 3.25 t shackles are provided for hoisting purposes.
[6]	Mounting plate	The Mounting plate is used to attach the d&b Z5711 ArraySight sender unit.
[7]		Four dedicated holes are provided at the front of the frame. The center hole serves as the exit for the laser beam, while the three surrounding holes allow for the adjustment of the ArraySight sender unit, if necessary.
[8]	Lifting pin	Four lifting pins (T-handles) are provided to serve as a temporary lifting aid for the cabinets during setup.

Z5743 KSLi-TOP Mounting frame dimensions in mm [inch]

Note:
For ArrayCalc purposes, the distance (**D**) between the fixing points on the center bar of the frame corresponds to the hole distance between hole position 4 (front) and 12 (rear) of the KSL Load beam.

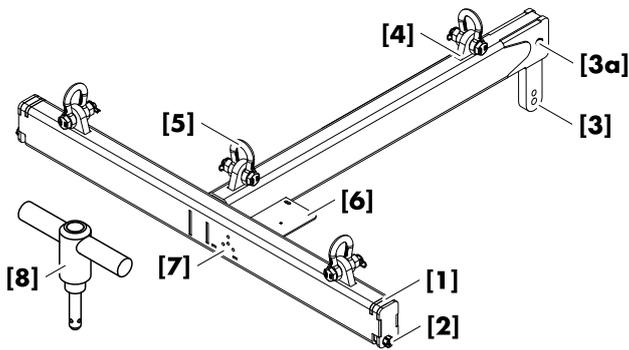### 2.1.2 Z5744 KSLi-SUB Mounting frame

Intended use

The Z5744 KSLi-SUB Mounting frame is designed to support a total system weight of 550 kg (1212.5 lb) - SWL including all rigging components.

This allows the suspension of a maximum of 6 x KSLi-SUB cabinets. For mixed array setups consisting of a maximum of 6 x KSLi-TOP cabinets below 2 x KSLi-SUB cabinets, the frame supports a total system weight of 600 kg (1322.8 lb) - SWL including all rigging components.
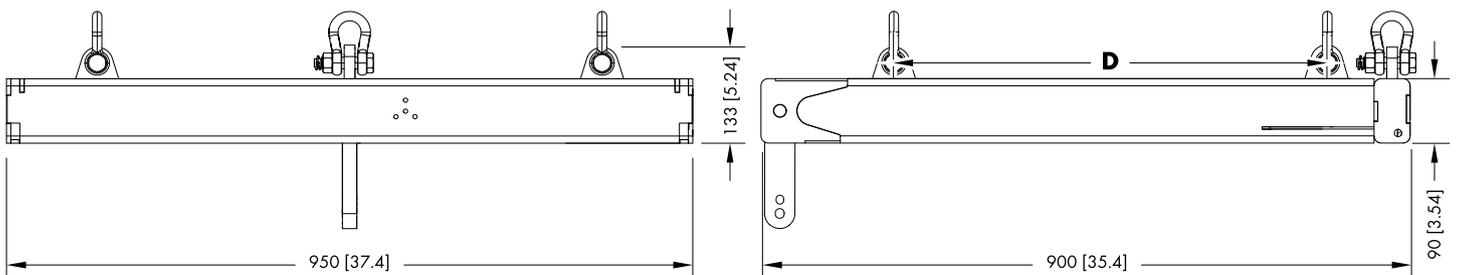
Scope of supply

Please verify the shipment for completeness and proper condition of the items.

The Z5744 KSLi-SUB Mounting frame is equipped and supplied with the following rigging components:

Pos.	Component	Description
[1]	Z5744	KSLi-SUB Mounting frame.
[2]	Locking pin	Locking pin (type D, 10 x 35mm).
[3]	Rear link	Rear link including fixing bolt **[3a]**.
[4]	Fixing points	The Mounting frame is equipped with four fixing points for suspension using shackles.
[5]	Shackle	Four 3.25 t shackles are provided for hoisting purposes.
[6]	Mounting plate	The Mounting plate is used to attach the d&b Z5711 ArraySight sender unit.
[7]		Four dedicated holes are provided at the front of the frame. The center hole serves as the exit for the laser beam, while the three surrounding holes allow for the adjustment of the ArraySight sender unit, if necessary.
[8]	Lifting pin	Four lifting pins (T-handles) are provided to serve as a temporary lifting aid for the cabinets during setup.

**Z5744 KSLi-SUB Mounting frame dimensions in mm [inch]**

Note:

For ArrayCalc purposes, the distance (**D**) between the fixing points on the center bar of the frame corresponds to the hole distance between hole position 4 (front) and 19 (rear) of the KSL Load beam.
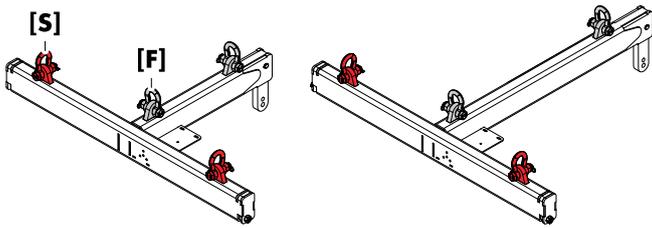
2.1.3 Suspension of the Mounting frames

The center bar of the Mounting frames is equipped with two fixing points **[F]** for suspension using the enclosed 3.25 t shackles.

The front tie bar of the Mounting frames is equipped with two safety points **[S]** for the attachment of a secondary safety device using the enclosed 3.25 t shackles.
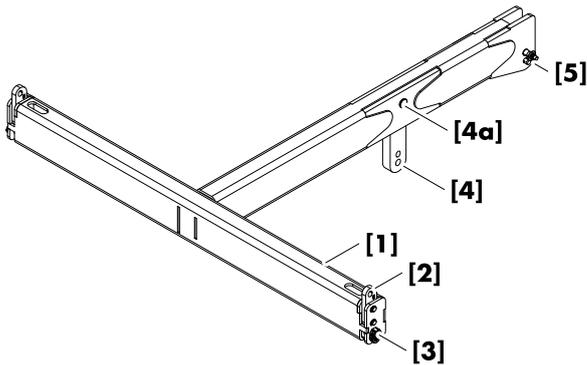
2.1.4 Z5745 KSLi-SUB Mounting adapter

Intended use

The Z5745 KSLi-SUB Mounting adapter is designed to support a total system weight of 600 kg (1322.8 lb) - SWL including all rigging components.
This allows the suspension of mixed array setups consisting of a maximum of 6 x KSLi-TOP cabinets below 2 x KSLi-SUB cabinets.

Scope of supply

Please verify the shipment for completeness and proper condition of the items.

The Z5745 KSLi-SUB Mounting adapter is equipped and supplied with the following rigging components:

| Pos.	Component	Description
[1]	Z5745	KSLi-SUB Mounting adapter.
[2]	Front links	The front tie bar of the adapter is equipped with fixed Front links.
[3]	Locking pin	Locking pin (type D, 10 x 35mm).
[4]	Rear link	Rear link including fixing bolt **[4a]**. In combination with the Front links of the KSLi-TOP cabinets, the Rear link of the adapter is used to attach the first cabinet below KSLi-SUB cabinets.
[5]	Rear link slot	The Rear link slot of the center bar is equipped with two Locking pins, type B, 10 x 45 mm, to accept the Rear link of the KSLi-SUB.
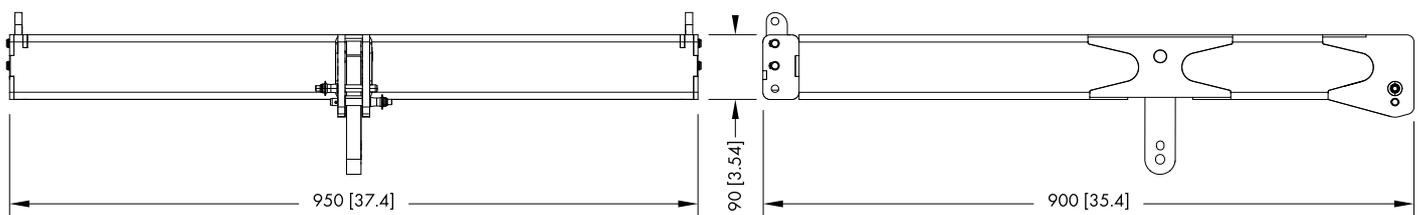
Z5745 KSLi-SUB Mounting adapter dimensions in mm [inch]
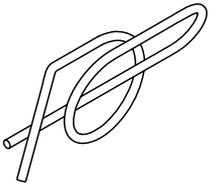
Ring cotter
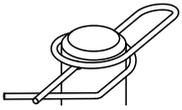
Ring cotter locked
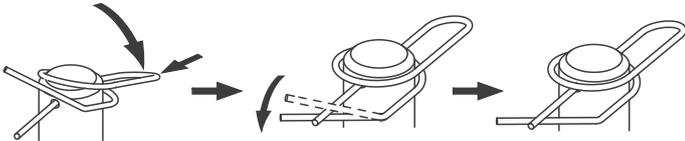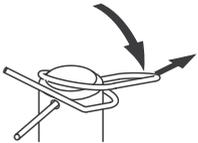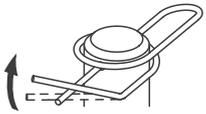
2.2 Ring cotters

In connection with the KSLi rigging system, ring cotters are used for the following items to prevent the respective item from slackening and/or loosening:

- Fixing bolts of the 3.25 t shackles attached to the respective fixing points of the KSLi Mounting frames.

