



Linea LC (b)

Loudspeakers for highest speech intelligibility.

User Manual

LC-20 (b)

LC-60 (b)

LC-100 (b)

LC-150 (b)

LC-220 (b)



Please read this manual carefully before operating the equipment and keep it for the future reference.

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1. Important safety information

Please read the following safety information carefully before using the system. This information should be kept handy for future reference. Reading this manual does not replace the need for awareness and observation of all current local safety regulations, legal requirements and compliance with safe working methods at the venue.

The following information and technical specifications have been based on data that was available at the time of publication. We expressly reserve the right to make changes as necessary.

Markings and definitions



Danger

This term is used to denote high-risk hazards which, if not prevented, can result in death or serious injury.



Warning

This term is used to denote medium-risk hazards which, if not prevented, can result in death or serious injury.



Caution

This term is used to denote low-risk hazards which, if not prevented, can result in minor or moderate injury.



Danger

To avoid risk of injury or death, please make sure that anyone involved in installing, operating or dismantling the system has read this user manual.



Warning

To prevent any potential injury caused by the system falling down,

- it must be firmly fixed to building structures according to the mounting instructions. Please also ensure that these structures combined with the equipment used for system deployment have sufficient load-bearing capability and are structurally suitable.
- Only use the recommended Fohhn accessories with this product, or other components that have been explicitly specified in this manual.
- it must be regularly checked for any signs of wear or loosened parts on load bearing connections.

To minimize the risk of fire or electric shock,

- the system should not be opened: It does not contain any parts to be maintained by the user. For maintenance requirements, please consult a qualified technician.
- items that have a naked flame (such as candles) should not be placed near the system.

To avoid injury, this product must be taken out of operation, appropriately marked and secured against unauthorised use if

- it shows any visible signs of damage.
- there is any indication of loose parts.
- it does not work properly.
- it has been subjected to poor transportation conditions (e.g. with unsuitable packaging).

To avoid injury

- this product must not be stored, installed or operated in reach of children.

To prevent hearing damage caused by excessive sound pressure levels, do not

- stand directly in front of a loudspeaker, that is ready for operation, without wearing ear protection.
- subject yourself to high sound pressure levels over a long time period.



Caution

To prevent damage to the product, please avoid the following:

- acoustic feedback
- high powered, permanently distorted signals

1.1 Connections and cabling

Cables form the vital links between the different components in an audio system.

Please make sure that your cables are in perfect working order. Only use branded cables of an appropriate cross section!

Speaker cables must be laid and secured in a way that they cannot be harmed by tools or jammed and damaged by the loudspeaker or wall brackets.

Wiring of loudspeaker must be solely executed by skilled personnel. We recommend using ferrules for stranded wires.

Avoid excessive torque to the terminal screws!

2. Introduction

Congratulations on purchasing a Fohhn LC loudspeaker system. LX loudspeakers are passive, weatherproof systems with aluminum housing, specially designed for use in fixed installations where the highest demands for speech intelligibility and visual appearance must be met. They are equally suited to indoor or outdoor use.

LC loudspeaker systems feature two-way technology with integrated passive filters that guarantee an even dispersion and the best possible coverage. An integrated Fohhn Source Division Waveguide (SDW) effectively suppresses side lobes, resulting in improved speech intelligibility for acoustically challenging venues with long reverberation times, such as railway stations, airports, auditoria and conference halls.

2.1 Intended readers of this manual

This user manual outlines the operation and potential applications of the Linea LC loudspeaker. The information is aimed at system technicians, users and anyone else involved in setting up, operating and dismantling the system.

2.2 Scope of supply

All Fohhn products are developed by qualified engineers. During the build process, current safety regulations are always kept in mind. Each product is thoroughly tested before leaving the factory.

Please examine your new product carefully for any signs of damage that may have occurred during transportation and, if necessary, inform your dealer and the transport company immediately. Please also check that the packaging includes all components belonging to the product. If anything is missing, please let your Fohhn dealer know immediately.

