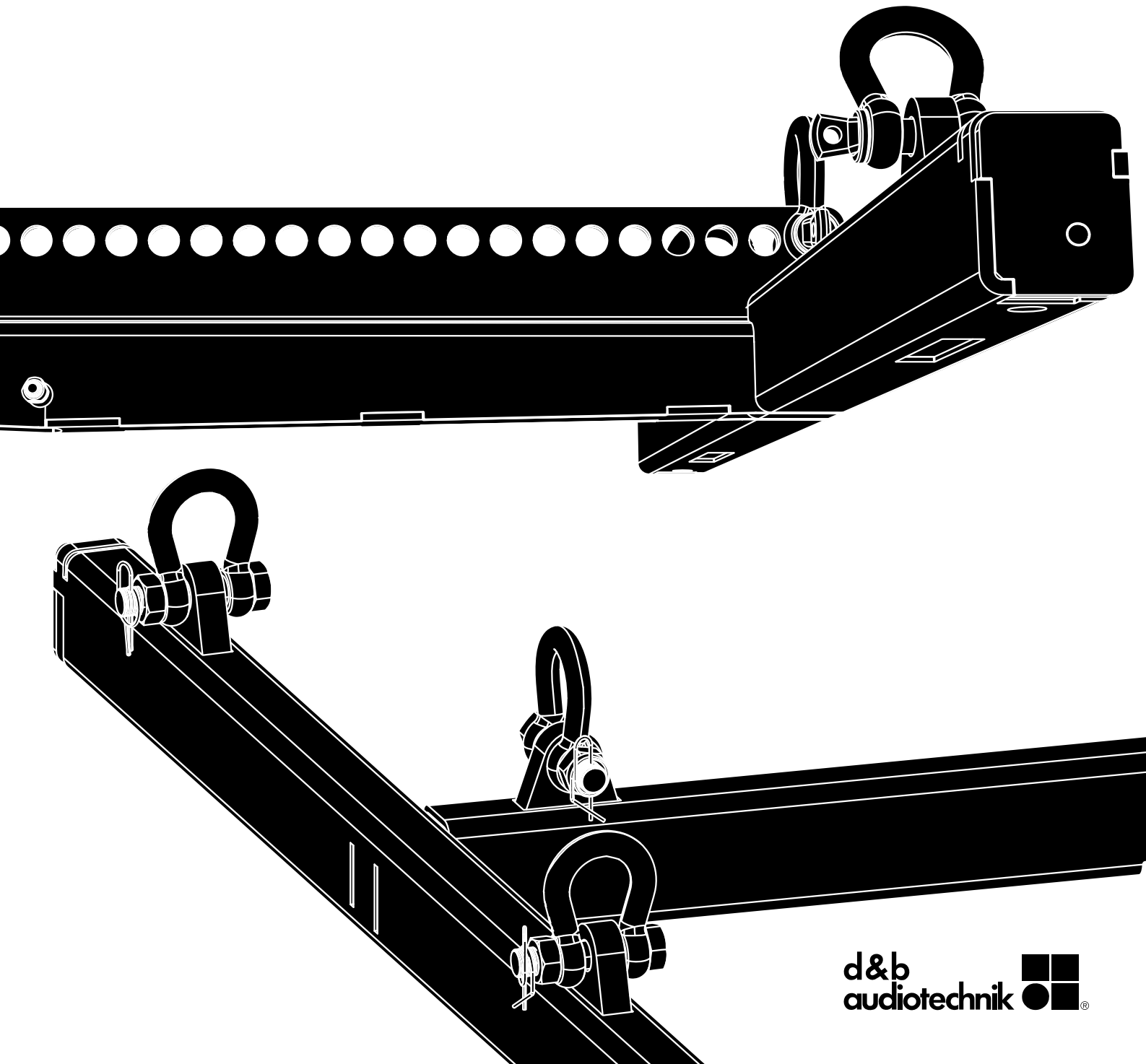


# Z

## Z5455/Z5459 Rigging manual 1.1 en



## **General information**

Z5455/Z5459 Rigging manual

Version: 1.1 en, 03/2021, D2746.EN .01

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

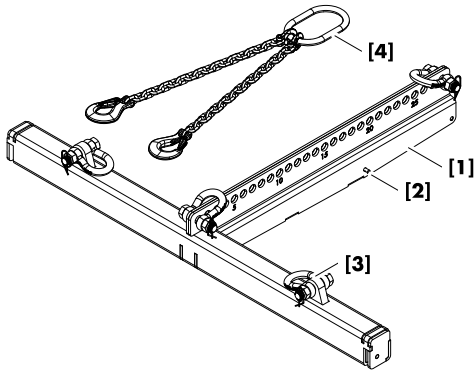
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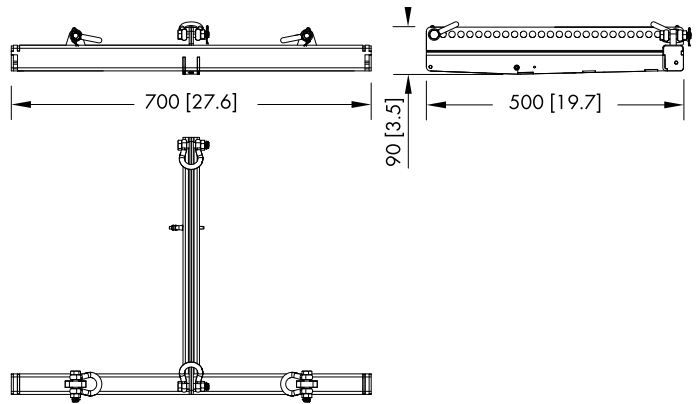


