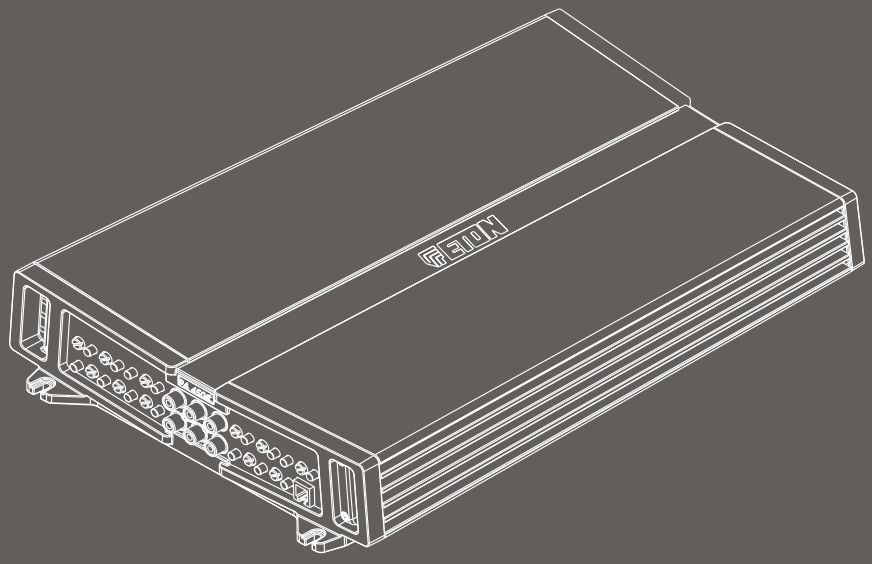
ETON

GERMAN HIGH TECHNOLOGY



POWER AMPLIFIER

PA 4506

EINBAU / BEDIENUNG

INSTALLATION / OPERATION

Inhaltsverzeichnis

Table of Contents

Introduction

ETON expressly thanks you for deciding to purchase this amplifier and congratulates you on the selection of this excellent product.

The ***ETON*** amplifiers are a guarantee for outstanding performance. The electrical, mechanical and tonal characteristics will be maintained at the original high standard throughout the entire operational life of this product. We wish you many pleasant listening hours.

Operating Instructions

The current operational instructions are designed to ensure correct installation of the amplifier. They contain information and essential procedures for the correct operation of the product and its attached external devices. Please carefully study the operating instructions before beginning with the installation or the connection of the amplifier.

The operating instructions are organized as follows:

Part A: Safety Instructions
Part B: Product Description
Part C: Installation and Connection
Part D: Adjustment and Operation

Safety instructions

Attention !

Please read all warnings found in this manual. This information is highlighted and is included to inform you of the potential danger of personal injury or damage to property.

Hearing Damage

Continuous, excessive exposure to sound pressure levels in excess of 85 dB can cause a loss of hearing. ETON components are capable of producing sound pressure levels greater than 85 dB.

Volume and Driver Awareness

Use of sound components can impair your ability to hear necessary traffic sounds and may constitute a hazard while driving your automobile.

ETON accepts no liability for hearing loss, bodily injury or property damage as a result of use or misuse of this product.

Before Putting into Operation

Hint

The installation and adjustment of the amplifier should only be entrusted to qualified personnel.
Please carefully read the operation instructions and follow the given directions regarding connection and adjustment of the amplifier.

Warning
Before connecting external devices that do not belong to this amplifier, please refer to the corresponding directions contained in the operation instructions for this device.

Warning
Under no circumstances should you open the amplifier or attempt any repairs. If required contact your dealer to obtain technical assistance. Unauthorized changes will result in the cancellation of warranty.

Installation

Warning
The amplifiers are exclusively designed for the interior of vehicles with a power supply of 12 volt DC (Direct Current). The surrounding temperature may vary from 0° to 60° Centigrade.

Attention
Install the amplifier only in the interior of the vehicle or in the trunk. Never install the amplifier in the motor space under the hood.

Warning
The amplifier must not be subjected to pressure and not be covered.

Warning
Be careful that no foreign object or fluid can enter the amplifier. Be sure the amplifier is provided with sufficient air circulation to achieve proper cooling of the cabinet.

Mounting

Warning
The amplifier should be mounted in a vertical position within an area of the vehicle that allows good air circulation.

Attention
The heat sinking device can reach a temperature over 80° Centigrade. Be careful to avoid contact with temperature sensitive surfaces or materials.

Attention
Be sure that no components are close to the mounting position of the amplifier that could be damaged by the screws or during the mounting procedure.

Damage to the vehicle can severely endanger the automobile safety as well as the safety of the passengers.

Attention
Mount the amplifier using the four fastening clips. Be careful that you choose a strong, stable surface that can carry the weight of the device. Avoid mounting on plastic parts or cardboard lining.

Cabling

Attention
Use only a cable of sufficient diameter for the power supply connection. Refer to the technical data in appendix. A cable of greater diameter is always recommendable.

Hint
The diameter of the grounding cable must be at least as large as the diameter of the plus cable.

Warning
Lay the cables single and one after the other. Pay attention to professional mounting. Cables leading through metal components should always be protected by rubber sleeves. Use only appropriate cable shoes and isolation covers.

Warning
Avoid bending the cable in a 45° angle. Avoid contact with sharp metal parts or surfaces that could damage the isolation.

Power Supply

Warning
Always disconnect the battery clamps before performing any maintenance, mounting or demounting. In any case disconnect at least the minus pole.

