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# ARCHE 1a

Tube power amplifier – monoblock

User manual (EN version)



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## INTRODUCTION

Arche 1a is a tube power amplifier - monoblock. A fully balanced Push-pull architecture is used, from the input connector, through the driver, power tubes to the output transformer.

The power tubes operate in class A. This means that their operating point is shifted to an area with higher anode current compared to class AB. This brings a significant reduction in "crossover" distortion and a more dynamic, detailed and pleasant sound performance.

The adjustment of the operating point of the power tubes and their balance is ensured automatically. No adjustment is required when replacing them. Also, the gradual aging of the tubes is not a problem, since the operating point is always automatically fine-tuned.

Arche 1a consists of only two active amplifier stages, which supports our philosophy: "less is more in many cases". The fewer components through which the audio signal passes, the more transparency and purity in the resulting performance.

Between the driver and the power tubes, high-quality capacitors from Mundorf with the addition of gold and silver are used, and they are also impregnated with oil. The final sound performance is significantly influenced by the capacitors in this position, which is why we took great care in their selection.

In critical positions, we use Amtrans AMRG resistors and Vishay metal film.

In the signal path, conductors made of oxygen-free copper in combination with gold and silver are used. At the input and output of the amplifier, there are connectors made of pure gold-plated copper and bronze.

A great advantage of our power stage is the possibility of switching to three operating modes, which affect the interaction of the amplifier and speakers, thus changing the character of the music performance. Thanks to this, the Arche 1a becomes a universal amplifier that will probably get along with a wide range of speakers. The right mode will of course depend mainly on your taste. Specifically, there is an ultralinear mode, a triode mode without feedback, and a triode mode with feedback.

As for feedback, it is active in ultralinear and one of the triode modes. Specifically, it is a sonically popular local cathode feedback, which uses separate output transformer windings that feed the music signal back to the cathode circuits of the power tubes. Moreover, this feedback is minimal. No global feedback is used in the amplifier.

Behind the power tubes is an output toroidal transformer with the aforementioned cathode feedback. Its main benefits include a wide bandwidth and low harmonic and intermodulation distortion. As for the advantages in the acoustic area, we can include extremely fast and controlled bass, revealing even the smallest details, and emphasizing space.

The entire amplifier is powered by an audiograde toroidal transformer and exclusively linear power supplies. The anode voltage section uses high-quality filter capacitors in conjunction with an audiograde toroidal choke.



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At the same time, this voltage is activated only after the tubes have warmed up, which extends their lifespan.

High-purity, lead-free audiograde solder with a 5% silver content and 2% copper content is used to solder the components. This ensures perfect conductivity and durability of electrical connections and even greater transparency and details in the performance of music.

Our products are not mass-produced on a line. Each original piece is assembled component by component by our hands. Each electronic component is tested and measured before installation. After completion, a comprehensive functionality test and parameter measurement follow. Finally, each product is tested in our listening room to make sure that everything is as it should be.



