

## NT46R - RDF 'Silica' Transmitting Triode



Since the early 1920s the British had developed a unique technology for transmitting tubes, the so called silica valves. The envelope of these tubes was made of silica with good resistance to high temperature, softening at about 1.000°C, and transparent to infrared. In the silica valves the anode of woven molybdenum ribbon was mounted close to the inner wall of the bulb wall. In operation it could reach white heat, dissipating efficiently by radiation. Silica was also mechanically stronger than glass, so that it could better withstand shock and vibrations. Furthermore it was preferred to glass for its lower dielectric constant and higher resistivity.

The cost of hand-made silica valves was much higher than that of other transmitting tubes but they could be easily repaired in case of failures.

The NT46R was a silica power triode designed to operate in the output stage of early metric RDF transmitters, around 1936. It looks to be directly derived from power triodes used in short wave communication transmitters, with simple variants to the single hairpin filamentary cathode and to the spacing of grid and anode output stems, in order to increase emission and plate operating voltage. Also used in 1.5 m radio homing beacons.

All silica valves were hand made, their codes being written on the envelope using silica rods melted by a torch. The serial number 059 written on the top of above sample makes us understand how small was the production of these valves. Another code D2494 on the side of the bulb could refer to its drawing.

- **Filament**                    15 V at 40 A
- **Emission**                    3 A
- **Anode voltage**                10 kV
- **Anode power**                 3.5 kW
- **Ampl. factor**                18
- **Mutual conduct.**            3 mA/V
- **Body diameter**              100 mm