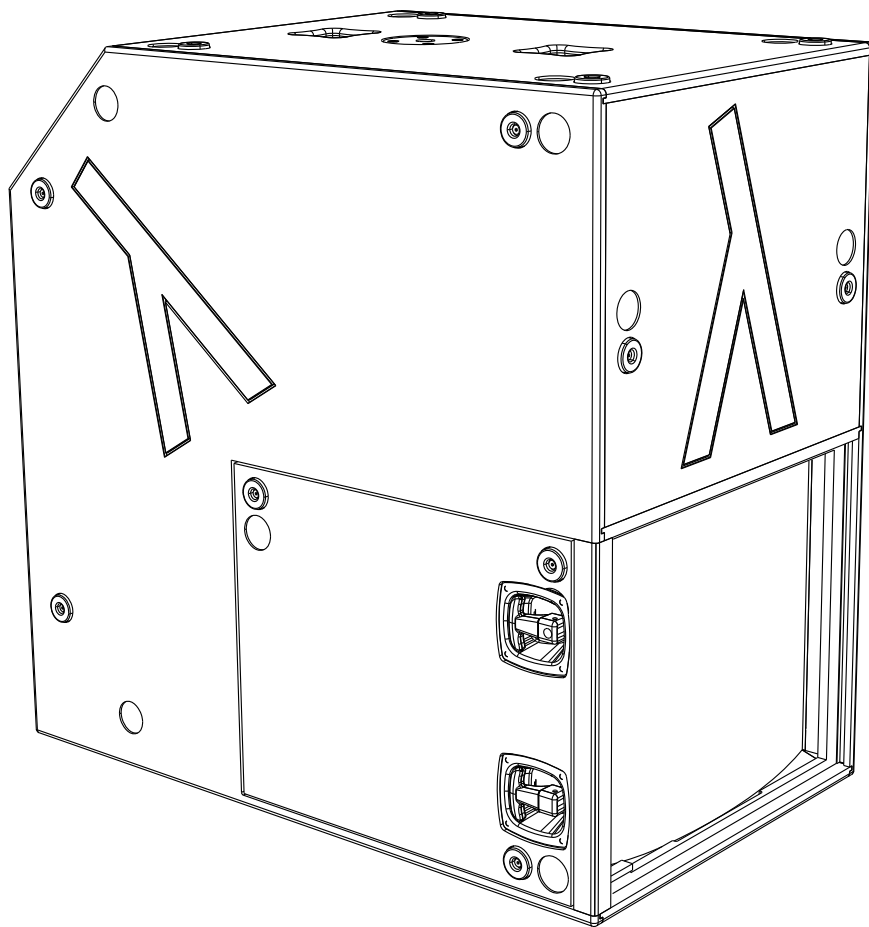


DH-18 Manual



Version 1.1

DH-18 Manual
Version 1.1 02/2022
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This manual is optimized to save paper and to print 2 pages per DIN A4 sheet.

Lambda Labs
professional acoustics



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NOTES:

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1. Safety

1.1. General safety information



This manual contains essential information on product safety, installation and usage. Read this manual carefully in order to become familiar with the operation and usage of the product/s. Read this manual carefully BEFORE operating the product/s for the first time! Read the IMPORTANT GENERAL SAFETY REGULATIONS you can find on the next pages!

- Keep this manual within reach while operating the product/s all the time!
- As a Lambda Labs products rental partner, always attach the appropriate user manuals to the devices. Should you need additional printed manuals, please order them from Lambda Labs or download the latest version!
- When reselling the product/s, hand over the manual to the new owner and provide written documentation about any changes of the system which may have been applied!
- Always use the latest manual edition! Check our website regularly for updates!



While all information in this manual has been prepared to the best knowledge and with the utmost care, Lambda Labs can not guarantee the accuracy of the documentation in all cases. Lambda Labs disclaims any liability for any errors or omissions that may be inferred from this manual or the products described therein. This does not apply to intent and gross negligence. Technical specifications, as well as dimensions, weight and properties do not constitute guaranteed characteristics. Lambda Labs expressly reserves the right to make changes and modifications in accordance with statutory provisions and to improve product features.

1.2. Declaration of Symbols and Illustrations of this Manual










In order to point out potential sources of danger and application errors, the following symbols and illustrations are used in this manual:

	<p>DANGER:</p> <p>The warning symbol "DANGER" indicates that non-observance may pose a danger to the operator or to other persons in close range and the loudspeaker product!</p>
	<p>CAUTION:</p> <p>The warning symbol "CAUTION" requires the operator to take particular precautions to prevent possible damage to the loudspeaker product!</p>



	<p>ATTENTION:</p> <p>The warning symbol "ATTENTION" indicates that a special attention should be given to certain setup activities or applications!</p>
	<p>NOTE:</p> <p>This illustration notifies the operator about hints and help to simplify and to accelerate the use of the loudspeaker, the setup process or to better understand some contexts.</p>




1.3. IMPORTANT GENERAL SAFETY REGULATIONS

	<p>Safe stand on suitable underground !</p> <p>Always ensure a good stability of the loudspeaker, especially when using it with distance rods. When placing the loudspeaker on the ground or platforms, make sure the area is even and capable to carry the total load! Secure the loudspeaker with straps to the ground or suitable platforms! Do NOT stack more than 2 subwoofers in D-Mode on each other! Do NOT stack more than 6 subwoofers in S-Mode on each other!</p>
	<p>High sound pressure levels!</p> <p>Loudspeakers are capable to deliver dangerously high sound pressure levels and can cause permanent hearing loss. Always pay close attention to the SPL levels when using a sound reinforcement product or system! Always adhere to the corresponding statutory provisions and safety regulations.</p>
	<p>Qualified operators!</p> <p>The operation as well as the planning of the setup may only be carried out by qualified personnel who are familiar and experienced with the instructions and the implementation of the operating procedures!</p>
	<p>Work safety!    </p> <p>In order to avoid accidents, it is the responsibility of the operator and the contractor to ensure that the local accident prevention regulations are always fulfilled. During the set up process of the loudspeaker and especially the entire rigging process, the operators should always wear head and foot protection, hand protection and possibly ear protection! Never climb on stacked or flown loudspeakers!</p>
	<p>Local safety regulations!</p> <p>Other safety regulations may apply in different countries. If changes occur, get to know the local regulations and if necessary, adapt them to the respective loudspeaker setup. It is the duty and responsibility of the operator to carry out any ground setup and any flown installation in accordance with the local regulations!</p>



	<p>Inspection of electrical items!</p> <p>Check ALL involved electrical devices such as cables, Speakon sockets and other components which are involved in the powering process of the loudspeaker before every use! Even with the slightest doubts about the function and safety of any components, these should not be used!</p>
	<p>Dynamic Load (Wind Load)!</p> <p>Lambda Labs does not recommend the use of stacked Lambda Labs subwoofers higher than 3 meters (78,7") with wind forces greater than 6 bft (12.3 m / s, 44 km / h). If the wind force exceeds 8 bft (17.8 m / s, 62 km / h), clear the loudspeaker area, bring down the loudspeakers and secure them!</p>
	<p>Setup environment!</p> <p>Keep the device dry and avoid the contact to heavy dust, sand and prolonged exposure to intense sunlight or strong vibrations and impact. For safety reasons, it is not allowed to place any liquid containers on or near to the enclosure.</p>
	<p>Placement & interaction with other devices!</p> <p>The device should not be placed near any heat producing sources or exposed to extremely high temperatures or below zero degrees Celsius. Sufficient ventilation should be provided when operating the loudspeakers!</p>
	<p>Setup area protection!</p> <p>When setting up a system with stacked loudspeaker arrays, secure the entire work area with crowd control barriers. Make sure that the secured area is sufficiently large in proportion to the height of the stack!</p>
	<p>Cabling!</p> <p>Lay down all cables with care. Additionally, secure the cables with duct tape or cable bridges and mark them for safety reasons. Do not place anything on the cables of the device. Use intact power cords only! The use of power cables and power distributions with insulated or missing protective earth conductor (PE) is strictly forbidden!</p>
	<p>Changing Lid!</p> <p>Always ensure, that the Changing Lid of the DH-18 is fully closed and safely locked!</p>
	<p>Invisible damages!</p> <p>In the event of a potential damage of a loudspeaker by falling down from a height or being involved in a transportation accident, it is mandatory to check the loudspeaker for mechanical stability.</p>
	<p>Maintenance!</p> <p>Please refer to Chapter 7 „Maintenance“. If any damage or failure occurs to the loudspeaker itself or the integrated rigging system, please contact the Lambda Labs technical support and wait for further instructions! Do NOT repair or exchange speaker parts or rigging components by yourself and without support of a qualified service personnel!</p>



