To our valued customer and music enthusiast,

with the purchase of your new **ACCUSTIC ARTS® MONO VI** you have opted for a product which incorporates the most modern technology to achieve excellent sound and quality. To make sure that you have pleasure for as long as possible with your amplifier we kindly ask you to thoroughly read this instruction manual through to the end.

We wish you many enjoyable hours of listening to music with your new unit.

ACCUSTIC ARTS® / Lauffen (Germany)

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1 MONO VI highlights

- Extremely powerful mono power amplifier
- 20 selected MOS-FET output transistors in premium quality
- Magnetically shielded and encapsulated toroidal core transformer
- Optimum smoothing thanks to more than 110,000 µF power supply capacity; Premium quality capacitors
- Very high damping factor for perfect speaker control
- ACCUSTIC ARTS® damping factor linearization (switchable)
- Professional protective circuit against clipping, HF oscillations and too high DC offset
- Switch-on current limitation for highest operational safety
- Constant low operating temperature due to generously dimensioned heat sinks
- Balanced input (XLR) and unbalanced input (RCA) – inputs are switchable
- Very high quality WBT speaker terminals (bi-wiring / bi-amping)
- Extremely stable housing, fully made of aluminium; inlay made of massive brass, polished and chromed

- ACCUSTIC ARTS® MONO VI is “Handmade in Germany”

2 Important safety instructions

- Read these instructions.
- Keep these instructions.
- Follow all instructions.
- **Do not** use this appliance near water.
- **Never** use this appliance near hot surfaces.
- **Never** use this appliance outside and always place it in a dry environment.
- Check that your mains voltage corresponds to that stated on the appliance.
- **Never** leave the appliance unsupervised when in use. Always keep electrical equipment out of the reach of children.
- **Never** pour or spill liquids directly onto this appliance.
- **Never** operate this apparatus in an explosive atmosphere.
- **Do not** put any vases or similar objects containing water or liquids on top of this appliance.
- Unplug this appliance during lightning storms or when unused for long periods of time.
- Ensure that the appliance has sufficient air around it and avoid extreme temperature influences on the unit, especially direct sunshine and high humidity.
- The mains cable of this appliance is equipped with an equipment grounding conductor. This equipment grounding conductor must **never** be disconnected or taped over. In case any humming occurs, please contact your authorized dealer.
- **Always** disconnect the appliance from the mains power before carrying out any changes to the cables or when cleaning the appliance.
- Protect the mains cable from being walked on or pinched particularly at plugs and the point where they exit from the appliance.
- From time to time check the mains cable and the appliance for damages. Take care that the mains cable is not buckled or damaged by any house pets.
- **Never** move the appliance by pulling the mains cable. Make sure the mains cable cannot get caught in any way. **Do not** wind the mains cable around the appliance and do not bend it.
- **Never** use accessories which are not recommended by the manufacturer. They could constitute a danger to the user and risk to damage the appliance.
- **Never** operate the appliance with the housing open.
- To clean the aluminium housing, please only use a cloth moistened with water and some detergent. **Never** use inflammable or chemically aggressive cleaning agents.
- In the event of a defect, please **never** attempt to repair it yourself. Any tampering with the appliance by an unauthorised person will make the warranty void. Please get in contact with your authorized dealer.
- Refer all servicing to qualified service person. Servicing is required when the appliance has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the appliance, the appliance has been exposed to rain or moisture, does not operate normally or has been dropped.
- Replace fuses only with original types having the same ampere value, the same voltage endurance and the same time-lag. You can find the corresponding value in chapter 4. 5 of this instruction manual.
- **Never** bypass a fuse.
- No user-serviceable parts inside.

- **<u>WARNING – DANGER TO LIFE!</u> High voltage in the inside of the unit. Never operate the unit with removed top cover and do never touch the board while the unit is switched on!**





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



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



Marking by the “CE” symbol indicates compliance of this device with the EMC (Electromagnetic Compatibility) and LVD (Low Voltage Directive) standards of the European Community.