Attention
Always install a fuse to the plus cable of the power supply coming from the battery as close as possible to the battery clamp. If possible use the enclosed fuse.

Attention
When connecting an external capacitor always refer to the instructions enclosed with the capacitor.

We do not grant warranty for any damage caused by improper usage of external power supply systems.

Connections and Adjustments

Attention
Be careful that the ground connection is reliable. Connect the cable only to a metal part of the vehicle where all paint and other residue have been thoroughly removed.

Warning
Use cables of proper length. Keep the cables as short as possible.

Warning
To ensure that the interference suppression system can function, the cinch entry connections may not make contact to the metal cabinet of the amplifier.

Warning
Perform any adjustment to the amplifier selection switches only with the amplifier shutoff.

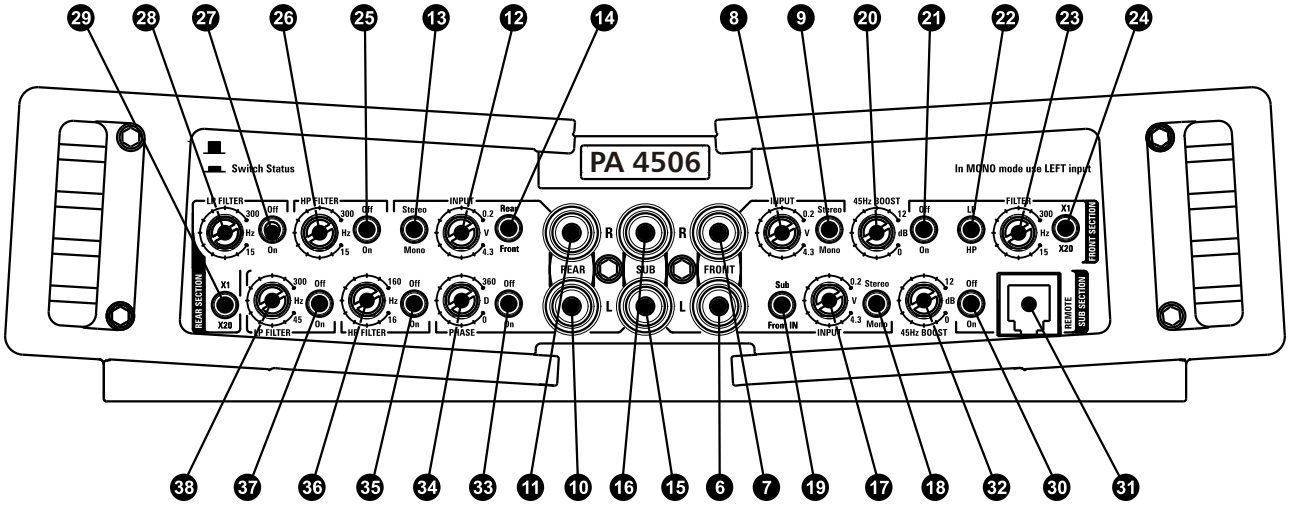
Product Description · Packing and Contents

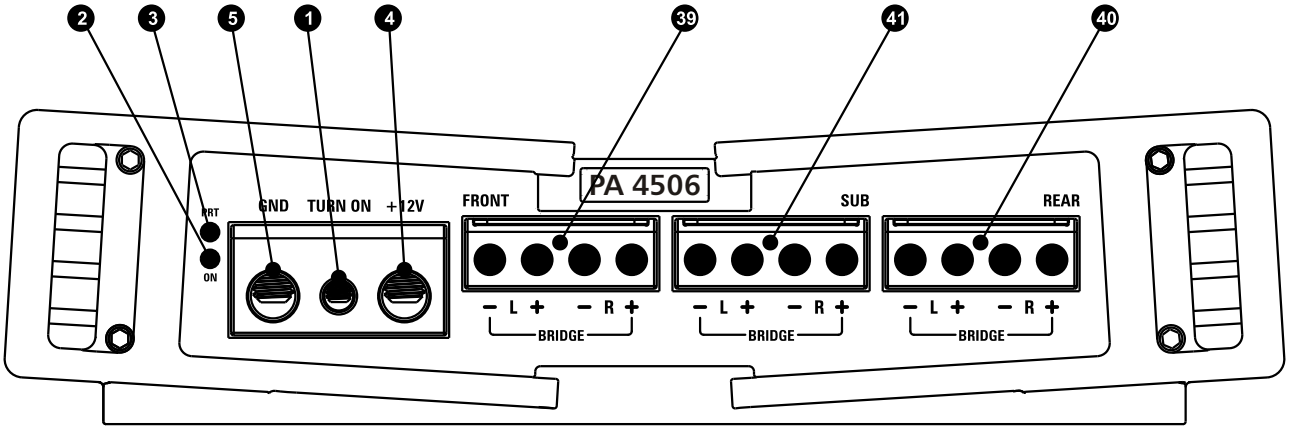
The amplifier is packed into an especially constructed protecting carton. Do not damage the packing and store it for future use in the case of possible damage.

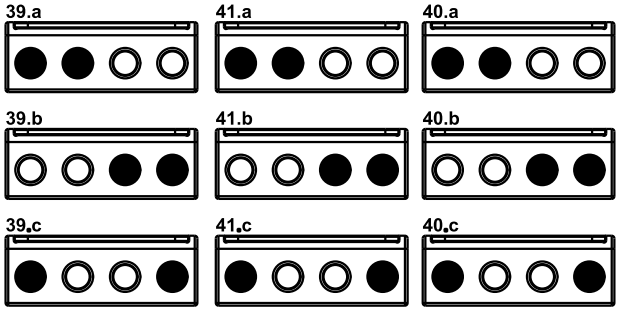
Upon receipt of the amplifier verify that:
- The packing is not damaged, the contents are according to specifications, the product shows no obvious damage.
- In the case of missing or damaged parts please contact immediately your dealer providing the model name as well as the serial number that is shown on the bottom of the amplifier.