	<p>Manual!</p> <p>Keep this manual within easy reach for operating the product/s all the time!</p> <p>As a Lambda Labs products rental partner, always attach the appropriate user manuals to the devices. Should you need further manuals, please order them from Lambda Labs or download a current copy!</p> <p>If you resell the loudspeaker, hand over the manual to the next operator and provide written records about any changes of the device which may have been applied! Check our website regularly for updates in order to use always and only the latest manual version!</p>
	<p>Storing!</p> <p>Store the devices in a dry, cool and clean environment!</p>
	<p>Shipping</p> <p>Keep the packaging of the devices in order to send them in original packaging in case of damage. This minimizes the risk of possible transport damage.</p>



1.4. EC declaration and conformity

Lambda Labs
Austria

Declares that the following product:
DH-18

Are in conformity with the provisions of:
Machinery Directive 2006/42/EC
2011/65/EU, RoHS

To guarantee the safety of the components, the following standards and rules have been complied:
EN ISO 12100-1: 2011 (Mechanical Safety)
DIN 18800 (Mechanical Structure)
BGV-C1 / DGUV Regulation 17 & 18 (Mechanical Standard applied in Germany)



Graz, 20/02/2022

Steffen Kroschel, Chief Technology Officer (CTO)

WEEE Declaration (Disposal)

Electrical and electronic devices must be disposed of separately from household or municipal waste at the end of its operational lifetime. Please dispose of this product according to the respective national regulations or contractual agreements. If there are any further questions regarding the disposal of this product, please contact Lambda Labs.



2. The DH-18

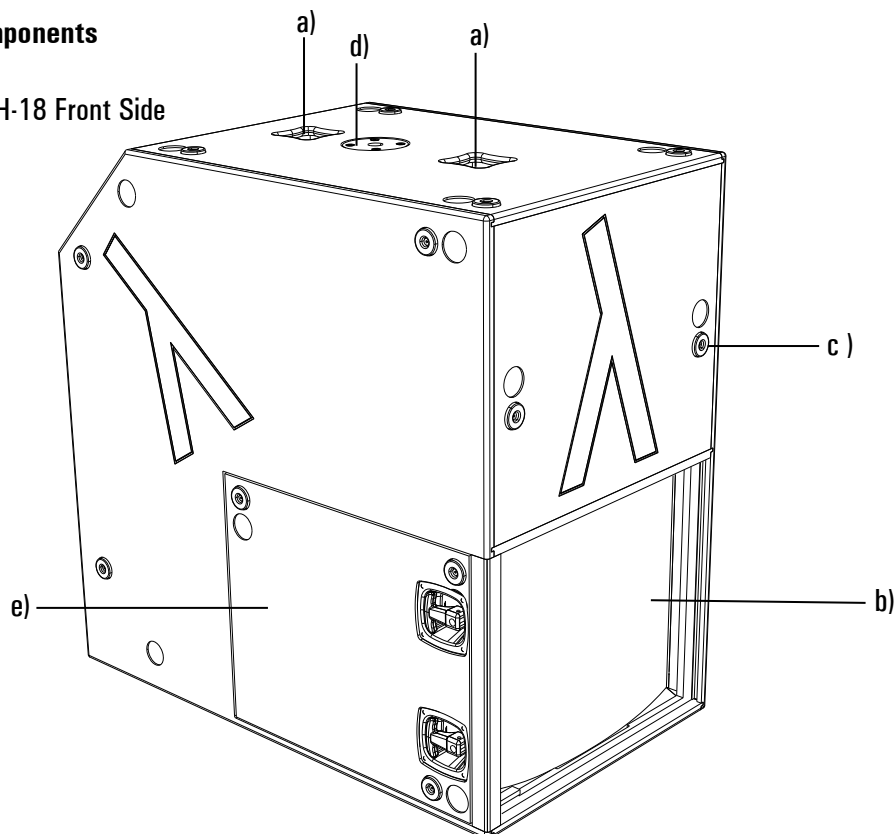
2.1. Technical data overview


System	Extreme high power subbass with Digitalhorn technology
Configuration	1 x 18" ultra long excursion driver with 5.3" VC as well as glass fiber and epoxy reinforced cone Aluminium demodulation rings
Power Handling	3600W RMS amplifier power
Frequency Response	S-Mode: 28 – 110Hz (+/- 3dB) D-Mode: 30-120Hz (+/- 3dB)
Sensitivity	S-Mode: 102dB / 1W / 1m D-Mode: 104dB / 1W / 1m
Connection	2 x Neutrik NL4 Speakon
Impedance	4 Ω
Enclosure	Rigid braced construction of special 15mm lightweight-plywood
Finish	High density black polyurethane-coating (Other colours on request)
Front Cover	Coated 2 mm perforated steel with weather-resistant micro-meshed fabric
Width	22.9" (582 mm)
Height	37.9" (962 mm)
Depth	37.9" (962 mm)
Weight	129 lbs (58.5 kg)



2.2. General Components

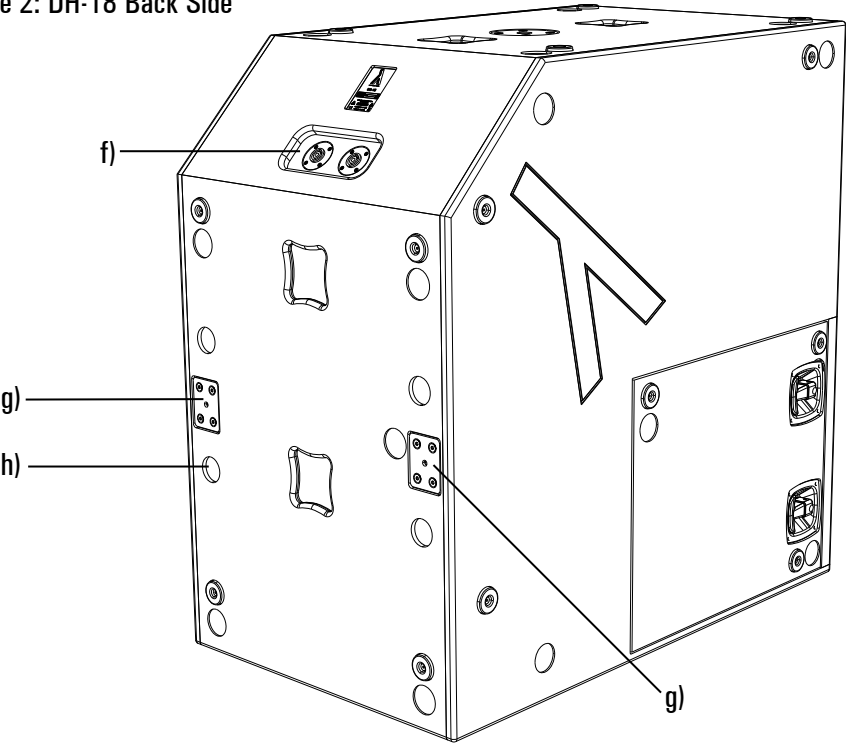
2.2 Figure 1: DH-18 Front Side




PART	DESCRIPTION of 2.2 Figure 1	REFERENCE
a)	Handle A recessed handle is located on the top, back and bottom plate of the cabinet to carry and move the loudspeaker.	—
b)	Front Grill The driver is protected by a perforated steel grill. Additionally, a micro-meshed weather resistant fabric on the inside of the grill protects the driver from dust and small particles. The fabric is acoustically transparent.	—
c)	Rubber Feets 24 rubber feets, attached to the subwoofer`s cabinet, make the subwoofer stand safely in all positions.	—
d)	Mounting Flange A Mounting Flange with M20 Thread is located on the loudspeakers top side to install a distance rod. (Distance rod / distance rod with hand crank). Lambda Labs recommends to use products with the „Ring Lock“ system.	Chapter 5
e)	Changing Lid By attaching the Changing Lid to the front or side of the subwoofer, the subwoofer can be switched into different modes (S-Mode / D-Mode).	Chapter 4.3
<div style="display: flex; align-items: center;">  <div> Danger: When using a distance rod mounted on subwoofer/s, the loudspeaker should never be heavier than the subwoofer/s itself. The longer the distance rod is extended, the greater the counterweight should be. Secure the subwoofers to each other with straps and/or to the ground/ suitable platforms! Check the stability in every case! </div> </div>		



