

112 SA

active subwoofer

MANUALE ISTRUZIONI **INSTRUCTION MANUAL** BEDIENUNGSANLEITUNG **MANUAL DE INSTRUCCIONES** MANUEL D'INSTRUCTIONS

Montarbo



The lighting flash with arrowhead symbol within an equilateral triangle, is intended to alert the user to the presence of uninsulated 'dangerous voltage' within the product's enclosure, that may be of sufficient magnitude to constitute a risk of electric shock to humans.



The exclamation point within an equilateral triangle, is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

IMPORTANT ! **SAFETY INSTRUCTIONS**

WARNING

In order to protect your own and others' safety and to avoid invalidation of the warranty of this product, please read this section carefully before operating this product.

- This product has been designed and manufactured for being operated as active speaker system in the applications tipical of a sound reinforcement system or of a sound recording system. Operation for purposes and in applications other than these has not been covered by the manufacturer in the design of the product, and is therefore to be undertaken at end user's and/or installer's sole risk and responsability.

TO AVOID THE RISK OF FIRE AND/OR ELECTRIC SHOCK:

• Never expose this product to rain or moisture, never use it in proximity of water or on a wet surface. Never let any liquid, as well as any object, enter the product. In case, immediately disconnect it from the mains supply and refer to servicing before operating it again.

• Before connecting this product to the mains supply, always make sure that the voltage on the mains outlet corresponds to that stated on the product.

• This product must be connected only to a grounded mains outlet complying to the safety regulations in force via the supplied power cable. In case the power cable needs to be substituted, use exclusively a cable of the same type and characteristics.

• Never place any object on the power cable. Never lay the power cable on a walkway where one could trip over it. Never press or pinch it.

• Never install the product without providing adequate airflow to cool it. Never obstruct the air intake openings on it.

• In case the external fuse needs replacement, substitute it only with one of the same type and rating, as stated on the product.

• Always make sure the On/Off switch is in its 'Off' position before doing any operation on the connections of the product.

• Before attempting to move the product after it has been installed, remove all the connections.

• To disconnect the power cable of this product from the mains supply never pull the cable directly instead, hold the body of the plug firmly and pull it gently from the mains supply outlet.

CAUTION!

This product does not contain user serviceable parts.
To prevent fire and/or electrical shock, never remove its cover.
For maintenance and servicing always refer to the official Montarbo Distributor in your State or to qualified personnel specifically authorised by the Distributor.

- Before placing the product on a surface of any kind, always make sure that its shape and load rating will safely match the product's size and weight. Never attempt to hang the product by any means not expressly provided or approved by the manufacturer (i.e. ropes, chains, belts or whatever medium, throgh carring handles, bolts, hooks or whatever). In case the product is factory-fitted with specific mounting hardware, always verify before installation that the lifting and/or hanging system you intend to use is of a proper type and can carry the product weight with the safety ratio required by the regulations in force.

- To avoid shocks, kicks, or whatever action, always reserve a protected area with no access to unqualified personnel as installation site of the product. In case the product is used near children and animals closest supervision is necessary.

- This product can generate very high acoustic pressures which are dangerous for the hearing system. Always avoid operation at loud levels if anyone is excessively near to the product (at least 1 m of distance). Never expose children to high sound sources.

