EML 300B-Mesh Data Sheet

Description

The 300B-Mesh can replace a standard 300B-Mesh in several cases, but not in all cases. So please read this data sheet carefully.

It is nor always possible, simply plug & play a 300B-Mesh into a 300B amplifier. If not checked with care, overheated anodes may result, and such a damage is not covered by the guarantee.

The 300B-Mesh can replace a normal 300B tube, if the following conditions are met:

1. Bias and Anode dissipation must be reduced to typical 22 Watt, or to absolute maximum of 28 Watt. (see below table)
2. Filament current of minimum 1.4 Ampere must able to supply by the amplifier. This is very important. Otherwise, heater voltage will drop below 5V, and the tubes may fail.
3. The larger length of the tube glass is no problem. (like with closed amplifiers).

The 300B-Mesh is a 'long Anode' version,. The Anodes are 25% longer as with normal 300B-Mesh we build. The physical size of this tube, inside and outside is the same as the larger 300B-XLS tubes we make, so it is larger than you may expect from a 300B. Check the dimensions at the end of this Data sheet.

The heat dissipation of the wire mesh is lower than for Solid Plate anodes. So the maximum Anode dissipation of the 300B-Mesh for continuous use must be limited to typical 22Watt, or absolutely maximum 28Watt. This is however a classical use condition in several Japanese products. Though many other amplifiers exceed this number, so it is important to check with your amplifier manufacturer first, if you are not sure about the Anode dissipation.

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.

Features

- Gray Wire Mesh Anodes, mounted on a hard metal frame for best stability.
- Gold Plated, Wolfram Grid
- Soft rubber suspended tube base
- Cathode Tapped filament
- Slow Start filaments, for best lifetime
- Hard metal Construction (Notes)
- Extra large getters
- Hand blown Glass bulb
- Anti-microphonic Anode- and grid suspension
- These tubes are shipped in a high quality dual box
- Tube printing with real gold (metal), red color is glass burned into the glass
- Gold Plated pins, black ceramic socket. (White bottom.)

Sound Character of the EML 300B-Mesh tube

Why Mesh Anodes? When a tube is given mesh Anodes, something magic happens to the sound! We believe this is caused by the better damping properties of the wire mesh material. A Solid Plate anode due to it's circular construction will have quite some ringing (bell like effect). A mesh anode will not have this effect. In most cases, when using mesh tubes, you will experience a more transparent sound stage, meaning a more realistic stereo reproduction of the original sound recording. With mesh tubes you will enjoy the very best of what small triodes have to offer.

Note: mesh means woven metal wire. Chinese factories make a tube with punched Anodes, and thin metal, and for marketing purposes call this 'mesh'. Which is not so. Such a punched Anode from thin metal, will have a ringing effect, with metallic sound, and will not have the superior resonance damping properties, a wire mesh anode has.

EML 300B-Mesh Filament Ratings

Filament Voltage Important: See notes at page bottom	= 5 Volt (AC or DC)
Tolerance on filament voltage	4%
Filament Current	~ 1.4 Ampere

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300B-Mesh Maximum Conditions

Maximum current and maximum voltage not possible simultaneously

Anode Voltage	450Volt
Anode Current	80mA
Peak Anode Dissipation	28Watt
Grid resistor @ Anode Dissipation= 22 Watt	100k...350kOhm
Grid resistor @ Anode Dissipation= 24 Watt	100k...250kOhm
Grid resistor @ Anode Dissipation= 26 Watt	100k...140kOhm
Grid resistor @ Anode Dissipation= 28 Watt	100kOhm, or lower

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300B-Mesh Recommended Single Ended operating points

Anode Voltage	Control Grid Voltage	Anode Current (ma)	Anode Rp (Ohm)	Load (Ohm)	Anode Dissipation (Watt)	Power Output (Watt)	2nd harm. (dB)
350	-73	63	720	2000	22	10.6	21
350	-73	63	720	3000	22	8.7	26
350	-73	63	720	4000	22	7.3	30
350	-72	70	685	3000	24	8.5	28
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400	-74	60	720	3500	24	10.5	26
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440	-101	59	775	4000	26	12	26
440	-101	59	775	5500	26	9.6	30

* For best lifetime, it is recommended to choose maximum 26 Watt Anode dissipation, though 28 Watt is possible at some compromise with life time. If you need higher output power than 300B-Mesh can do, choose standard 300B tube, or upgrade to 300B-XLS.

Choice of output transformer impedance: For each working point, a wide range of primary impedance is possible. When using a transformer of another value, you can estimate the output power and distortion by averaging between two rows of this table. Example: 450V, 60mA. Use of Lundahl LL1679-70mA (4k5 type). This will give

you appr. 11.5 Watt @ 27dB 2nd harmonics. (28dB distance of signal to 2nd harmonics.