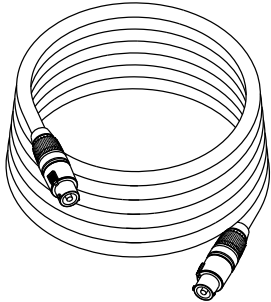
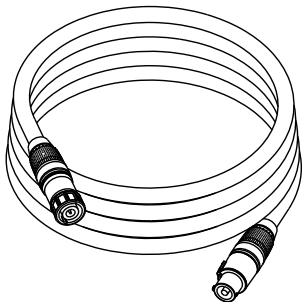
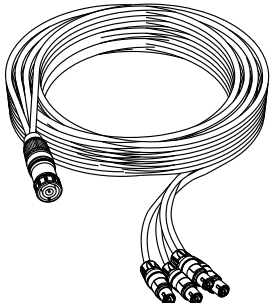
2.2 Figure 2: DH-18 Back Side



PART	DESCRIPTION of 2.2 Figure 2	REFERENCE
f)	Connector Section 2 Neutrik NL4 Speakon connectors for driving the DH-18 subwoofer from a Lambda Labs KW-18 Amplifier Rack. Both connectors can be used as an input or link (Daisy Chaining) connector. One DH-18 subwoofer can be driven from one channel of the KW-18 Amplifier. The DH-18 takes the signal from the +1/-1 pins.	Chapter 3
g)	Wheelboard Fixture The DH-18 wheelboard is equipped with 2 Combi Pins. By connecting the 2 Combi Pins to the Wheelboard Fixture, the wheelboard can be attached to the subwoofer`s back side. For further details, refer to Chapter 6.	Chapter 6
h)	Wheelboard Recesses 4 recesses at the backside of the DH-18 help to attach the wheelboard more easily. They match the wheelboard`s rubber feets with the recesses.	Chapter 6
	Danger: Make sure that the Changing Lid is closed correctly and completely at all times!	



3. Cabling

Cable Type	DESCRIPTION
	<p>8 Pole Speakon Cable (20m) 20m 8 x 4mm² High Quality Speaker Cable with 2 pieces of Neutrik NLT8FX-BAG Connectors. Use this cable between the Lambda Labs KW-18 Amplifier Rack and the DH-18 enclosure together with the 8 Pole / 4x2 Pole Sub Speakon Breakout Cable (5m).</p> <p>Note: 8 Pole Speakon Cable 10m is also available.</p>
	<p>8 Pole Speakon Extension Cable (10m) 10m 8 x 4mm² High Quality Speaker Cable with one Neutrik NLT8FX-BAG and one Neutrik NLT8MX-BAG Connector.</p>
	<p>8 Pole / 4x2 Pole Sub Speakon Breakout Cable (5m) 4 pieces of 2 x 2mm² 5m cables with 4 pieces of Neutrik NL4FC Connectors and one Neutrik NLT8MX-BAG Connector. Use this cable between the Lambda Labs KW-18 Amplifier Rack and the DH-18 enclosure together with the 8 Pole Speakon Cable (20m).</p>

4. Changing the DH-18's mode of operation

The DH-18 subwoofer can be set to different operating modes by moving the lockable Changing Lid. Depending on the position of the Changing Lid, the subwoofer can be operated in S-Mode or D-Mode. The different modes influence the low corner frequency, the radiation pattern and the maximum SPL capability of the subwoofer.

4.1. Presets & Modes

The DH-18 subwoofer provides two different modes to choose from.

- **D-Mode**

In D-Mode, the DH-18 provides 2dB more sensitivity and an extra amount of rear attenuation. At the same time, the low corner frequency for this mode is 33Hz.

- **S-Mode**

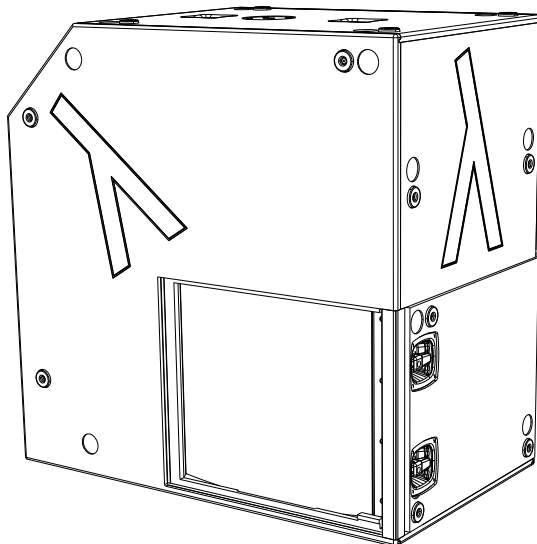
In S-Mode, the DH-18 provides more very low frequency extension down to 28Hz. At the same time, the subwoofer in this mode has 2dB less sensitivity and less rear attenuation.



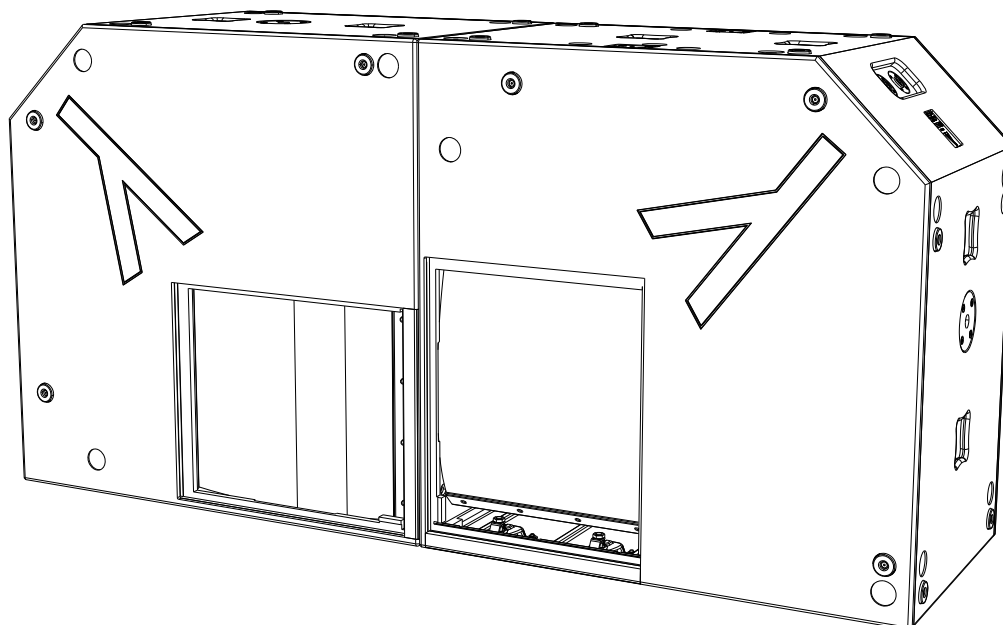
Lambda Labs recommends using the customized presets for D-Mode and S-Mode and provides presets for these modes for a single, for double and for more than two DH-18 subwoofers in an array.