**1.1 Scope of supply**

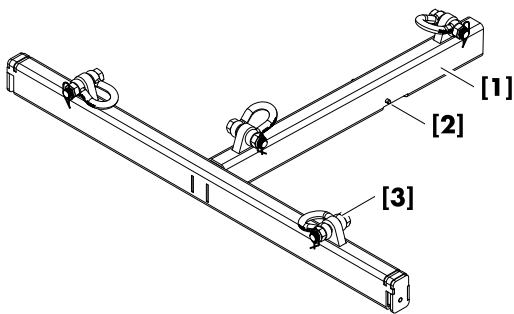
Please verify the shipment for completeness and proper condition of the items.

Qty.	d&b Code	Description
1	<b>Z5455</b>	d&b AL Flying frame <b>[1]</b>
Including:		
1		Locking pin 5 x 35 mm <b>[2]</b>
4		1t shackle <b>[3]</b>
1		AL Safety chain 1.4 t (WLL) <b>[4]</b>
1	D2746.EN .01	Z5455 Rigging manual

Weight (incl. all items) .....10 kg / 22 lb

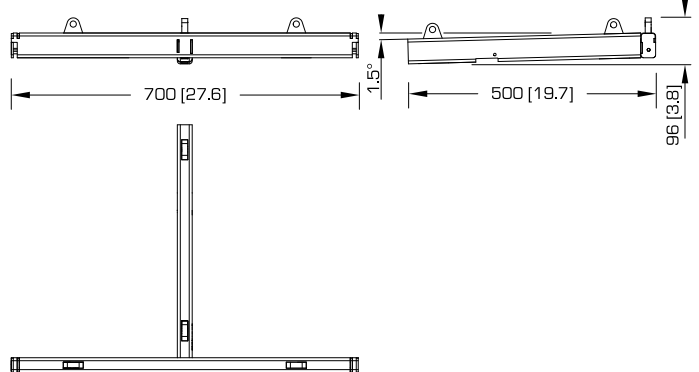


**Z5455 AL Flying frame dimensions in mm [inch]**

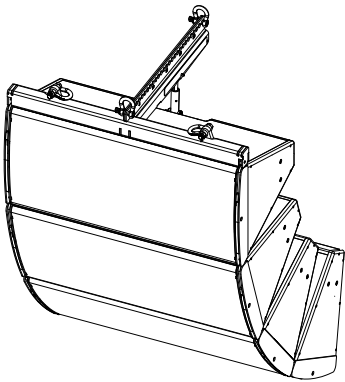
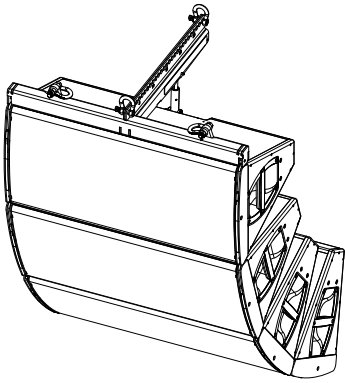


Qty.	d&b Code	Description
1	<b>Z5459</b>	d&b ALi Mounting frame <b>[1]</b>
Including:		
1		Locking pin 5 x 35 mm <b>[2]</b>
4		1t shackle <b>[3]</b>
1	D2746.EN .01	Z5455 Rigging manual

Weight (incl. all items) .....7.8 kg / 17.2 lb



**Z5459 ALi Mounting frame dimensions in mm [inch]**



## 1.2 Intended use

The Z5455 AL Flying frame / Z5459 ALi Mounting frame must only be used in conjunction with the d&b A-Series AL60/AL90 and ALi60/ALi90 cabinets, as described in this manual.

### A-Series vertical arrays and ArrayCalc

A vertical A-Series array can consist of up to four loudspeakers for mobile and installed applications where the captive rigging components and the normal mounting accessories are to be used. For installed applications where more than four loudspeakers are required in a vertical array, ArrayCalc allows the prediction of arrays with up to six A-Series loudspeakers.

**Note:** Please note that arrays of more than 4 loudspeakers can only be mounted using custom cabinets and custom-designed mounting accessories and require the array to be driven with ArrayProcessing. For these special applications, please consult with your d&b sales partner.