Function of the ring cotter

By default, the ring cotters are "locked" to prevent them from loosening.

For modification reasons such as altering the position of the frame's Splay link or exchanging a shackle, it may be necessary to temporarily remove the cotter and reattach it afterwards.

For this purpose proceed as follows:

1. **Unlock**
   Unlock the ring cotter by pushing up the front wire loop over the straight wire shaft.

2. **Release and remove**
   Push down the rear wire loop until the ring cotter snaps over the edge of the bolt and remove the ring cotter.

3. **Refit and lock**
   Refit the ring cotter by pushing the straight wire shaft through the hole and pressing the front wire loop underneath the straight wire shaft.

2.3 Locking pins

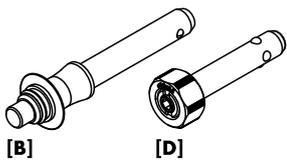The KSLi Mounting frames and the adapter are equipped with two types of Locking pins.

> ⚠ **WARNING!**
> **Potential risk of personal injury and/or damage to material!**
>
> Ensure all Locking pins are fully inserted and securely locked before lifting any load.
> For this purpose, briefly pull the Locking pin towards you.

Type [B] Locking pin 10 x 45 mm used for the Mounting adapter's Rear link slot.

Type [D]
- Used to fix the Front links of the first cabinet to the Mounting frames and adapter.
- Used to fix the Front links of the Mounting adapter to the bottom of the KSLi-SUB cabinet in a mixed array configuration.
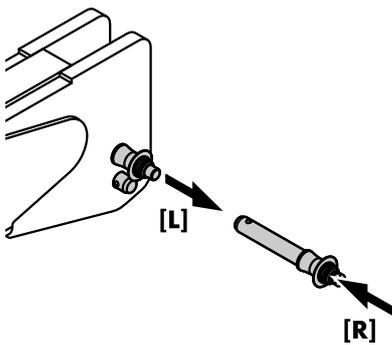
Locking pin type B - assembly

To attach a Locking pin of type B, proceed as follows:

1. Press the button to **R**elease the locking mechanism (◄━ **[R]**).

2. Insert the Locking pin into the respective socket and link until it is fixed in place.

3. Release the button to **L**ock the pin (━► **[L]**).

4. Recheck the Locking pin is securely locked by briefly pulling the Locking pin towards you.

5. To release and remove the Locking pin, proceed in reverse order.

Locking pin type D - assembly

To attach a Locking pin of type D, proceed as follows:

Tool required:

- Allen hex key #4 mm

1. Turn the allen hex screw (set screw) counterclockwise until the locking balls of the pin are released.

2. Insert the Locking pin into the respective socket and link until it is fixed in place.

3. Handtighten the allen hex screw (set screw) until the pin is properly locked.

4. Recheck the Locking pin is securely locked by briefly pulling the Locking pin towards you.

5. To release and remove the Locking pin, proceed in reverse order.
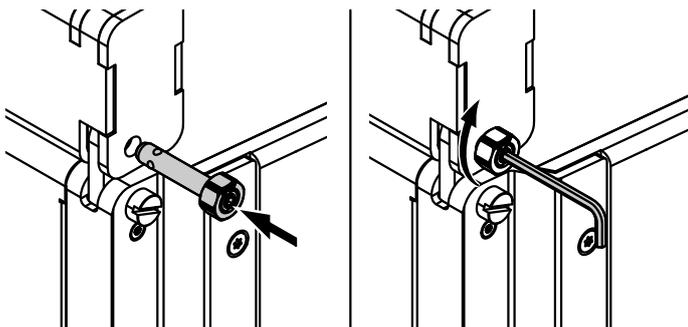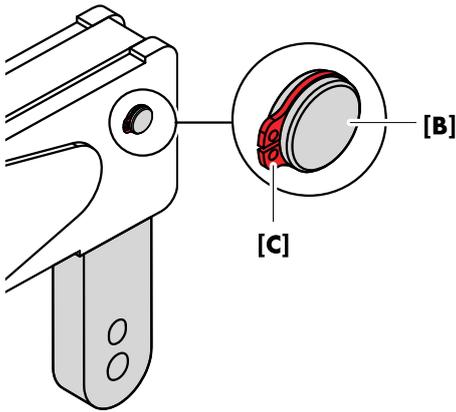
2.4 Rear link of the frames/adapter

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

The fixing bolt **[B]** of the Rear link on the frames/the adapter bears the full load of the array and therefore the fixing bolt is a safety-relevant item.

It is essential that the bolt is fitted correctly and secured by the circlip **[C]**.

2.5 Rigging mechanism of the cabinets

The cabinets are mechanically connected to the Mounting frames/Mounting adapter and subsequent loudspeakers using the Front links attached to both sides of the front rigging strands of the cabinets and the central Splay/Rear link on the rear rigging strand of the cabinet.

All necessary rigging components are mounted to the cabinets and slide or fold out when needed.

In principle, the Front link mechanism applies to both the TOP and SUB cabinets. The Front links are spring loaded and therefore extend automatically as soon as the respective Locking pins are released and pulled out.

2.5.1 Front link mechanism

Fixing bolts

The Front links are fixed using dedicated snake eye fixing bolts.
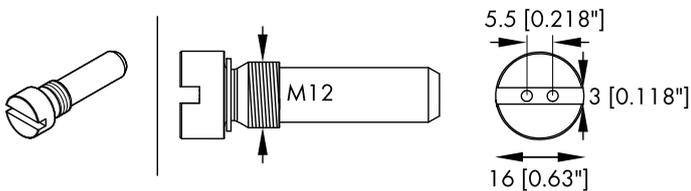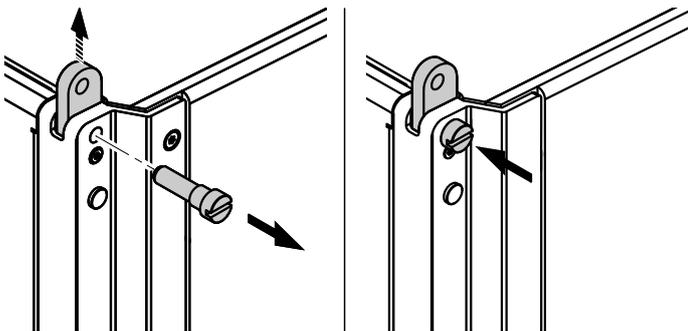
> **NOTICE!**
> **Potential risk of damage to the rigging components!**

The front rigging strands of the cabinets is made from high-grade aluminum. However, to avoid any damage to the threads of the fixing bolt slots ...:

- Only **hand-tighten** the fixing bolt so that the fixing bolt only just begins to tighten using an appropriate flat-head screwdriver or a suitable snake eye spanner.
- **Do not overtighten** the fixing bolt.

TOP cabinets

1. Release the fixing bolt.
   ↳ The Front link extends automatically.

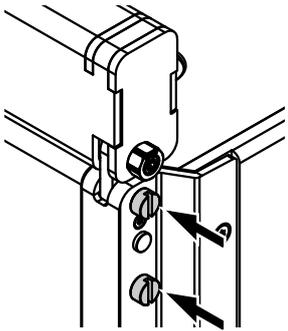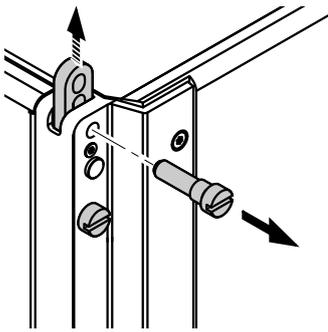2. Reinsert the fixing bolt to fix the Front link in place.