The packing includes:
Fuse socket
Fastening screws
Allen wrench (2x)
Remote Control

Connection and Operating







Connection and Operating

POWER SUPPLY

1. Turn ON 12Volt input
2. ON Indicator LED
3. PRT (Protection) Indicator LED
4. +12 VDC Terminal
5. Ground Terminal

FRONT PRE-AMP

6. Left-hand RCA input socket (Mono)
7. Right-hand RCA input socket
8. Sensitivity adjustment
9. Stereo/Mono input mode selection (in MONO mode use LEFT input)

REAR PRE-AMP

10. Left-hand RCA input socket (Mono)
11. Right-hand RCA input socket
12. Sensitivity adjustment
13. Stereo/Mono input mode selection (in MONO mode use LEFT input)
14. Rear Channel input selection (REAR or FRONT RCA)

SUB PRE-AMP

15. Left-hand RCA input socket (Mono)
16. Right-hand RCA input socket
17. Sensitivity adjustment
18. Stereo/Mono input mode selection (in MONO mode use LEFT input)
19. Sub Channel input selection (SUB or FRONT RCA)

FRONT X-OVER

20. 45Hz Bass-boost adjustment from 0 to +12 dB
21. Filter ON/OFF
22. Filter type selection LP/HP
23. Filter cut frequency adjustment from 15 to 300 Hz
24. Filter cut frequency multiplier X1/X20

REAR X-OVER

25. HP Filter ON/OFF
26. HP Filter cut frequency adjustment from 15 to 300 Hz
27. LP Filter ON/OFF
28. LP Filter cut frequency adjustment from 15 to 300 Hz
29. LP Filter cut frequency multiplier X1/X20

SUB X-OVER

30. Remote volume ON/OFF
31. Remote volume connector
32. 45Hz Bass-boost adjustment from 0 to +12 dB
33. Phase shifter ON/OFF
34. Phase adjustment fro 0 to 360 Deg
35. HP Filter ON/OFF
36. HP Filter cut frequency adjustment from 16 to 160 Hz
37. LP Filter ON/OFF
38. LP Filter cut frequency adjustment from 45 to 300 Hz

OUTPUT

39. Front Loudspeakers connection terminals
    - **39.a** Left-hand loudspeaker connection terminals
    - **39.b** Right-hand loudspeaker connection terminals
    - **39.c** Bridged mono loudspeaker connection terminals
40. Rear Loudspeakers connection terminals
    - **40.a** Left-hand loudspeaker connection terminals
    - **40.b** Right-hand loudspeaker connection terminals
    - **40.c** Bridged mono loudspeaker connection terminals
41. Sub Loudspeakers connection terminals
    - **41.a** Left-hand loudspeaker connection terminals
    - **41.b** Right-hand loudspeaker connection terminals
    - **41.c** Bridged mono loudspeaker connection terminals

Connection Description

Entry
The amplifier is equipped with three cinch stereo entries (6;7 and 10;11, 15,16). Connect the pre-amplifier signal of your car radio or DVD player etc. to these connectors.

The sensitivity controllers (8,12 and 17) are used to adjust the entry signal to the amplifier.

Filter
The amplifier is equipped with HP and LP filters. With these filters it is possible to correspondingly adjust the signal processing in the amplifier (23, 28, 36, 38). When the filters are shut off, the entry signal is linear amplified (21,27,35,37)

Remote Control
Volume control with the remote control device can only be achieved through the subwoofer channels. The remote control device is activated by placing switch (30) in the ON position.

Loudspeakers
The loudspeakers of the system are attached to the clamps plus and minus of the performance exits (39,40,41).

This amplifier is equipped with exceedingly high filter capacity enabling it to be employed in a large number of applications. We are only able to provide a few sample configurations:

6 Channel Operation
The loudspeakers are connected according to diagrams 39a, 39b and 40a, 40b and 41a, 41b.

5 Channel Operation
The front and rear loudspeakers are connected in stereo operation as shown in diagrams 39a, 39b as well as 40a, 40b. The subwoofer connection is shown in diagram 41c.

Tri Mode
The front loudspeakers are connected in bridged stereo operation as shown in diagrams 39c and 40c. The subwoofer is connected in bridged operation as shown in diagram 41c.

Full Active Operation
The filter equipment of the amplifier allows you to actively operate a 2 way front system (without additional crossovers). Simultaneously a subwoofer can be actively employed.

Attention:
Take the polarity of the loudspeakers into consideration. Refer to the polarity specifications on the terminal.

Power Supply
The plus cable coming from the battery should be attached to socket 4. The mass cable should be attached to socket 5 and the control cable to socket 1.

Always use the enclosed fuse in the plus cable.

Security System
The operating state of the amplifier is controlled by protecting circuitry that in the event of disturbance (short-out, equal voltage at the loudspeaker exit, pump effect and overheating) switches on to protect the amplifier and the connected audio system. In this case the PRT LED (3) lights up.

Disturbance Suppression
The amplifier is equipped with circuitry that softens electric and electro-magnetic disturbances created by the vehicle.

Ventilation
The amplifier is cooled by the cabinet. Ensure that the cabinet receives sufficient air circulation.

