

A Powerizer Mystery

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In the A.W.A. Electronic Communication Museum, you'll find a beautiful glass-enclosed superhet receiver using eight UV-201A tubes. it's an example of a popular product from the Radio Receptor Co. of New York City, and it dates from about 1924. A 1974 *OTB* article (1) told some of the company's early history. The current article features another product of the company that presents something of a mystery.

Suppose it's 1928 and you want to pipe music around your store using the free programs of your local radio station. No problem firing up an Atwater Kent model 33 in the office, but how can you hook the radio up to six or eight more speakers all around the premises? What you need is a power booster or two, and Radio Receptor has just the thing--a line of add-on amplifiers that would not only drive several speakers but, in the case of the unit that is the subject of this article, could also replace the A, B, and C batteries. Or could it?

The Radio Receptor, Co. Model PXY-1 "ABC Power Supply with One Stage Power Amplifier," also known as the "Powerizer," came to me from eBay--unfortunately without instructions. It looks like a nice battery eliminator, but it has sockets for a 210 triode in addition to an 80 rectifier.

The output panel (Figure 1) is black Bakelite and carries speaker terminals, three B supply binding posts, and a four-pin tube socket for supplying filament voltages to type 26 or 27 tubes. Etched thereon is the phrase "Built specially for A.K. 20 - 30 -33 - 35."



Fig. 1. The Radio Receptor Co. Powerizer. Output panel has speaker jacks, binding posts for "B" voltages, and a 4-pin socket for filament voltages

Now we have a mystery because none of those A-K models used type 26 or 27 tubes. The model 36 did, yet it's not mentioned on the output panel. The main nameplate (Figure 2) does announce that fact that the unit will power 26 or 27 tubes.

Could the Radio Receptor people have designed this unit with the idea that it could be used to replace 201A tubes with 226 types and the detector tube with a more modern (and 5-pin) 227 heater type? Definitely a job for the local radio shop in 1928.

And that 210 grid lead--where would it have been hooked up? My guess is that it was to be connected between ground and the high side of the host radio's high-impedance speaker--isolated from the receiver's B+ potential by a coupling capacitor. That would make the 210 tube happy, and about 1.6 watts could be had if its plate ran at



Fig. 2. Second ID plate confirms that this unit is intended to power external 226 and 227 tubes.

its rated 425 volts. That's about twice the power of a '71A.

Figure 3 is the original schematic of the Powerizer--and it agrees with the one I had to make during reconstruction of my unit. The designers did everything they could to minimize hum: center-tapping each filament

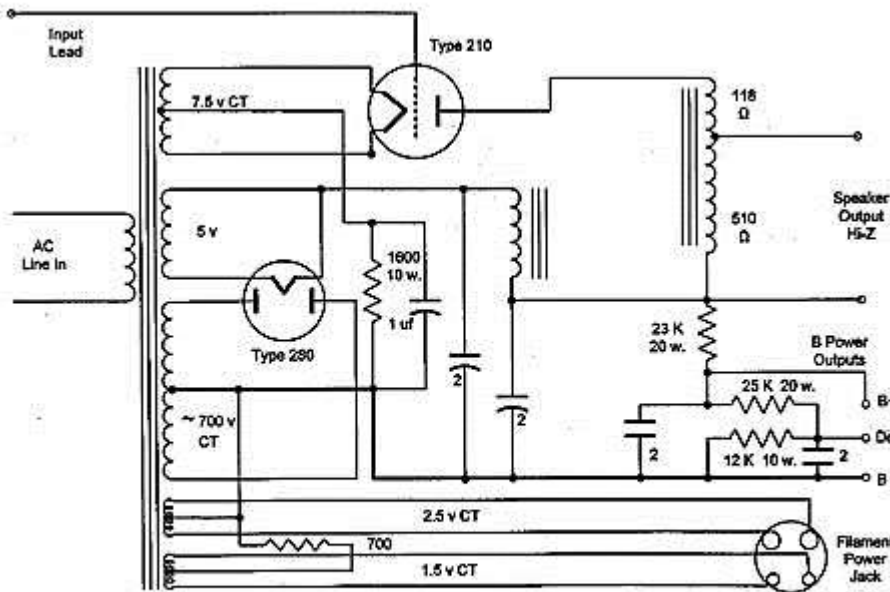


Fig. 3. Schematic diagram of the PXY1 Powerizer.

winding and using 2 uF paper capacitors here and there (all contained in a tin can block). The 700 ohm resistor shown between the two lower filament windings must be for creating grid bias for type 226 tube(s) in a host receiver.

If there were four tubes in use there, their combined plate current (per a tube manual) could be as much as 20 milliamps, and that would make for 14 volts drop across the resistor, close to spec grid bias for the '26. Was that the scheme? Let's see--in an A-K model 20, the tube lineup is 01A - 01A - 01A (detector) - 01A plus an output tube which might be either another 01A or a '71A.

If the R-R folks wanted to make a conversion, they could suggest a new lineup of 26 - 26 - 27 - 26 - output tube, and ask the customer to replace the detector tube socket with a new 5-pin one for the '27. New wiring there, too. For an output tube, another 26--it's as capable there as an 01A. If total B+ drain were 20 milliamps and if the top resistor in the divider is 10,000 ohms, the bus voltage would be 200 volts below the Powerizer B+, or about 150 volts.

Under this analysis, the legend on the nameplate: "ABC Current Supply" is made good; all the filaments will light, there's plenty of B+, and there's grid bias for the new tubes in the host receiver. So this might have been the king of all battery eliminators besides being a power booster.

When I tore into the Powerizer to bring it to life, I found the choke was missing and the power transformer had shorted turns in the primary. I fixed those problems and replaced the output transformer with one that matches a modern speaker. This now gives over 1.5 watts with no visible distortion, with the 210 running at 350 volts on the plate and 29 volts of self-bias across a 2000 ohm cathode resistor.

Readers--now you have the facts. Does my analysis make any sense to you? Or do you see this mystery differently? Best of all, do you have instructions or other paper for the Powerizer line from Radio Receptor? Write or email and help with this mystery.

Reference

1. "The Radio Receptor Story," *Old Timer's Bulletin* Vol 15, No. 3, p.8