ENGLISH

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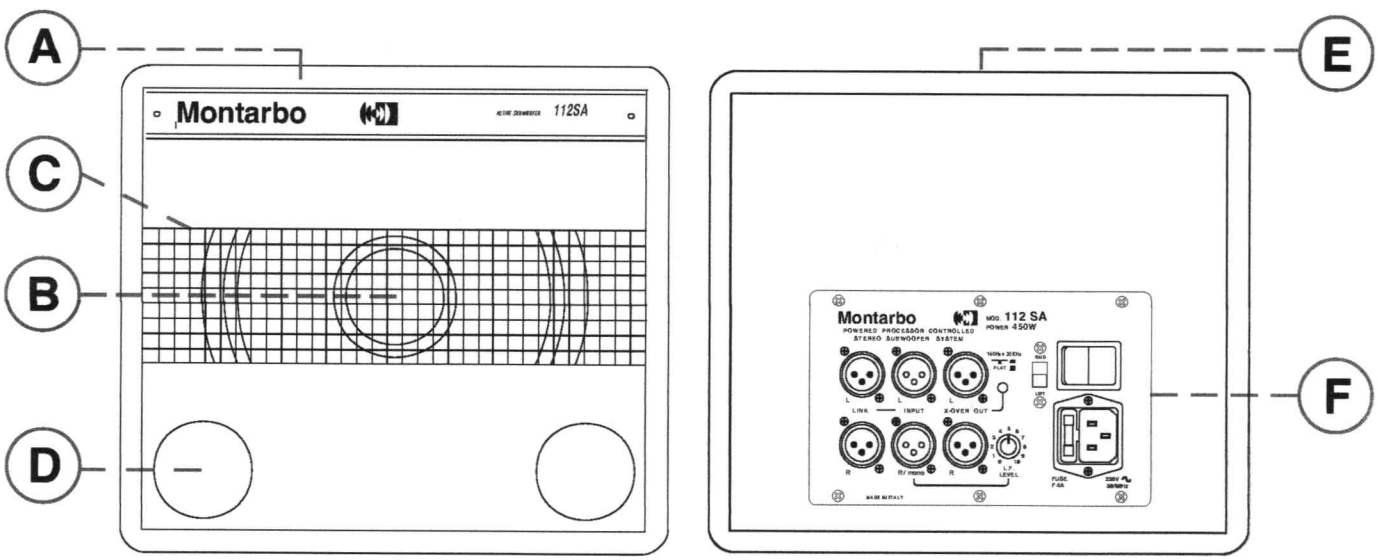
Introduction

Active subwoofer

- custom designed, high quality components.
- 1 x **450 W** MosFet processor controlled power amplifier.
- stereo electronic cross-over.

112SA is an active 12"-based subwoofer designed to extend the low frequency output of small- to mid-sized loudspeaker systems. Like the other Montarbo active subwoofers, it houses all the necessary electronics to combine with any system, no matter what brand, model or kind, with maximum ease of use and optimum results: there are stereo line-level inputs and outputs, a 24dB/oct stereo electronic cross-over, and a 450 Watts MosFet power amp. controlled by a dedicated active processor.

Description



A Phenyl glued, high grade multiply; polyurethane paint.

B 12" high efficiency woofer.

C Protection grid.

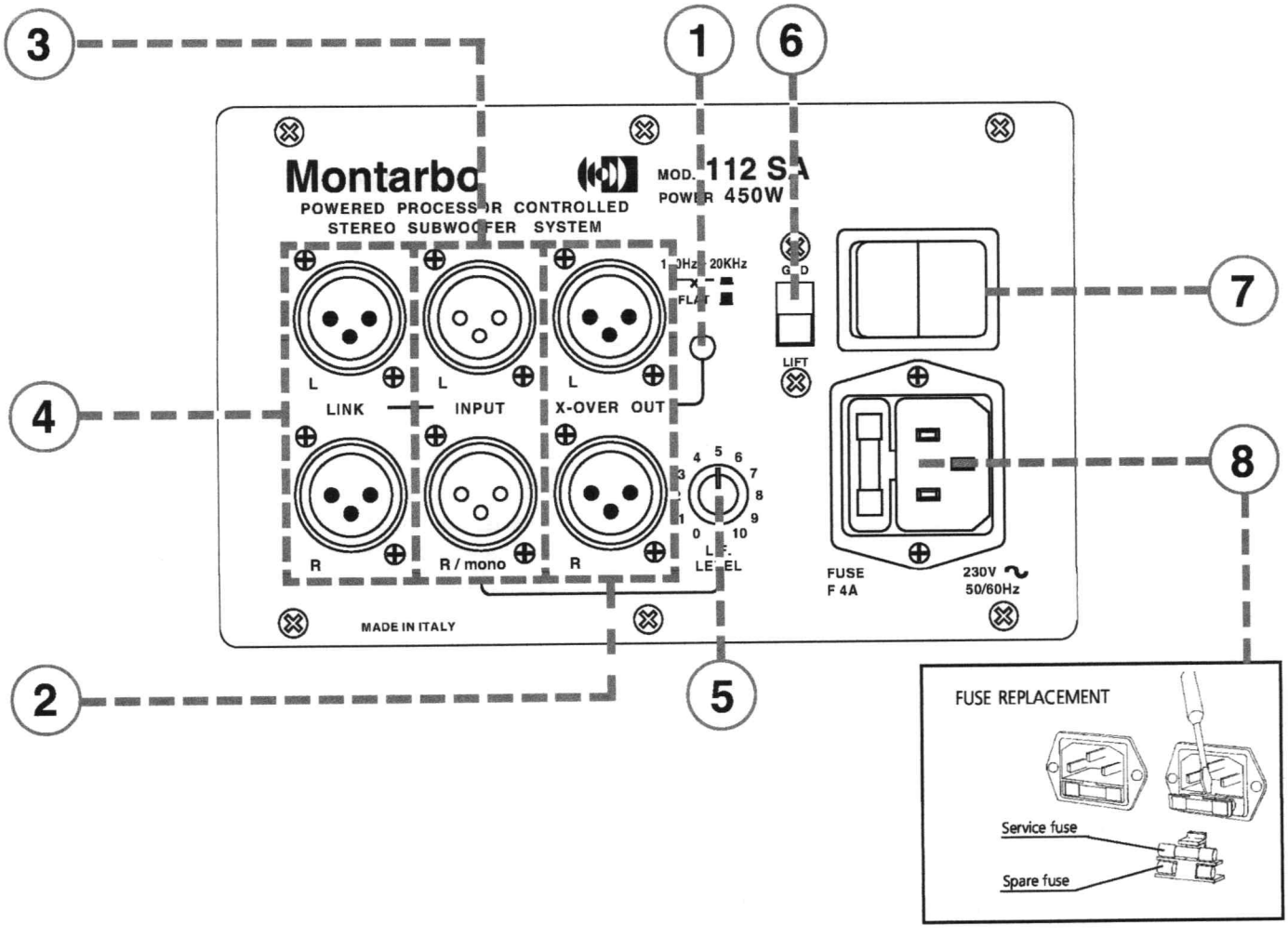
D Tuning ports.