Technical Characteristics

Channels	6		
Output Power (RMS) Stereo @ 4 Ohm Stereo @ 2 Ohm Bridged @ 4 Ohm	 6 x 83 W 6 x 150 W 3 x 300 W		
T.H.D.	<0,03% (4 Ohm)		
Frequency Response	20 Hz - 100 kHz		
S/N Ratio	>89 dB		
Separation @ 1 kHz	>65 dB		
Transient Distortion (100W)	<0,01% @ 4 Ohm		
	FRONT	REAR	SUB
RCA Input	YES	YES	YES
Input Sensivity	0,2 - 4,3V	0,2 - 4,3V	0,2 - 4,3V
Stereo / Mono	YES	YES	YES
45 Hz Bass Boost	0 - +12 dB		0 - +12 dB
Phase Shift			0 - 360°
LP Range		15 - 300 Hz	45 - 300 Hz
LP Filter Multiplier		X1 - X20	
HP/LP Range	15 - 300 Hz		
Filter Multiplier	X1 - X20		
Input Impedance	11 kOhm		
Damping factor	>1000		
Max Current @ 4 Ohm; 14,4V; 0,3% THD @ 2 Ohm; 14,4V; 0,3% THD	 56 A 120 A		
Remote Volume Control	0 - +15 dB		

Installation and Connections

General Rules

The following shows several device types describing their connection and adjustment. These descriptions are designed to show you in a clear form how to operate the amplifier.

This does not exclude that your dealer can individually modify and use the system. (dieser Satz ist für mich unverstandlich)

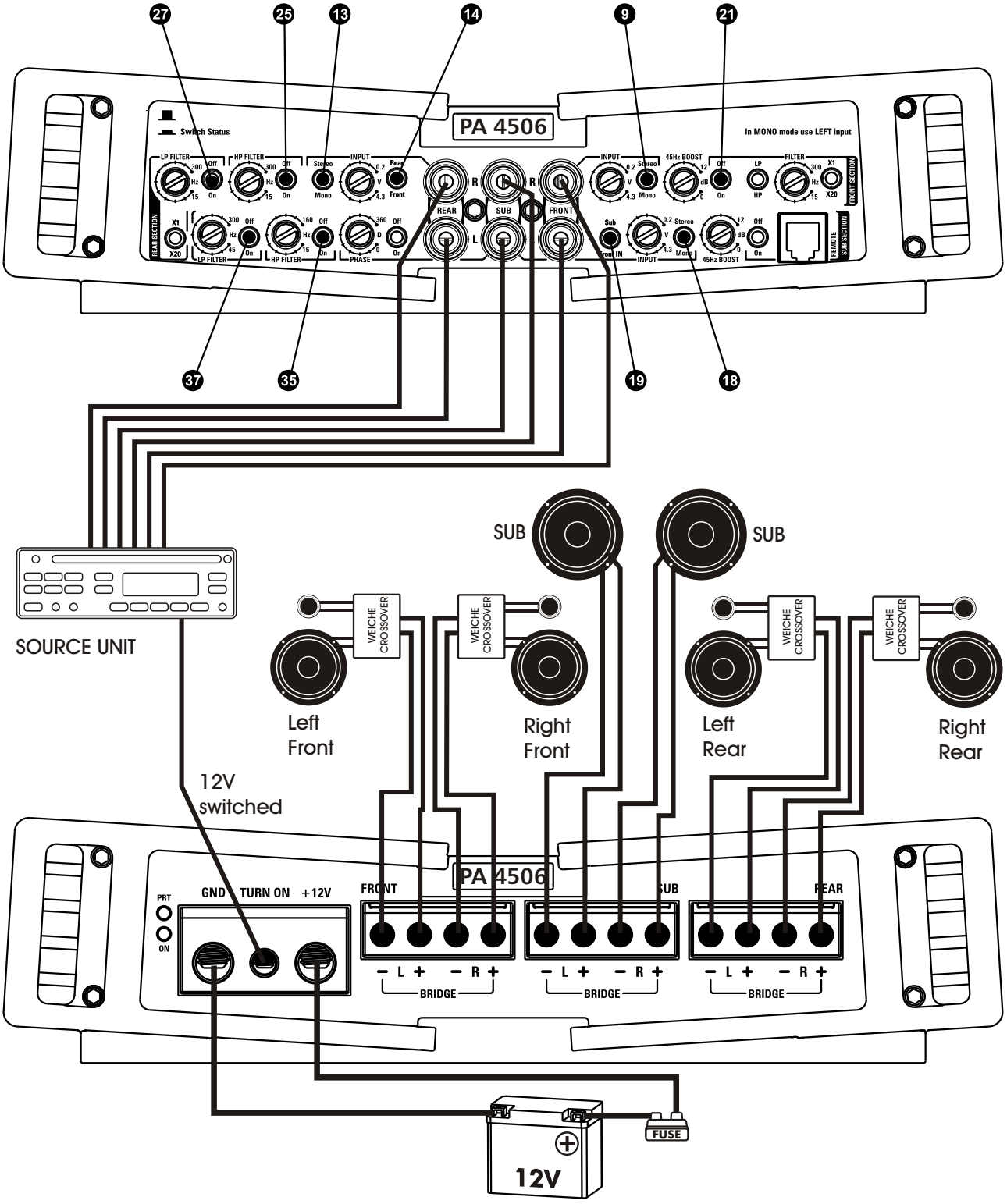
Speaker Load

It is possible to connect systems with multiple loudspeakers as long as the total impedance is greater than 2 ohm.

