

NT57D - Early 'Silica' Triode for Radar Transmitters



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NT57 was the very early 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 of the Signal School valve group. This group was already involved in the production and in the repair of silica valves for radio communication transmitters. Anode and other electrodes were made very short, about 8 cm, in order to reduce input and output capacitance and to operate at 45 MHz. A pair of hairpin-shaped thick filaments of pure tungsten, operated at 15 V and 48 A, granted about 5 A saturated emission at 10 kV anode voltage. At that time only pure tungsten was believed capable of surviving to ion bombardment due to high-voltage plate supply. As we will see later, with the development of pulse magnetron, ions do not reach enough energy to damage the cathode oxide surface when the tube is operated for short pulse durations.

NT57 was used virtually 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 just 300 W 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 before. NT57D still retained pure tungsten filament. About 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. Click on image to enlarge.