EZ 2 Rectifying valve

The EZ 2 is an indirectly-heated full-wave rectifying valve, specially designed for car radio receivers. The heater is fed from the car battery at 6.3 V and for this reason the heater-current consumption has been kept as low as possible. The optimum D.C. output is sufficient to operate a normal car radio receiver, not including energizing current for a loudspeaker.
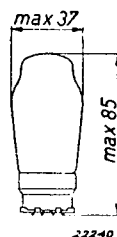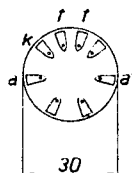
Fig. 1
Dimensions in mm.

Fig. 2
Arrangement of electrodes and base connections.

HEATER RATINGS

Heating: indirect by A.C. or D.C.

Heater voltage . . . . $V_f = 6.3$ V
Heater current . . . . $I_f = 0.4$ A

MAXIMUM RATINGS

Voltage on no-load, across the secondary winding
of the power transformer . . . . V_{tr} = max. 2×350 V_{eff}
D.C. output . . . . I_o = max. 60 mA
Voltage between heater and cathode (absolute peak
value) . . . . V_{fk} = max. 500 V
Internal resistance of the power transformer (per
anode) . . . . R_t = min. 600 ohms
Capacitance of first smoothing capacitor at
$V_{tr} = 2 \times 350$ V_{eff} . . . . C = max. 16 μF
Capacitance of first smoothing capacitor at
$V_{tr} = 2 \times 300$ V_{eff} . . . . C = max. 32 μF

As rectifying valve in a car radio receiver, the direct voltage with a superimposed ripple voltage between the filament — which is connected to the car chassis through the battery — and the cathode which is taken directly to the positive H.T. side of the first smoothing capacitor must be accepted as such.
At such time as the rectifying valve is not loaded a potential occurs between these components equal to the peak value of the voltage applied to the valve. The maximum permissible voltage between heater and cathode is 500 V, i.e. the maximum peak value of the alternating anode voltage, whilst the optimum value of the direct current delivered is 60 mA, this being an absolute value, applicable also to alternating voltages of 2×300 $V_{(eff)}$
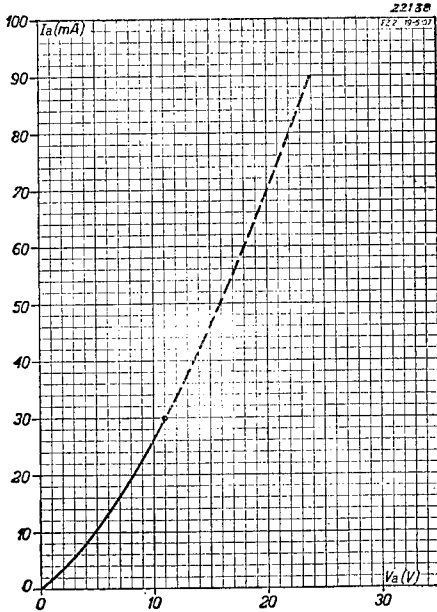
Fig. 3
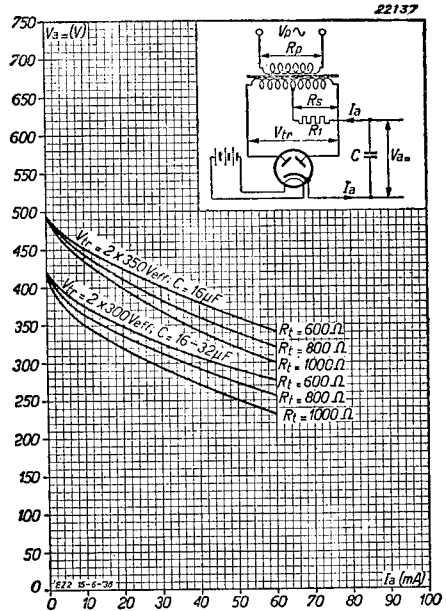Current per anode as a function of the applied
voltage.

Fig. 4
Loading curves for the rectifying valve EZ 2, for
voltages of 2 × 300 and 2 × 350 V on no load,
across the secondary winding of the power
transformer, and with respect to different values
of the internal resistance of the rectifier circuit.
The input capacitance is at most 16 μF on
2 × 350 V, or 32 μF on 2 × 300 V. If the
internal resistance of the power transformer
is less than the minimum of 600 ohms, it must
be increased to that value by means of an extra
resistor R_1 in series with the half-secondary.

Rt = $Rs + R_1 + n^2 Rp$
Rp = resistance of primary winding.
Rs = resistance of half secondary winding.
n = transformer ratio; prim. winding/sec.
half-winding.
R_1 = additional resistance when total resis-
tance is too low.