Configuration Examples

6 Channel Operation

Place the connections as shown in the diagram.



Filter Selection 6 Channel Operation

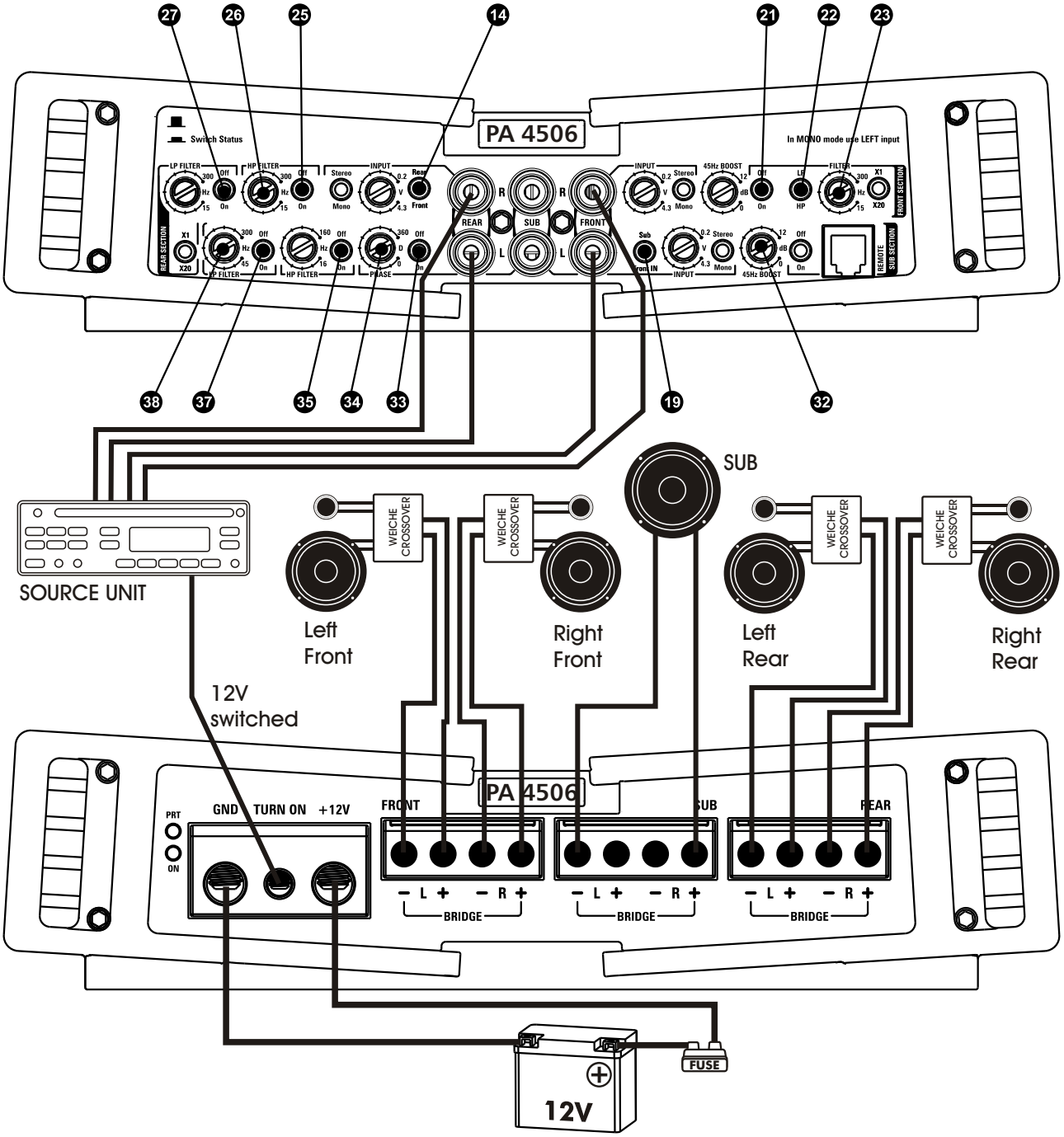
Place the HP and LP filter switches (21,25,27,35,37) in the OFF position
Place the switches (9,13,18) in the STEREO position.
Place switch (14) in REAR position and switch (19) in SUB position.

The amplifier now operates in full range mode. The entry signal is amplified, but the frequency range remains unchanged.

Configuration Examples

5 Channel Operation

Place the connections as shown in the diagram.



Filter Selection 5 Channel Operation

Place filter switch (21) in ON position and the filter selection switch (22) in HP position.
Place the HP filter switch (25) in ON position and the LP filter switch (27) in OFF position
Place the HP filter switch (35) in OFF position and the LP filter switch (37) in ON position
Now adjust the take-over frequency using the filter controller (23,26,38) for the front- and the rear systems as well as for the subwoofer.
Place the switch (33) for the phase in ON position and adjust the subwoofer phase using controller (34) so that you receive the best bass impression.
With the bass boost controller (32) you can increase the volume of the 45 Hz frequency up to 12 dB.