<u>Remarks in the manual:</u>

WARNING!	**Calls attention to a procedure, practice, condition or the like that, if not correctly performed or adhered to, could result in personal injury or death.**
CAUTION!	**Calls attention to a procedure, practice, condition or the like that, if not correctly performed or adhered to, could result in a damage or destruction to part or the entire component.**

To guarantee a reliable function of this unit over the long-term we kindly ask you to thoroughly **read this instruction manual** before connecting this unit and to observe the following instructions. This is also necessary for your own safety when dealing with the unit.

VERY IMPORTANT!	**<u>Never</u> leave the appliance unsupervised when in use. Always keep electrical equipment out of the reach of children.**

VERY IMPORTANT!	**After switching the unit off please wait <u>60 seconds</u> before switching it on again.**

VERY IMPORTANT!	**<u>Never</u> use the unit in a room with temperature more than 25 °C and high humidity.** **<u>Never</u> use the unit outside.**

3 Introduction and positioning

The MONO VI is a powerful power amplifier. Please read through all important information provided by this instruction manual for the handling and operation of this top-quality high-end product.

The weight of this V is approx. 71 kg / 157 lbs. Great care must be exercised when unpacking the unit. Due its high weight a minimum of two people should unpack the amplifier out of its flight case.

Carefully store the flight case for the possibility of further use. If you have a claim on the warranty, always use the original packaging for any necessary transportation. Transportation without this flight case can lead to damage to the housing.

Please check, if the following items are included:

1 x AC mains cable (type depends on your country)
2 x replacement fuses for **FUSE 1 / FUSE 2** (type depends on your mains voltage)

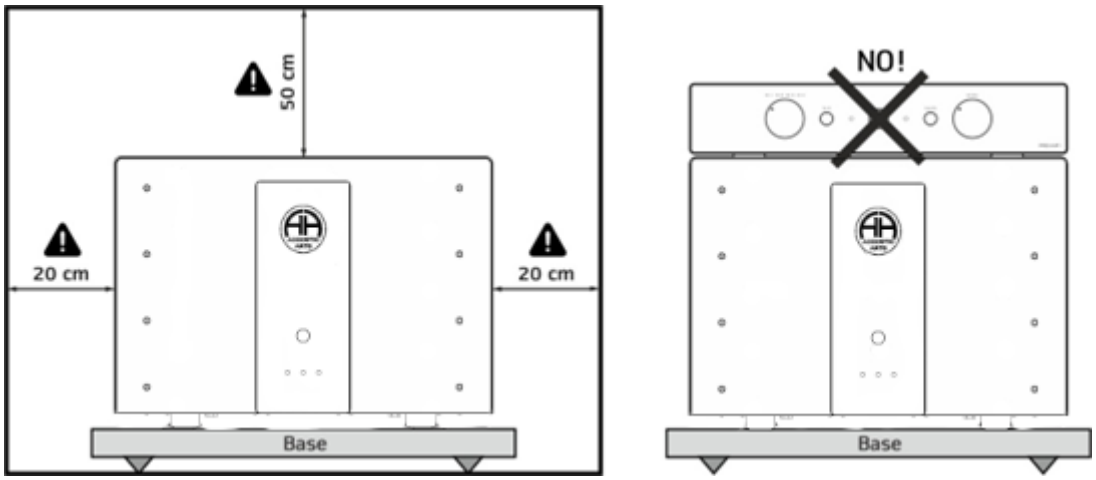
Provided there is available space the power amplifier should, if possible be positioned as close as possible to the loudspeakers since the loss within the loudspeaker cable is generally higher than with interconnect cables. Therefore always use the shortest possible loudspeaker cable but of equal length on the left and right side.

Due to these facts and due to its high weight the power amplifier is usually set up in a position near to the floor either between or near the loudspeakers. If you cannot set up the power amplifier in a free position, then under no circumstances should the chimney effect of the heat sinks be restricted. Therefore leave a minimum of 5 cm distance at the sides and 10 cm distance above the housing cover. Take care that the base of the power amplifier is always stable and level.

Please **do not** put any other electronic products (e.g. preamplifier, CD player, turntable etc.) directly on the AMP V, instead please use a suitable hifi-rack.