### 1.2.1 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 4 "Care and maintenance" on page 16.

### 1.2.2 Load safety information

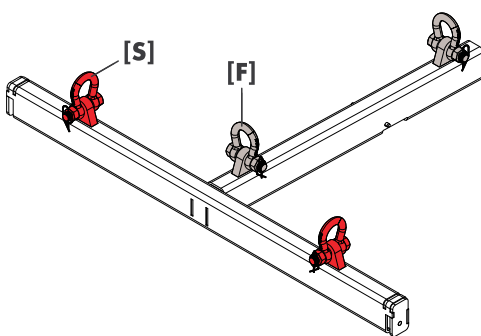
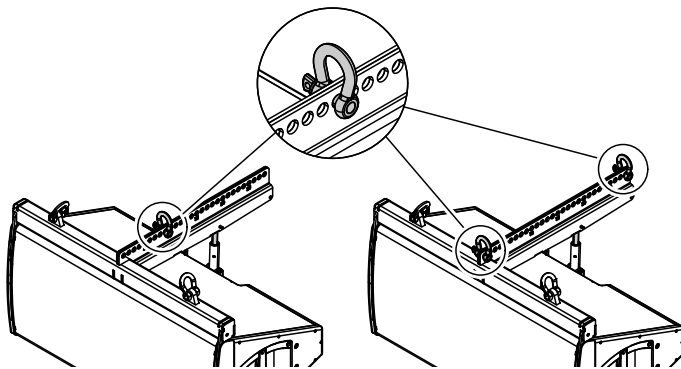
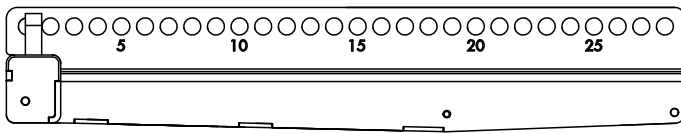
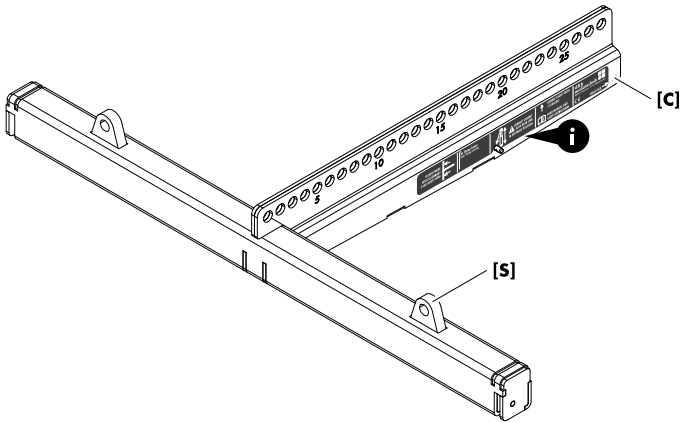
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#### NOTICE!

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Both, the Z5455AL Flying frame and Z5459ALi Mounting frame are designed to suspend a total of 4 x AL60/AL90 or ALi60/ALi90 cabinets which corresponds to a total system weight of 100 kg (220 lb) - SWL.

---



In addition the Z5455 AL Flying frame is equipped with the following items:

Pos.	Description
[S]	Two safety points in the tie bar for the attachment of the Z5454 AL Safety chain (also refer to ⇒ Chapter 2.3 "Secondary safety" on page 7.
[C]	Cable pick.
[i]	Instruction label providing vital safety and rigging instructions.

### 2.1 Suspension options

#### Z5455 AL Flying frame

The center bar of the Flying frame is equipped with a total of 28 holes to allow for the suspension of the array and the setting of different vertical angles.

The holes are numbered in increments of five.

#### Single or dual pickpoint operation

The array can be suspended using one or two E6507 1t shackle(s) and appropriate lifting devices or steel wire ropes.

In "Single pickpoint operation", the overall vertical aiming of the entire array is defined by using a particular hole of the hole index on the center bar.

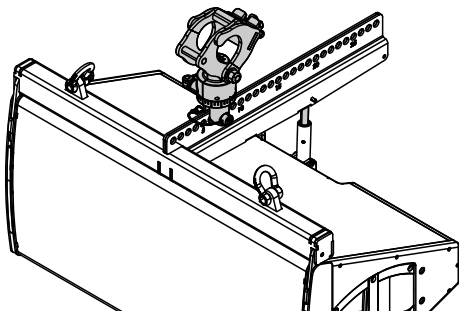
The corresponding hole position is calculated using the d&b ArrayCalc simulation software. For this purpose, ArrayCalc can be downloaded at [www.dbaudio.com](http://www.dbaudio.com)

In "Dual pick point operation", the vertical aiming of the entire array is set by trimming the respective lifting devices.

#### Z5459 ALi Mounting frame

**Note:** In ArrayCalc, you have to use the mobile version Z5455 AL Flying frame for the simulation. When using the pick holes 5 and 26 in ArrayCalc, it corresponds to the installation variant Z5459 ALi Mounting frame.

The center bar of the mounting frame is equipped with two fixing points [F] for suspension using the enclosed 1 t shackles. The front tie bar of the mounting frame is equipped with two safety points [S] for the attachment of a secondary safety device using the enclosed 1 t shackles.



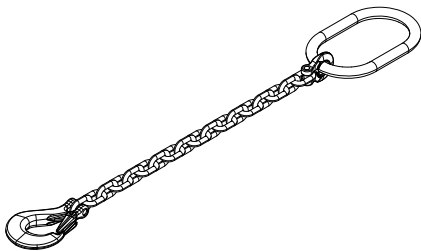
### Z5147 Rota clamp option

Alternatively, the array can be suspended and horizontally aligned from a single pickpoint using the d&b Z5147 Rota clamp. The clamp allows the load to be attached to overhead bars or truss with a tube diameter of up to 50 mm (2").

#### Attachment

Choose the appropriate hole position on the center bar according to the ArrayCalc calculation and attach the clamp correspondingly.

**Note:** Please observe the relevant mounting instructions which are enclosed with the clamp.



### 2.2 Z5453 AL Hoist connector chain

The Z5453 AL Hoist connector chain is used to connect the lifting motor(s) to the AL Flying frame using the 1 t shackle. Its length of 53 cm (21") allows enough space for the hang of most 2 t motor chain containers and avoids any impact on the vertical balance of the array when suspended from a single pickpoint.

