

NT57D - Early 'Silica' Triode for Radar Transmitters



NT57 was the early silica triode developed in Great Britain specifically for use in radar transmitters. Works on Radio Direction Finder or RDF, as radar was referred to at that time, were secret in the mid thirties and no tube supplier had access to related information before 1938. According to Callick, the tube was developed in 1936 by H.G. Hughes at the Signal School valve group, already involved in the production and in the repair of silica valves for radio communication transmitters. Anode and other electrodes were made shorter, about 8 cm height, in order to reduce input and output capacitance and to operate at 45 MHz. A pair of thick hairpin-shaped filaments of pure tungsten operated at 15 V and 48 A, granting about 5 A saturated emission at 10 kV anode voltage. At that time only pure tungsten was believed capable of surviving ion bombardment caused by high-voltage plate supply. Only later different emitters were accepted, since it was observed that in short pulse operation heavy ions do not reach enough energy to damage the cathode surface.

NT57 was used in all the early radar sets operating at 45 MHz. One or more of them were used in the MB1 and MB2 mobile ground radar systems, in the GL1 and GL2 gun-laying sets and even in the Type 79 shipborne early warning set. Only in April 1939 the [NT57T](#) was introduced to replace the NT57. With its thoriated-tungsten filament, NT57T was capable of giving pulses 50 per cent more powerful of its predecessor, wasting with its 300 W less than one half of heater power.

The above sample is the NT57D approved as CV1233, an improved variant of NT57 with graded glass seals instead of the lead seals used in the production of early lots. NT57D still retained pure tungsten filament. About 1937-1938.



- Close-up view of the internal electrode structure, showing the basket-like, double woven molybdenum ribbon of the plate and one of the two filament hairpins, the second one being barely visible in the background. Compare this structure with the one of [CV14](#), characterized to have six filament hairpins.