CV87 - Early X-Band Klystron

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The first British klystron capable of operating as local oscillator in X-band radar receivers was developed by EMI in close collaboration with the Clarendon Laboratory. The approach was to scale-down the design of the already working S-band 'Sutton tube', using the same copper to glass seal technique to connect the external cavity. To prevent unacceptable dielectric losses in the glass wall, the klystron was designed to operate with the harmonic resonator proposed by Blumlein at EMI. The cavity was modified to operate in a three-quarter mode, with nodal circle in correspondence of the glass wall and an antinodal circle between the glass wall and the outer wall of the cavity.

The first samples of KRN2 were available by March 1941. Operated with 10 W in input at 1500 V they gave about 100 mW in output over a range tunable from 3.05 to 3.45 cm. The klystron used a differential screw tuning mechanism. It was approved as CV87 and with relaxed specs, 60 mW at center-band, as CV323. About 100 units made through 1942, mainly delivered to TRE for experiments on X-band H2S.

1.6 kV resonator voltage, -425 V reflector. 4.0 V at 1.4 A heater.