SUB cabinets
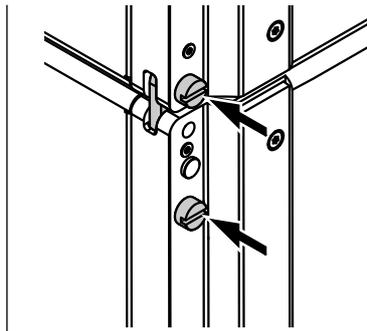
⇒ Release the upper fixing bolt.

  ↳ The Front link extends automatically.

The Front link mechanism of the SUB cabinets provides four different settings:

1. SUB to Frame (⇒ Fig. 1).
2. SUB to SUB with 0° splay between the cabinets (⇒ Fig. 2).
3. SUB to SUB with 2° splay (free) between the cabinets (⇒ Fig. 3).
4. SUB to SUB with 2° splay (blocked) between the cabinets (⇒ Fig. 4).
   This setting is used to prevent the cabinets from folding up.

Fig. 1: SUB to Frame

Fig. 2: SUB to SUB, 0° splay

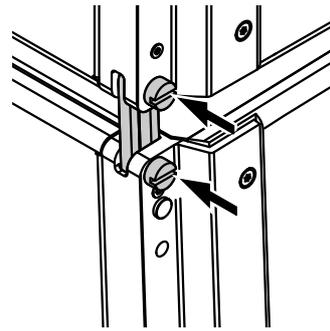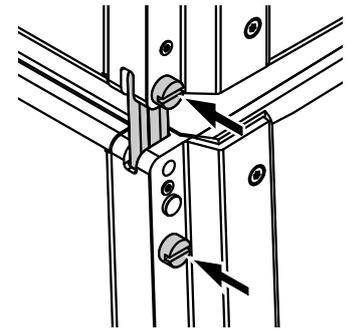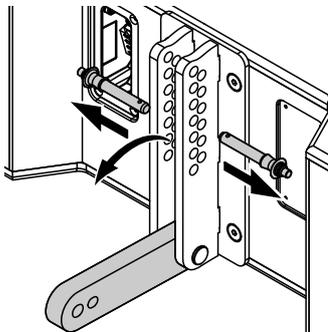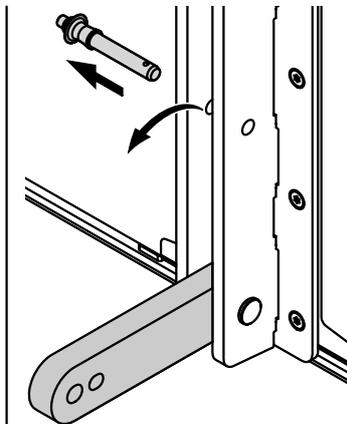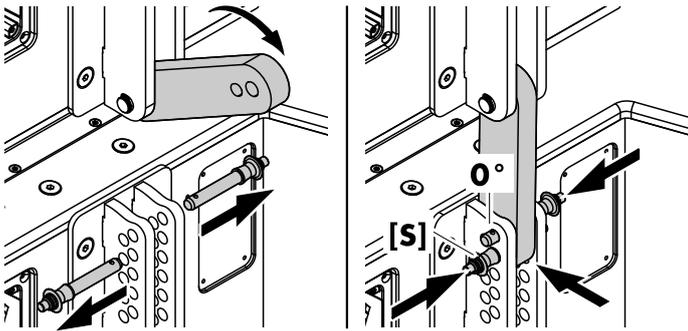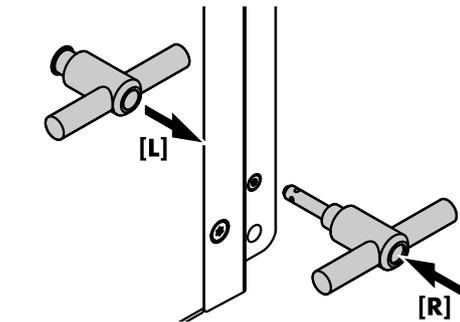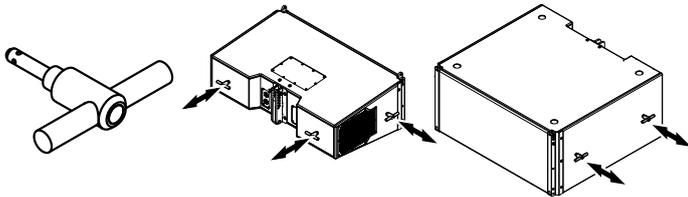
Fig. 3: SUB to SUB, 2° splay, free

Fig. 4: SUB to SUB, 2° splay, blocked

2.5.2 Splay/Rear link mechanism

Release the respective Locking pin(s) and fold out the Splay/Rear link.

Splay/Rear link mechanism

Set splay angle (e.g. 0°)

2.5.3 Setting splay angles for KSLi-TOP cabinets

The splay angles are set on the central rear rigging strands of the cabinets. The angles between adjacent cabinets can be set in the range from 0° to 10° in 1° increments.

The Splay link of the cabinets is designed as a straight link with two holes.
The inner hole defines the splay angle while the outer hole is used to insert the second Locking pin (Safety pin **[S]**), as shown in the graphic opposite.

2.6 Lifting aid (T-handle)

KSLi cabinets incorporate dedicated slots to accept lifting pins (T-handles), which are supplied with the respective Mounting frame.
During setup, these pins serve as a temporary lifting aid and can be inserted and locked when needed.

Once the cabinet is mounted, simply remove these pins so that they can be used for the assembly of the next cabinet.

T-handle assembly

To attach a T-handle, proceed as follows:

1. Press the button to **R**elease the locking mechanism (◄— **[R]**).

2. Insert the handle into the respective socket until it is fixed in place.

3. Release the button to **L**ock the handle (—► **[L]**).

4. Recheck the handle is securely locked by briefly pulling the Locking pin towards you.

5. To release and remove the handle, proceed in reverse order.
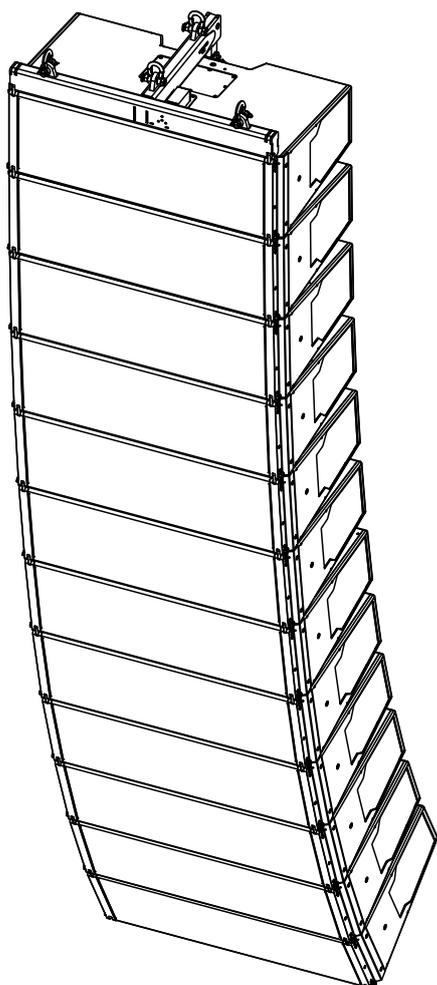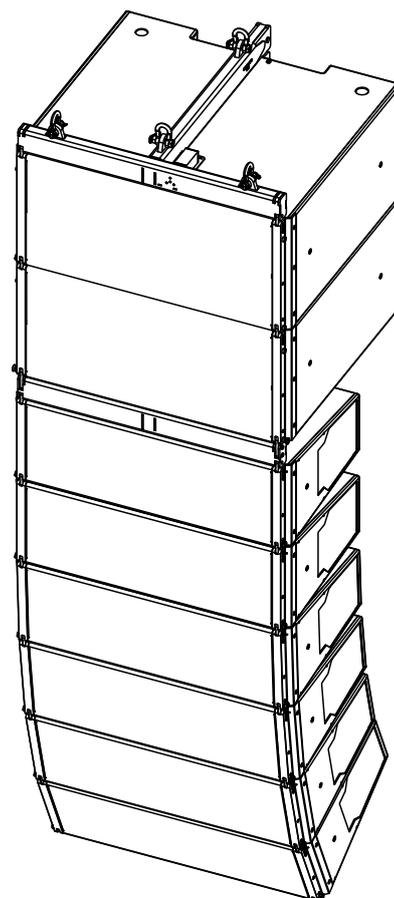
KSLi-TOP array, 10-deep with:
Z5743 KSLi-TOP Mounting frame