E Transport handle.

F Control and connection panel.

Construction and components conform to the highest professional standards for maximum reliability.

Control and connection panel



1 Flat / X-over switch allowing the 'satellite' speaker systems, connected to the stereo output (2), to receive a full-range signal or the upper audio range only. In both conditions the signal is not affected by the volume control (5)
▮ Button up (crossover off). 'Flat' mode: the output signal is 'full bandwidth'.
▮ Button pushed (crossover on): 'X-over mode': 150Hz÷20kHz high pass filter output signal (150Hz, 24dB/ oct.).
***NOTE**: To avoid misoperation, this button is recessed: use a tip (pen or pencil) to switch it.*

2 2 unbalanced XLR male sockets for the stereo output.

3 2 balanced XLR female sockets for the stereo input.

4 2 balanced XLR male sockets for the 'link' outputs allowing parallel connection of active speaker systems.

5 Input level control.
Allows to adapt the input sensitivity of the built-in power amplifier to the output level of the mixer.
If you are using a Montarbo mixer (or any other mixer having an output level of 0dB), turn this control fully clockwise to its maximum setting.

6 Ground/Lift switch: this switch allows to lift signal ground from chassis ground (but the chassis is still connected to the safety ground). This allows to lower annoying hums caused by 'ground loops' when more units are connected.

7 Mains power switch.

8 I.E.C. power supply socket with built-in fuse.

Connections

The very low frequency range reproduced by model 112SA (40÷150Hz) is essentially omnidirectional allowing easy installation of the enclosure.
In most cases the subwoofer can be placed near the speaker systems, but when space or set up reason dictate it, the subwoofer can be positioned at some distance from them (e.g.: under the stage floor).
You must always consider that the extended low frequency range increases the risk of acoustic feedback, with undesired 'howls' and reduced clarity. It is thus essential to place the subwoofer on a rigid structure, that does not transmit vibrations to the microphones.

Some connection examples, among the most common possible configurations, are described here below and also illustrated on pages **17**, **18**, **19** and **20** of this manual.

Stereo Standard Configuration: see fig. 1 page 17

Two 112SA + two active speaker enclosures 260A (or two 110A, two MT180A or MT160A).

This is the most typical configuration: each subwoofer can drive one self-powered speaker enclosure.

mixer **L/R** outputs ➟ '**R**'-inputs of the two **112SA**

'**R**'-outputs of the two **112SA** ➟ inputs of two active systems *('Line' inputs, in the case of MT160A and MT180A)*

! Always use SHIELDED CABLES

! Make sure the 'Flat/X-over switch is pushed (X-OVER mode)

! The output levels of the active speaker enclosures used as satellites are not affected by the volume control of the 112SA. Set the volume control of the subwoofer to its maximum setting, then adjust it to obtain the desired tonal balance.

! When using the MT160A or MT180A as satellytes, adjust their controls as described for figure 2 herebelow.