#### Specification

Lifting chain (DIN EN 818) .....	1-leg, 6 mm
Grade .....	10
Nominal length incl. hook .....	534 mm (21")
Load rating .....	1.4 t (WLL)

### 2.3 Secondary safety



#### WARNING!

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

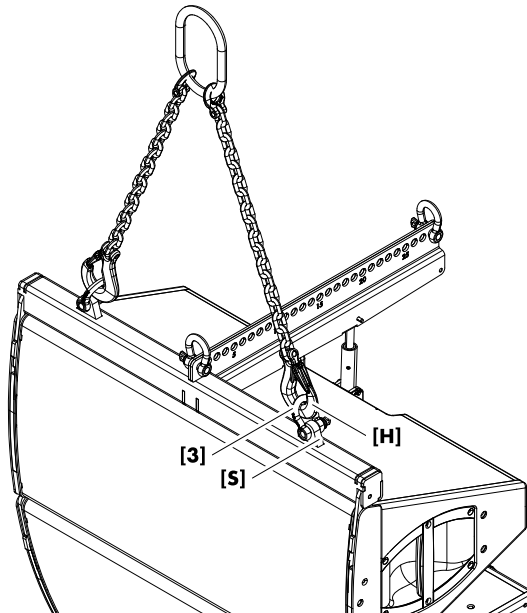
The secondary safety suspension must be independent of the primary suspension points and capable of carrying the total system weight.

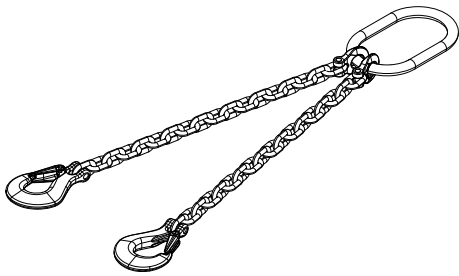
The additional safety device must be mounted in a way that the array is caught by the safety device without any drop and swing in the event that the primary suspension fails.

The A-Series Flying frame is equipped with two safety points **[S]** in the tie bar of the frame fitted with two 1 t shackles to accept the d&b Z5454 AL Safety chain or an appropriate equivalent according to the specifications given in the following chapter ⇒ 2.3.1 "Z5454 AL Safety chain".

#### Assembly

1. Before attaching the safety device, ensure the two 1 t shackles **[3]** are properly fitted to the frame's safety points **[S]** as shown in the graphic opposite.
2. Attach the safety chain and ensure the chains are not twisted and the hooks **[H]** are in the right direction as shown in the graphic opposite.





### 2.3.1 Z5454 AL Safety chain

The Z5454 AL Safety chain is supplied with the Flying frame.

#### Specification

Lifting chain (DIN EN 818) .....	2-leg, 6 mm
Grade.....	10
Nominal length per leg incl. hooks .....	534 mm (21")
Load rating .....	1.4 t (WLL)

### 2.4 Locking pins



#### WARNING!

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

The steel wires of the Locking pins are not intended to carry any load. The cabinet's weight must only be carried by the Front and Splay/Rear links in conjunction with the front and rear rigging strands of the loudspeaker cabinets and the rigging components.

Ensure all Locking pins are fully inserted and securely locked before lifting any load.

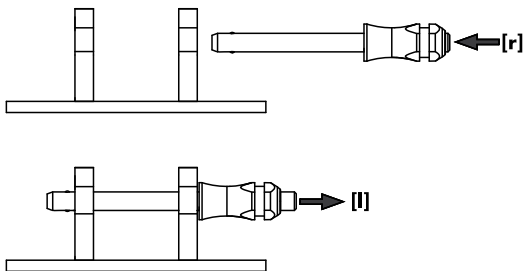
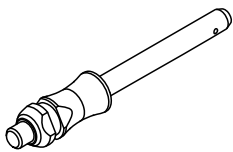
The A-Series loudspeaker cabinets and rigging components are equipped with dedicated Locking pins.

**Note:** The Locking pins are undetachably attached to the different rigging components on the cabinet using steel wires. Throughout this manual these steel wires are not shown in the corresponding illustrations.

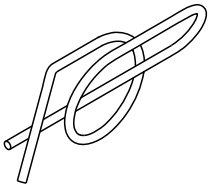
#### Functionality (Quick lock mechanism)

Proceed as follows:

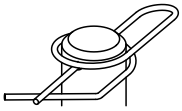
1. Press the button to **release** the locking mechanism (← [r]).
2. Remove the Locking pin through the respective link or socket.
3. Insert the Locking pin through the respective link or socket until it is fixed in place.
4. Release the button to **lock** the pin (→ [l]).
5. Recheck the Locking pin is securely locked by briefly pulling the Locking pin towards you.



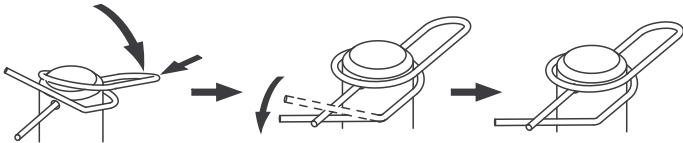
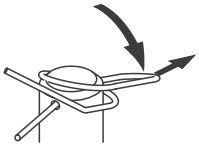
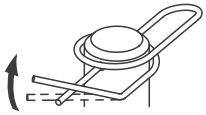




Ring cotter



Ring cotter locked



## 2.5 Ring cotter

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

- Fixing bolt of the shackles attached to the Flying frame.
- Fixing bolt of the cabinet's splay link.
- Fixing bolt of the Z5147 Rota clamp.