4.2. Subwoofer Stack Types & Modes

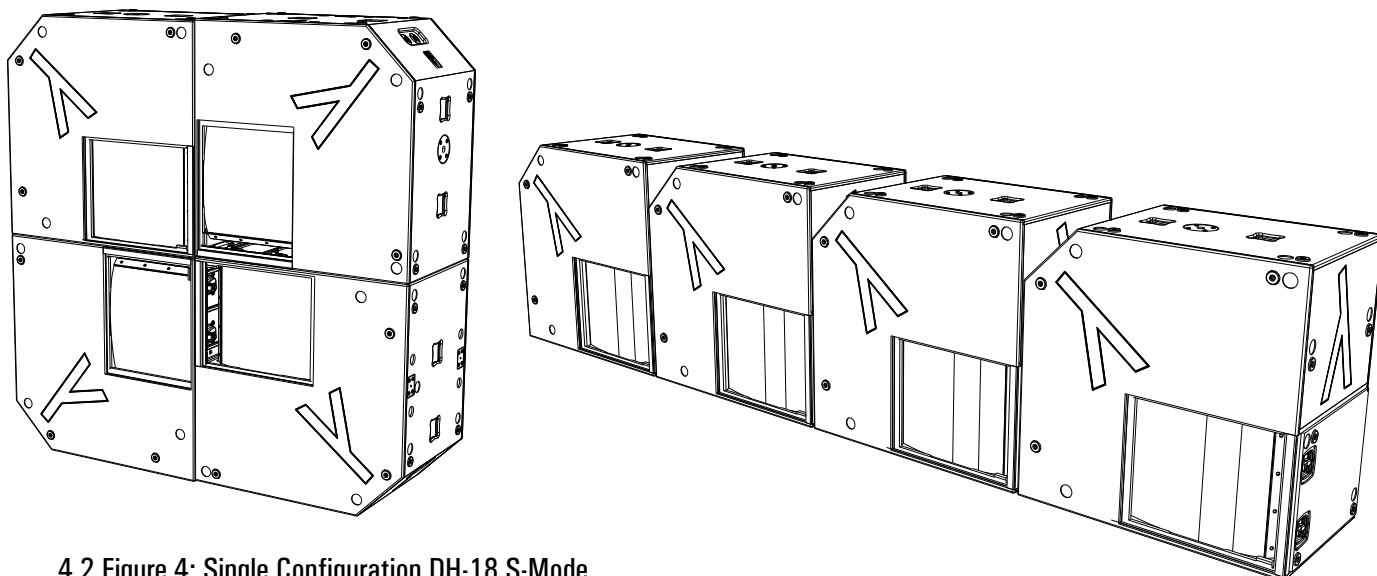
4.2 Figure 1: Single Configuration DH-18 D-Mode



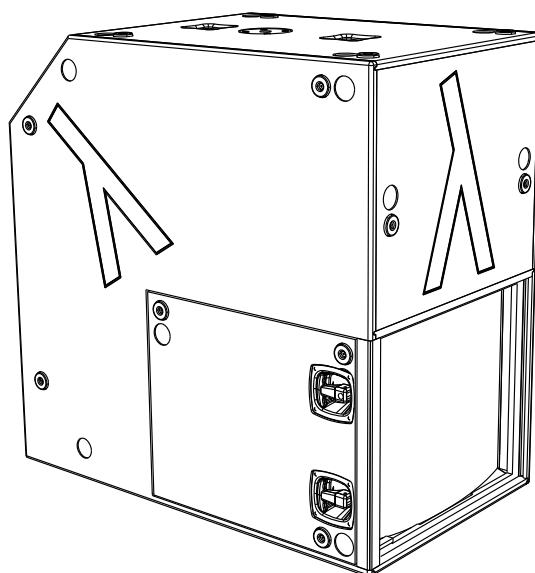
4.2 Figure 2: Double Configuration DH-18 D-Mode



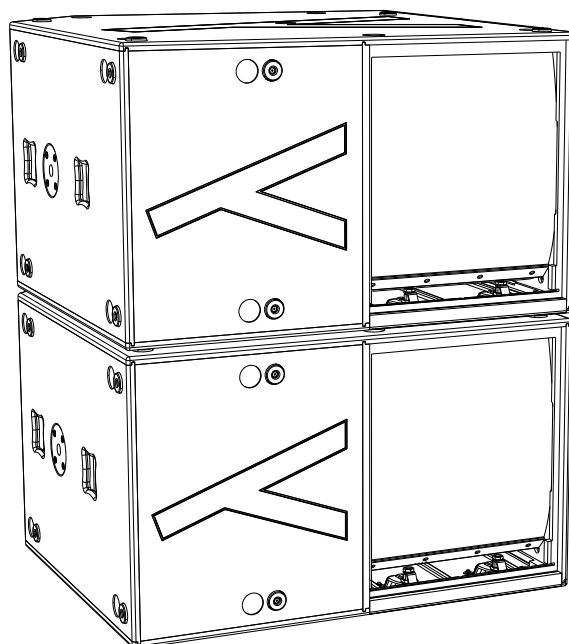
4.2 Figure 3: Quad Configuration DH-18 D-Mode



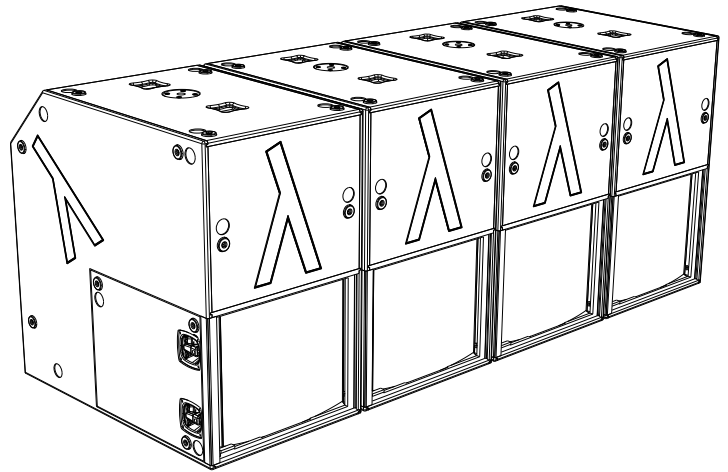
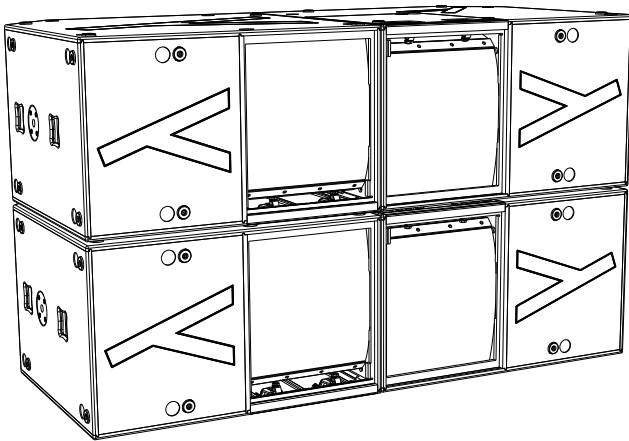
4.2 Figure 4: Single Configuration DH-18 S-Mode



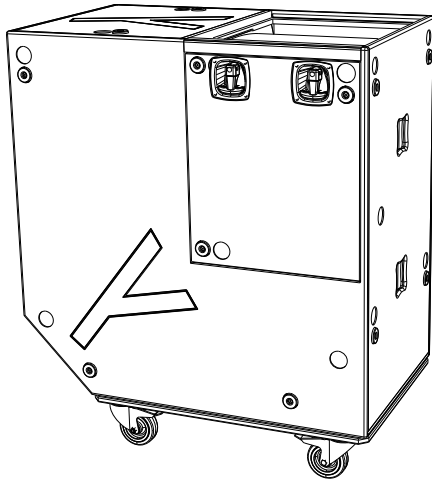
4.2 Figure 5: Double Configuration DH-18 S-Mode