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## OPERATING INSTRUCTIONS AND SAFETY WARNINGS

1. Read all operating instructions and safety warnings before using the device.
2. Keep these operating instructions and safety warnings for future reference.
3. The manufacturer reserves the right to make changes to this manual without prior notice. The current version is always available on the manufacturer's website.
4. The manufacturer reserves the right to make minor changes to the components used and internal wiring without prior notice, as long as these changes do not affect the function, reliability or declared technical parameters of the product. These changes do not affect the statutory rights of the consumer.
5. Do not apply excessive force to the device, do not throw it or hit it with objects.
6. The device must not be used by children. Keep out of the reach of children.
7. Use in a temperate climate zone, do not use it in hot or humid conditions. Use the device in a well-ventilated, not enclosed space. The device may deteriorate, corrode, overheat or catch fire in an environment with a temperature below 0°C or in a closed space with a high temperature, such as a sauna. Moisture or liquid may also damage the surface of the product and its peripheral components.
8. Use the device only indoors.
9. The device should not be placed near water, such as near a bathtub, swimming pool, kitchen sink, etc. It should also not be exposed to dripping or splashing water and moisture such as rain. If the device becomes damp or wet, do not turn it on and contact the service center. Unplug it from the power outlet.
10. Do not place objects containing liquids (vases, flower pots, etc.) where they can fall on the device or where they can spill onto the device.
11. Do not use chemical solutions (alcohol, thinner, solvents, etc.) or cleaning agents that could damage the surface or internal parts of the device to clean the device. For routine cleaning, use a clean, soft, dry cloth. In case of heavy soiling, lightly dampen a clean, soft cloth with a suitable cleaning agent for computer screens - the liquid must not get into the device. Always unplug the device from the power supply before cleaning.
12. Do not use accessories that are not recommended by the manufacturer.
13. Do not place the device on unstable surfaces. The device may fall, which may cause serious injury to children, adults or animals, as well as damage to the device. The device must be placed on a solid and level surface. Use only pads or stands recommended by the manufacturer. The device should be placed in accordance with the manufacturer's instructions and only accessories recommended by the manufacturer should be used.
14. Install this device at least 1 m away from devices that may emit radio interference (wireless routers, microwave ovens, etc.).
15. The device should be placed in a location that ensures proper air circulation. It should not be placed on a sofa, upholstered furniture, or other soft surfaces. It should not be covered during operation. This would prevent proper air circulation around the device.
16. Make sure that the device is away from sources of heat and naked flames (direct sunlight, electric stove, candle, etc.).
17. A minimum distance of 20 cm should be maintained around the device on all sides (except the bottom) from other objects.



18. The device must only be connected to the power source for which it is intended. This is indicated on the back of the device next to the mains (IEC) socket.
19. Special attention should be paid to the power cord (IEC) which must be placed so that it is not walked on and protected from mechanical damage.
20. Use only a certified (IEC) power cord for the region in which the device is used. It must include a protective earth connection and must also be correctly rated for the current. The same applies to any extension cords used.
21. If the device is not to be used for a long period of time, you should disconnect the power cord from the mains power source. Also disconnect it during thunderstorms. Always disconnect it when the power switch is off.
22. Before connecting the power cord and turning on the device, connect the audio cables first.
23. For trouble-free use, you must first connect the power cord to the device and only then turn on the power switch.
24. The device may only be connected to a power outlet with a protective earth connection.
25. When replacing fuses, the appliance must be switched off and the power cord disconnected.
26. The appliance may only be repaired by a qualified service technician if:
  - a. The power cord is damaged.
  - b. The appliance has fallen into water or has been spilled on it.
  - c. The appliance has been exposed to rain.
  - d. The appliance does not operate properly.
  - e. The appliance has been dropped or otherwise mechanically damaged.
27. All repairs must be entrusted to a qualified service technician.
28. Do not disassemble, modify or repair the product yourself. Doing so puts your health and life at risk. If this causes a fault to occur, contact a qualified service center.
29. Never switch on the device without the tubes installed, the tube protection and the speakers connected.
30. A large amount of heat is generated during operation of the tubes - there is a risk of burns.
31. If the device starts to behave abnormally, becomes dangerously hot, or you start to smell smoke, disconnect it from the power supply immediately.
32. If the device shows visible signs of damage, do not connect it to the power supply.
33. High voltage is present in the device, therefore never disassemble it.
34. Never use other types of tubes than those specified in this manual.
35. The device is not intended for continuous all-day operation. After approximately 4–6 hours of continuous operation, it is recommended to turn off the device and let it cool down for at least 1 hour.
36. Do not leave the device unattended during operation due to the presence of electrical voltage and increased temperature.
37. Use the device according to the operating instructions and safety warnings and in accordance with the user manual.

