RCA MANUFACTURING COMPANY, INC.
A RADIO CORPORATION OF AMERICA SUBSIDIARY
Harrison, New Jersey

APPLICATION NOTE No.110
March 4, 1941

INSTANTANEOUS PLATE-VOLTAGE CAPABILITY OF RCA-6L6

During the past eighteen months, the RCA-6L6 has been manufactured with a "barrier" wafer base, which, together with the "glass button" seal employed in present-day metal tubes, enables this tube to withstand instantaneous voltages between its plate and cathode as high as 5000 volts, provided the tube is operated in typical circuits where its rated d-c potentials and dissipations are not exceeded.

It should be emphasized that the ability of the 6L6 to withstand a surge voltage of 5000 volts applies only for surges of extremely short duration. When a sustained 60-cycle voltage is applied to the plate circuit of a 6L6, breakdown usually occurs at a peak voltage of 3000 to 4000 volts.

While the 6L6 as initially manufactured met the contemporary requirements for a "heavy-duty" receiving tube, later demands involved the ability of this tube to withstand momentarily high voltages in its plate circuit. Such voltages may be caused by transients occurring in a high-power audio amplifier which lacks the plate-load compensating network usually desirable for high-impedance output tubes. The resistance-capacitance method of compensation is effective not only in correcting the fidelity characteristic but also in preventing transients from producing excessive swings of plate voltage.

A second example of a circuit which subjects a tube to high instantaneous plate voltages is the horizontal scanning circuit of television receivers using magnetic deflection. In general, in these circuits, the 6L6 has been used to supply sawtooth current to the deflection coils. The sudden change of current in these coils induces a high voltage in the plate circuit of the 6L6 during the return time of the sawtooth wave. Often, this voltage is as high as 3000 volts. The improved 6L6 meets this condition with a large factor of safety, a statement confirmed by the satisfactory results obtained in practical operating tests.

The large factor of safety of the improved 6L6 is provided by a button-stem seal in which the length of insulation between leads has been greatly increased over that of the original bead seals, and by a barrier type of base in which the insulating paths between the staked ends of the base pins have been augmented by radial barriers molded in the insulating wafer.

AN-110-2-24-41
Printed in U.S.A.