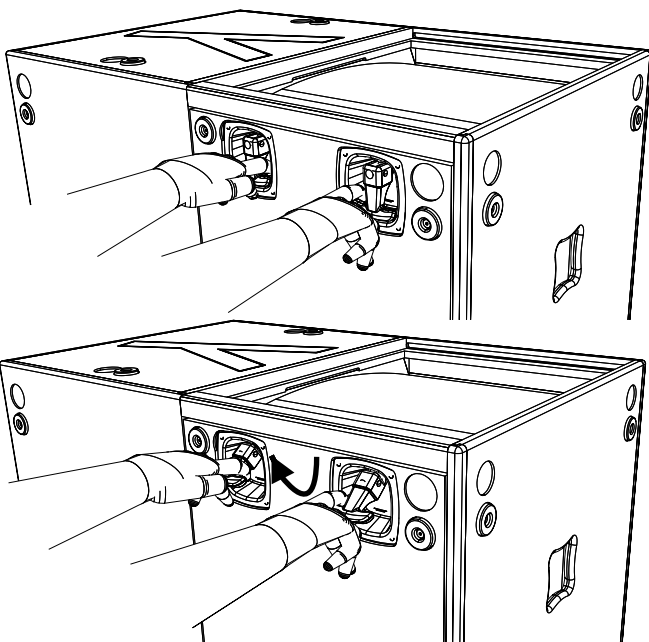
4.2 Figure 6: Quad Configuration DH-18 S-Mode



4.3. Operating the Changing Lid

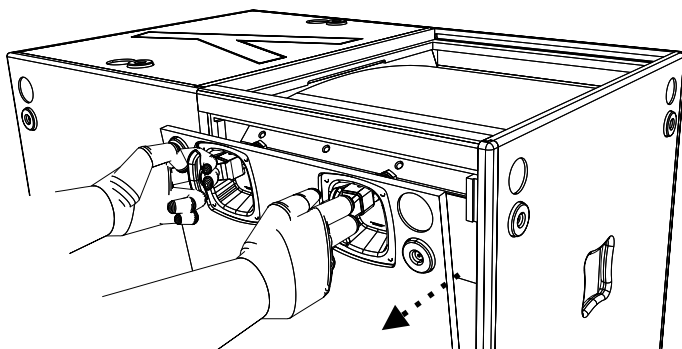
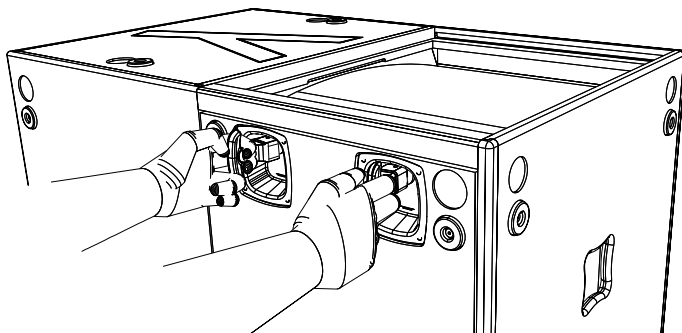
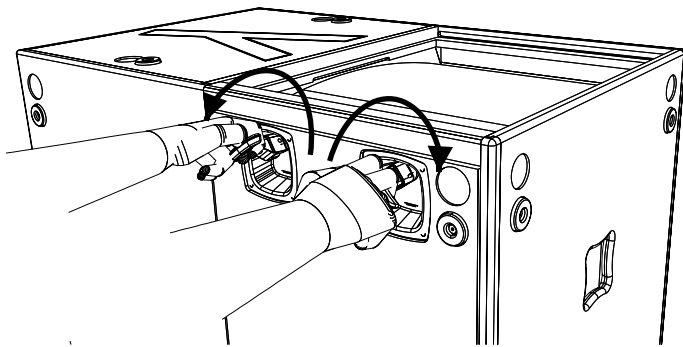
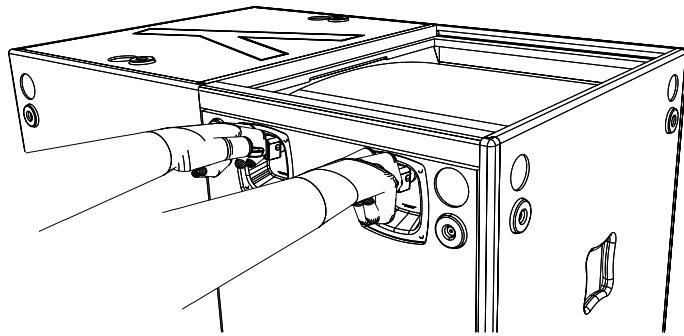
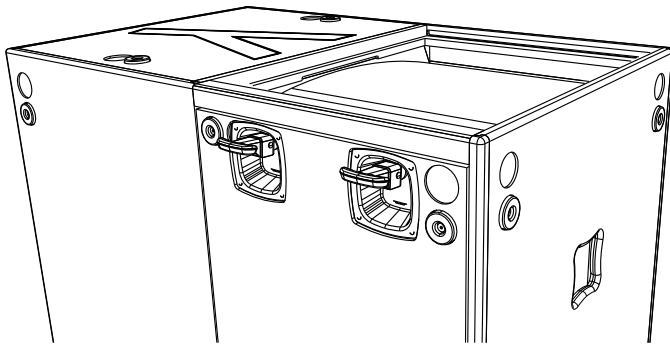


1. Lambda Labs recommends replacing the Changing Lid while the DH-18 is still on its wheelboard. This way, the Changing Lid can be replaced easily while the operator is standing.



2. First, fold the handles of the two locks outwards with the help of your fingers.





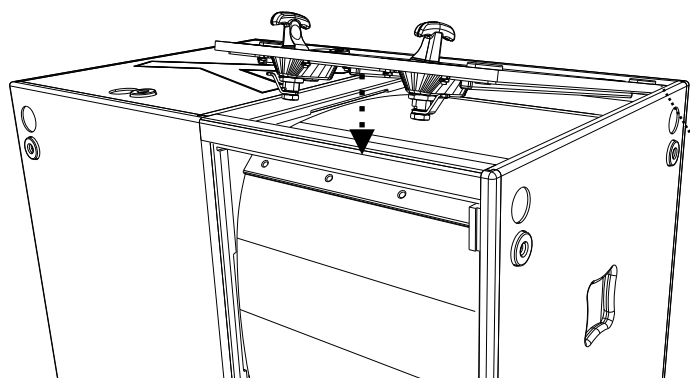
3. When the handles are fully unfolded, take hold of them with your index and middle fingers...

...and turn the left handle **anti-clockwise** and the right handle **clockwise** at the same time...

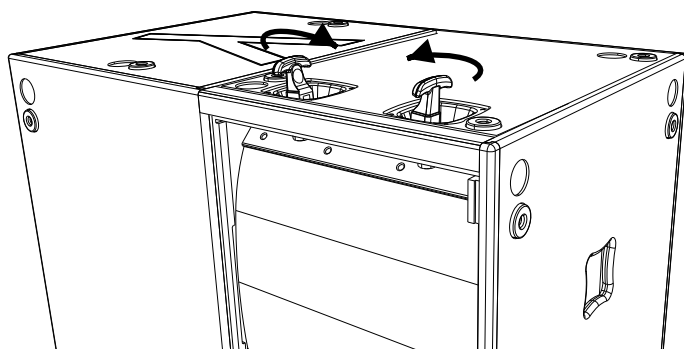
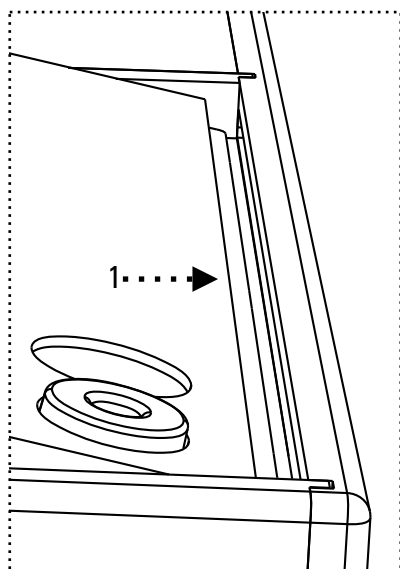
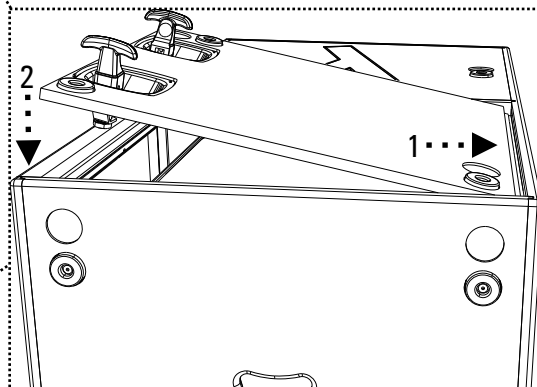
...until the handles are rotated by 90 degrees.