**The manufacturer declines all responsibility if these operating instructions and safety warnings are not followed. To avoid electric shock, do not expose the Arche 1a amplifier to rain, water or moisture!**

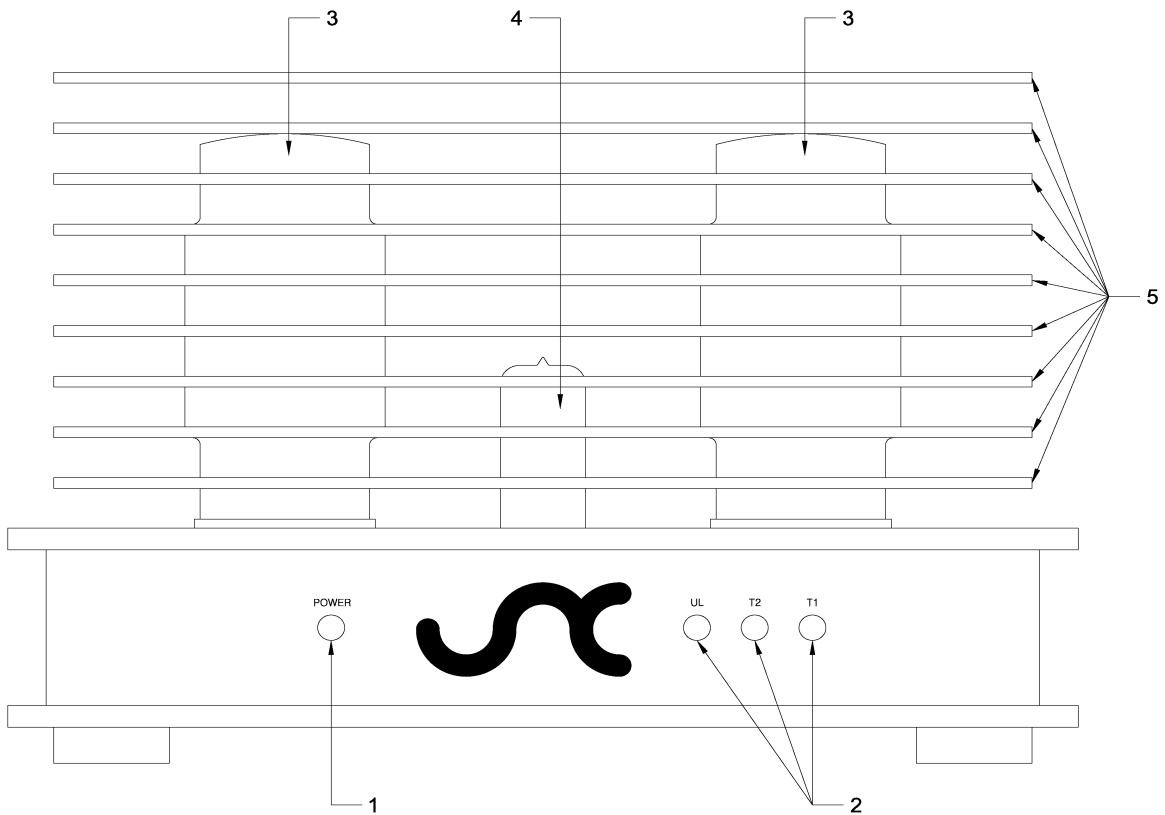