Your Linea LC system contains the following components:

- 1 x LC-20/60/100/150/220 (b)
- 1 x quick start guide
- 1 x cover plate (including 2x cable gland & dummy plugs)

2.3 Unpacking the product

When unpacking the system, we recommend proceeding as follows:

1. Open the packaging and take out the product.
2. Check the product carefully for any signs of damage during transportation. If any is found, please notify the transport company immediately. Reimbursement for damage during transportation can only be claimed by the consignee i.e. you. Please retain all packaging for examination by the transport company.
3. The packaging should ideally be kept in any case, as products should never be returned without their original packaging.

3. Setup and operation

3.1 Installation and mounting

Depending on the particular model, LC (b) loudspeakers can be mounted on building structures using the following wall brackets (see chapter 5. Accessories): WS-2, WS-4, WS-5, WLX-100, WLX-200

When mounting a wall bracket, please refer to the information given in its dedicated manual.

- ⚠ Loudspeaker mounting within buildings should only be carried out by trained personnel.
- ⚠ Please ensure that the wall brackets you have selected are suitable for use with the product to be installed.
- ⚠ We recommend that you read Chapters 1 and 2 of this user manual carefully.
- ⚠ You must also observe any relevant national safety requirements.

Connection to building structures

- ⚠ Make sure that the building structure to which the loudspeaker will be connected is statically suitable.
- ⚠ Surfaces that support brackets must be sufficiently stable and not be subject to long-term settlement.
- ⚠ Wall plug and screw connections must be of sufficient size to cope with the tensile strength required. This will also depend on the type and inclination of the particular speaker mounting.
- ⚠ If you are uncertain about any of the above points, it is imperative to consult a qualified structural engineer.

Connections between loudspeakers and brackets

All LC (b) loudspeakers are equipped with slot nuts placed in the rear T-slot at delivery. All Fohhn brackets include fastening materials for connecting them to the loudspeaker.

- ⚠ If you want to use other screws, their strength must be at least class 8.8; this corresponds to a tensile strength of 800 N/mm² and a 0.2 % proof stress of 640 N/mm².
- ⚠ Never use screws that are longer than the originals supplied. This could damage structures inside the loudspeaker or cause a short circuit.
- ⚠ When connecting the following brackets to LC-series loudspeakers, a tightening torque of 10 Nm is required: WS-2, WS-4, WS-5, WLX-100, WLX-220. This applies to standardised screws without washers: DIN912/6912, DIN931/933, ISO7380.

Safety

Regardless of any currently applicable legal requirements, we strongly recommend securing all systems to a second separate point (secondary safety).

- ⚠ When applying a secondary safety to a LC (b) loudspeaker only Fohhn safety brackets SB-S und SB-L must be used. The maximum load of the safety brackets must never be exceeded.
- ⚠ To secure the loudspeaker, only suitably sized permitted elements (such as wire ropes, shackles or quick links) should be used. The maximum falling distance, before the safety element is engaged, should be as small as possible and must not exceed 200 mm.

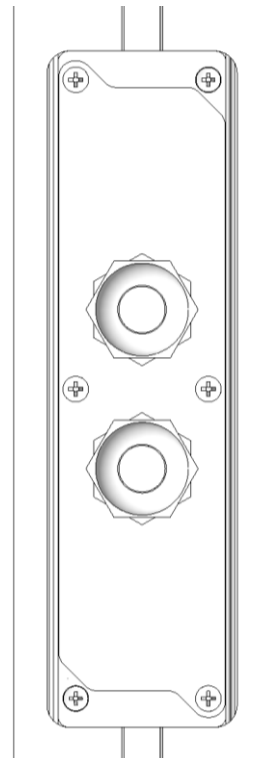
- ⚠ When anchoring the system to the wall, dynamic strength caused by the falling loudspeaker must also be considered.

3.2 Wiring

All loudspeakers of the LC (b) series are passive systems designed for use with external amplifiers. Two terminal connectors, supplied at delivery, are used for wiring. They are suitable for wires with a cross section of up to 2,5 mm². All cables used must be of an appropriate cross section. The 2-pin connectors allow the signal to be daisy-chained to the next loudspeaker easily.



Picture 1: Terminal



Picture 2: Terminal with cover

A terminal cover is supplied at delivery with each loudspeaker, along with two M16 cable glands. Once cabling has been completed, this can be used to cover the connector panel and provide tension relief for the cable.

