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AZ4 Mesh Data Sheet

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Description



historically, AZ4 was parts of a new generation rectifier tubes, following up the famous RGN Series of Telefunken, intended for applications the AZ1 by Philips, could not do. AZ4 is in between 274B and 5U4G.

The smaller AZ1 was the mostly used rectifier tube in Europe, and electrical identical to RGN1064. The more powerful AZ4 is on par with stronger tubes like RGN2004.

AZ4 is an ideal candidate for HiFi applications. It can easily supply a stereo amplifier using a pair of AD1 or 2A3, as done for instance in the [Yamamoto A06-03](#) amplifier.

The base of this tube is an original old Bakelite base, that we remove from NOS tubes.

[High Resolution](#)

Guarantee program for first owner.

The first owner can register the tube within 4 weeks after receival, at the Emission Labs ® website, to participate in the 5 years guarantee program, which is additional to the legal obligations of the seller.

[Our Guarantee conditions](#)

[Register here for the 5years guarantee](#)

Features

- Soft rubber suspended tube base
- Hard metal Construction ([Note1](#))
- Extra large getters
- Hand blown Glass bulb
- These tubes are shipped in a [high quality single box](#)
- Tube printing with real gold (metal), red color is glass burned into the glass
- For AZ4, we apply original bake lite NOS Tube base from 1950
- YAMAMOTO tube sockets or NOS Sockets recommended. New made Chinese sockets are troublesome and not recommended.

Filament Ratings AZ4

Filament Voltage

4 Volt (AC or DC)

Did you know?

Emission Labs; was the first company to re-introduce the AZ4 mesh in the year 2005.

Tolerance on filament voltage	5%
Filament Current	Appr 2.3 Ampere

Maximum ratings NOT possible simultaneously IMPORTANT: Please read the notes at the bottom of this data sheet	
AC input voltage	300Volts
DC output current	200 mA
Minimum Copper Resistance of transformer winding Raa. Add two normal resistors in series, if copper resistance is below 2x 60 Ohms.	2x 60 Ohms
Maximum First capacitor, connected to Anodes	60uF max

AZ4 Mechanical Data	
 Logo is on this side	Size of Glass Bulb 125 x 58 mm
Tube weight:	130 Gram
Shipped weight for a single boxed tube:	400 Gram

Previous Type	Later Type	Max Transformer AC	Max Capacitor	Heater Current	Max DC output
RGN1064	AZ1	2x 300V	60uF	1.1A	100mA
RGN1054	AZ3	2x 350V	12uF	2A	120mA
RGN2004	AZ4	2x 300V	60uF	2.3A	200mA
RGN4004	AZ50	2x 500V	64uF	3A	250mA

SOME DESIGN NOTES FOR POWER SUPPLIES

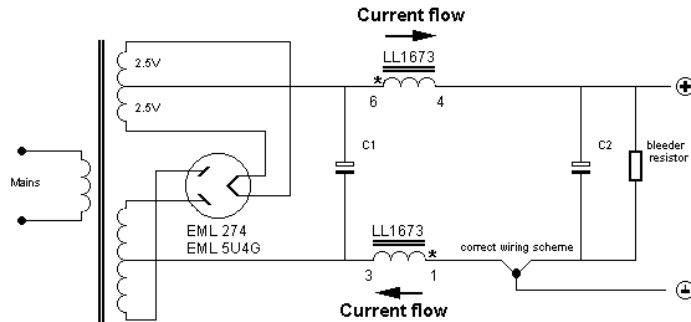
Design note-1

Design note-2

BLEEDER RESISTOR: will discharge the capacitor when the circuit is switched off. Make sure the resistor will discharge the capacitors to less than 40 Volts in maximum one minute. Verify the results! Depending on the capacitor value you may end up with a larger power resistor than expected.

Keep one inch distance from the capacitor, to prevent heating up the capacitor.

The suggested wiring scheme will make sure you have no ground loop error. So the black dot is one soldering point, to which **ONLY** these **THREE** wires are connected as you can see in this scheme. No other wires may be connected to it. When the black dot is in fact a chassis connection, it means the "ground" connection is already made, and only the choke and C2 are connected to it.



Note: This scheme for improved Ripple rejection works only with dual chokes like Lundahl 1673 or similar part numbers. The chokes must be wound on one core. Please check the right polarity of the connections. Use pin connections of the choke as in this circuit diagram.

Like this, effectively the choke will have the specified value as in the datasheet. For instance, the LL1673/10Henry will be split in two halves of 5Henry. It will perform as 10Henry still.

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Note 1) Good care should be taken when making the design of any DHT rectifier. It must be prevented to have strong current peaks, through the first capacitor, because consequently this flows through the tube anode, and transformer windings as well. The transformer will produce mechanical hum by this, most specially if windings symmetry fails. Also the tube will suffer. For this reason, the first capacitor (C1) should never be larger than stated in this data sheet. The mechanical transformer hum, and also tube current peaks are greatly reduced by smaller capacitor values, and use higher choke values instead. Although higher capacitor values come at lower cost, using lower capacitors and higher chokes values instead, is always more satisfactory in the end. The result will be: Lower transformer hum, less electrical field radiation into the pre-amp, and more lifetime from the rectifier tube. This is why we recommend using largest chokes. From Lundahl, high value chokes are achievable at the same price as HiFi capacitors, like from a Mundorf or Black gate. So we have to go back to the roots, and use high quality, large value chokes, like in the old days of radio design. For best ripple suppression, increase the choke to any value you need, or even use an C-L-C-L-C circuit, as also advised in the historical RCA data sheet.

Note 2) As a rule of thumb, high voltage power supplies are work best with large size chokes, specially at high output current, whereas low voltage power supplies are more conveniently build with larger capacitors.

Note 3) Windings symmetry is needed with HV transformers to prevent hum. A HV winding with Cathode Tap, requires **FOUR** separated HV windings inside the transformer, which are arranged for the end user as **TWO** windings which are in series. It is remarkable to see, this is widely unknown today by many transformer manufacturers. Also this is more expensive. So often, they build tube rectifier windings only from two internal windings, and not **FOUR** windings as needed for tube rectifiers. However we have a tube data sheet here, no transformer construction manual, so we can not explain this in full detail.