## DELIVERY CONTENTS

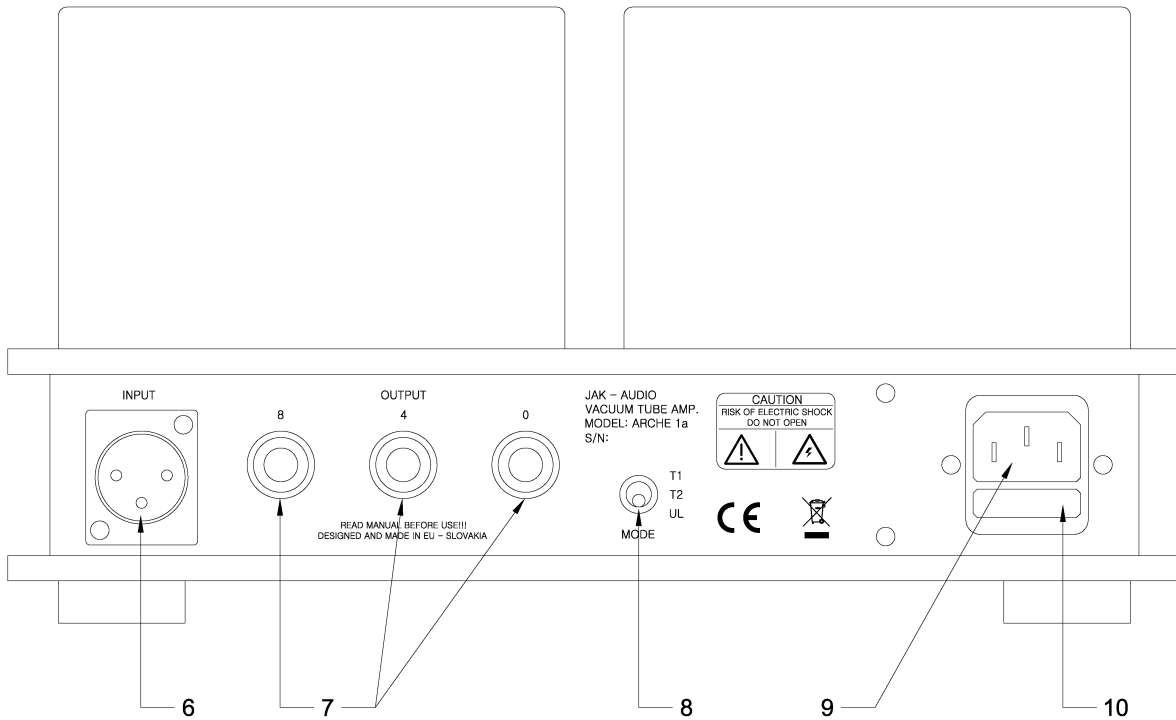
Shipping packaging

1 x Arche 1a amplifier

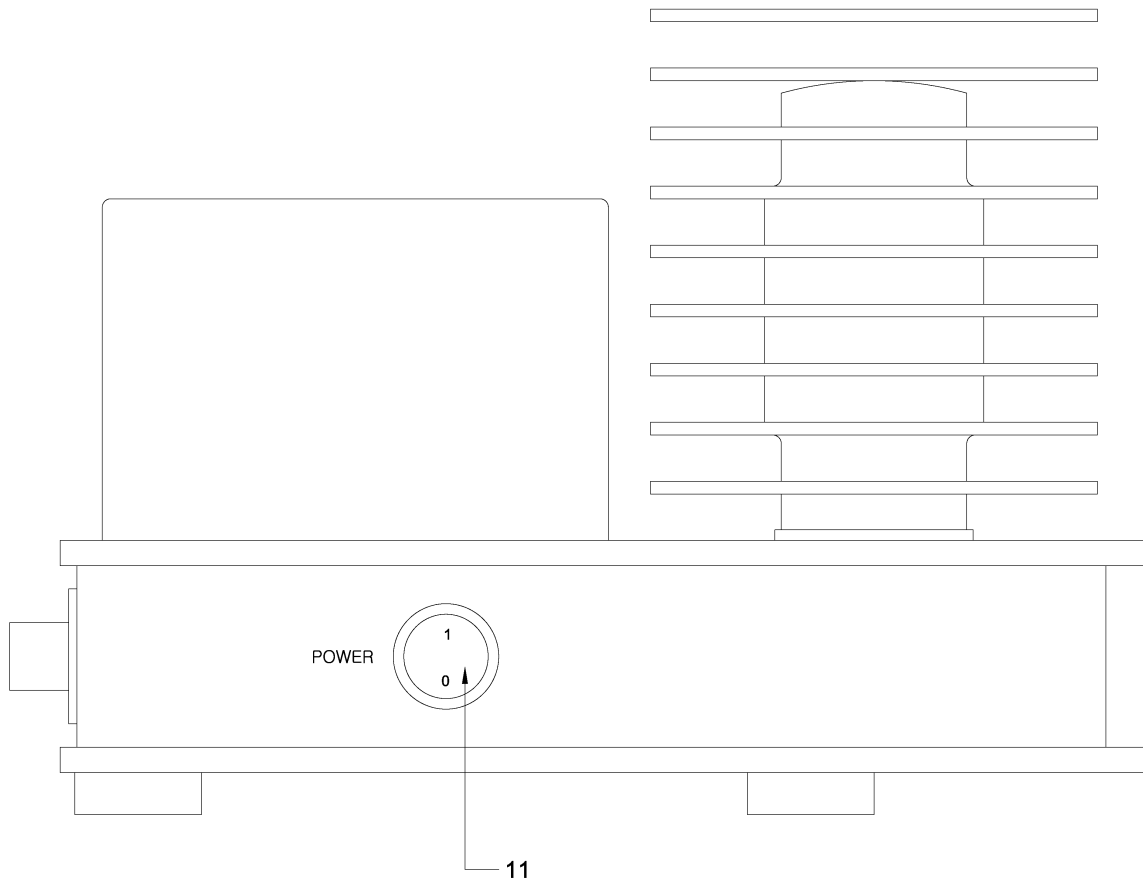
## DESCRIPTION OF THE ARCHE 1a AMPLIFIER