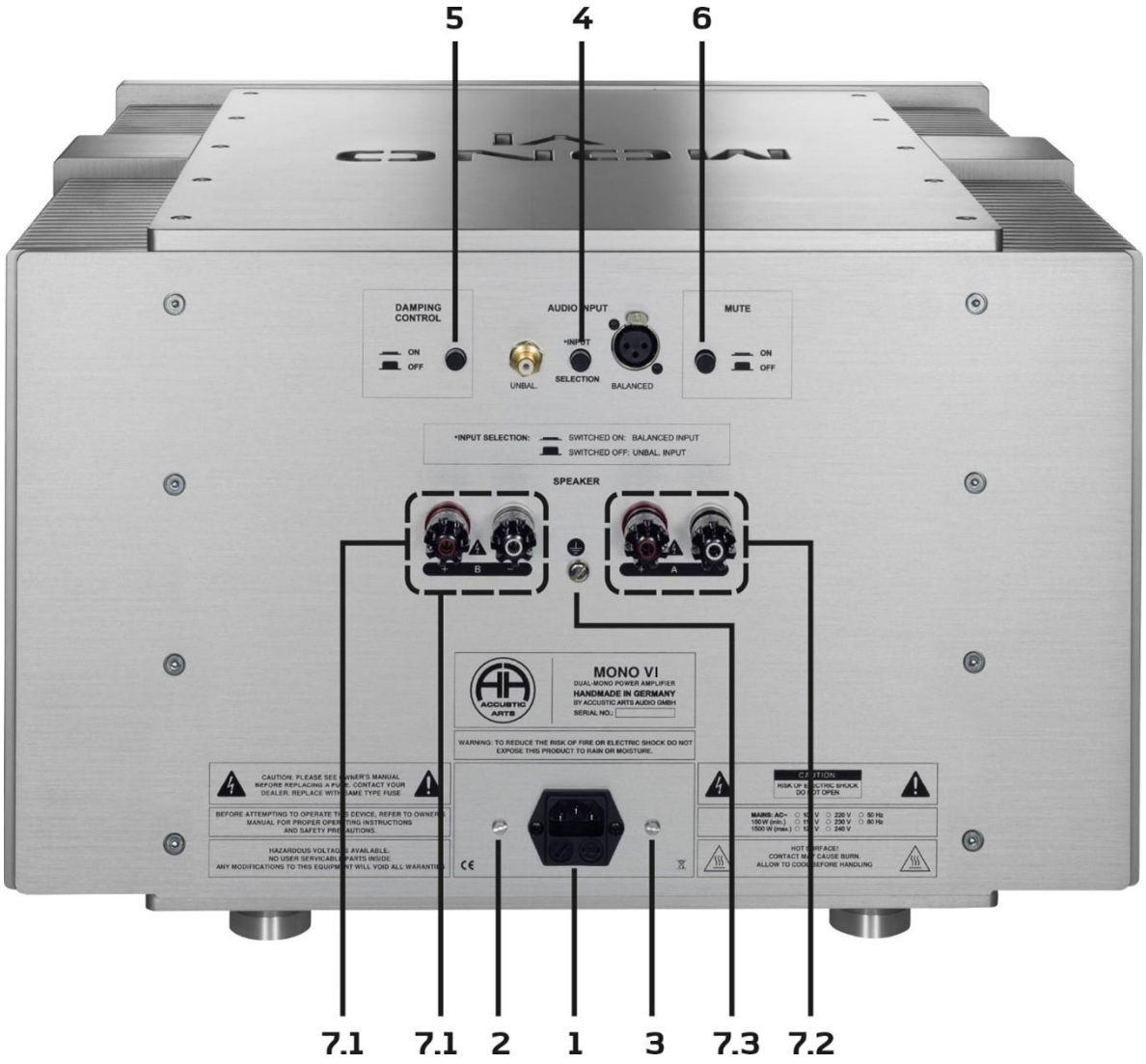
VERY IMPORTANT!	**CAUTION ! DANGER OF FIRE !** **Please <u>never</u> cover the ventilation slots or the heatsinks.** This could lead to overheating of the power amplifier and cause serious damage or fire. **Please <u>never</u> put any other electronic products or other objects directly on the AMP V.**

