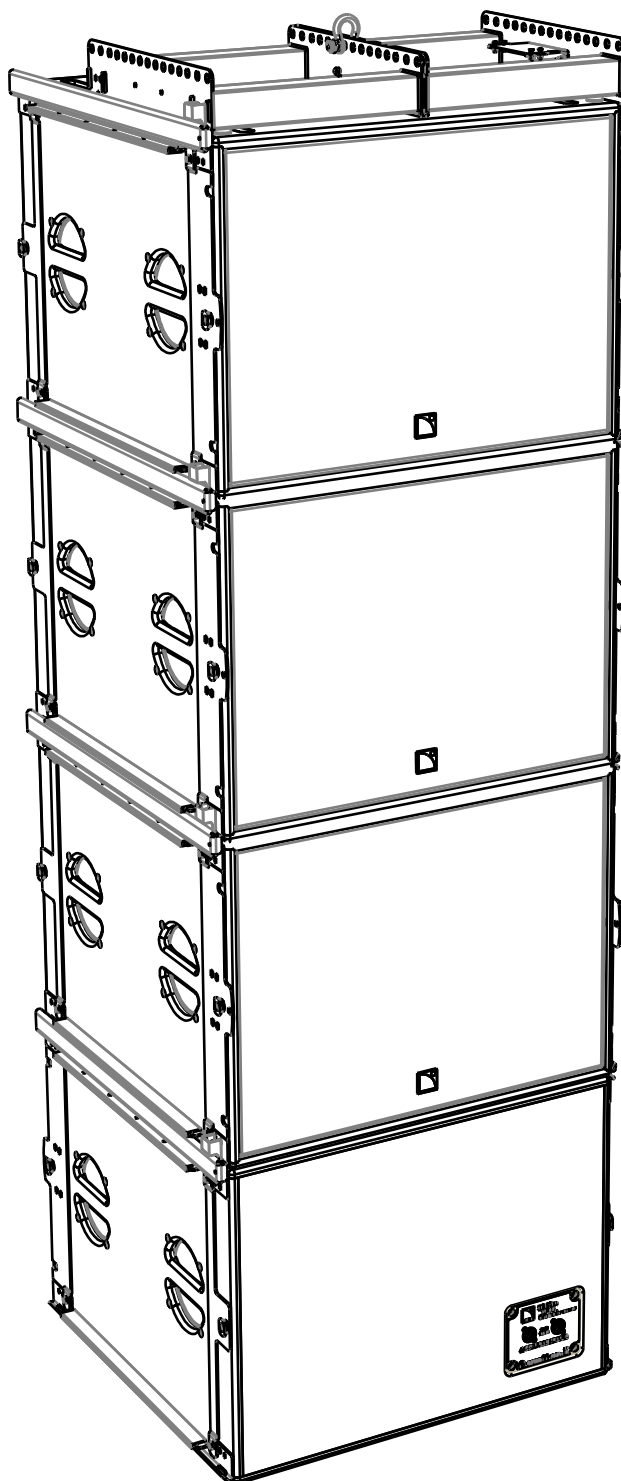


SB18m SUBWOOFER

RIGGING MANUAL

VERSION 1.0



SAFETY INSTRUCTIONS

1. **Read this manual**
2. **Heed all SAFETY INSTRUCTIONS as well as DANGER and OBLIGATION warnings**
3. **Never incorporate equipment or accessories not approved by L-ACOUSTICS®**
4. **Read all the related PRODUCT INFORMATION documents before exploiting the system**
The **product information** document is included in the shipping carton of the related system component.
5. **Work with qualified personnel for rigging the system**
Installation should only be carried out by qualified personnel that are familiar with the rigging techniques and safety recommendations outlined in this manual.
6. **Ensure personnel health and safety**
During installation and set-up personnel must wear protective headgear and footwear at all times. Under no circumstances personnel is allowed to climb on a loudspeaker assembly.
7. **Respect the Working Load Limit (WLL) of third party equipment**
L-ACOUSTICS® is not responsible for any rigging equipment and accessories provided by third party manufacturers. Verify that the Working Load Limit (WLL) of the suspension points, chain hoists and all additional hardware rigging accessories is respected.
8. **Respect the maximum configurations and the recommended safety level**
For safety issue, respect the maximum configurations outlined in this manual. To check the conformity of any configuration in regards with the safety level recommended by L-ACOUSTICS®, model the system in SOUNDVISION and refer to the warnings in **Mechanical Data** section.
9. **Be cautious when flying a loudspeaker array**
Always verify that no one is standing underneath the loudspeaker array when it is being raised. As the array is being raised, check each individual element to make sure that it is securely fastened to the adjacent element. Never leave the array unattended during the installation process. As a general rule, L-ACOUSTICS® recommends the use of safety slings at all times.
10. **Be cautious when ground-stacking a loudspeaker array**
Do not stack the loudspeaker array on unstable ground or surface. If the array is stacked on a structure, platform, or stage, always check that the latter can support the total weight of the array. As a general rule, L-ACOUSTICS® recommends the use of safety straps at all times.
11. **Take into account the wind effects on dynamic load**
When a loudspeaker assembly is deployed in an open air environment, wind can produce dynamic stress to the rigging components and suspension points. If the wind force exceeds 6 bft (Beaufort scale), lower down and/or secure the loudspeaker array.

SYMBOLS

The following symbols are used in this document:



DANGER

This symbol indicates a potential risk of harm to an individual or damage to the product. It can also notify the user about instructions that must be strictly followed to ensure safe installation or operation of the product.



OBLIGATION

This symbol notifies the user about instructions that must be strictly followed to ensure proper installation or operation of the product.



