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300B / 300BM+ Data Sheet

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Description

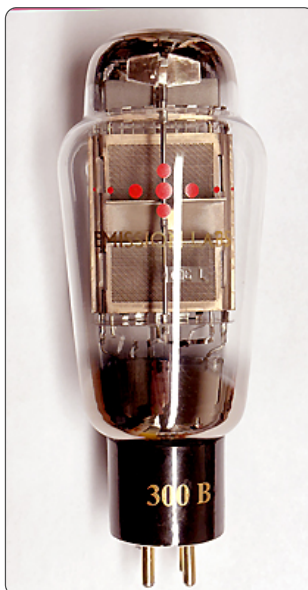


300B Solid Plate

This tube is a direct replacement for the Western Electric E300B as built until 1988. Glass height however is 15mm longer. Diameter is the same.

[High Resolution](#)

[300B Tube compare \(on Youtube\)](#)



300BM+ Mesh Plate

Product Release February 2026

This tube can be used in all 300B power amplifiers. For pre amplifiers and head phone we recommend Solid plate.

[High Resolution](#)

[Night View](#)

Guarantee program for first owner

At EML we have the normal guarantee. In addition to that, the first owner can register the tube within 4 weeks after receipt, at the Emission Labs website, to participate in the 5 years guarantee program.

[Our Guarantee conditions](#)

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

Features

- Gold Plated Grid ([Note](#))
- **NEW** Soft rubber suspended tube base

Other 300B Versions

[Replacement Read me!](#)

[300B-XLM](#)

[300B-XLS](#)

[320B-XLS](#)

[520B](#)

- Hard metal Construction ([Note](#))
- 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 24k gold, and red color burned into the glass
- Gold Plated pins, black ceramic socket, with white bottom

Sound Character of the EML 300B

It is probably the most asked question, and for this we refer to the genuine 300B, as made until 1988 by Western Electric itself, in the [Hawthorne plant](#), in USA.

The 300B tube has less interaction with the speaker system, as smaller tubes like the 45 have. This makes the overall sound less dependant on the speakers, and more dependant on the tubes itself. We see 300B often used with medium efficiency loudspeakers. Meaning, the tube often needs to work medium hard, which is indeed what the 300B is designed for. There are some more requirements too.

With low to medium efficiency speakers, relatively high output power at low distortion is required. Another requirement is, distortion should increase as little as possible, during the aging process. This requirement is often overseen, because tube owners have a high lifetime expectation anyway, even though this tube is loaded quite hard by some amplifiers. So the 300B has to build with as much as possible reserve emission. This is just what we are doing at EML. Low distortion needs emission reserve.

The low distortion of EML 300B, can optically be seen from the tube curves. This is demonstrated by the equal distance between each curve, specially where they are close to the horizontal axis, in the high voltage range. The more uniform at this difficult region, the higher the emission of the tube probably is. Compare this with other brands, and you will see the difference. We achieve this by our unique filament and grid construction, featuring a real, physical filament Cathode tap, positioned outside of the grid, but inside the glass bulb. We use gold plated grids, and a very long life cathode coating. The gold plated grid ensures constant tube data over the entire lifetime.

Sound Character of the EML 300B Mesh

Mesh tubes have a sound of it's own.

[Click here](#) for a detailed, general description.

EML 300B Filament Ratings	
Filament Voltage	= 5 Volt (AC or DC)
Electronic heater modules:	Only voltage source
Tolerance on filament voltage	-4... +5% 4.8 ... 5.25V at Tube pins 4.85 ... 5.30V at Socket pins See also this graph
Filament Current	~ 1.3 Ampere
Maximum Time on Stand By (Heater voltage only)	2 hours

EML-300B Factory Test conditions	
Anode Voltage	300V
Anode Current	60mA

EML-300B Factory Test Result at 300V, 60mA	
Grid voltage (AC heated)	-61V
Grid voltage (DC heated)	-58,5V

Transconductance	5.5 mA/V
Note: these are average values, variation is appr 5% for random tubes. Any other current will also give another transconductance	

EML-300B incoming inspection. Tested at 300V, 60mA Multiply -Grid Voltage with transduction	
New tube. AC heated.	above 315
New tube. DC heated.	above 302

EML 300B Capacitance	
Grid to Plate	15pF
Grid to Filament	8.5pF
Anode to Filament	4pF

EML 300B Factory Test conditions	
Anode Voltage	300V
Anode Dissipation	17Watt
Anode Current	56mA
Anode Impedance	700 Ohm
Amplification Factor	3,9
Transconductance	5.6 mA/V
Control Grid Voltage	matched
Transconductance	matched