Fig. 1 Distance to walls and objects



4 Installation

Fig. 1: Rear panel



1 Mains socket

2 **FUSE 1:** Fuse socket for protection of transformer 1 / right channel

3 **FUSE 2:** Fuse socket for protection of transformer 2 / left channel

4 **INPUT SELECTION:** see **Fig. 2** in chapter 4. 1

5.1 **AUDIO INPUT BALANCED:** Balanced XLR input socket for the preamplifier output signal
5.2 **AUDIO INPUT UNBAL.:** Unbalanced RCA input socket for the preamplifier output signal

6.1 **SPEAKERS RIGHT**: Right loudspeaker output socket pair **A**
6.2 **SPEAKERS RIGHT** Right loudspeaker output socket pair **B**
6.3 Ground contact for shielded speaker cables

7.1 **SPEAKERS LEFT:** Left loudspeaker output socket pair **A**
7.2 **SPEAKERS LEFT:** Left loudspeaker output socket pair **B**
7.3 Ground contact for shielded speaker cables

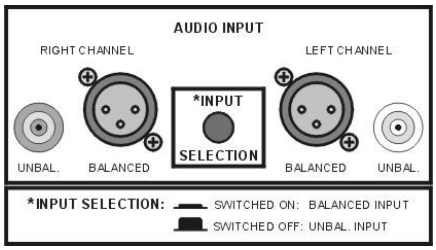
DAMPING CONTROL: see **Fig. 4** in chapter 4. 2

9 **MUTE:** The switch **MUTE** is designed for very short listening interruptions, e.g. connection speaker cables; please see chapter 4. 3

4. 1 Input selection: balanced / unbalanced

The MONO V has balanced XLR input sockets 5.1 and unbalanced RCA input sockets 5.2. To connect a preamplifier, please use one of them.

Fig. 2: INPUT SELECTION

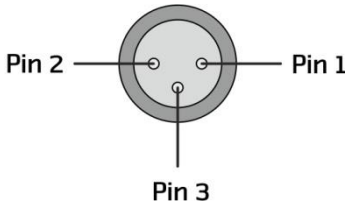


Please press the button **INPUT SELECTION** to use the balanced XLR input **AUDIO INPUT BALANCED** or release the button to use the unbalanced RCA input **AUDIO INPUT UNBAL.**

You can use either the balanced input or the unbalanced input but not at the same time.

In order to connect this amplifier with a separate preamplifier, e.g. the TUBE PREAMP II from ACCUSTIC ARTS®, please use interconnect cables with best possible shielding and high quality connectors. This is the only way to ensure that the sound quality of the power amplifier is fully exploited.

Fig. 3: Pin declaration of the balanced input (XLR)



Pin 1: Ground (shield)
Pin 2: Non-inverting (hot; 0°)
Pin 3: Inverting (cold; 180°)

These pin assignments comply with the standard adopted by the Audio Engineering Society. Refer to the operating manual of your other units to verify that the pin assignments of their connectors correspond to your ACCUSTIC ARTS® unit.

4. 2 Damping factor linearization

Fig. 4: DAMPING CONTROL ON/OFF



The damping factor linearization can improve the performance of your speaker. By pushing this button, the function is activated (= **ON**).

4. 2. 1 General information

The damping factor **D** of a power amplifier is determined from the load resistance $\mathbf{R_L}$ (connected loudspeaker, but for the measurement assessment 8 Ω resistance) divided by the internal resistance of the amplifier $\mathbf{R_i}$.

Physical equation: $D = R_L / R_i$

D : damping factor (calculated number)
R_L : load resistance (connected loudspeaker, for the measurement assessment 8 Ω resistance) *
R_i : internal resistance of the amplifier (usually measured at 1 kHz) **
Example: A power amplifier has (at 1 kHz) the internal resistance **R_i =**16 mΩ
The damping factor is then calculated to be 500. Physical equation: 8 Ω / 0.016 Ω = 500 ***
This is a typical value for modern transistor power amplifiers.

(In comparison: at 1 kHz full tube power amplifiers usually have an internal resistance in the range of 0.4 Ω to 4 Ω and therefore a calculated damping factor in the range of 2 to 20)

Technical background:

* Loudspeakers do not have the same resistance at all frequencies. They are characterized by dynamic resistance, whereby the so-called complex load is formed by the spring mass system, deflection and movement speed of the membrane, induced counter-voltage in the voice coil, and crossover.