### 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 Rear link or exchanging a shackle, it may be necessary to temporarily remove the ring 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.

## 2.6 Cabinet rigging mechanism

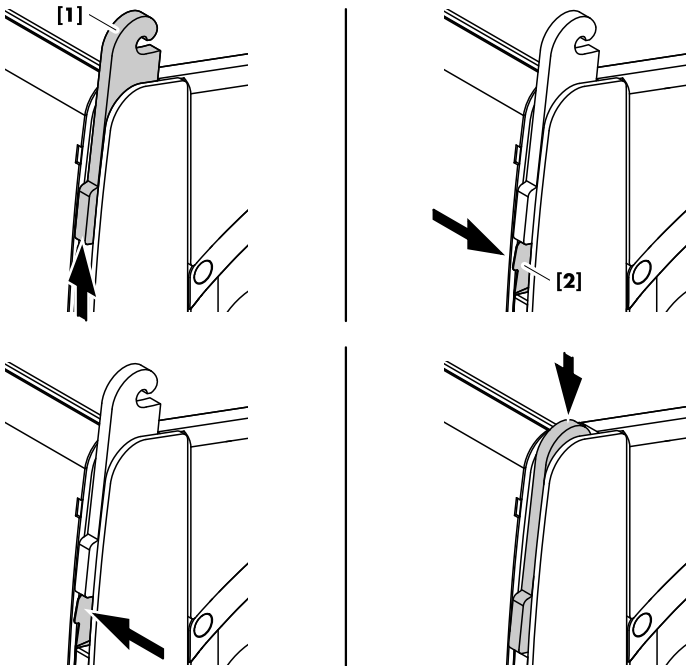
The cabinets are mechanically connected to the Flying frame and subsequent loudspeakers using the Front links on both sides of the cabinet front and the central Splay link on the rear rigging strand of the cabinet.

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

### 2.6.1 Front link mechanism

To extend and/or park the Front link, proceed as follows:

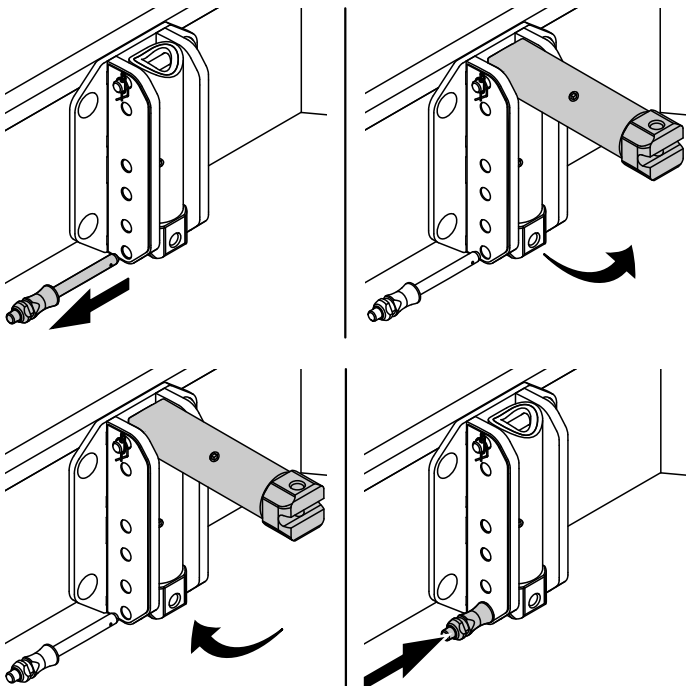
1. Slide out the Front link **[1]** up to its stop position.
  - ↳ Once the Front link is fully extended, it will be automatically fixed in place by the spring steel sheet **[2]**.
2. To slide the Front link back into its park position, press the spring steel sheet towards the front grill.
3. Slide the Front link back into its park position.

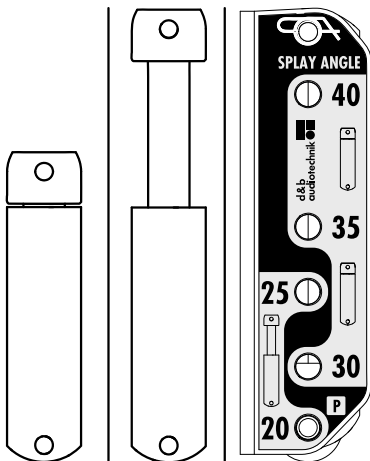


### 2.6.2 Splay link mechanism

The Splay link is fixed in its park position (P) by a Locking pin.