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EML 300B-Mesh Factory Test conditions

Anode Voltage	300V
Anode Dissipation	17Watt
Anode Current	56mA
Control Grid Voltage	-58Volt DC
Anode Impedance	700 Ohm
Amplification Factor	3,9
Transconductance	5.6 mA/V
Control Grid Voltage	matched
Transconductance	matched

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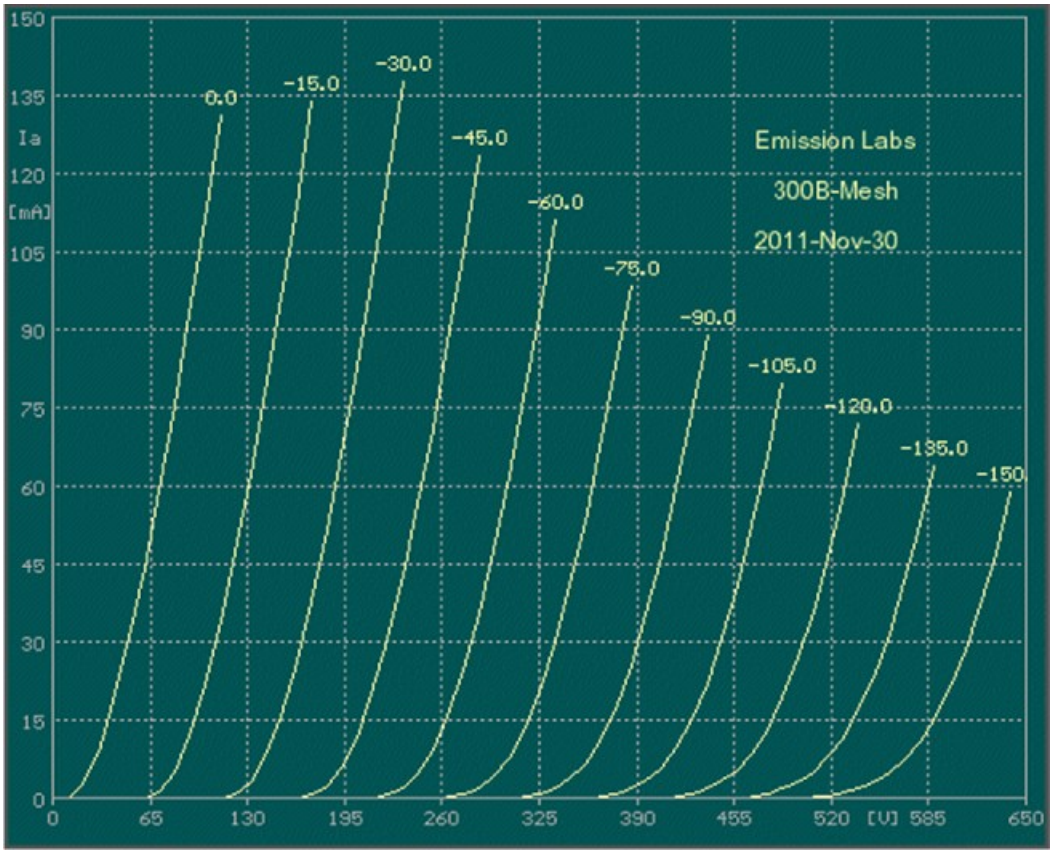
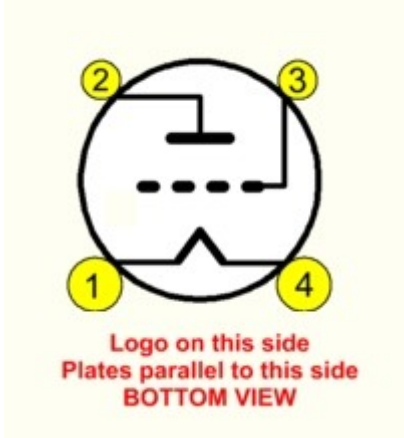


EML 300B-Mesh Mechanical Data

Size including Socket UX-4
(but excluding pins)

175 x 63 mm

Pin 1: Heater1
Pin 4: Heater2
Pin2: Anode
Pin3: Grid



Weight of one tube:
145 Gram

Shipment weight for pair in gift box:
840 Gram

Notes

1. Hard-metals can be used in electron tubes, though these are more difficult to use, and more costly than the classical nickel. Hard metal Anodes have a more precise Anode distance, and do not change shape when heated, or at mechanical shock. This ensures reproducible tube parameters, and long term stability. Wolfram grids allow the most precise grid wire distance, because wolfram is an extreme hard metal. Best grid geometry ensures uniformity and linearity of the tube curves.
2. Individual Test data, such as: Matching Data, Grid Current, Vacuum, Filament Current, etc., are on the Certificate that is on the outside of the tube box. Each tube is numbered from the inside, with a metal Tag
3. Do not experiment with lower filament voltage, to expect better lifetime. If it was that easy, we would make the tubes like this ourselves. The specified filament voltage is the one for best lifetime.
4. Gold Plated grids have a few advantages, such as increased bias stability, some protection against accidental overload, and better linearity of tube curves.
5. Heater voltage is always defined at the tubes pins itself. There may be some voltage drop along the wires, and tube contacts as well. So voltage measured at the tube socket wiring should ideally be 5.1V.