Triplet configuration, example A: see fig. 2 page 18

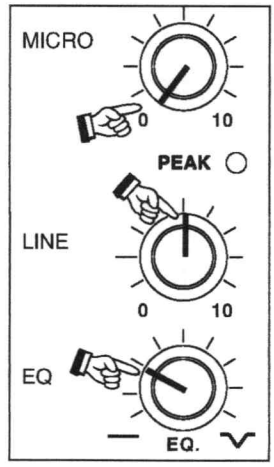
One 112SA + two active speaker enclosures MT160A (or two MT180A, or two 110A).

The complex connections usually required for this configuration with other systems are made extremely simple with our 112SA thanks to the L/R outputs of the built-in stereo electronic cross-over.

NOTE: It is advisable to place the subwoofer in the center, between the two speaker enclosures.

mixer **L/R** outputs ➟ **L/R** inputs of one **112SA**

L/R outputs of one **112SA** ➟ 'Line' inputs of two MT160A active systems.



! Always use SHIELDED CABLES

! Make sure the 'Flat/X-Over switch is pushed (X-OVER mode)

! Connect the L-R outputs of the mixer to the L-R inputs of the 112SA.

! Connect the L-R outputs of the 112SA to the inputs of the 2 'satellite' active systems. This set-up allows them to benefit from the increase in dynamic range provided by the electronic crossover of the 112SA.

! The output levels of the active speaker enclosures used as satellites are not affected by the volume control of the 112SA.

Set the 'Micro', 'Line' and 'EQ' controls of each MT160A as shown here beside.

Set the 112SA volume control to the maximum.

After these initial settings, you can now adjust the sound to your requirements by means of the Line level controls on each MT160A.

Connections

Triplet configuration, example B: see fig. 3 page 19

One 112SA + two active speaker enclosures MT160A (or two MT180A, or two 110A).

This is a more complex configuration which enables selective enhancement of the low-frequencies (for example, only on drums and keyboards, not on voices or brasses).

NOTE: It is advisable to place the subwoofer in the center, between the two speaker enclosures.