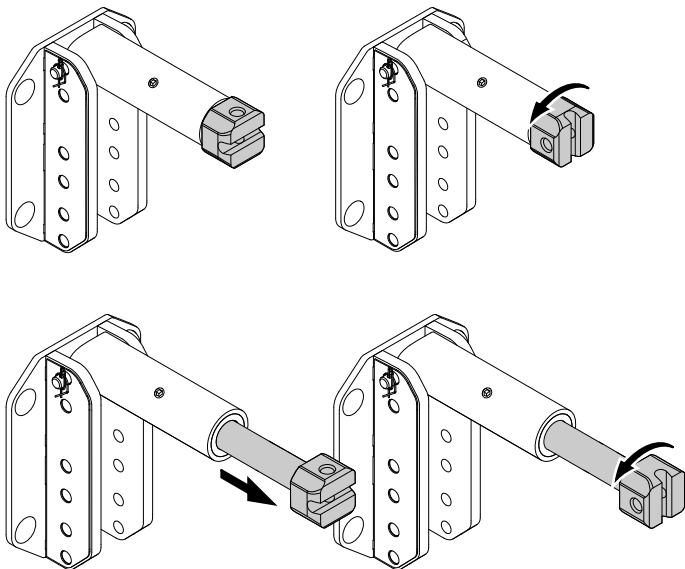
1. Release the Locking pin and fold out the Splay link.
2. To park the Splay link, proceed in reverse order and ensure the extension tube is fully pushed in and the head is aligned correspondingly, as shown in the graphic opposite.





**Standard | Extended | Hole grid**

Splay link lengths and correlation to the hole grid on the rear rigging strand.



**2.6.3 Setting the splay angle(s)**

Splay angles between adjacent cabinets can be set in the range from 20° to 40° in 5° increments resulting in a total coverage of 50° up to 70° for two cabinets, with a maximum total coverage of 150° for four cabinets.

Splay angles can also be set symmetrically or asymmetrically, depending on the application.

For this purpose, the Splay link provides two different lengths: **Standard** or **Extended**.

Together with the corresponding **Hole grid** on the rear rigging strand, the desired splay angles can be set in the range from 20° to 40° in 5° increments.

The Splay link is constructed as a cylindrical extender (we call it the 'Trombone');. The extension tube head can be turned counter clockwise by 90° and back again.

To change between the Standard and Extended positions, proceed as follows:

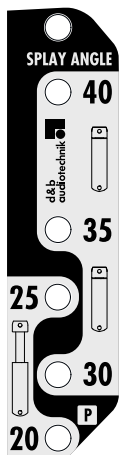
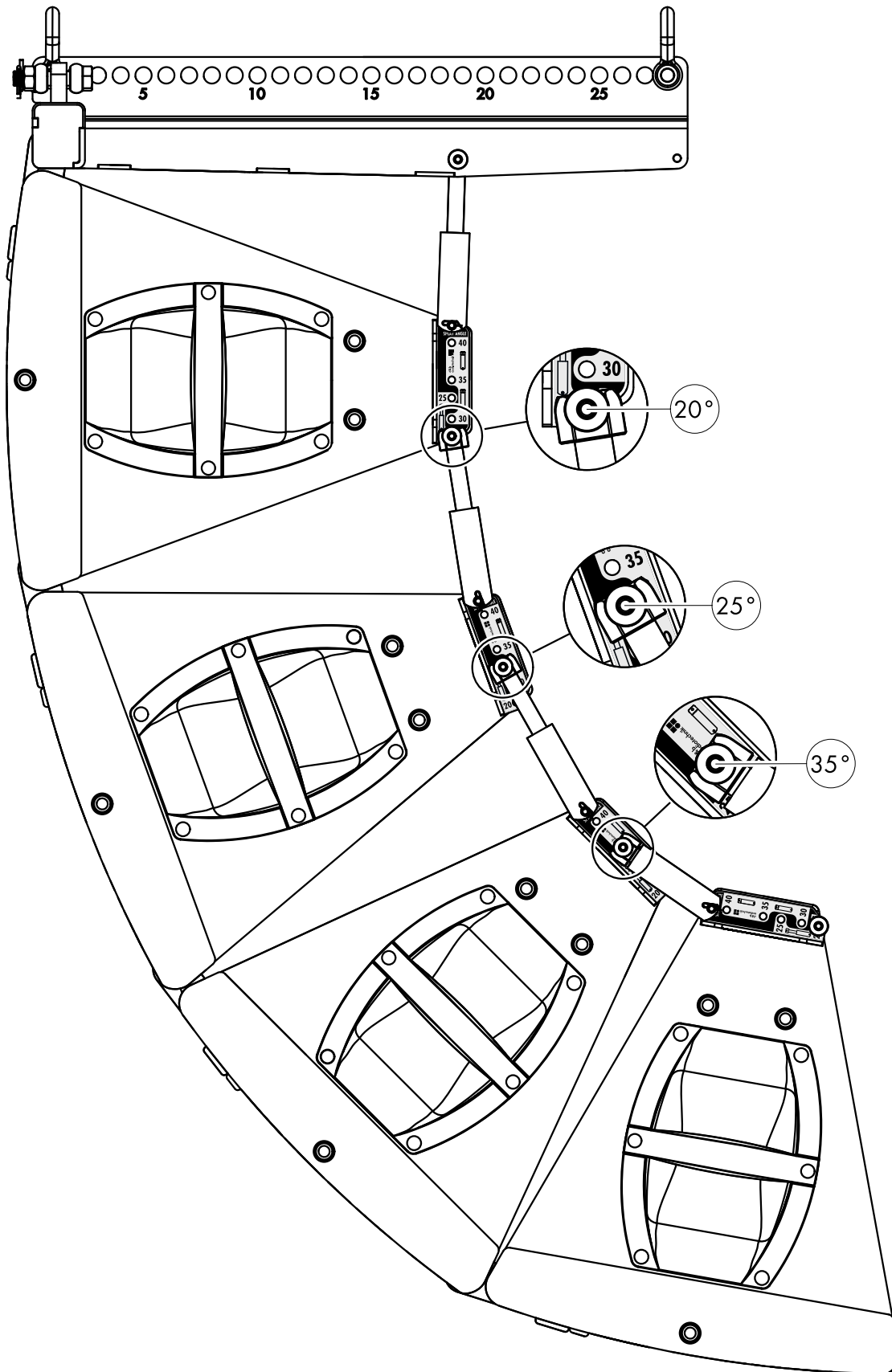
**Standard length**

1. Fold out the Splay link as previously described.
2. Turn the extension tube head counter clockwise by 90° to fix the standard length of the Splay link.