** The internal resistance of a power amplifier is also a dynamic variable. It is only valid for a certain working point, with a certain frequency and for a certain modulation. In addition, it can be determined in a number of ways.

*** These above-mentioned mathematical considerations do not take the loudspeaker cable resistance values or contact resistance (banana connector, cable lugs, etc.) into account. In reality these loudspeaker series resistance values and contact resistance values are naturally added to the internal resistance.

4. 2. 2 The technical part

As described above, due to the required high negative feedback reserve modern high-power amplifiers with transistors have very low internal resistance (**R_i**) and therefore high damping factors. These high damping factors are desired because they have a very positive effect on important technical parameters, e.g. on distortion characteristics.
At 5 kHz the damping factor of a power amplifier is relatively linear and has a high value, but then for physical reasons (limitation of bandwidth) goes down with higher frequencies.
The degree and progress of the damping factor influence the in- and outswing behaviour and therefore the control of the connected loudspeaker by the power amplifier.

4. 2. 3 Claims and reality

Claims are often made that a higher damping factor is better for controlling the loudspeaker and therefore the system sounds better. This is not the case.

Correct is that a power amplifier with a very low damping factor is not able to sufficiently control the loudspeaker.

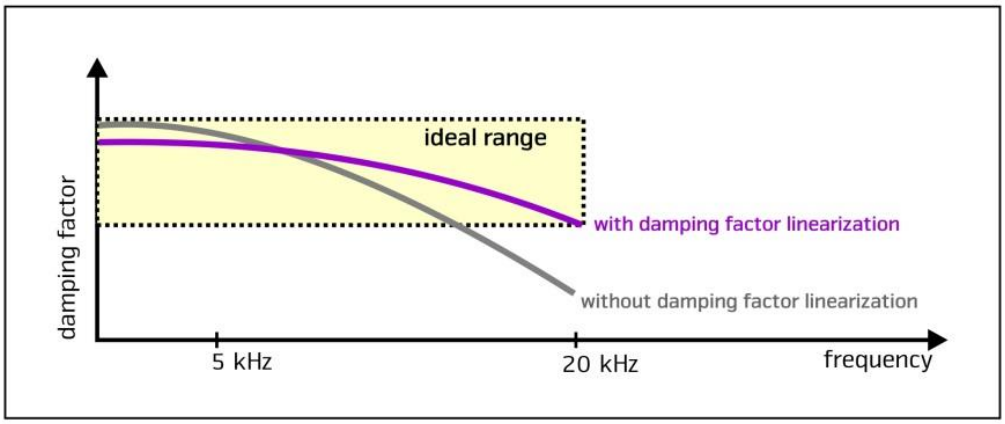
It is, however, true that a loudspeaker does not have the best outswing behaviour with the maximum damping factor.

The truth is that the value of the damping factor should in fact be within a certain range which is ideal for the loudspeaker and should also be linear for as long as possible over the frequency range.

4. 2. 4 Solution: damping factor linearization

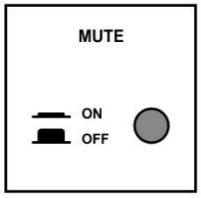
In order to meet these two requirements (ideal range and linear curve), in the switch position "***DAMPING FACTOR - ON***" we lower the complete value of the damping factor slightly to the ideal value and then linearize it over a wide frequency range. In this process the advantageously high negative feedback reserves remain completely intact (see text above). If the push switch on the rear is not pressed, the function is not activated. The absolute damping factor is then maximized, but from 5 kHz decreases considerably. According to his preference, the customer can choose to activate the damping factor linearization or not.

Fig. 5: This simplified diagram serves to illustrate damping factor linearization



4. 3 Mute function

Fig. 6: Positions of the **MUTE** switch



When the switch **MUTE** is pressed, the speaker outputs of the unit are turned off. The blue LED is still illuminated, but the speakers get no signal.

Releasing the switch **MUTE** activates the speaker outputs.

The switch **MUTE** is designed for very short listening interruptions, to keep the unit on perfect temperature (= optimized sound). If you're not going listen music for a longer time (e.g. more than 1 hour), please always switch off the unit completely by pressing the main power switch **13**on the front.