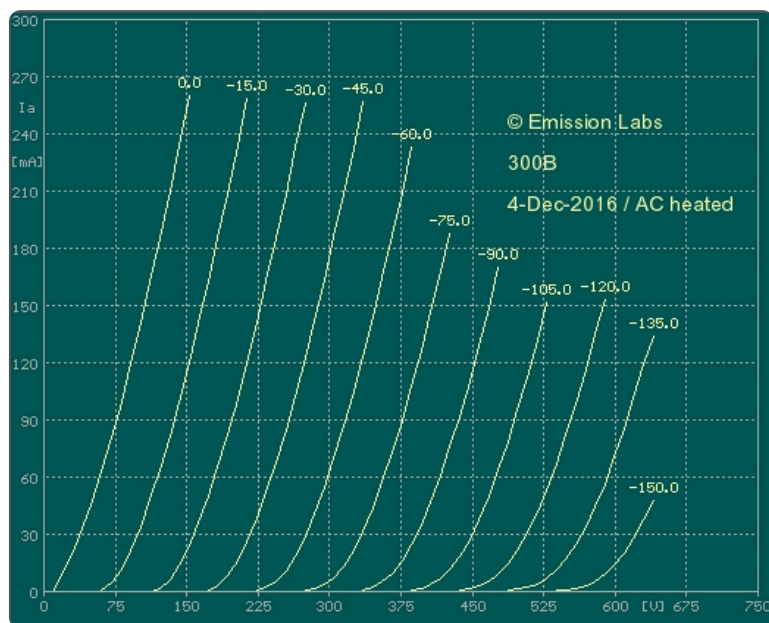
EML 300B Maximum Ratings (Not possible simultaneously)	
Maximum Anode Voltage	450V
Safe Maximum Anode Dissipation	36 Watt
Peak Anode Dissipation	40Watt
Maximum Anode Current Fixed Bias	70mA
Maximum Anode Current Auto Bias	100mA
Recommended grid Resistor	150k Auto Bias
Maximum grid resistor Auto Bias	250k Auto Bias

300B Recommended Single Ended operating points. Other choices are possible.							
Anode vs. Heater (Volt)	Grid (V) vs. Heater	Anode Current (mA)	Anode Rp (Ohm)	Load (Ohm)	Anode Dissipation (Watt)	Power Output Watt)	2nd harm. (dB)
350	-74	60	720	2000	21	10.2	21
350	-74	60	720	3000	21	8.3	26
350	-74	60	720	4000	21	7.0	30
350	-71	80	640	2200	28	9.6	26

400	-87	60	720	3500	24	10.5	26
400	-84	80	720	2500	32	12.5	25
450	-100	60	780	4000	27	12.5	26
450	-100	60	780	5500	27	10.0	30
450	-98	73	720	2000	33	16.2	21
450	-98	73	720	3000	33	13.2	25
450	-98	73	720	4500	33	10.5	30
450	-97	80	700	2000	36*	17.8	21
450	-97	80	700	3000	36*	14.6	26
450	-97	80	700	4500	36*	11.5	31

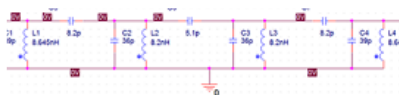
* Lifetime of 300B reduces at 36 Watt dissipation, regardless of the tube brand. For best lifetime, it is recommended to stay below 33 Watt. For highest output power and no compromise with lifetime or distortion, it recommended to choose the 300B-XLS.

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.



EML 300B tube curves. See Note 3

[300B Anode Curves Print Version \(full size pdf\)](#)



[300B SPICE Parameters, made with EML tube.](#)

Some recommended Lundahl transformers

	Primary	Secondary	Auto Bias Cathode resistor	Anode Current	Anode Voltage to ground
LL1623-090mA 11Hz @1.5dB	3000Ω	Alt.B = 4Ω Alt.C = 8Ω Alt.D = 16Ω	750 Ohms	80mA	435V

Alternative:

Use transformer Impedance Boards for LL1623 by JACMUSIC.

EE16 switches between 4 and 8Ohms at 3k.

EE18 switches between 8 and 16Ohms at 3k.

LL1664-080mA
13Hz @1.5dB

3000Ω

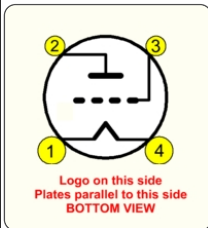
8Ω

750 Ohms

80mA

435V

Complete list of [recommendations here](#)

EML 300B Mechanical Data

Size including Socket
(but excluding pins)

148 x 65 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

- Hard-metals can be used in electron tubes, though these are more difficult to use, and more costly than classic 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.
- 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](#)
- Average Plate Characteristics are made with the Sofia Digital Curve tracer.
- We are recommending the same values as Western Electric in their 1950 Data sheet.
- The Western Electric 1950 Data sheet. says 36 Watt maximum dissipation. Later data sheets say 40 Watt. Though 40 Watt is possible, this is a peak value only, and no normal working point. When you intent to get the maximum out of a 300B, and operate this tube at the limits of safe operation, it is a better idea to use the 300B-XLS in such a case.
- Some of our competitors claims to be the only one with a Center Tapped filament, but at EML we build since many years all tubes Cathode Tapped, not just this tube.
- Do not experiment with lower filament voltage, to expect better lifetime. We already specify filament voltage for the best lifetime.
- Gold Plated grids have a few advantages, such as increased bias stability, some protection against accidental overload, and better linearity of tube curves.
- The curves for the 300B are plotted, with AC heating. This is in accordance with the historical WE data sheet.