**Extended length**

1. Fold out the Splay link as previously described.
2. Pull out the extension tube to its stop position.
3. Turn the extension tube head counter clockwise by 90° to fix the extended length of the Splay link.

Overview chart - Splay angle settings\*



\* Shown with: Z5455 AL Flying frame. Same applies to the Z5459 ALi Mounting frame

### 3.1 Preparing the setup

#### General

Check the acoustical and mechanical setup using ArrayCalc and prepare enough printouts for each array. Alternatively, the d&b 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.
- Prepare the cables and link cables according to the number of amplifier channels and cabinets used.

#### 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.

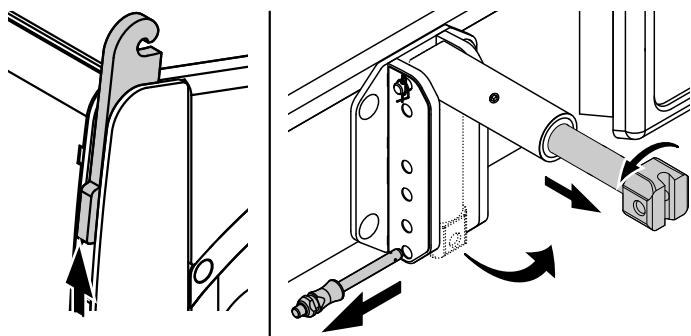
Please also follow the instructions given in ⇒ Chapter 4 "Care and maintenance" on page 16.

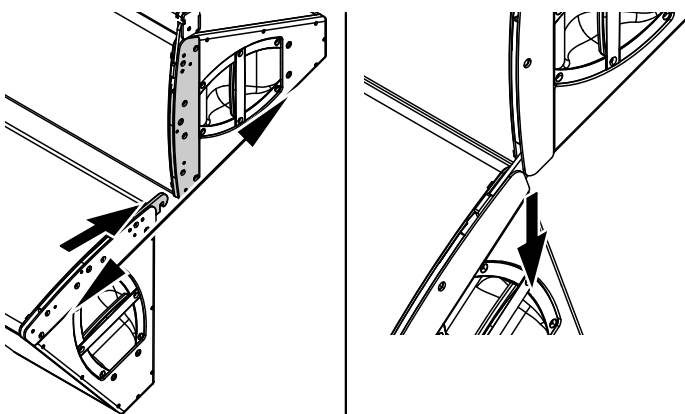
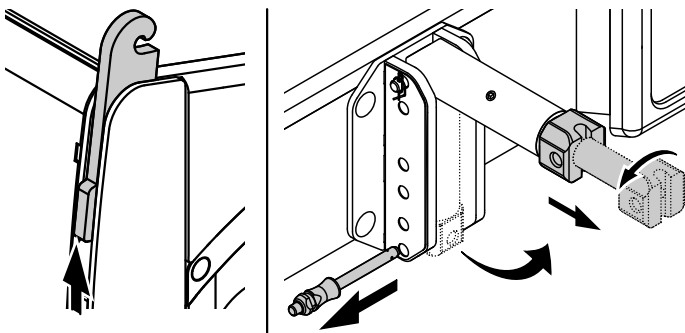
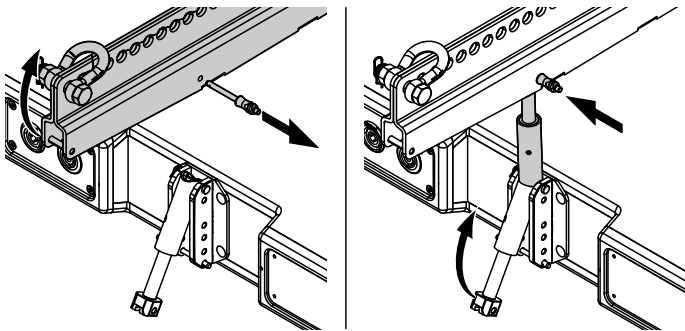
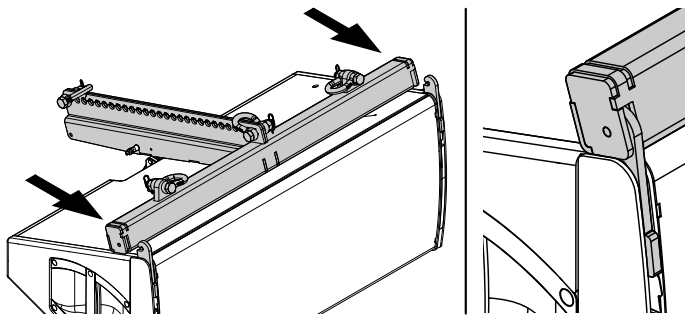
### 3.2 Order of assembly

Due to the compact size of the A-Series cabinets and the maximum number of four cabinets that can be flown, the assembly may be carried out either suspended or on the ground. The following procedure refers to the suspended assembly.