Please be aware of the fact that the specified degree of protection in accordance with IEC 60529 is only obtained by mounting the terminal cover correctly. The cable glands are suitable for use with cables of between 6 and 10 mm in diameter.

If only one cable is being used, the other cable gland should be replaced by the dummy plug that has been supplied with the loudspeaker.

3.3 Operating conditions

Please note the following:

- The recommended operating temperature range for this system is -25°C to +70°C. If used in temperatures below 0°C, the system should be permanently operated using a pilot tone in order to prevent the system from freezing and getting stuck.
- Always allow the system to acclimatise before using it.
- Do not subject the system to aggressive chemical liquids or vapours.
- Always ensure that heat can be dissipated over the external surfaces of the housing.
- The system should be well ventilated at all times. To ensure sufficient airflow, it should not be covered with towels. Heat from the sun and strong lighting should also be avoided.
- Do not subject this system to strong vibrations!

3.4 Transportation and storage

Please note the following:

- This system should only be transported in its original packaging.
- Store it in a dry place with an even temperature, so that it is not affected by condensation.
- The recommended temperature range for storing this system is -10°C to +70°C.

3.5 Maintenance

Clean the system as required using a damp cloth. Do not use any cleaning products that contain aggressive chemicals.

3.6 Servicing and Repair

Servicing and/or repairs should only be carried out by qualified personnel who have been trained by Fohhn.

Do not carry out any servicing or repair on a system other than stated above.

To find a Fohhn Service centre in your area, please contact us at the address on the back page of this manual.

Keep the packaging that has been supplied with this system so that, in the event of any damage, it can be returned in its original packaging. This will reduce the risk of any further damage occurring during transportation.

4. Technical data

Fohhn Linea LC (b)

Passive column speakers for highest speech intelligibility

Datasheet

Model	LC-20 (b)	LC-60 (b)	LC-100 (b)	LC-150 (b)	LC-220 (b)	
Electroacoustical features						
Acoustic design	weatherproof passive line source speaker system, closed, passive 2-way CD crossover and filter, suppression of side lobes by Source Division Waveguides (SDW)					
Number of 4" drivers with treated cones	2	6	8	12	18	
2-way design	No	Yes	Yes	Yes	Yes	
Power rating (nominal) [1]	W	60	180	240	360	440
Power rating (program) [2]	W	120	360	480	720	880
Power rating (peak) [3]	W	240	720	960	1440	1760
Sensitivity [4]	dB SPL	93	97	98	100	101
Maximum SPL	dB SPL	117	125	127	131	133
Frequency range [5]	Hz	120 - 12000				
Nominal dispersion (h _{xy}) [6.2]	Deg	130 x 60	130 x 25	130 x 15	130 x 14	130 x 14
Nominal impedance	Ohms	16	12	8	4	4
Mechanical features						
Housing	weatherproof aluminium housing, powder coated					
Mounting points	continuous T-slot at rear					
Front design	ball impact resistant steel grille, powder coated backed by acoustically transparent 3D mesh					
Protection class acc. to IEC529/EN60529	IP54					
Terminal	terminal connectors capable of receiving up to 2,5 mm², two per pin, terminal cover with dual cable gland for up to 10 mm cable diameter					
Weight [7]	kg	2,5	6	8,5	12,5	17,5
Width	mm	133	133	133	133	133
Depth	mm	128	128	128	128	128
Height	mm	230	640	990	1460	2200
Standard colours	black (RAL 9005) or white (RAL 9016)					
Optional features						
Custom colours	all RAL classic colours					
Weather protection	weatherproof without further protection as standard					
CAAD Simulation data	EASE, Ulysses, CLF					

All measurements normalized to freefield full-space conditions

[1] according to IEC-60268-5 long term

[2] according to IEC-60268-5 short term

[3] Peak, 20 ms with bandpass filtered pink noisesignal according to IEC 60268-2 at one octave above the lower limit of the frequency range

[4] 2,83 V at 8 ohms (2 V at 4 ohms, 3,46 V at 12 ohms, 4 V at 16 ohms) normalized to a distance of 1 meter

