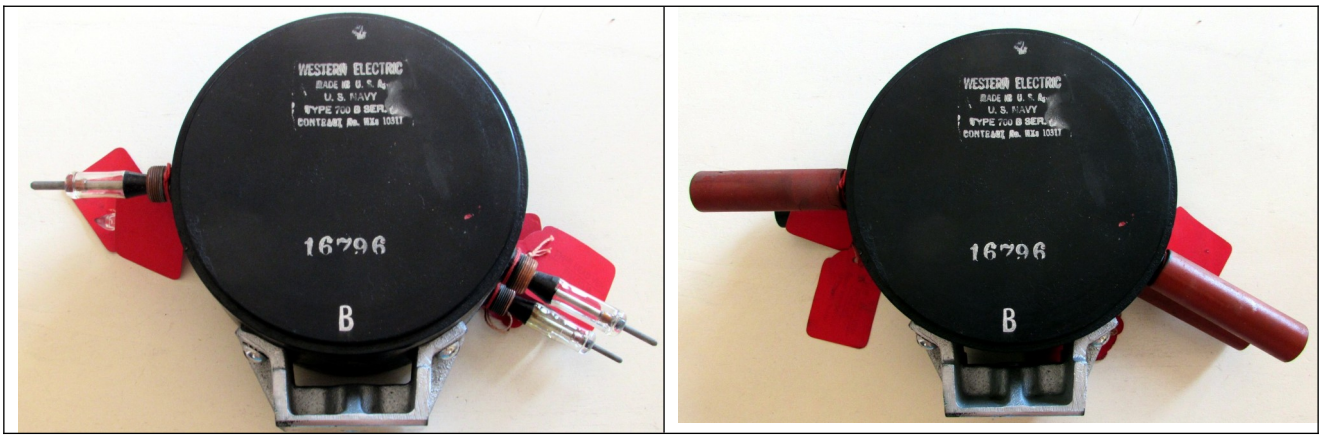
700A-D, Western Electric Magnetron, 1941



The 700A to D were the first cavity magnetrons entirely designed at Western Electric after the Tizard Mission in the late 1940 unveiled the far superior performance provided by the innovative design of the GEC E1189 8-cavity magnetron. In its Whippany laboratory Bell was designing a 40 cm pulsed radar using doorknob UHF triodes, but the obtainable power was under 2 kW. The description of the design, developed early in 1941, is given in the Bell System Technical Journal, Vol. XXV, April 1946, No. 2.

For reasons of size of the resonant system, a six-cavity design with elongated slots was chosen. Due to the initial difficulties for tuning several cavities simultaneously, four frequency selections were made to cover the range from 680 to 720 MHz. The four frequencies were tuned by small variations of the slot width. The magnetron transmitter generated 40 kW pulses with about 35% efficiency with an impressive increase over the triode version.

- **Frequency** **680 to 729 MHz**
- **Va pulsed** **12 kV**
- **Ia pulsed** **10 A**
- **Mag. field** **650 gauss**
- **Weight** **12.5 lbs, eq. 5,67 kg**

The 700A-D magnetron was soon superseded by strapped and tunable magnetrons, yet it was still listed in the early 1950s. Unfortunately, since the magnetron was almost entirely made of copper, most of the production was destroyed to reclaim the metal. Today this sample, still complete with its original verification tags and with the protective sleeves can be considered quite rare.

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