IMPORTANT! **Please use the MUTE function when connecting speaker cables. It prevents short circuits.**

4. 4 Loudspeaker cables and correct phase for the loudspeakers

For each channel the power amplifier has 2 pairs of WBT loudspeaker terminals labelled **A** and **B.** With this arrangement you can wire your loudspeaker system in a BI-WIRING mode. If you want to control your loudspeakers with only one cable you can either use pair **A** or pair **B**. Both connections are identical and therefore have exactly the same characteristics.

Please use only high-quality loudspeaker cables. This is the only way to ensure that the sound quality of the power amplifier is fully exploited.
To connect the cables to the power amplifier or loudspeakers if possible, use high quality terminal ends or banana plugs*) and avoid connecting bare litz wires (except: OFC-cables) since these corrode and so restrict the signal flow. The terminals on your power amplifier and your loudspeaker are colour coded or marked with a plus (**+**) and minus (**-**). Connect the red (**+**) output terminal of your amplifier with the red (**+**) input terminal of your loudspeaker. Proceed in the same way with the white or black (**-**) terminals.

IMPORTANT! **Avoid short circuits!**



Never connect the output terminals of your power amplifier to each other. Neither connect red (**+**) with white or black (**-**) of the channel nor the channels to each other.

4. 5 Connection to mains power

Only connect the power amplifier to the mains power when all the other cable connections have already been carried out. Plug in the mains cable firstly in the inlet connector socket 1 of the power amplifier and only then the earthing pin-plugs in the mains socket.

By actuating the mains power switch 13, you can switch the unit on or off. For further details, please read chapter 5. 2.

4. 6 Replacing damaged mains fuses

Replace fuses only with original types having the same ampere value, the same voltage endurance and the same time-lag. Never use fuses with other ampere classes or time-lag classes.

IMPORTANT! **Pull out the mains plug!**



Always disconnect the unit from the mains power before replacing a fuse.

To change the fuses **FUSE 1** and **FUSE 2** please use a screwdriver suitable for the slot in the fuse holder. Press the screwdriver lightly into the slot and only then turn anticlockwise. Now you can take out the fuse holder and replace the fuse.

For countries with **220 - 240 V / 50-60 Hz** please use the following fuse types:

Fuse F1 / F2: 12,5 Ampere, time lag

For countries with **100 - 120 V / 50-60 Hz** please use the following fuse types:

Fuse F1 / F2: 16 Ampere, time lag

5 Start-up

Fig. 7: Front view



10 LED (red) indicates protection mode during warm-up or error on the left output stage channel

11 LED (red) indicates protection mode during warm-up or error on the right output stage channel

12 LED (blue) indicates ready for operation

13 **Mains power switch** to switch on the AMP V

5. 1 Description of function

The two red LEDs (10 and 11) signal that the output relay of the output stage channel is open and that means that the transmission of a music signal to the connected loudspeaker is interrupted.

The blue LED 12 in the middle signals that the unit is switched on (operational status).

To connect the unit to the mains socket, please press the mains power switch 13 on the front of the unit. To start your listing music please check, if the **MUTE** switch 9 on the rear isn't activated.

After switching on the mains switch 13 all three LEDs will turn on. After approx. 5 seconds the two red ones will extinguish, while the blue LED stays on showing that the unit is running.

5. 2 Operating instructions

- **Switching on: Always** switch-on the power amplifier last, i.e. after the other devices in your system (preamplifier, CD player, etc).
- **Switching off: Always switch-off the power amplifier first and then switch-off the other devices from the mains power.**
- When you switch off the unit from the front panel the auxiliary transformer remains connected to the mains power. The power consumption is minimal. However, for longer periods of absence always disconnect the power amplifier from the mains power by pulling the mains plug from the socket.
- During a thunderstorm please **completely** disconnect the unit from the mains power by pulling out all three plugs.
- Avoid unnecessarily frequent switching the power amplifier on and off. The high amount of switch-on current is a heavy burden for the electrical components and so the life of the unit will be shortened by this action.

VERY IMPORTANT!	**WARNING!** **After switching the unit off please wait <u>60 seconds</u> before switching it on again.**

6 Looking after your amplifier

This unit from ACCUSTIC ARTS® does not require special treatment in excess of the usual care taken with high quality devices. Clean the housing with a dry or slightly moistened cloth. Please do not use any aggressive detergents or detergents which contain silicon.