Refer to:
⇒ Chapter 3.2 "KSLi-TOP array"
on page 17
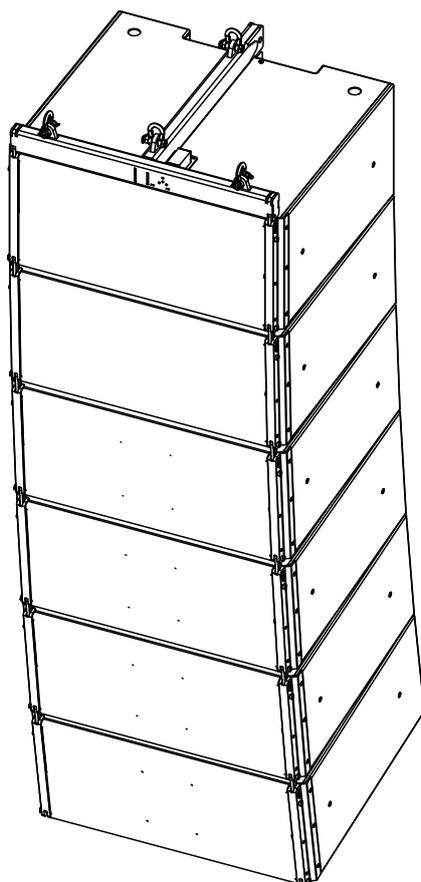
KSLi-SUB colum, 6-deep, 2° splay with:
Z5744 KSLi-SUB Mounting frame

Refer to:
⇒ Chapter 3.3 "KSLi-SUB Column"
on page 20

Mixed array with:
Z5744 KSLi-SUB Mounting frame
Z5745 KSLi-SUB Mounting adapter

Refer to:
⇒ Chapter 3.4 "Mixed array
configuration" on page 22

3.1 Setup preparation

Check the acoustical and mechanical setup using ArrayCalc and prepare enough printouts for each array. Alternatively, the ArrayCalc Viewer App can be used for this purpose.

The plan enables the riggers to set up the suspension points, the securing points and the chain hoists.

When on site first:
- Clear the working areas and ensure there is enough space to set up and lift the array.
- Check that the hoists are exactly in the specified position.
- Ensure the chains are not twisted.

Inspections before setup

Before setting up the array, carry out a visual inspection of all system components for faults. This also includes the loudspeakers and in particular the rigging parts of the cabinets (Front and Splay/Rear links).
Damaged components must be withdrawn from use immediately.

Please follow the instructions given in ⇒ Chapter 5 "Care and maintenance" on page 29.

3.2 KSLi-TOP array

Remarks and limitations

NOTICE!

In combination with the Z5743 KSLi-TOP Mounting frame, a maximum 10 x KSLi-TOP cabinets can be flown.

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1. Suspend the Mounting frame
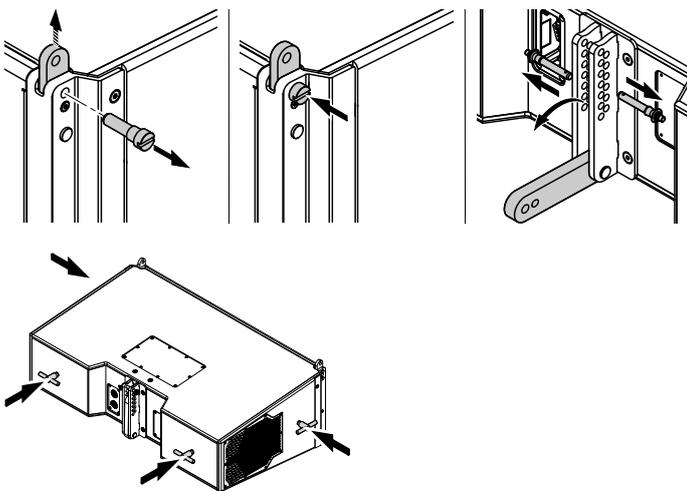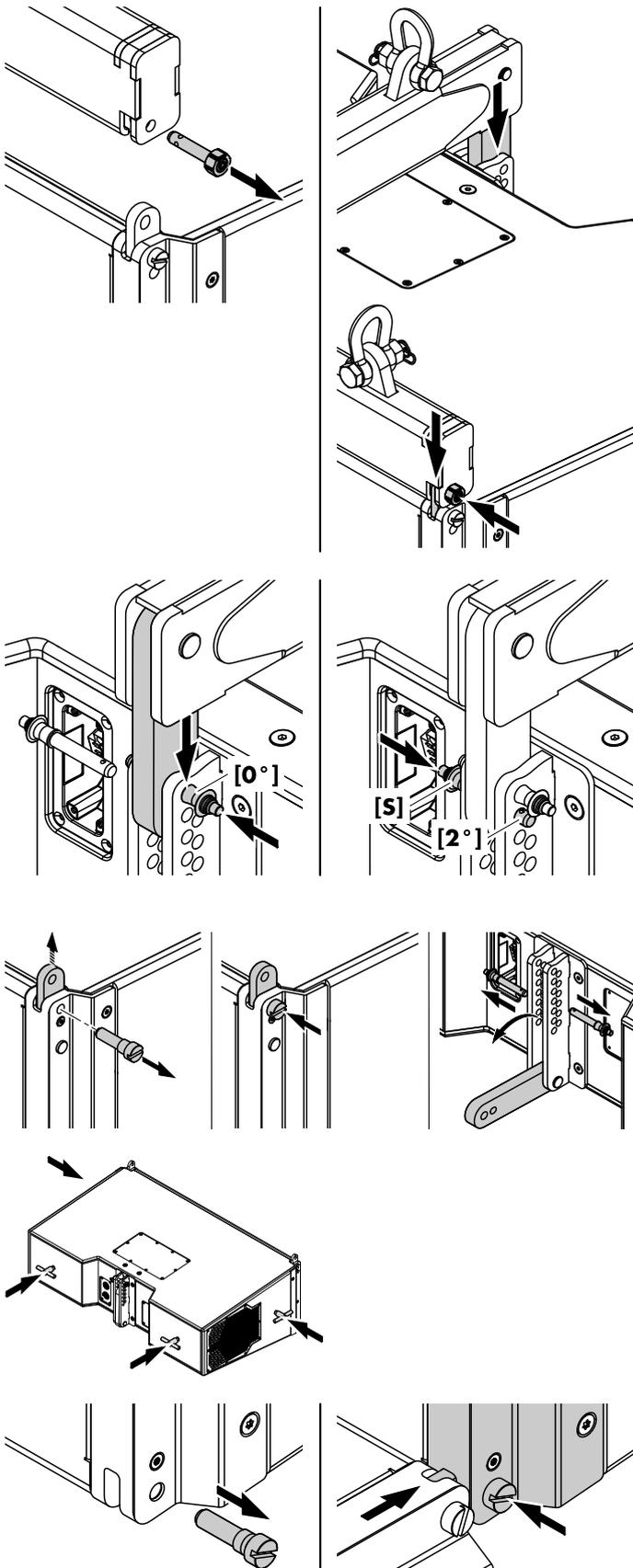1. Suspend the Mounting frame according to your onsite requirements.

2. Lift the frame to a suitable working height.

2. Prepare the first cabinet
1. Prepare the Front and Splay links of the first cabinet as described in ⇒ Chapter 2.5.1 "Front link mechanism" on page 13 and ⇒ Chapter 2.5.2 "Splay/Rear link mechanism" on page 14.

2. Attach the T-handles and position the cabinet below the frame.

3. Attach the Mounting frame to the first cabinet

To attach the frame to the first cabinet, proceed as follows:

Tool required:

- Allen hex key #4 mm

1. On the front tie bar of the frame, release and pull out the Locking pins (type D) on both sides.

2. Lower the frame onto the cabinet until the Front links of the cabinet fit into the slots at the front of the frame and the Rear link of the frame fits into the rear rigging strand of the cabinet.