- 1) **Power indicator:** When lit, it indicates that the device is on.
- 2) **Operating mode indicator:** Indicates the active operating mode of the amplifier.
- 3) **Power tubes:** KT88 or equivalent.
- 4) **Preamp tube:** ECC81 or equivalent.
- 5) **Tube protection:** Protects the tubes from mechanical impact and protects the user from touching hot tubes.



- 6) **XLR Audio Input:** Balanced audio input.
- 7) **Audio Power Output:** Speaker Connection:  
0: (-) Speaker Pole / 4: (+) 4 Ohm Speaker Pole / 8: (+) 8 Ohm Speaker Pole.
- 8) **Operating Mode Switch:** Its function is enabled only during the amplifier's startup phase, when the anode voltage to the tubes is not yet connected, which is approximately the first 30 seconds after the main power switch is turned on. After this time, switching this switch has no effect on changing the mode. Even though the switch function is internally blocked after this time, switching it is not recommended due to the possible failure of the blocking circuit. This could damage the amplifier or speakers. Each mode has a different input sensitivity, so after switching the mode, it is necessary to set your audio signal source to the minimum volume before starting the music.
- 9) **Mains socket:** Connection for the mains (IEC) power cable, which must include a protective earth connection. The appliance must only be connected to the power supply for which it is intended. This is indicated on the rear of the appliance next to the mains (IEC) socket.
- 10) **Mains fuse:** The fuse must be replaced with the appliance switched off and the mains cable disconnected. It must be replaced with the type of fuse indicated on the label next to the mains socket.



- 11) **Main power switch:** Used to turn the device on and off. The ARCHE 1a amplifier does not have a standby mode, meaning that it has no power consumption when the switch is off. To avoid unpleasant sound in the speakers when turning on your audio system, you must first turn on all audio devices connected before the amplifier and only then turn on the amplifier. To turn off, proceed in reverse order.