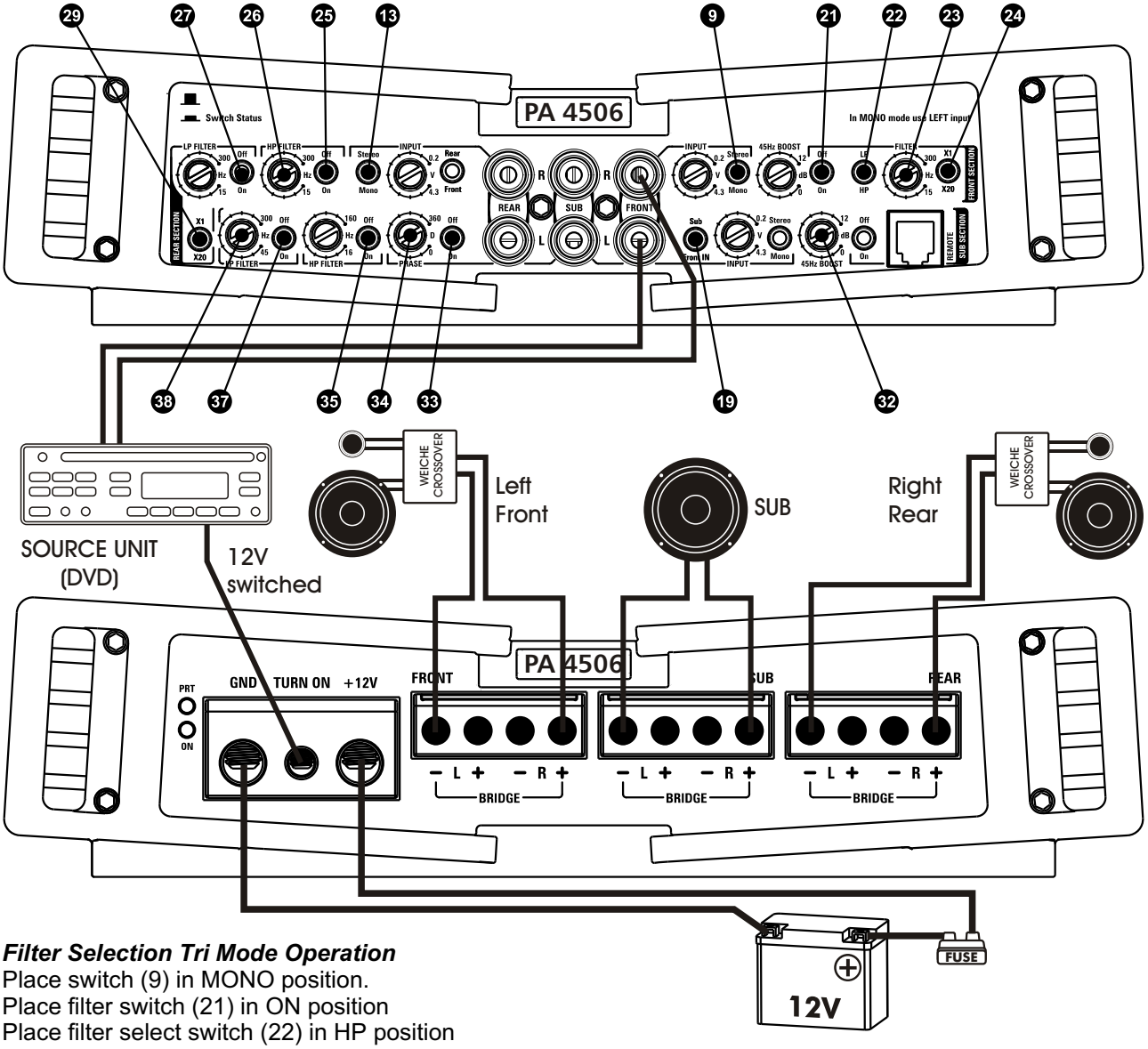
Attention

As already mentioned the filters can be placed in varied applications. The above mentioned adjustment can for this reason only be an example and does not lead necessarily to the best sound results in your vehicle.

Configuration Examples

Tri Mode Operation

In tri mode operation the front and rear channels function in bridged mono operation, thus achieving a higher exit performance for addressing your front system. The subwoofer also functions in bridged operation.



Filter Selection Tri Mode Operation

Place switch (9) in MONO position.
Place filter switch (21) in ON position
Place filter select switch (22) in HP position
Using the filter controller (23) you can now adjust the transmission frequency from 15 to 300 Hz. The adjustment is dependant upon the characteristics of your subwoofer and loudspeaker front system.

Place stereo/mono switch (13) in MONO position
Place signal entry switch (14) in REAR position
Place HP filter switch (25) in ON position
Place LP filter switch (27) in OFF position
Using the filter controller (26) you can now adjust the transmission frequency from 15 to 300 Hz. The adjustment is dependant upon the characteristics of your subwoofer and loudspeaker front system.