3. Insert and lock the Locking pins (type D) of the frame on both sides.

4. At the rear, align the inner hole of the Rear link with the **[0°]** hole of the rear rigging strand of the cabinet.

5. Insert the first Locking pin into the **[0°]** hole.

6. Insert the second Locking pin (Safety pin **[S]**) into the hole below (**[2°]** hole).

7. Remove the T-handles.

4. Add further cabinets

1. Prepare the Front and Splay links of the next cabinet as described in ⇒ Chapter 2.5.1 "Front link mechanism" on page 13 and ⇒ Chapter 2.5.2 "Splay/Rear link mechanism" on page 14.

2. Attach the T-handles.

3. Lift the assembly to a suitable working height.

4. Release and pull out the fixing bolts at the bottom of the front rigging strands of the first/upper cabinet.

5. With the front grill facing upwards, attach the prepared next cabinet to the corresponding slots at the front of the upper cabinet.

6. Insert and handtighten the fixing bolts of the upper cabinet's front rigging strands on both sides.
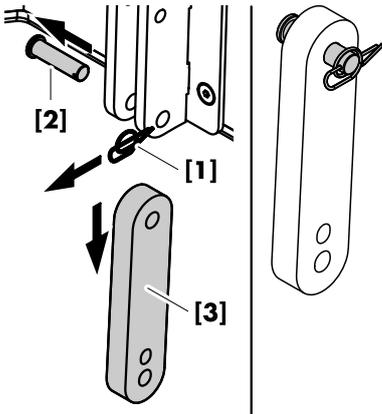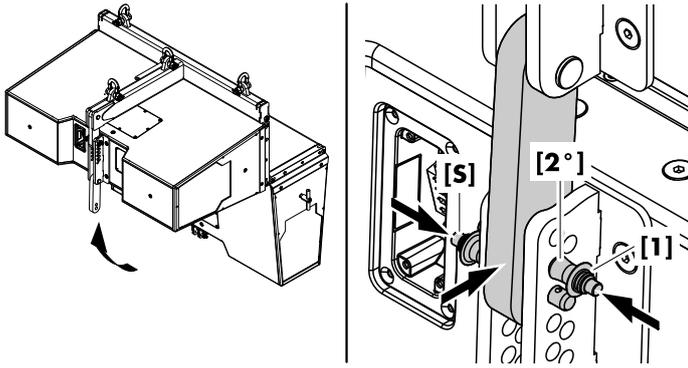
7. Raise the bottom cabinet until the Splay link of the upper cabinet fits into the rear rigging strand of the bottom cabinet.

8. Align the inner hole of the Splay link with the appropriate hole for the desired splay angle (e.g. **[2°]**).

9. Insert the first Locking pin **[1]** to set the angle and fix the cabinet in place.

10. Insert the second Locking pin (Safety pin **[S]**).

11. Remove the T-handles.

To add further cabinets, proceed in the same manner until the assembly is completed.

5. Splay link of the last cabinet

To avoid either rattling during operation or damage to the Splay link of the last cabinet, we recommend you to remove the link and store it in a safe place. To remove the link, proceed as follows:

1. Release and remove the ring cotter **[1]** of the fixing bolt.

2. Remove the fixing bolt **[2]** and the link **[3]**.

3. To avoid losing any item, reattach the fixing bolt to the link and refit the ring cotter.

6. Check the assembly

Before hoisting the array to its operating position, recheck the actual status of the entire assembly according to the checklist given in ⇒ Chapter 4 "Safety and system checks/Hoisting" on page 28.

7. Rig the cabling

Connect the cables and link cables according to the number of amplifier channels and cabinets used.

- If the amplifiers are already wired and powered on, use their System check functions or channel mute switches and a test signal to check the correct operation and routing of all channels and cabinets.
- Alternatively, check the wiring using the Array verification function in R1.

3.3 KSLi-SUB Column

Remarks and limitations

NOTICE!

In connection with the Z5744 KSLi-SUB Mounting frame, a maximum of 6 x KSLi-SUB cabinets can be flown.
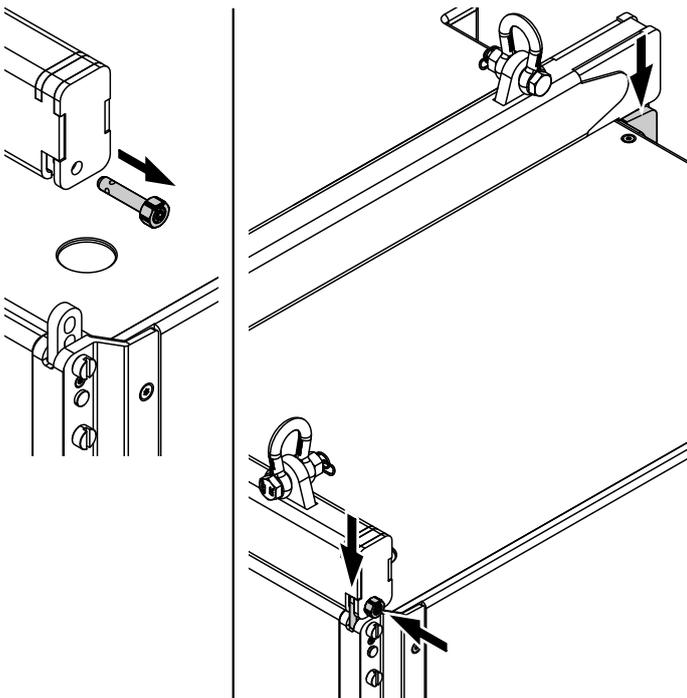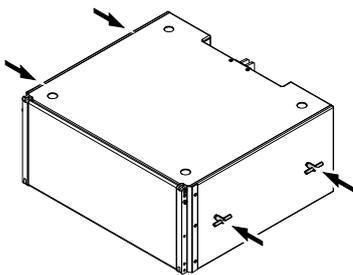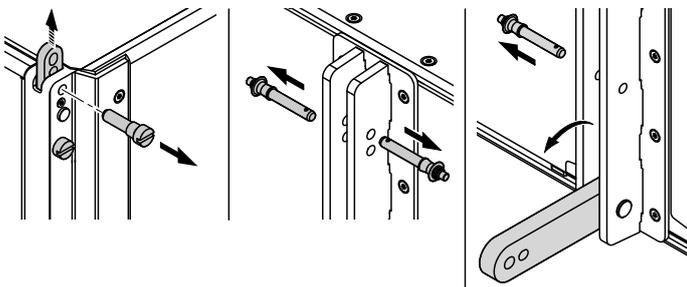
---

1. Suspend the Mounting frame
1. Suspend the Mounting frame according to your onsite requirements.

2. Lift the frame to a suitable working height.

2. Prepare the first cabinet
1. Prepare the Front and Rear links of the first cabinet as described in ⇒ Chapter 2.5.1 "Front link mechanism" on page 13 and ⇒ Chapter 2.5.2 "Splay/Rear link mechanism" on page 14.

2. Attach the T-handles and position the cabinet below the frame.
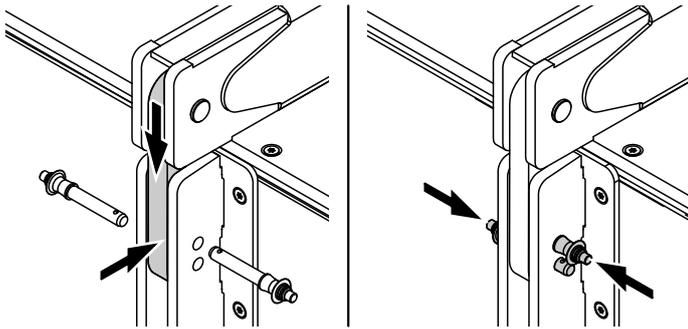
3. Attach the Mounting frame to the first cabinet
To attach the frame to the first cabinet, proceed as follows:
Tool required:

- Allen hex key #4 mm

1. On the front tie bar of the frame, release and pull out the Locking pins (type D) on both sides.

2. Lower the frame onto the cabinet until the Front links of the cabinet fit into the slots at the front of the frame and the Rear link of the frame fits into the rear rigging strand of the cabinet.

3. Insert and lock the Locking pins of the frame on both sides.

4. At the rear, check the Rear link is properly fitted into the rear rigging strand of the cabinet.

5. Insert and lock both Locking pins.

6. Remove the T-handles.

4. Add further cabinets

1. Prepare the Front and Rear links of the next cabinet as described in ⇒ Chapter 2.5.1 "Front link mechanism" on page 13 and ⇒ Chapter 2.5.2 "Splay/Rear link mechanism" on page 14.