The best way to clean the chromed front plate is with a mild non-aggressive fat-dissolving detergent (e.g. glass cleaner). Use a very soft clean cloth and wipe the front plate with this without exerting strong pressure. **Never** use abrasive agents or polishing agents with abrasive particles.

VERY IMPORTANT!	**CAUTION ! DANGER OF FIRE !** **<u>Never</u> place the unit in direct sunshine and avoid extreme changes in temperature**.

7 Troubleshooting

Malfunctions are mostly caused by something simple which can be put right quickly.
In the next section some possible malfunctions are described together with their corrective action. However, if it is not possible to remove the malfunction please contact your authorized dealer.

<u>Malfunction</u> **<u>The unit is switched on, the blue LED is illuminated but you hear no music.</u>**

Cause 1 The interconnect or speaker cables are not properly connected.
Solution Switch off all units and check all connections

Cause 2 MUTE switch is activated.
Solution Turn on the MUTE switch (see chapter 4. 3).

Malfunction **The left or right LEDs do not go out approx. 5 seconds after switching on the unit or light up during operation.**

Cause 1 Clipping due to overload of the power amplifier.
Solution Lower the volume on your control device (e.g. preamplifier).

Cause 2 Overheating of the unit.
Solution Switch off the unit for approx. 30 minutes and then make sure that the unit has adequate cooling.

Cause 3 Short circuit at speaker outlet.
Solution Check the loudspeaker terminals and correct it if necessary

Malfunction **Crackling or humming in the loudspeaker.**

Cause Contact problems on the input sockets or on the loudspeaker terminals.
Solution Switch off the unit and check the contact on the input sockets and on the loudspeaker terminals.

8 Specifications

Inputs:	1 x RCA (unbalanced) 1 x XLR (balanced)
Input impedance:	RCA - 15 kΩ XLR - 16 kΩ
Output:	2 loudspeaker terminals (WBT)
Minimum loudspeaker impedance:	2 Ω
Voltage gain:	30.0 dB
Rated power output: (at THD+N = 0,1 %)	> 1,600 watts on 2 Ω > 1,500 watts on 4 Ω > 950 watts on 8 Ω (at each THD + N = 0,1% at 230VAC)
Distortion factor (THD+N):	0,003% on 4 Ω load at 1kHz and 10 watts
Frequency response	10 Hz – 50,000 Hz (+0/-0,5dB) (at 10 watts on 4 Ω)
Signal to noise ratio:	-96 dB A (ref. 6.325 V)
Power consumption at idle:	appr. 120 watts
Loading and screening capacity:	> 110,000 µF
Zero signal current setting:	300 mA
Protection circuits:	clipping, HF oscillations and too high DC offset
Dimensions (H x W x D)	320 x 530 x 545 mm / 12.9 x 20.9 x 21.5 inches
Weight:	approx. 71 kg / 157 lbs. + 22kg / 48.5 lbs flight case

9 Copyright, trademarks, warranty

Copyright:

This instruction manual was correct at the time of going to press. The manufacturer reserves the right to make changes to the technical specification without prior notice as deemed necessary to uphold the ongoing process of technical development.
This manual is done by ACCUSTIC ARTS Audio GmbH.
Copyright © 2020. All rights reserved.

Trademarks:

ACCUSTIC ARTS® is a registered trademark of ACCUSTIC ARTS Audio GmbH.

Warranty:

The manufacturer accepts no responsibility for damage caused by not adhering to this instruction manual. Modification or change to any part of the product by unauthorized persons releases the manufacturer from any liability over and above the lawful rights of the customer.
If a warranty claim occurs, first contact your dealer. If a possible fault is confirmed there and cannot be remedied by the dealer, send the device to the service center responsible for your country. For information, contact your dealer or distributor in your country. In any case, please use the original packaging for return transport to the dealer or service center. Pack your device carefully. We accept no liability for damage caused by transport.

Recycling:

If at some point the device is no longer used and needs to be disposed of, use the recycling stations or delivery points provided in your country. Never throw the device into the household waste. This also applies to the batteries used in the remote control. Dispose of used batteries only at certain recycling facilities or collection points.