mixer **AUX** output ➟ 112SA '**R**'-input

mixer **L** output ➟ 'Line' input of one MT160A

mixer **R** output ➟ 'Line' input of one MT160A

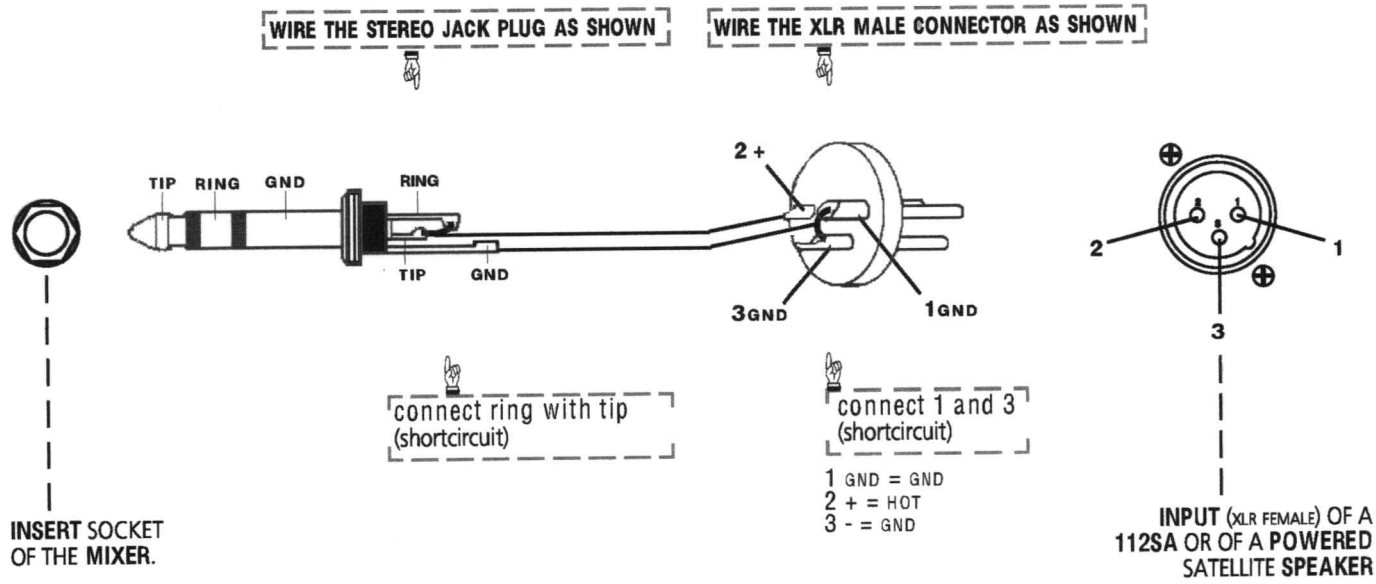
! Always use SHIELDED CABLES

! The subwoofer is connected to one of the mixer's AUX outputs. This type of set-up allows to use the subwoofer to extend the low frequency response of only those instruments that really need it (e.g. drum machines, bass, keyboards). These instruments must be selected using the corresponding input channel's AUX send controls. The subwoofer's volume control and the mixer's AUX output level control adjust only the very low frequencies.

NOTE:

Our configuration examples are using the L and R master outputs of the mixer, but if they are already taken up (as, for example, in a powered mixer) the **insert** sockets can be used to the same purposes.

Take out the signal from the insert sockets by means of a stereo jack plug, in which you have previously joined the RING with the TIP and send it to the inputs of the subwoofer by means of an unbalanced XLR, as shown here below.



Parallel connection of two or more systems: see fig. 4 page 20

Two or more 112SA

The 112SA speaker system is equipped with XLR male (Link) and female sockets wired in parallel, allowing for easier parallel connection of more systems.

mixer output ➟ 112SA '**R**'-input

LINK-output of the 112SA ➟ '**R**'-input of another 112SA

Important !

⚠ Product Care and Maintenance

• Never expose the enclosure to heat sources such as radiators or other products that produce heat.

• Never expose the enclosure to direct sunlight, excessive vibrations or mechanical shocks.

• Avoid operating and storing the enclosure in dump or dusty places: this will avoid malfunctions, premature degrading of specifications.

• Avoid using the enclosure close to strong sources of electromagnetic interferences (e.g. video monitors, high power electrical cabling). This may lead to degradation of audio quality.

• Care should be taken so that objects do not fall and liquid are not spilled into the enclosure. In public event don't let people, musicians, technicians or anyone put glasses, cups, ashtrays or cigarettes on the enclosure.

• Always leave the protective grille mounted on the enclosure.

• Use a soft brush or a jet of air to clean the enclosure. Do not use alcohol, solvents or detergents.

• Take care of your connector cables. Make sure that they are not damaged, knotted or twisted.

• Do not force the connectors and the controls.

⚠ Power supply connection:

• make sure the 112SA is switched off.

• check that mains voltage corresponds to the voltage indicated on the panel (beside the main socket).

• use the three wire power cord supplied with the enclosure.

• always connect it to a grounded outlet.

⚠ Connection to the mixer:

If the mixer has XLR balanced outputs:
- use standard balanced XLR connectors.

If the mixer has XLR unbalanced outputs:
- in this case, unless you are using a Montarbo mixer, make sure that the XLR outputs on the mixer are unbalanced to IEC 268 standard: 1 = GND, 2 = HOT, 3 = GND.

If the mixer has JACK unbalanced outputs:
- use suitable Jack-XLR male adapters unbalanced according to IEC 268: tip = pin 2, ground = pin 1, + = pin 3.

☛ *See 'connectors' at page* ***16***.

• Always use only heavy gauge, high quality SHIELDED cables (*signal cables*).

• Always make sure that the mixer, the 112SA and any other powered enclosure are switched off before connecting them.
This shall to avoid annoying noises and signal peaks, which can also be dangerous for the enclosures themselves.