2. Attach the T-handles.

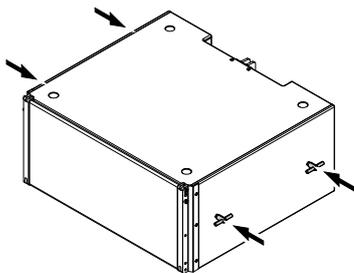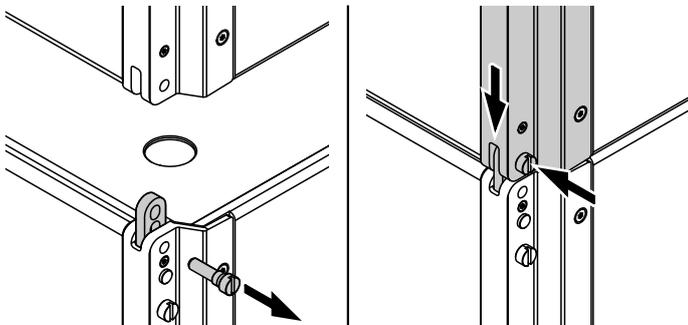3. Lift the assembly to a suitable working height.

4. Position the next SUB cabinet below the assembly.

5. Lower the assembly onto the cabinet until the Front links of the next cabinet fit into the slots on the front rigging strands of the upper cabinet and the Rear link of the upper cabinet fits into the rear rigging strand of the bottom cabinet.

6. Insert and handtighten the fixing bolts of the cabinet's front rigging strands on both sides.

   ↳ Please also refer to ⇒ 2.5.1 " Front link mechanism" ⇒ "SUB cabinets" on page 14.
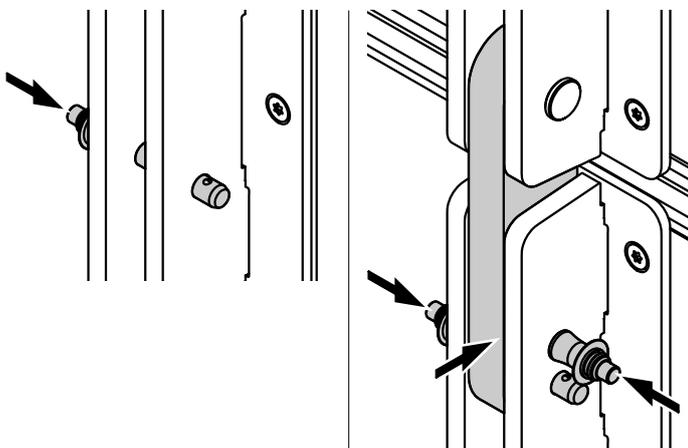
7. At the rear of the upper cabinet, reinsert the Locking pin that holds its Rear link in its park position.

8. On the bottom cabinet, check the Rear link is properly fitted into the rear rigging strand.

9. Insert and lock both Locking pins.

10. Remove the T-handles.

To add further cabinets, proceed in the same manner until the assembly is completed.
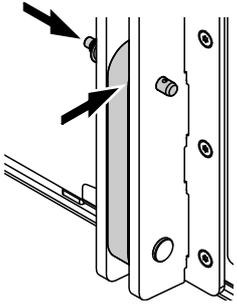
5. Rear link of the last SUB cabinet
The Rear link of the last cabinet can be kept in its park position.

6. Check the assembly
Before hoisting the array to its operating position, recheck the actual status of the entire assembly according to the checklist given in ⇒ Chapter 4 "Safety and system checks/Hoisting" on page 28.

7. Rig the cabling
Connect the cables and link cables according to the number of amplifier channels and cabinets used.
- If the amplifiers are already wired and powered on, use their System check functions or channel mute switches and a test signal to check the correct operation and routing of all channels and cabinets.
- Alternatively, check the wiring using the Array verification function in R1.

3.4 Mixed array configuration
3.4.1 Limitations

NOTICE!

For a mixed setup, the Z5744 KSLi-SUB Mounting frame must always be used as a suspension device while the Z5745 KSLi-SUB Mounting adapter is required in addition.

The Z5745 KSLi-SUB Mounting adapter is designed to support a total system weight of 600 kg (1322.8 lb) - SWL including all rigging components.
Together with the Z5744 KSLi-SUB Mounting frame, this allows the suspension of mixed array setups consisting of a maximum of 6 x KSLi-TOP cabinets below 2 x KSLi-SUB cabinets.

3.4.2 Order of assembly

1. Suspend the KSLi-SUB Mounting frame
1. Suspend the Mounting frame according to your onsite requirements.

2. Lift the frame to a suitable working height.

2. Prepare the first SUB cabinet

1. Prepare the Front and Rear links of the first cabinet as described in ⇒ Chapter 2.5.1 "Front link mechanism" on page 13 and ⇒ Chapter 2.5.2 "Splay/Rear link mechanism" on page 14.
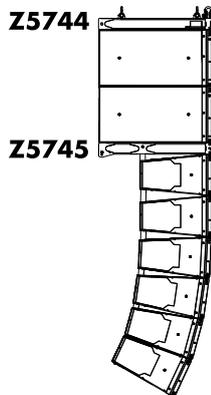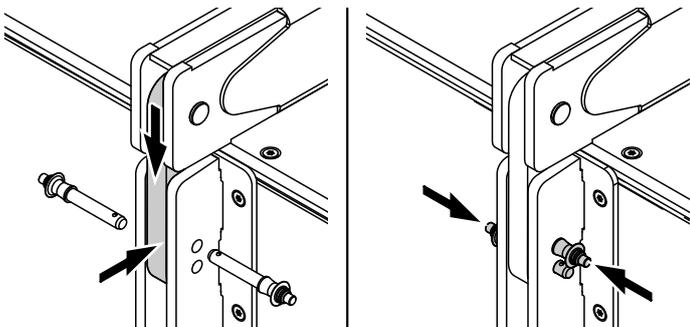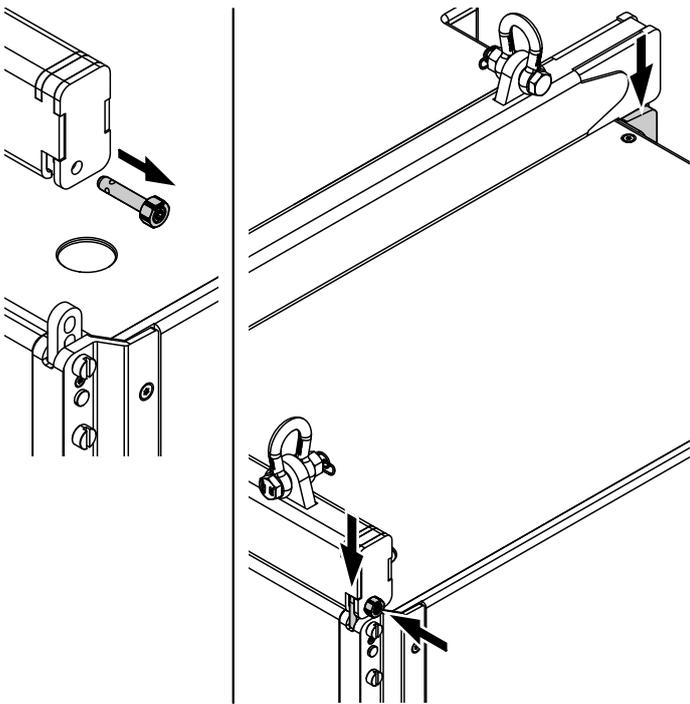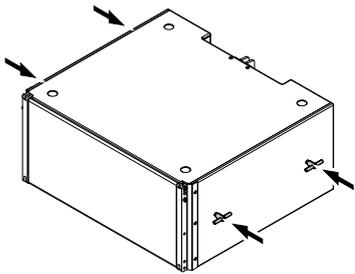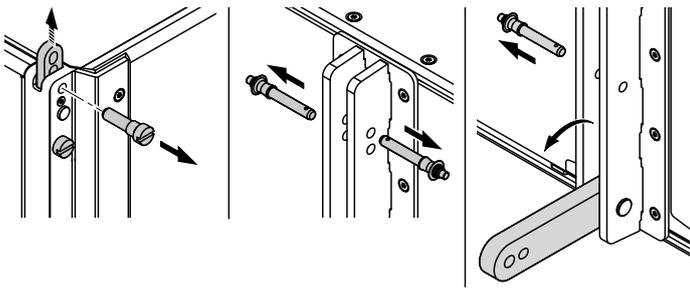
2. Attach the T-handles and position the cabinet below the frame.