## TECHNICAL INFORMATION

Operating modes:	U/L: Ultralinear T2: Triode with feedback T1: Triode without feedback
Output power:	U/L: 30 W @ THD < 1% T2: 20 W @ THD < 1% T1: 20 W @ THD < 3% / 10 W @ THD < 1%
Output impedance:	4 and 8 Ohm
Input sensitivity @ full power:	U/L: 1.8 V T2: 2 V T1: 1.3 V
Input impedance:	200 kOhm
Input connector:	1 x XLR
Number of channels:	1
Architecture:	fully balanced push-pull
Class:	A
Frequency response @ 1 W:	U/L: 4 Hz to 120 kHz T2: 4 Hz to 110 kHz T1: 4 Hz to 110 kHz
Frequency response @ full power:	U/L: 15 Hz to 90 kHz T2: 12 Hz to 90 kHz T1: 12 Hz to 80 kHz
Harmonic distortion @ 1 W:	U/L: 0.012% T2: 0.04% T1: 0.08%
Noise level (ref. 1 W), without mains hum:	-125 dB
Mains hum components (ref. 1 W):	-100 dB
Damping factor:	U/L: 4 T2: 6 T1: 3.2
Negative feedback rate:	U/L: 6.5 dB T2: 4 dB T1: 0 dB
Negative feedback type:	local - cathode (no feedback used in T1 mode)
Heating:	AC



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Tubes used:	1 x ECC81 (JJ), 2 x KT88 (JJ)
Power consumption:	120 W
Power supply:	230 V / 50 – 60 Hz / 148 VA
Solder:	audiograde (5% silver, 2% copper)
Case:	black sandblasted anodized aluminum and highly polished stainless steel
Weight:	12 kg
Dimensions:	278 mm (width) x 258 mm (depth) x 175 mm (height without feet)
Packaging:	1 x amplifier

## NOTE

At least 60 hours of music playback is required to achieve full audio potential.

Start playing music only after the amplifier has fully warmed up, which is about 30 seconds after turning on the main power switch.

## VACUUM TUBE REPLACEMENT

When the sound of the amplifier starts to distort or noise starts to be heard, it is probably time to replace the vacuum tubes. The replacement is done on a cooled amplifier that is disconnected from the power supply. First, unscrew the 3 screws on top of the tube protection. This will release the top layer of the protection. Then put on rubber gloves or use a rubberized cloth (never use a metal tool) and unscrew the 3 stainless steel posts that fix the next layer of protection by hand. In this way, gradually disassemble the entire protection. Keep your gloves on and use them to slowly pull the tubes out of the sockets. If the tubes are blocked, you can use a slight circular motion. Then insert new tubes into the sockets. Gently press them all the way in. There is a position lock in the sockets, so you don't have to worry about the wrong position. Then put the tube protection back together layer by layer. For best results, use matched pairs/quads of tubes.

## WASTE SEPARATION

Waste Electrical and Electronic Equipment Directive – European Union Regulation 2012/19/EU on the separate collection of waste.

This device must not be disposed of as unsorted municipal waste. Hand it over to a collection point for the recycling and disposal of waste electrical and electronic equipment. Correct disposal of waste will not cause negative impacts on the environment and human health. You will thus contribute to the protection of the environment.



## WARRANTY CONDITIONS

The warranty period for this appliance is 24 months, calculated from the date of purchase. The warranty is only valid if the original proof of purchase and the confirmed warranty certificate can be presented. The warranty covers material and workmanship defects, but does not cover misuse contrary to this manual, unauthorized modifications, repairs other than directly at JAK-AUDIO and external causes such as natural events, power supply abnormalities, etc. The device contains fuses that are authorized to be changed by a qualified service center other than JAK-AUDIO. The manufacturer assumes no liability for damage caused by failure to comply with these instructions for use. Modifications or changes to any part of the product by unauthorized persons relieve the manufacturer of any liability beyond the statutory rights of the customer.

**Attention! There are no user-serviceable parts inside your Arche 1a amplifier!**

## SERVICE

If you encounter a problem that you cannot alleviate or identify, please contact your dealer for further advice. Please note that the Arche 1a is difficult to disassemble and even more difficult to reassemble. This is due to the stainless steel casing that is stored in the grooves in the bottom and top panels. Disassembly and assembly may cause visual damage to the device, which is not covered by the warranty. For this reason, we recommend that you entrust the service to JAK-AUDIO. However, replacement of internal fuses by another qualified service is possible by removing the thin bottom cover, in which the ventilation holes are milled.

## EUROPEAN COMMUNITY DIRECTIVES

This product is designed and manufactured in accordance with the applicable laws of the European Community.