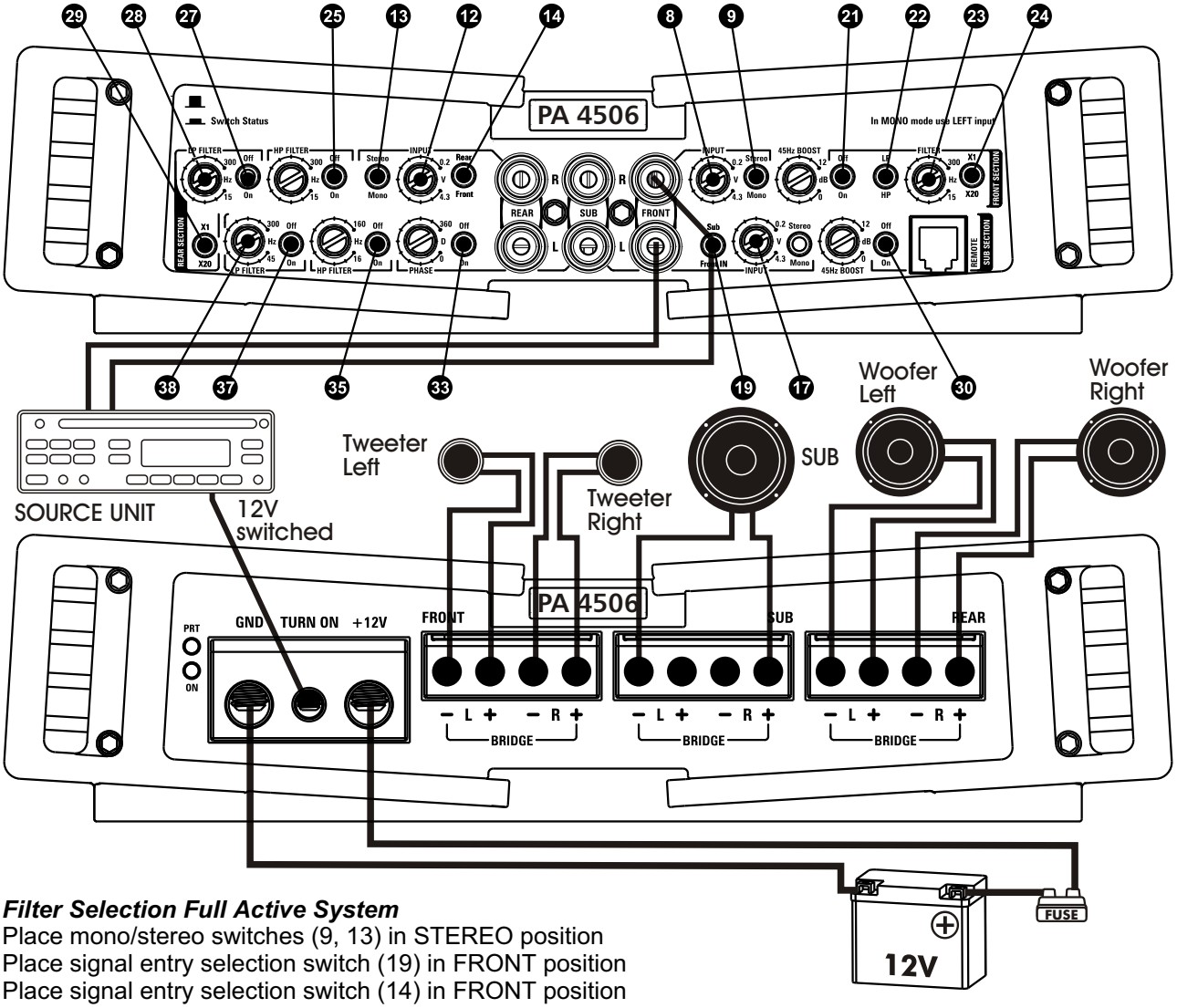
Place signal entry switch (19) in FRONT position
Place HP filter switch (35) in OFF position and LP filter switch (37) in ON position
Now adjust the take-over frequency using filter controllers (23,26,38) for the front- and the rear systems as well as for the subwoofer.
Place the switch (33) for the phase in ON position and adjust the subwoofer phase using controller (34) so that you receive the best bass impression.
With the bass boost controller (32) you can increase the volume of the 45 Hz frequency up to 12 dB.

Attention

The filter multiplier switches (24, 29) should be set to position X1 for the above mentioned

Configuration Examples

Full active Operation



Filter Selection Full Active System

Place mono/stereo switches (9, 13) in STEREO position
Place signal entry selection switch (19) in FRONT position
Place signal entry selection switch (14) in FRONT position
Place filter switch (21) in ON position
Place filter selection switch (22) in HP position
Place multiplier switch in X20 position
Using the filter controller (23) adjust the take over frequency of the tweeter between 600 Hz and 3000 Hz.
Place filter switch (25) in OFF position
Place filter switch (27) in ON position
Place multiplier switch (29) in X20 position
Using the filter controller (28) adjust the take over range of the midrange speaker between 600 Hz and 3000 Hz.
Place remote control switch (30) in ON position
Place phase switch (33) in ON position
Place HP filter switch (35) in OFF position
Place LP filter switch (37) in ON position
Using the filter controller (38) you can now adjust the transmission range for your subwoofer between 45 to 300 Hz according to your listening taste.

Now tune the entire system to satisfy your listening taste.

Attention:
It is absolutely mandatory to observe the technical specifications of the loudspeaker manufacturer. If the frequency is too low for the tweeter, it will definitely result in irreparable damage.

Before turning on the amplifier you should place all volume controllers at minimum. The sensitivity controllers (8,12 and17) should also be adjusted to the lowest sensitivity level (4.3 V).

Bassboost

The bass reproduction can be increased at 45 Hz between 0 and 12 dB. Simply turn the controllers (20;32) until your listening taste has been satisfied.

First operation

Before reconnecting the vehicle battery, ensure that all connections correspond to the instructions contained in this operations manual. Verify that all installation steps are in accordance with the safety regulations. Reduce the volume of your control device to a minimum and switch the device on.

If the connections are correct the amplifier will also switch on and the green LED operational display (2) will turn on.

Sensitivity Adjustment

(not for full active operation)
Using a flat screw driver turn the potentiometers (8,12,17) to the left as far as possible. Reduce the volume of your control device to a minimum and switch the device on. Adjust the volume of the control device to about 75% of the final value. Now turn the controllers (8,12,17) clockwise until the first distortions in the loudspeaker can be heard. Turn the controller slightly in the reverse direction until the distortions disappear.

Maintenance

In case of damage contact your dealer.