3. Attach the Mounting frame to the first cabinet

To attach the frame to the first cabinet, proceed as follows:

Tool required:

- Allen hex key #4 mm

1. On the front tie bar of the frame, release and pull out the Locking pins (type D) on both sides.

2. Lower the frame onto the cabinet until the Front links of the cabinet fit into the slots at the front of the frame and the Rear link of the frame fits into the rear rigging strand of the cabinet.

3. Insert and lock the Locking pins of the frame on both sides.

4. At the rear, check the Rear link is properly fitted into the rear rigging strand of the cabinet.

5. Insert and lock both Locking pins.

6. Remove the T-handles.

4. Add the second SUB cabinet

NOTICE!

The second SUB cabinet must always be connected to the first SUB cabinet with **0°** splay. Please also refer to ⇒ Chapter 2.5.1 " Front link mechanism" ⇒ " SUB cabinets" ⇒ Fig. 2: " SUB to SUB, 0° splay" on page 14.
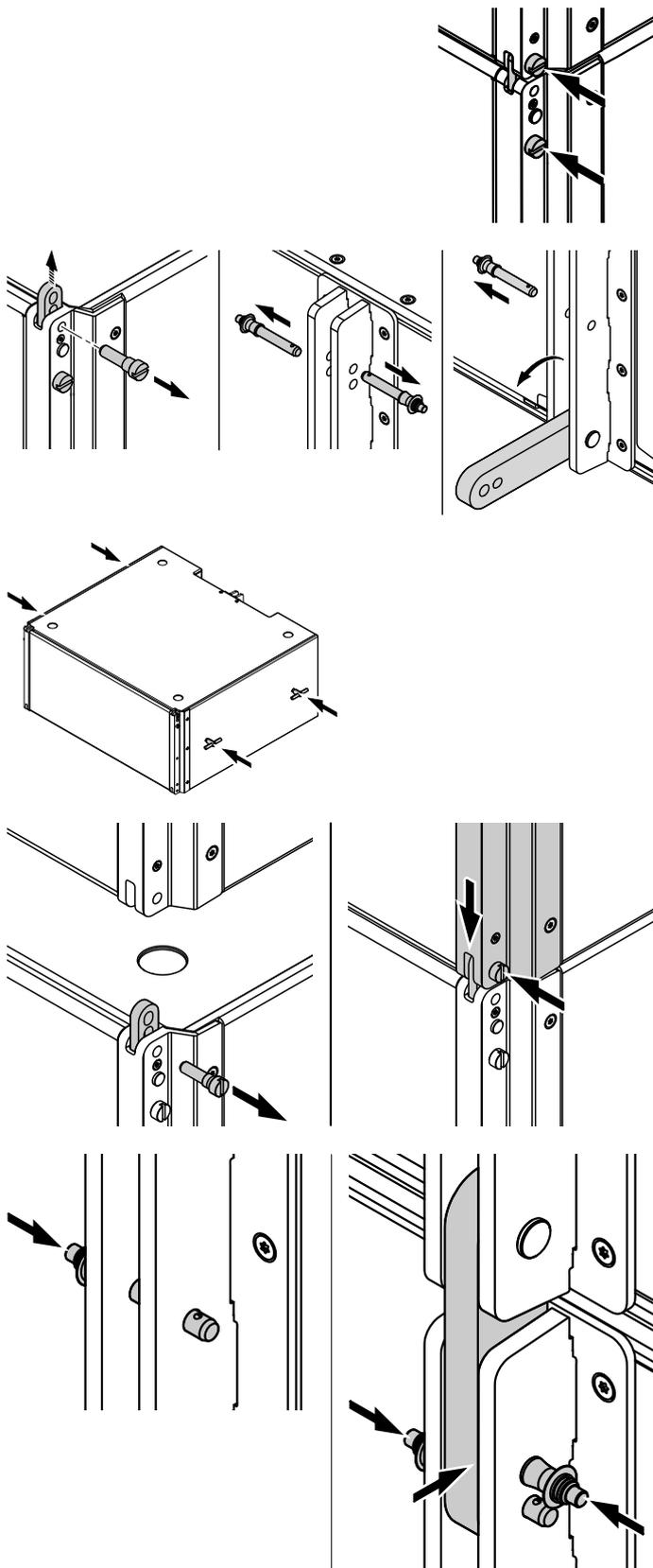
1. Prepare the Front and Rear links of the next cabinet as described in ⇒ Chapter 2.5.1 "Front link mechanism" on page 13 and ⇒ Chapter 2.5.2 "Splay/Rear link mechanism" on page 14.

2. Attach the T-handles.

3. Lift the assembly to a suitable working height.

4. Position the next SUB cabinet below the assembly.

5. Lower the assembly onto the cabinet until the Front links of the next cabinet fit into the slots on the front rigging strands of the upper cabinet and the Rear link of the upper cabinet fits into the rear rigging strand of the bottom cabinet.

6. Insert and handtighten the fixing bolts of the cabinet's Front links on both sides.

7. At the rear of the upper cabinet, reinsert the Locking pin that holds its Rear link in its park position.

8. On the bottom cabinet, check the Rear link is properly fitted into the rear rigging strand.

9. Insert and lock both Locking pins.

10. Remove the T-handles.
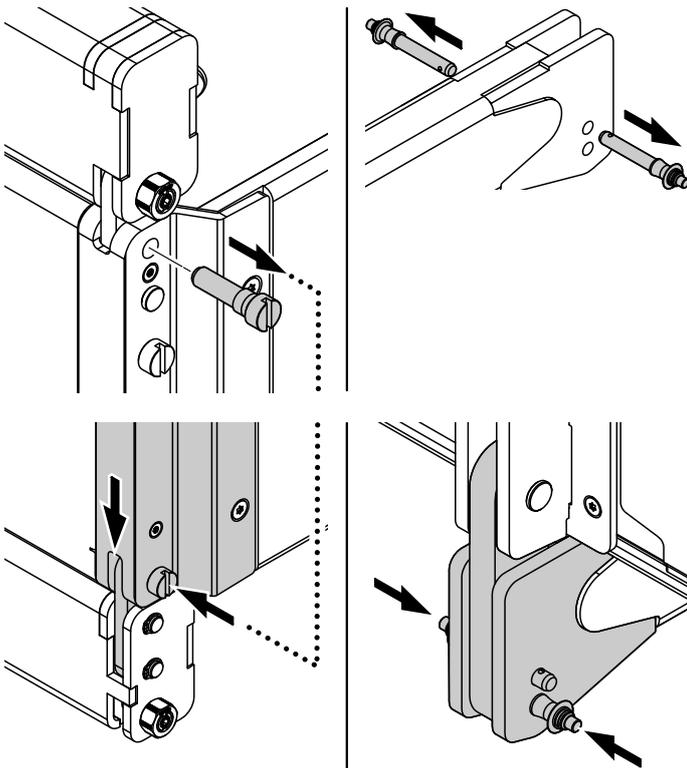
5. Attach the Mounting adapter

1. To attach the Mounting adapter to the bottom of the second SUB cabinet, use the fixing bolt of the first SUB cabinet which is connected to the Mounting frame.

2. On the Rear link slot of the Mounting adapter, release both Locking pins (type B).

3. Place the Mounting adapter underneath the cabinet until the Front links of the adapter fit into the slots on the front rigging strands of the cabinet and insert the fixing bolts.

4. At the rear, check the Rear link of the cabinet is properly fitted into the rear rigging slot of the adapter and insert both Locking pins.

5. To attach the first TOP cabinet, lift the assembly to a suitable working height.

6. Attach the first TOP cabinet

To attach the frame to the first cabinet, proceed as follows:

Tool required:

- Allen hex key #4 mm

1. Lift the assembly to a suitable working height.

2. Prepare the Front and Splay links of the first cabinet as described in ⇒ Chapter 2.5.1 "Front link mechanism" on page 13 and ⇒ Chapter 2.5.2 "Splay/Rear link mechanism" on page 14.
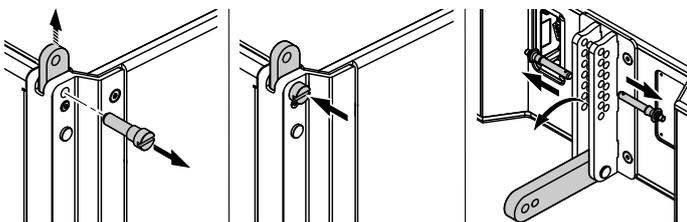
3. Attach the T-handles.

