

## REL-3C – Early Canadian S-Band Magnetron Equivalent to British CV38



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Early cavity magnetron, similar to E-1198 and to [CV38](#).

This is one of the early types entered in production, directly derived from the E-1198, frequency variant for airborne applications of the British E-1189 prototype brought to U.S. and Canada by the Tizard Mission in 1940.

REL-3C operated at 9.1 cm wavelength, 3297 MHz. Being unstrapped, its efficiency was quite poor, around 10%. According to the spec sheet of CV38, when operating at 8 kV and 7 A input pulses the typical output pulse power was 7 kW and tubes generating 5 kW were still acceptable.

Heater operates at 6 volts, 1.2 amps.

Used in AI Mark VII radar set. AI stays for Air Intercept.

The collection includes a couple of samples of this tube, built for REL by Northern Electric Co. and still in their original cardboard packing. Remarkable in these samples are the bare cathode/heater flying wires. Northern Electric was a Canadian company related to Bell and Western Electric. In October 1940 Bell Laboratories examined the prototype of [E-1189](#) S-band magnetron carried by the Tizard Mission. Soon later they built a few tens of copies which were spread among schools, research institutes and industries involved in the radar development. The E-1189 design, with a simplified 4-fin radiator, went in production as [REL-3D](#), equivalent to the the British [NT98](#). It was used in the Naval radar Type 271. Its frequency variant E1198 was coded as REL-3C. Presumably Northern Electric was involved in the volume production of magnetrons by the same Bell. Anyway Bell, Western Electric and Northern Electric shared all their information on these devices. The story of the magnetron development in Canada can be read [here](#).