INFORMATION

This symbol notifies the user about complementary information or optional instructions.

WELCOME TO L-ACOUSTICS®

Thank you for choosing the L-ACOUSTICS® **SB18m subwoofer**.

This document contains essential information on rigging the system properly and safely. Carefully read this document in order to become familiar with these procedures.

As part of a continuous evolution of techniques and standards, L-ACOUSTICS® reserves the right to change the specifications of its products and the content of its document without prior notice.

Please check the L-ACOUSTICS® web site on a regular basis to download latest updates for documents and software: www.l-acoustics.com.

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1 RIGGING SYSTEM

The system approach developed by L-ACOUSTICS® consists in providing packaged solutions for loudspeaker system in order to guarantee the highest and most predictable level of performance at any step: modeling, installation, and operation. An L-ACOUSTICS® loudspeaker system is the set of components available to form any loudspeaker system based on one of the full-range loudspeaker enclosure afforded by L-ACOUSTICS®. It includes enclosures, rigging accessories, loudspeaker cables, amplified controllers, and software applications.

The SB18m subwoofer is especially adapted to the ARCS® WIDE SYSTEM or ARCS® FOCUS SYSTEM, and to the coaxial XT enclosures from L-ACOUSTICS®. It extends the low frequency response of a loudspeaker system down to 32Hz.

The main components involved in the **SB18m** rigging process are the following:

1.1 Loudspeaker enclosure

SB18m	Subwoofer enclosure provided with 2 SB18MRIG coupling bars equipped with the LOCKTAB locking tab
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1.2 Rigging elements

WIFOBUMP	Frame for flying SB18m or ARCS® WIDE/FOCUS enclosures as a vertical array provided with 2 bow shackle Ø12mm
CLAMP250	Truss clamp

1.3 Software application

SOUNDVISION	Proprietary 3D acoustical and mechanical modeling software
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1.4 Accessories

SB18PLA	Removable front dolly board for moving the SB18m enclosure and protecting its front grill during transportation and storage
SB18COV	Protective cover for transportation and storage



SB18m



WIFOBUMP



CLAMP250



SOUNDVISION



SB18PLA



SB18COV

Elements involved in the SB18m rigging process

2 MECHANICAL SAFETY

2.1 Maximum configurations

The SB18m rigging system has been designed to comply with BGV-C1 (2012) and EN ISO 12100-1 (2004) when implementing the following vertical arrays:

Ground-stacking	Flying	
On the floor 8 SB18m	With WIFOBUMP 8 SB18m	With WIFOBUMP and CLAMP250 4 SB18m



Mechanical safety of the shackles

The bow shackles Ø12mm provided by L-ACOUSTICS® have a working load limit (WLL) of 1000 kg with a 6:1 safety factor. This rating is in accordance with BGV-C1 (2012) recommendations when implementing the maximum configurations authorized by L-ACOUSTICS®.