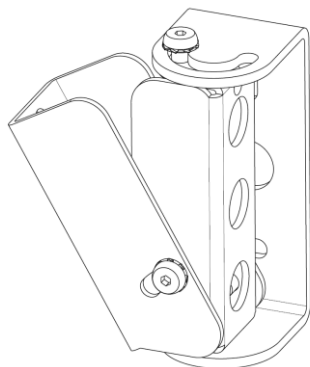
[5] -10 dB under anechoic halfspace-conditions

[6.2] horizontal x vertical at -6 dB, averaged 1-4 kHz

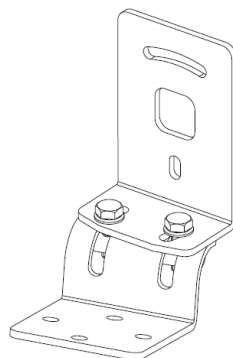
[7] net weight without optional equipment

5. Accessories

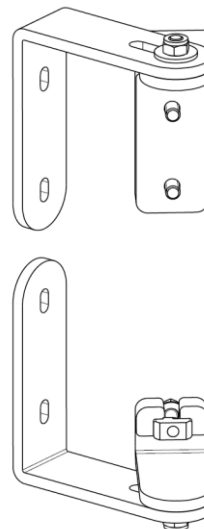
WS-2



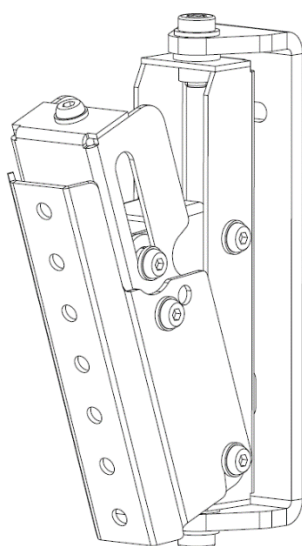
WS-4



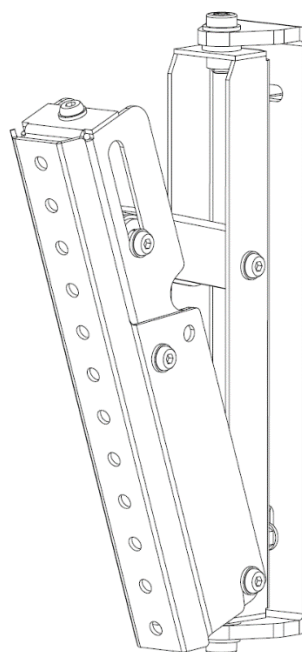
WS-5



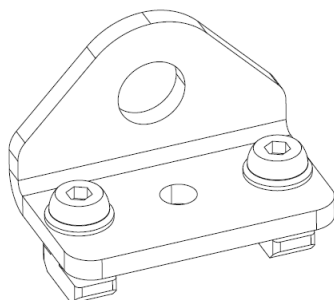
WLX-100



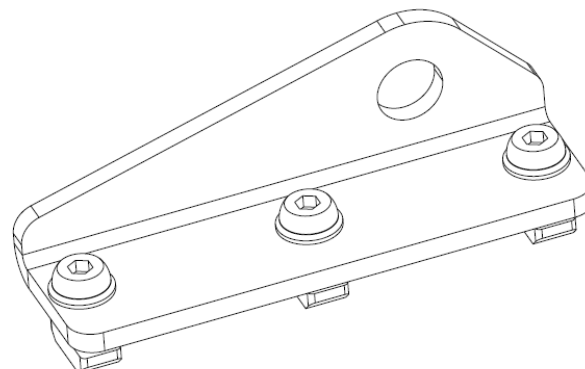
WLX-200



SB-S



SB-L



6. EG Conformity (CE marking)

This loudspeaker complies with the currently applicable conditions of EMC law and as such, carries the CE marking.



The relevant Declarations of Conformity are available on request from Fohhn Audio AG.

7. WEEE Directives (Disposal)

Electrical and electronic components must not be disposed of in standard household waste. For this reason we include the dustbin symbol shown here on our products and in manuals.



Please consult your dealer or distributor regarding product disposal in your particular country.

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