4. Now pull the handles to pull the Changing Lid out of the enclosure.

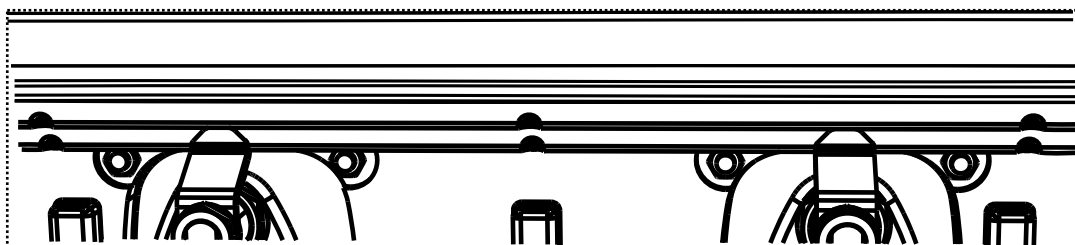




5. Next insert the Changing Lid with the handles facing up into the opposite opening of the DH-18. Make sure to first place the groove completely in the recess before you push the Changing Lid down. Also make sure that the two locks are completely open.



6. Proceed in the reverse order to lock the locks. Finally, fold the handles back in completely. Always make sure that the locks are locked safely and the lock latches are behind the inner metal counter parts!

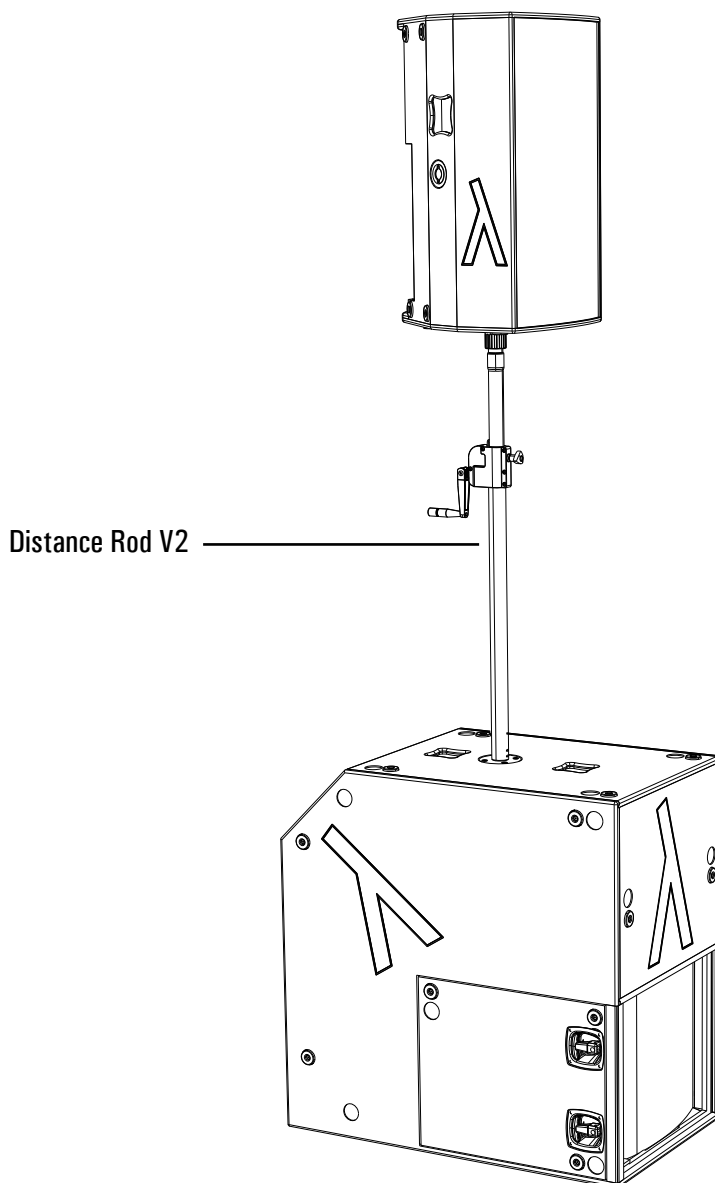


Danger: Make sure that the Changing Lid is closed correctly and completely at all times! Always fold the handles back completely to safe the lock! Always make sure, that the locks are locked safely and the lock latches are behind the inner metal counter parts!



5. Distance Rod

With the use of the built in Mounting Flange, a Distance Rod with M20 thread can be mounted on the DH-18.



Note: The items described above can be purchased as:
Distance Rod V1: Distance Rod with splints (Ring Lock)
Distance Rod V2: Distance Rod with hand crank and splints (Ring Lock)

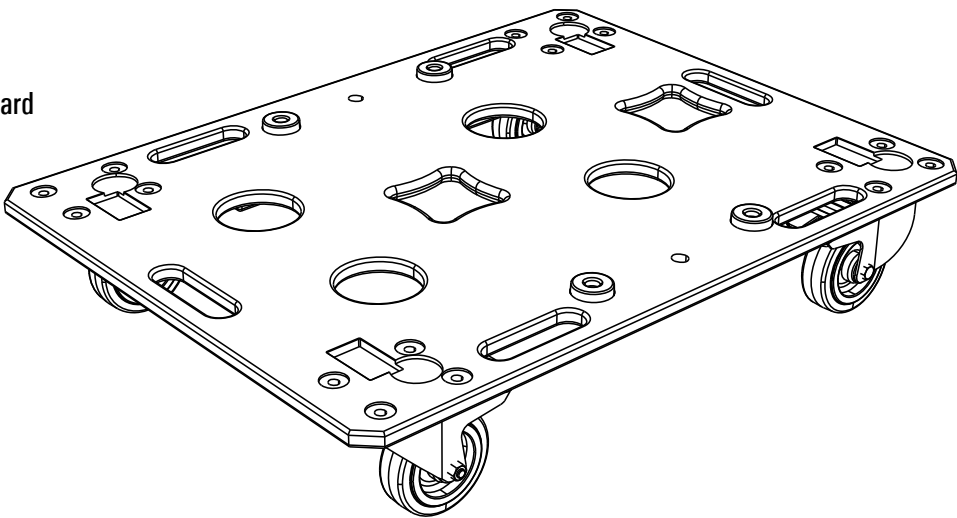


Danger: When using a distance rod mounted on a subwoofer/s, the loudspeaker should never be heavier than the subwoofer/s itself. The longer the distance rod is extended, the greater the counterweight should be. Secure the subwoofers to each other with straps and/or to the ground/suitable platforms! Check the stability in every case! For further details, refer to the individual loudspeaker manuals as well.