Mechanical safety of the rigging system

Maximum configurations indicate the maximum number of enclosures which can be safely arrayed without the need for SOUNDVISION modeling. For more enclosures, model the system in SOUNDVISION and check the **Mechanical Data** section for any *stress warning* or *stability warning*.

2.2 Assessing mechanical safety

In order to assess the actual safety of any array configuration before implementation, refer to the following warnings:



Rated working load limit (WLL) is not enough

The rated WLL is an indication of the element resistance to tensile stress. For complex mechanical systems such as loudspeaker arrays, WLLs cannot be used per se to determine the maximum number of enclosures within an array or to assess the safety of a specific array configuration.



Mechanical modeling with SOUNDVISION

The working load applied to each linking point, along with the corresponding safety factor, will depend on numerous variables linked to the composition of the array (type and number of enclosures, splay angles) and the implementation of the flying or stacking structure (number and location of flying points, site angle). This cannot be determined without the complex mechanical modeling and calculation offered by SOUNDVISION.



Assessing the safety with SOUNDVISION

The overall safety factor of a specific mechanical configuration always corresponds to the lowest safety factor among all the linking points. Always model the system configuration with the SOUNDVISION software and check the Mechanical Data section to identify the weakest link and its corresponding working load. By default, a *stress warning* will appear when the mechanical safety goes below the recommended safety level.



Safety of ground-stacked arrays in SOUNDVISION

For ground-stacked arrays, a distinct *stability warning* is implemented in SOUNDVISION. It indicates a tipping hazard when the array is not secured to the ground, stage or platform. It is user responsibility to secure the array and to ignore this warning.



Consideration must be given to unusual conditions

SOUNDVISION calculations are based upon usual environmental conditions. A higher safety factor is recommended with factors such as extreme high or low temperatures, strong wind, prolonged exposition to salt water, etc. Always consult a rigging specialist to adopt safety practices adapted to such a situation.

3 SYSTEM SET-UP



Dismantling an array

Apply the associated set-up procedure in reversed order.



Independent or mixed

This document only deals with independent rigging of the SB18m subwoofer enclosure.

When using the SB18m enclosure as a companion to a main system, some combined configurations will imply the set-up of mixed arrays. At this point, it is especially the case of ARCS®WIDE/SB18m or ARCS®FOCUS/SB18m arrays. Always refer to the rigging manual of the main system or enclosure to get acquainted with the rigging procedures specific to the mixed main/sub arrays.



Cardioid configuration

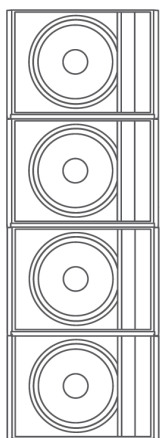
The cardioid configuration is an array of 4 subwoofers with 1 reversed element.

Refer to the subwoofer **user manual** for details about the CARDIOID operating mode.

Any of the following arrangements can be set in cardioid configuration.

3.1 Ground-stacking

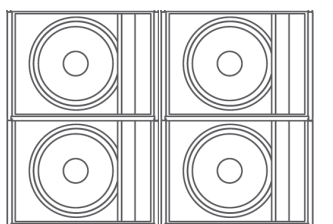
Vertical stacked on SB18m



► Attach the enclosures one after the other, on top of each other (logo down)

! Refer to PROCEDURE A to lock the SB18MRIG bars

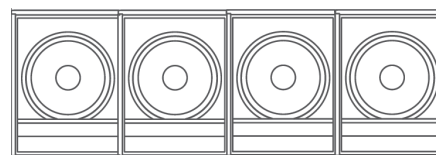
Block



► Set vertical stacks, side by side, one after the other, by attaching the enclosures on top of each other (logo down)

! Refer to PROCEDURE A to lock the SB18MRIG bars

Horizontal & On-end



► Place the enclosures side by side

3.2 Flying



Never implement a bridled suspension on the WIFOBUMP frame.
Always use 1 motor per pick-up point.



Truss clamping

By installing a CLAMP250 instead of a shackle, an array can be attached to a truss. Refer to PROCEDURE B.



Final check before flying the system

Coupling bars: All lugs of locking tabs must be secured, as indicated in PROCEDURE A.