Cleaning

Clean the amplifier with a soft brush and a slightly dampened cloth. Never use any cleaning solution.
Be careful not to change the position of the selection switches and the adjustments on the control panel.

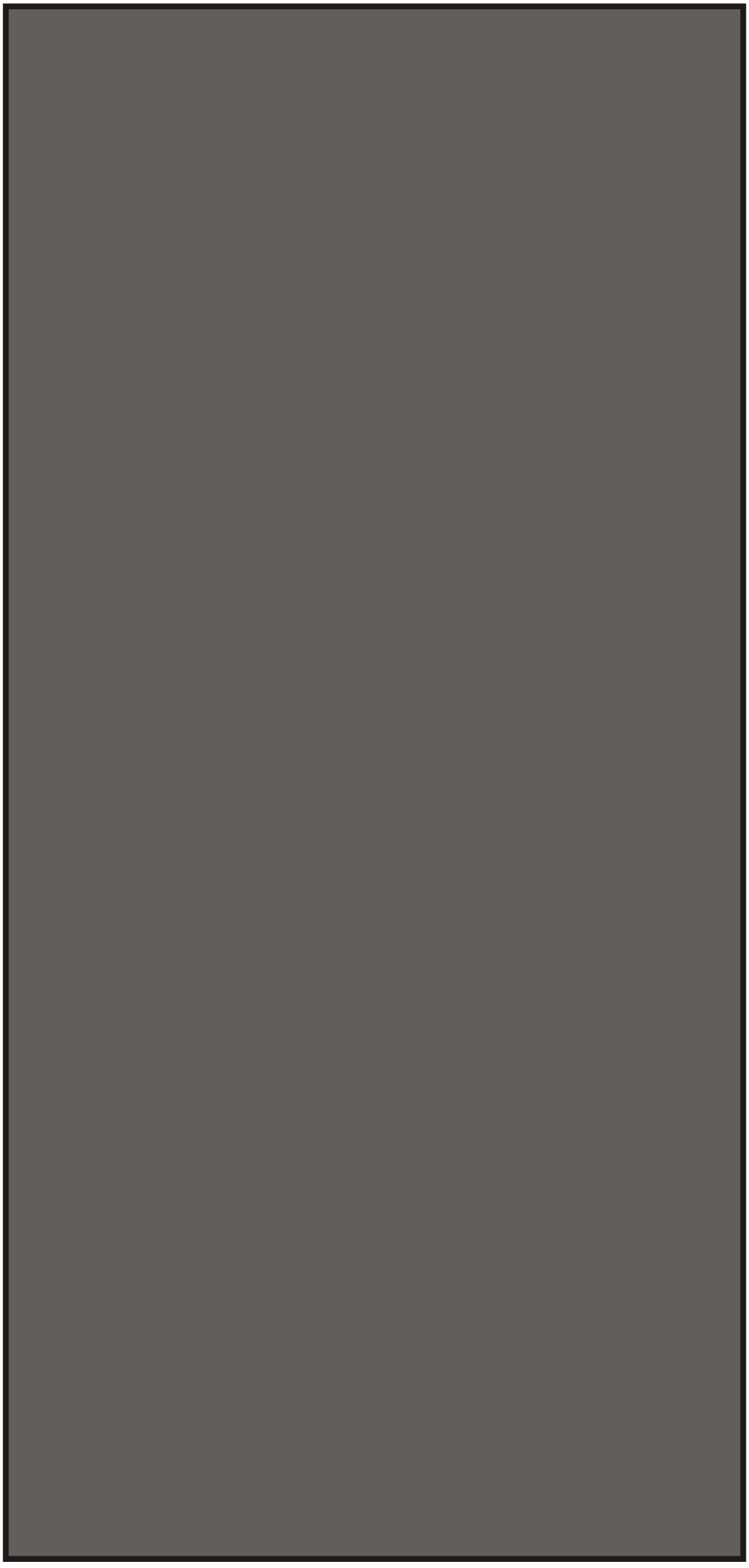
Replacement of the Fuse

Replace the fuse only when you are sure that the control device is turned off. Remove the defective fuse and replace it by an identical fuse having the same electrical value.

Disturbance and Removal of Disturbance

Symptom	**Cause**	**Removal**
Control device turned on, but no operational display on the amplifier	No +12 Volt on clamp Rem Faulty mass connection	Verify control cable connection Verify all cable connections
LED On does not light up PRT LED lights up	Faulty +12V connection Internal fuses are defective The electric current +12 Volt is less than 7 Volt Amplifier is defective	Verify the connection cables Fuses should be replaced by qualified personnel Charge the battery Repair by service personnel only
LED green and LED red turned on	Warming-up phase in operation Overload in the loudspeaker circuit Short-out in the loudspeaker circuit Amplifier overheated	Wait 3 seconds for the amplifier to reach normal operation Verify the total impedance of the loudspeakers Remove the short-out Reduce amplifier volume and allow amplifier to cool off
No sound at all or at some of the loudspeakers LED green lightens up LED red does not light up	Loudspeaker system connected incorrectly Signal entries not connected Control device not correctly connected	Examine and possibly replace the loudspeakers Verify all connections Examine control device
Disturbing noise	The cinch connection plugs have contact to each other Poor signal connection Signal cables are located close to live lines	Isolate cinch plugs Use good quality shielded signal cable Modify cable placement
Distorted reproduction	The signal entry sensitivity is not correctly adjusted.	Using the directions in the manual readjust the sensitivity.

Notizen / Notes



Technische nderungen
und Druckfehler vorbehalten.
All specifications are subject
to change without notice.