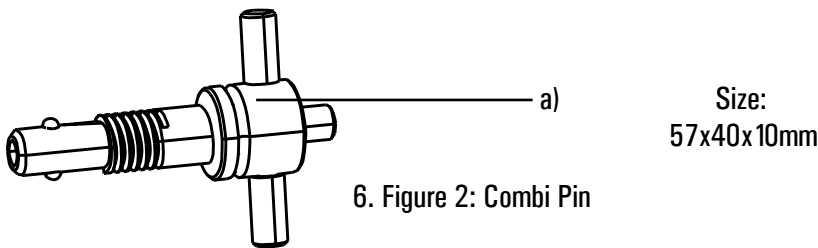


6. Wheelboard Mounting

6. Figure 1: DH-18 Wheelboard

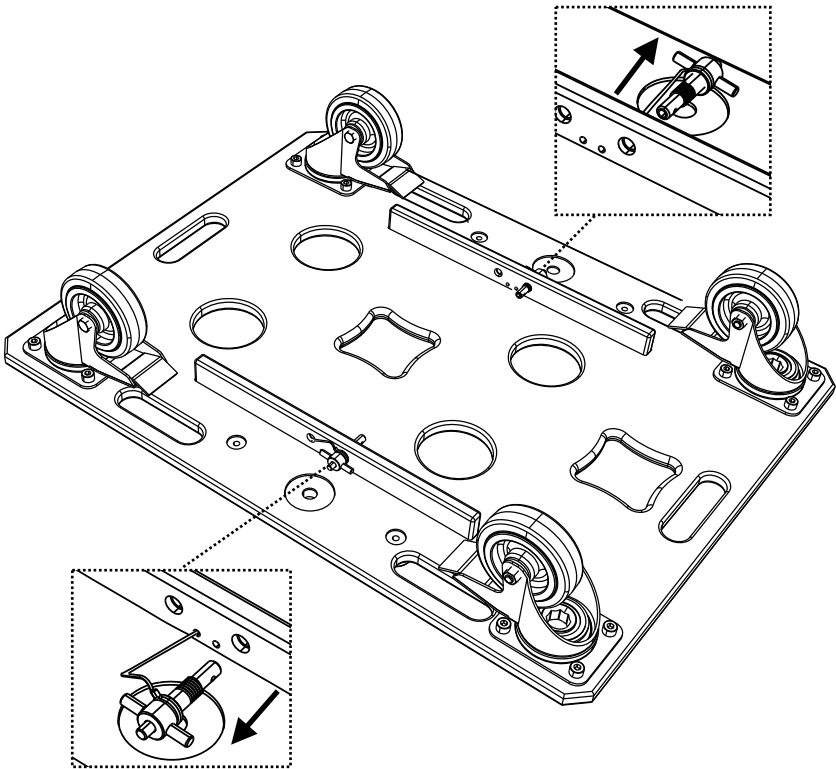


Attaching the DH-18 Wheelboard to the enclosure is done by the Combi Pin.



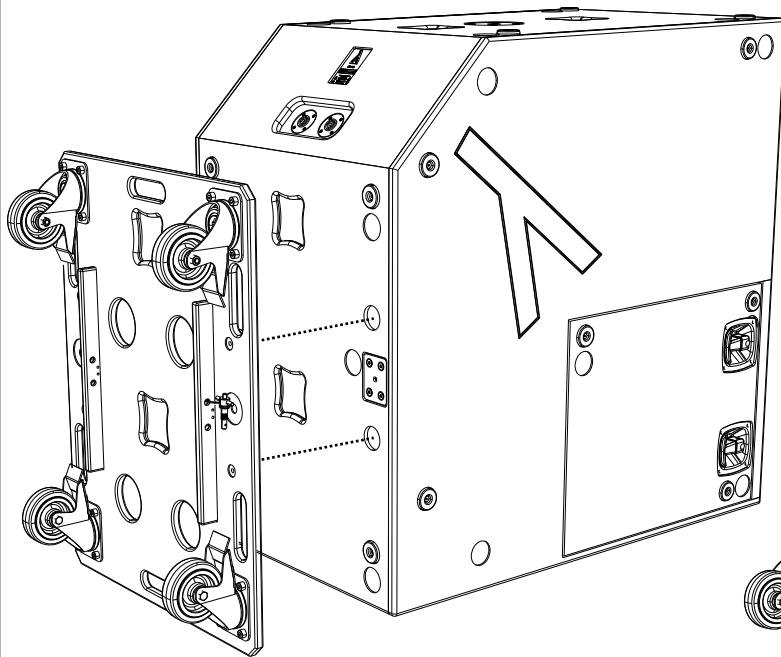
6. Figure 2: Combi Pin

PART	DESCRIPTION of 6. Figure 2	REFERENCE
a)	Combi Pin The Combi Pin is a Ball Lock Pin with an additional M10 thread.	Chapter 6

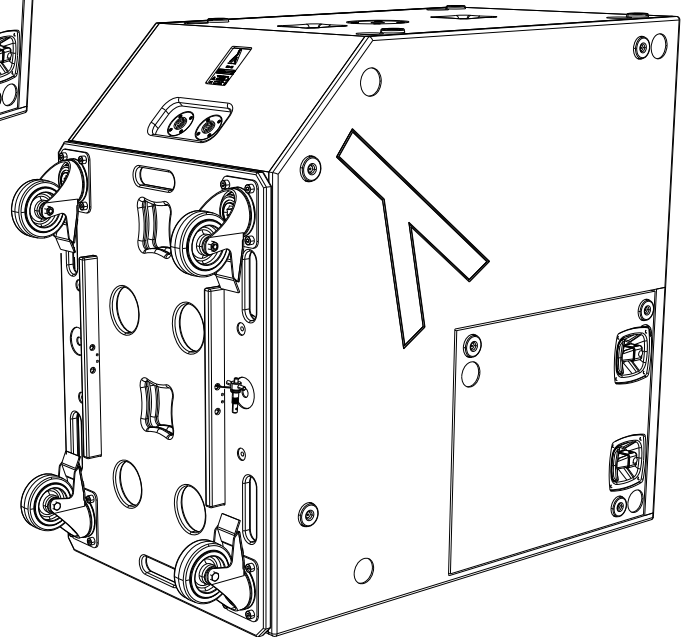


1. Remove the 2 x Combi Pins from their storage position. To do this, push the release button of the Combi Pin and pull out the pin. Just let the Combi Pin connected to the wire rope hanging at the outside.

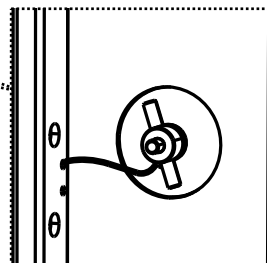
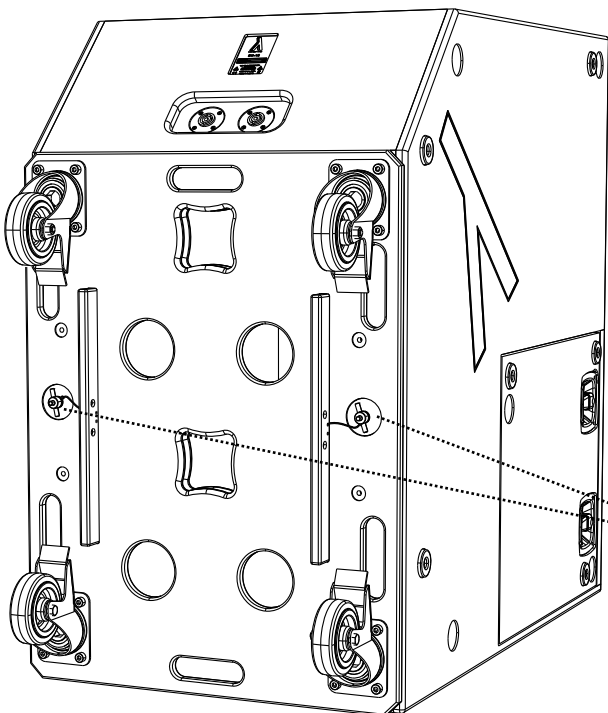


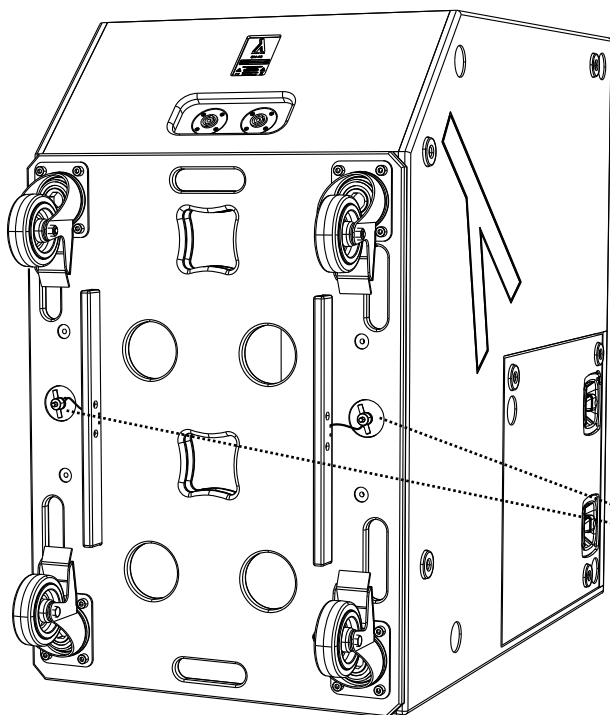


2. Match the wheelboard's rubber feet with the recesses of the backplate of the DH-18 and push the wheelboard as close as possible against the DH-18 enclosure.