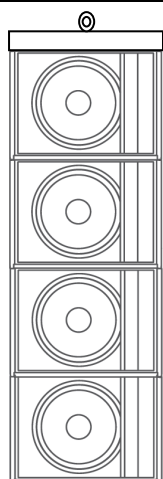
Shackles: All safety pins must be secured as indicated in PROCEDURE B.



Choose the flying option before rigging the system

Identify the appropriate flying option and rigging hole(s) by modeling the system in SOUNDVISION.

Vertical



- ▶ Place the first enclosure (logo down)
- ▶ Place and lock a second SB18m on top of the first one (logo down)
 - ❗ Refer to PROCEDURE A to lock the SB18MRIG bars
- ▶ Remove the coupling bars from their storage location
- ▶ Place and lock the WIFOBUMP frame to the top enclosure
 - ❗ Refer to SOUNDVISION for the frame position (front or rear)
 - ❗ Refer to PROCEDURE A to lock the SB18MRIG bars
- ▶ Attach a bow shackle Ø12mm or a CLAMP250 on the WIFOBUMP frame
 - ❗ Refer to PROCEDURE B
- ▶ Slightly raise the array until its bottom is at waist height
- ▶ Bring the next enclosure (logo down)
- ▶ Lower the array until its bottom rests on the next enclosure
- ▶ Remove the bars from their storage location and slide them into adjacent rigging rails
- ▶ Slightly raise the array and lock the coupling bars
 - ❗ Refer to PROCEDURE A to lock the SB18MRIG bars
- ▶ To add more enclosures, repeat the previous 5 steps until the array is completed

4 RIGGING PROCEDURES

A. Locking a SB18MRIG bar



Coupling bars and SB18m

For SB18m/SB18m or SB18m/WIFOBUMP attachment, only use the long SB18MRIG bars stored on the SB18m subwoofers. The shorter WIFORIG bars cannot ensure the mechanical safety of these connections.

- 1 **RIGGING:** Slide the bar into adjacent rigging rails from the front of the array.

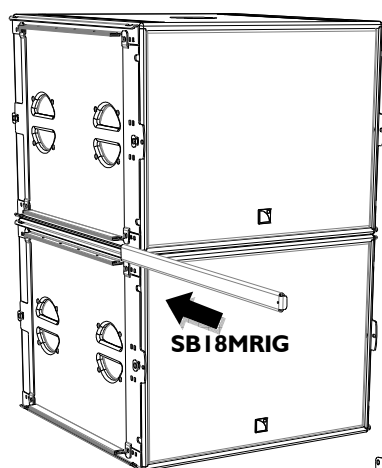
STORAGE: Engage the bar into both storage pins.

- 2 Secure the bar with the locking tab.

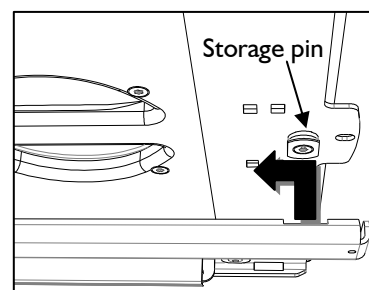
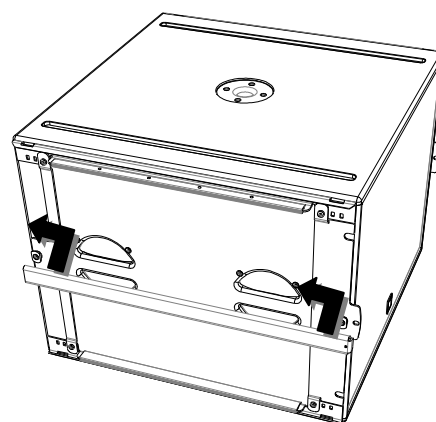
- a. Accurately position the bar by pushing it into place.
- b. Pinch the spring tongue and slide the locking tab until it snaps into place.

When encountering difficulty, try to slide the tab from the other side.