4. On the front tie bar of the adapter, release and pull out the Locking pins (type D) on both sides.

5. With the front grill facing upwards, attach the prepared cabinet to the corresponding slots at the front of the adapter.

6. Insert and lock the Locking pins (type D) of the adapter on both sides.
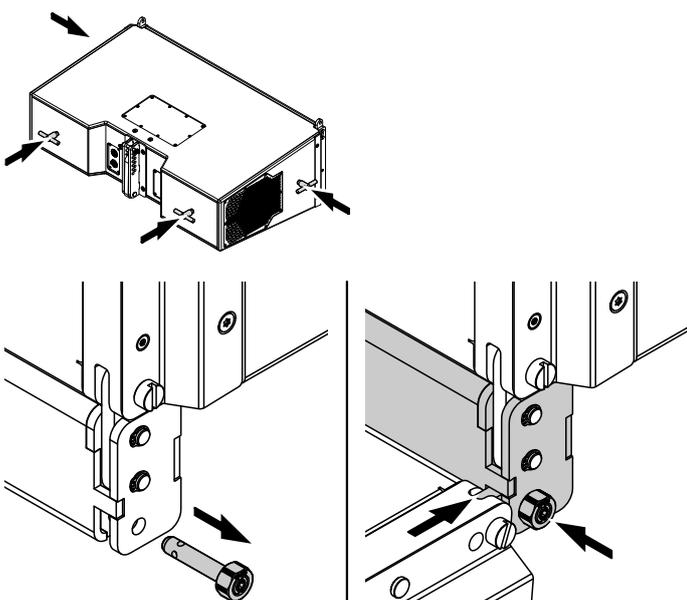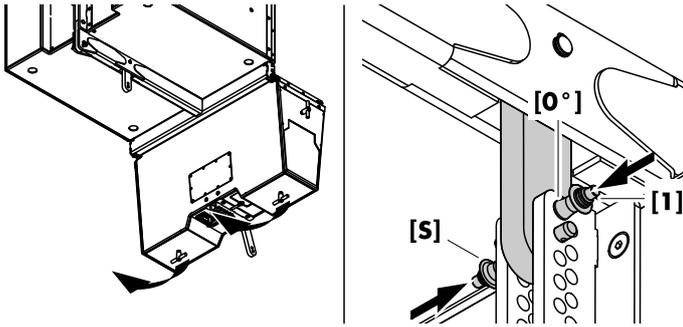
7. Raise the back of the cabinet until the Rear link of the adapter fits into the rear rigging strand of the cabinet.

8. Align the inner hole of the Rear link with the **[0°]** hole of the cabinet's rear rigging strand.

9. Insert the first Locking pin **[1]** to fix the Rear link and cabinet in place.
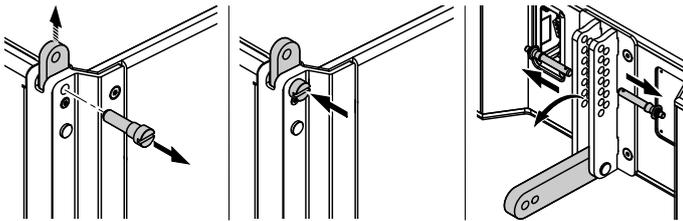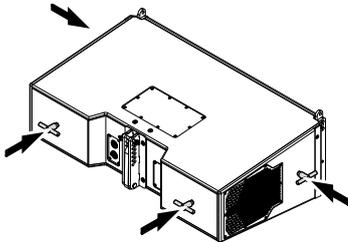
10. Insert the second Locking pin (Safety pin **[S]**).

11. Remove the T-handles.

7. Add further TOP cabinets

1. Prepare the Front and Splay links of the next cabinet as described in ⇒ Chapter 2.5.1 "Front link mechanism" on page 13 and ⇒ Chapter 2.5.2 "Splay/Rear link mechanism" on page 14.

2. Attach the T-handles.

3. Lift the assembly to a suitable working height.

4. Release and pull out the fixing bolt at the bottom of the front rigging strands of the first/upper cabinet.

5. With the front grill facing upwards, attach the prepared next cabinet to the corresponding slots at the front of the upper cabinet.

6. Insert and handtighten the fixing bolts of the upper cabinet's Front links on both sides.

7. Raise the bottom cabinet until the Splay link of the upper cabinet fits into the rear rigging strand of the bottom cabinet.

8. Align the inner hole of the Splay link with the appropriate hole for the desired splay angle (e.g. **[2°]**).

9. Insert the first Locking pin **[1]** to set the angle and fix the cabinet in place.

10. Insert the second Locking pin (Safety pin **[S]**).
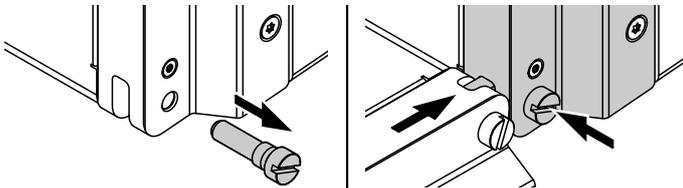
11. Remove the T-handles.

To add further cabinets, proceed in the same manner until the assembly is completed.

8. Splay link of the last cabinet

To avoid either rattling during operation or damage to the Splay link of the last cabinet, we recommend you to remove the link and store it in a safe place. To remove the link, proceed as follows:

1. Release and remove the ring cotter **[1]** of the fixing bolt.

2. Remove the fixing bolt **[2]** and the link **[3]**.

3. To avoid losing any item, reattach the fixing bolt to the link and refit the ring cotter.

9. Check the assembly

Before hoisting the array to its operating position, recheck the actual status of the entire assembly according to the checklist given in ⇒ Chapter 4 "Safety and system checks/Hoisting" on page 28.

10. Rig the cabling

Connect the cables and link cables according to the number of amplifier channels and cabinets used.

-   If the amplifiers are already wired and powered on, use their System check functions or channel mute switches and a test signal to check the correct operation and routing of all channels and cabinets.
-   Alternatively, check the wiring using the Array verification function in R1.

Safety and system checks

Before hoisting the array to its operating position, recheck the actual status of the assembly as follows:

Mechanical setup

- Check the attachment of the Mounting frame(s) and/or adapter to the cabinets:
  - Ensure all Locking pins are properly inserted and locked.
  - Ensure all Fixing bolts are properly fitted and secured by a locked Ring cotter.
- Check the attachment of all Front links on both sides of the cabinets and ensure all Locking pins are properly inserted and locked.
- Check the splay angles and the attachment of the Splay/Rear links at the rear of the cabinets:
  - Ensure all Locking pins are properly inserted and locked.
  - Ensure all Fixing bolts are properly fitted and secured by a locked Ring cotter.

Wiring

- If the amplifiers are already wired and powered on, use their System check functions or channel mute switches and a test signal to check the correct operation and routing of all channels and cabinets.
- Alternatively, check the wiring using the Array verification function in R1.

Hoisting

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

Always ensure that each of the hoists is able to carry the total weight of the array.

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.

When all the mechanical adjustments, safety checks and system checks have been made, the array can be hoisted up to its operating position and firmly attached to the onsite construction.

The chain hoist motors must raise the array slowly and evenly so that it does not swing or move from side to side during hoisting.

5.1 Visual and functional inspection

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

To eliminate the potential risk of accident due to malfunctioning of a component, regularly inspect all system components.

Cabinet enclosure
- Visual inspection of all fitting plates for obvious damage (e.g. cracks or corrosion).
- Visual inspection of the rear rigging strand for obvious damage (e.g. cracks, deformation or corrosion) including all drilled holes of the component.
- Inspection of all fitting plates including front grills to ensure they are securely attached.

Front and Splay (Rear) links
Visual inspection regarding deformation and damage (e.g. cracks and corrosion) including all drilled holes of the component.

Locking pins
Visual inspection for deformation, cracks, and corrosion of the component.

Mounting frames and adapter
Visual inspection regarding deformation and damage (e.g. cracks and corrosion) including all drilled holes of the component.

6.1 EU conformity (CE symbol)

This declaration applies to:

d&b KSLi loudspeaker cabinets
(with integrated rigging components.)

- Z0790 KSLi8
- Z0791 KSLi12
- Z0795 KSLi-SUB

d&b KSLi rigging components
(including all additional components.)

- Z5743 KSLi TOP Mounting frame
- Z5744 KSLi SUB Mounting frame
- Z5745 KSLi SUB Mounting adapter

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.

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