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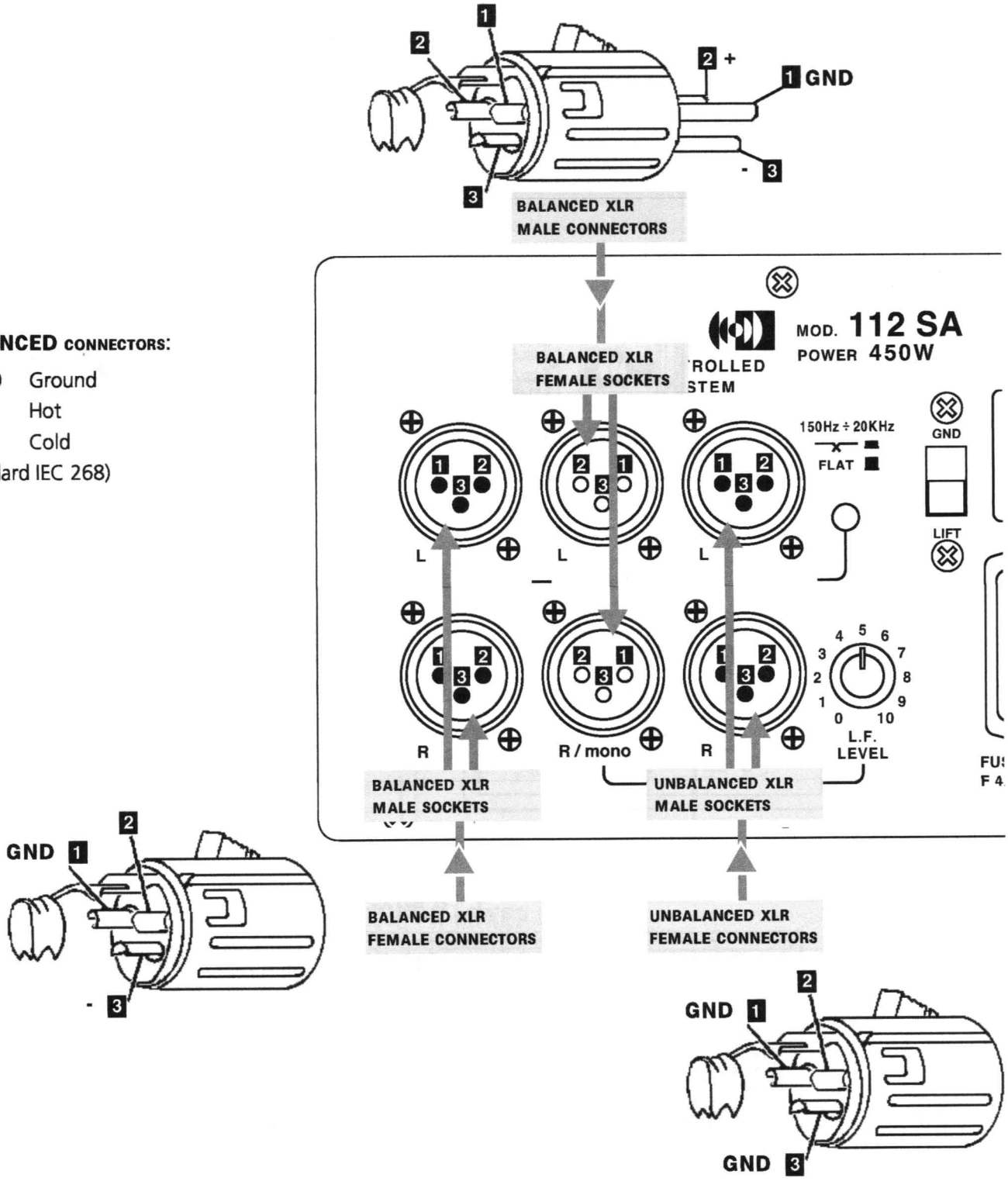
Specifications

Speaker system	*bass reflex*
• Components:	custom designed
- custom woofer	12" high efficiency woofer
Nominal diameter	12"
Nominal impedance	4Ω
Frequency range	38÷2000Hz
Power capacity	450W
Sensitivity	98dB
Net weight	7,5 Kg
Thiele & Small Parameters	
fs	38Hz
Re	3,65 Ω
Qms	10
Qes	0,217
Qts	0,212
Vas	0,124m³
B.l	14,68T/m
SD	522cm²
Xmax	±5,5mm
Mms	68gr
Le	2,3mH
• Impedance	4 ohm
• Frequency response	40Hz ÷ 150Hz
• Sensitivity (1W / 1m)	98 dB
• Max SPL	124 dB
Built-in electronic crossover:	
• crossover frequency	150Hz,
• slope	24dB/oct.
Amplifier	*MosFet*
• Max. output power	450 W continuous 750 W peak
• Frequency response	40Hz ÷ 150Hz ±1dB
• Input impedance	10KΩ (balanced)
• Input sensitivity	0dB (775 mV)
• Noise referred to input	-110dB (A weighted)
• Power supply (Europe and Asia) • Power supply (USA and Canada)	230V AC 50÷60Hz 117V AC 50÷60Hz
• Fuse (Europe and Asia) • Fuse (USA and Canada)	F 3,15 AL F 6,3 AL
Connections	
• X-over stereo input	Balanced female XLRs
• Link output (parallel)	Balanced male XLRs
• X-over stereo output	Unbalanced male XLRs
Construction	*plywood - polyurethane paint*
Dimensions (w x h x d):	*46 x 40 x 34,5 cm*
Weight	*24 Kg*