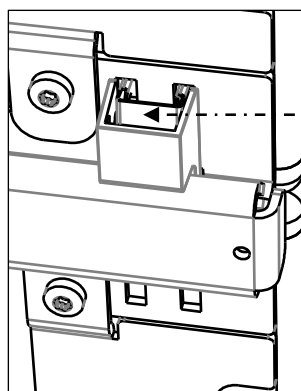
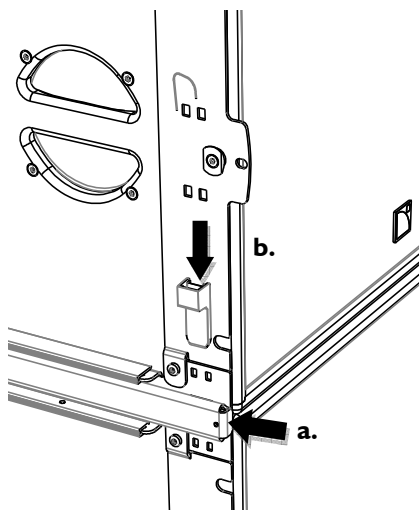
► PROCEDURE A : Locking a rigging bar



SB18MRIG bars being slid into adjacent **RIGGING** rails



STORAGE position



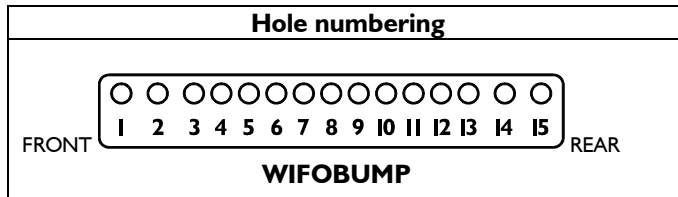
- ! Pinch and slide at the same time
- ! A clicking noise should be heard
- ! Check that the tab lugs are well locked

2

Pushing the bar into position and sliding the locking tab

B. Installing a shackle or CLAMP250

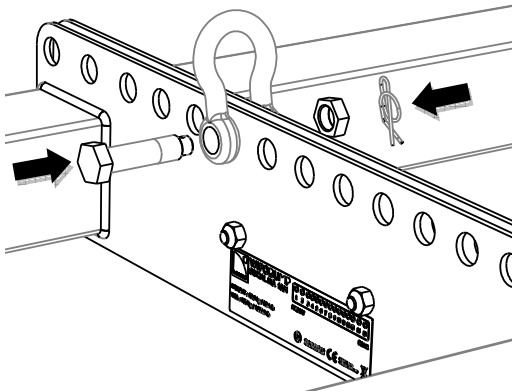
- 1 Refer to **SOUNDVISION** modeling to identify the hole number that corresponds to the desired tilt angle.



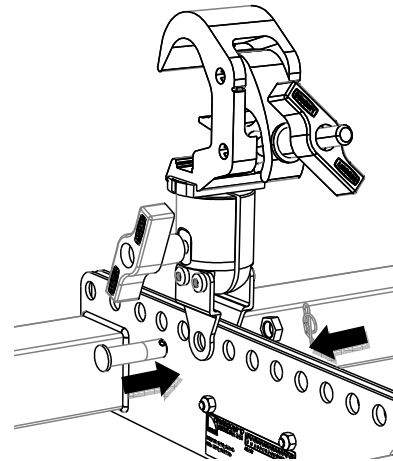
- i** **About site angle**
 As many variables can affect the actual site angle, it is recommended to use an inclinometer.

- 2 Secure a shackle or CLAMP250 to the identified hole.
 - a. Attach the shackle or the CLAMP250 bar to the identified hole, by driving the pierced bolt and securing the nut.
 - b. Lock the pierced bolt with the safety pin.
 - c. With CLAMP250, install safety slings between the WIFOBUMP and the truss.

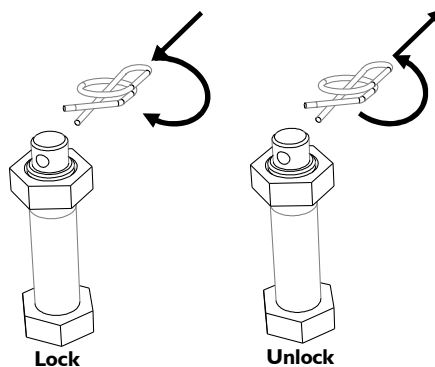
► PROCEDURE B : Locking a shackle or CLAMP250



A shackle being attached on the WIFOBUMP



A CLAMP250 being attached on the WIFOBUMP



Safety pin mechanism on shackles

2b.



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