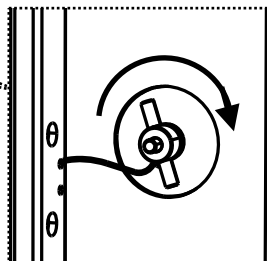


3. To attach the wheelboard to the DH-18 enclosure, push the release button of the Combi Pins and insert them into the Wheelboard Fixtures at the backside. After inserting them completely, release the release button.





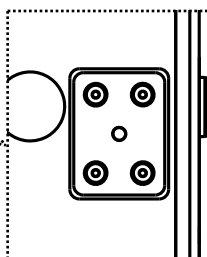
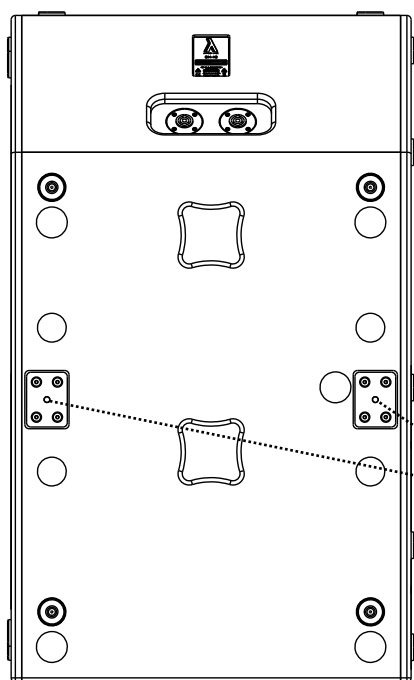
4. To provide a vibration free connection, turn the Combi-Pin **clockwise** until the wheelboard is tightly fixed.



Caution: Always ensure the correct and safe mounting of the wheelboard! Make sure, the Combi Pin has been inserted completely!

7. Maintenance

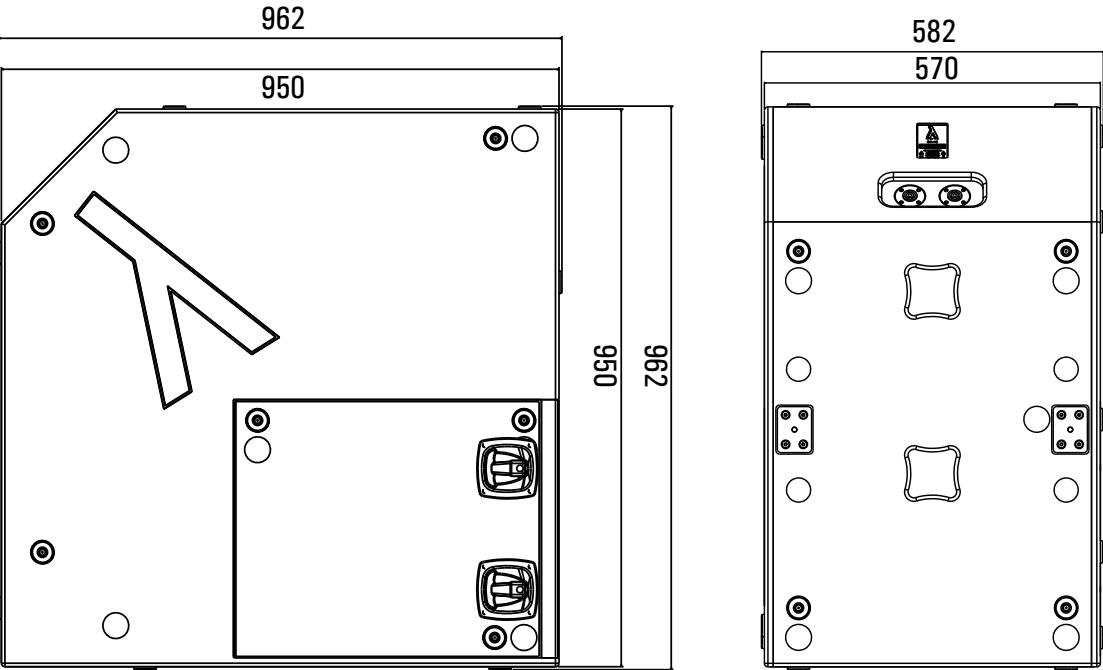
In order to keep the Wheelboard Fixture in a good condition and to keep its deep black colour, follow the description below from time to time or after long and intense use. Repeat these steps more often when installed in a salty environment like sea shores:

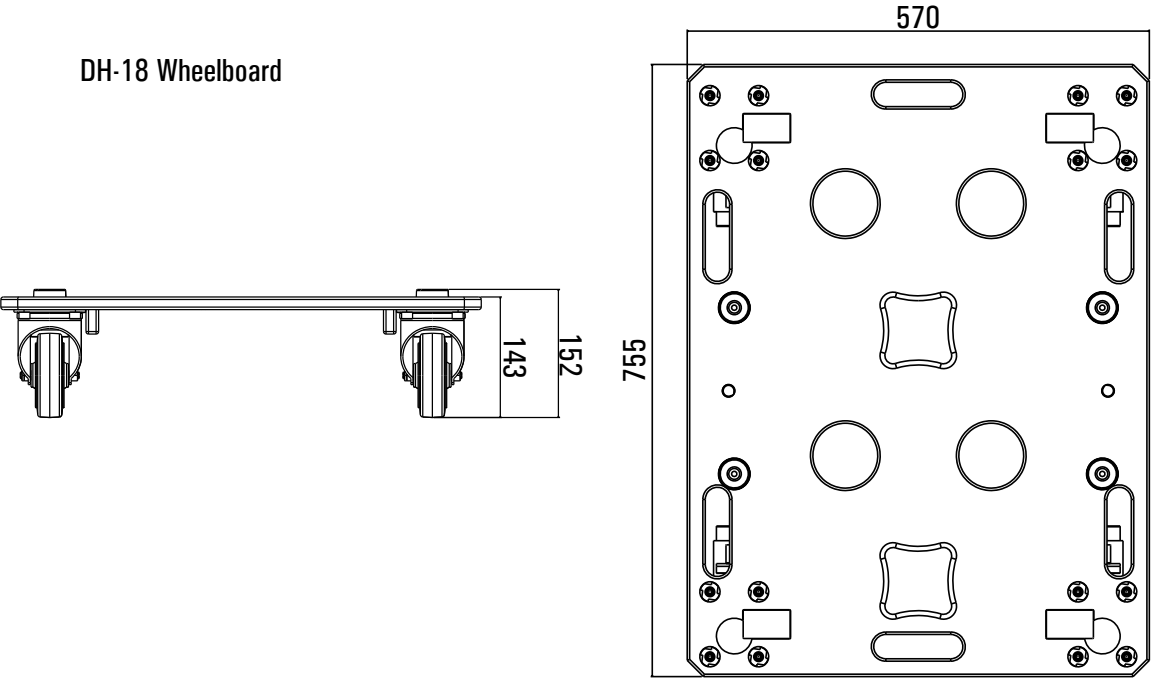


- Clean and protect the Wheelboard Fixture with WD 40 and/or Rolimeco 1. For salty environments, Rolimeco 5. is recommended. **Do not use ANY other cleaning supplies on these areas!**
- We advice against the use of pressure water cleaning the Lambda Labs loudspeakers and mounting parts in general! **High pressure cleaning is at your own risk!**



8. Dimensions

Dimensions (mm)	Weight
 <p>Technical drawing of the DH-18 enclosure. The front view shows a width of 962 mm and a height of 950 mm. The top view shows a width of 950 mm. The side view shows a depth of 582 mm and a height of 570 mm. The drawing includes details of the enclosure's structure, including a door with a handle and a lock, and a control panel with buttons and a display.</p>	58,5 kg / 129 lbs

Dimensions (mm)	Weight
 <p>Technical drawing of the DH-18 Wheelboard. The front view shows a width of 570 mm and a height of 152 mm. The top view shows a width of 570 mm and a height of 143 mm. The side view shows a depth of 557 mm. The drawing includes details of the wheelboard's structure, including a base with wheels and a control panel with buttons and a display.</p>	8,1 kg / 17,9 lbs



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