#### 1. Prepare the first cabinet

1. Extend both Front links.
2. At the rear, release the Locking pin of the Splay link.
3. Fold out the Splay link.
4. Pull out the link to the "Extended" length and turn the extension tube head counter clockwise by 90°.





## 2. Attach the frame

1. Attach the frame on top of the cabinet until the Front links of the cabinet fit into the slots at the front of the frame, as shown in the graphic opposite.

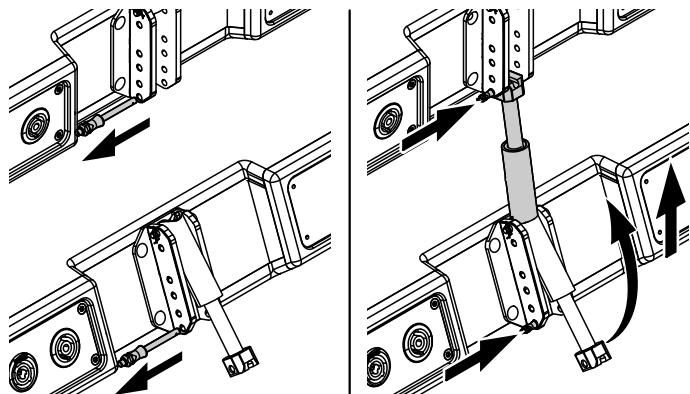
2. Lift the back of the frame until the Front links are engaged.
3. Release the Locking pin of the Splay link slot of the frame.
4. Insert the cabinet's Splay link into the Splay link slot of the frame.
5. Insert the Locking pin and ensure the pin is fully inserted and properly locked.
6. Suspend the assembly according to the desired suspension option.

## 3. Prepare the next cabinet

1. Extend both Front links.
2. At the rear, release the Locking pin of the Splay link.
3. Fold out the Splay link.
4. Set the link to the required length (Standard or Extended) and turn the extension tube head counter clockwise by 90°.

## 4. Attach the next cabinet

1. Lift the assembly to a suitable working height.
2. With one person on each side, attach the prepared cabinet at an angle of approx. 90° to the corresponding slots at the front of the upper cabinet, as shown in the graphic opposite.
3. Slightly lower the cabinet until the Front links are engaged.



4. On the rear rigging strand, release the corresponding Locking pins on the top and bottom cabinets.
5. Raise the back of the bottom cabinet.
6. Align the prepared Splay link with the corresponding hole of the rear rigging strand of the upper cabinet.
7. Insert the Locking pins and ensure the pins are fully inserted and properly locked.

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

### 5. Rig the cabling

Connect the flying cables and link cables according to the number of amplifier channels and cabinets used. Observe the related loudspeaker setups for the inner (In) and outer (Out) cabinets.

### 6. Check the assembly

Before hoisting the array to its operating position, recheck the entire assembly.

### 3.3 Hoisting and securing the array

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

When hoisting the array, ensure that the loudspeaker cables do not get caught anywhere. The cables can be strapped together with the motor cable to form a loom while the system is hoisted.

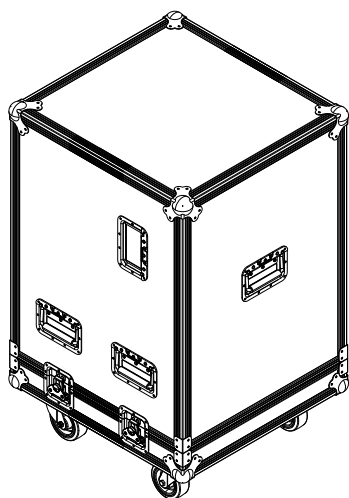
The chain hoist motors must raise the system slowly and evenly so that it does not swing or move from side to side during hoisting.

When the array is in its final operating position, the secondary safety device must be attached (please also refer to ⇒ Chapter 2.3 "Secondary safety" on page 7).

### 3.4 Derigging

#### The same safety instructions apply.

To dismantle any of the assemblies, follow the corresponding rigging and setup instructions in reverse order.



E7927 Touring case 2 x AL

#### 4.1 Transport/storing

During transport ensure the rigging components are not stressed or damaged by mechanical forces. Use suitable transport cases.

We recommend the use of the d&b E7927 Touring case 2 x AL for this purpose. The touring case provides specific trays and fixtures for the AL Flying frame and AL Flying adapter.

Due to their surface treatment the rigging components are temporarily protected against moisture. However, ensure the components are in a dry state while stored or during transport.

#### 4.2 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.
- Regularly lubricate the sockets using WD-40® or a similar product.

##### **Front and Splay 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.
- Inspection for missing ball bearings and damage.
- Functional inspection of the release mechanism to ensure it operates properly.
- Regularly lubricate the Locking pins using WD-40® or a similar product.

##### **Z5455 AL Flying frame**

##### **Z5459 ALi Mounting frame**

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



**5.1 EU conformity (CE symbol)**

This declaration applies to:

**d&b Z5455 AL Flying frame**

**d&b Z5459 ALi Mounting frame**

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](http://www.dbaudio.com).

**5.2 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.