Connectors

BALANCED CONNECTORS:

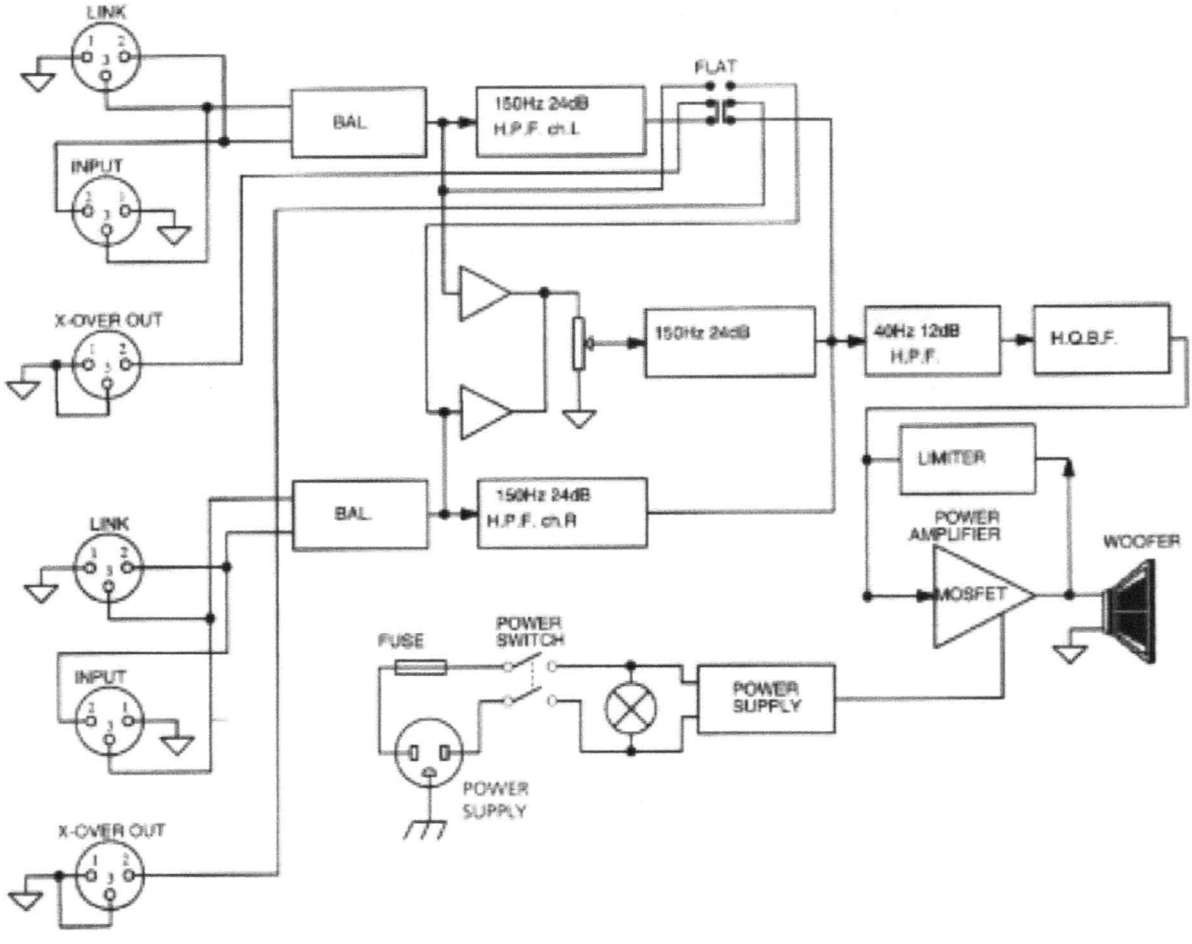
1 GND Ground
2 + Hot
3 - Cold
(standard IEC 268)



UNBALANCED CONNECTOR:

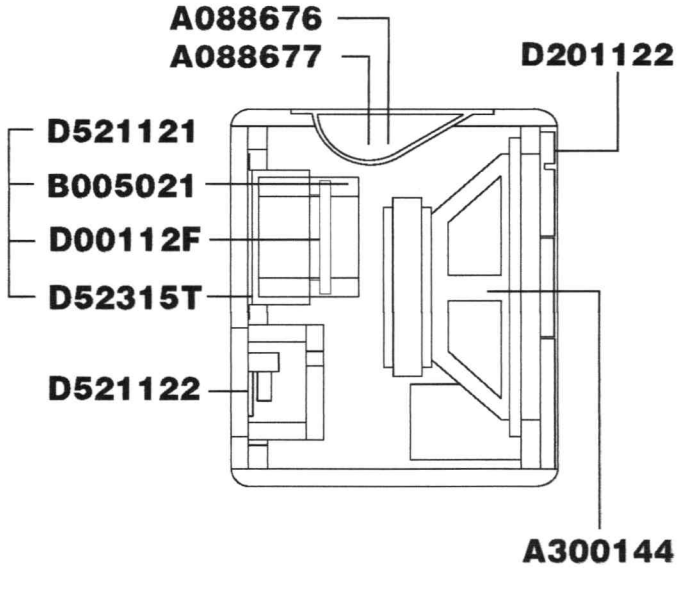
1 GND Ground
2 + Hot
3 - Ground
(standard IEC 268)

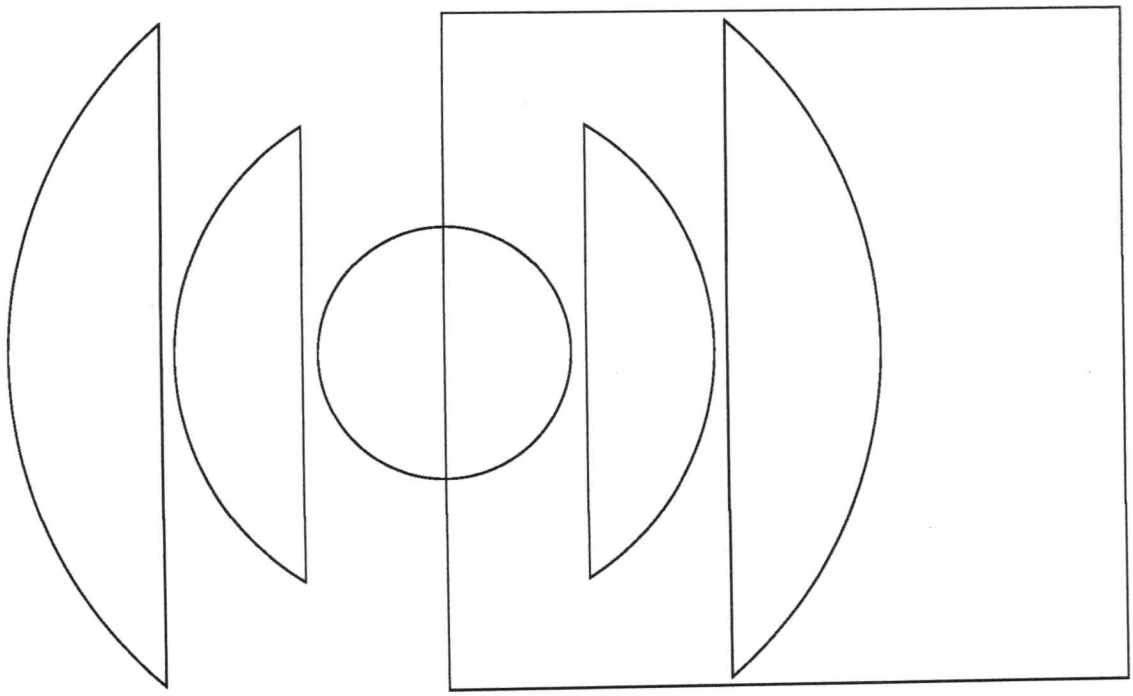
Block diagram



Spare parts

12" high efficency custom woofer	**A300144**
Amplifier chassis:	**D521121**
Power transformer	**B005021**
Power amplifier	**D00112F**
Power amplifier heat sink	**D52315T**
Control and connection panel	**D521122**
Metal grid	**D201122**
Handle assembly	**A088676** **A088677**





Le informazioni contenute in questo manuale sono state attentamente redatte e controllate. Tuttavia non si assume alcuna responsabilità per eventuali inesattezze.
Questo manuale non può contenere una risposta a tutti i singoli problemi che possono presentarsi durante l'installazione e l'uso dell'apparecchio. Siamo a vostra disposizione per fornirvi eventuali ulteriori informazioni e consigli.

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Should further information be desired, please contact us or our local distributor.

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