

EZ 4 Rectifying valve

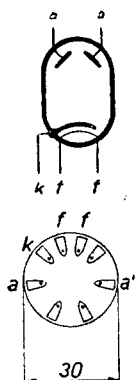


Fig. 2
Arrangement of
electrodes and
base connections.

The EZ 4 is an indirectly-heated full-wave rectifying valve for use in high-power receivers and small amplifiers. With the two anodes shorted the valve can be used as a half-wave rectifying valve, and two valves connected in this manner provide a full-wave circuit that will give a high voltage with considerable power. The optimum power thus delivered is twice the value that can be obtained from a single EZ 4, the two valves giving 350 mA with 2×400 V A.C. across the secondary winding of the power transformer.

The dimensions of this valve are unusually small; notwithstanding the low current consumption, the output is, relatively speaking, exceptionally high.



Fig. 1
Dimensions in mm.

HEATER RATINGS

Heating: indirect by A.C.

Heater voltage	$V_f = 6.3$ V
Heater current	$I_f = 0.9$ A

MAXIMUM RATINGS

Voltage, on no load, across the secondary winding of the power transformer	$V_{tr} = \text{max. } 2 \times 400$ V _{eff}
D.C. output	$I_o = \text{max. } 175$ mA
Voltage between heater and cathode	$V_{fk} = 0$ V ¹⁾
Internal resistance of the power transformer, at $V_{tr} = 2 \times 300$ V _{eff} (per anode)	$R_t = \text{min. } 200$ ohms
Internal resistance of the power transformer, at $V_{tr} = 2 \times 350$ V _{eff} (per anode)	$R_t = \text{min. } 250$ ohms
Internal resistance of the power transformer, at $V_{tr} = 2 \times 400$ V _{eff} (per anode).	$R_t = \text{min. } 300$ ohms
Capacitance of the first smoothing capacitor at $V_{tr} = 2 \times 350$ V _{eff} and 2×400 V _{eff}	$C = \text{max. } 16$ μ F
Capacitance of the first smoothing capacitor at $V_{tr} = 2 \times 300$ V _{eff}	$C = \text{max. } 32$ μ F

¹⁾ The cathode must in every case be connected to one side of the heater.

The heater of the valve must not be included in the heater circuit of the receiving valves, but a separate winding should be provided in the power transformer; the cathode should be connected directly to one end of the heater. Of the smoothing capacitors, the first may be increased in value from 16 to 32 μ F, provided the A.C. voltage is reduced to 2×300 V_{eff}. Owing to the very low internal resistance of this rectifying valve, not much heat is developed and it is therefore not necessary to take any special precautions in the design of the receiver or the mounting of the valve to ensure ventilation.

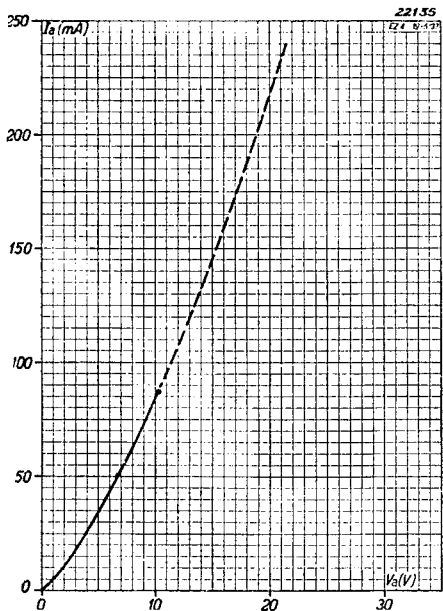


Fig. 3
Current per anode, plotted against the applied direct voltage.

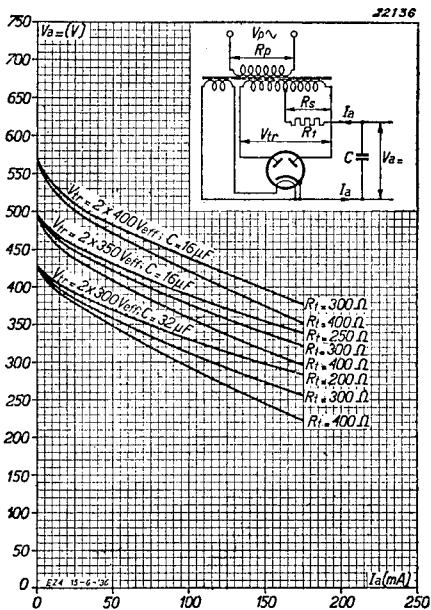


Fig. 4
Loading characteristics of the rectifying valve EZ 4, for voltages of 2×300 , 2×350 and 2×400 V(eff) across the secondary winding of the power transformer, for different values of the internal resistance of the transformer. The input capacitance C of the filter is at most $32 \mu\text{F}$ on 2×300 V(eff), or $16 \mu\text{F}$ with 2×350 and 2×400 V(eff). If the internal resistance of the transformer is less than the minimum value it must be raised to this minimum by means of an extra resistor R_1 in series with the half-winding of the secondary.

$R_t = R_s + R_1 + n^2 R_p$
 R_p = resistance of primary winding
 R_s = resistance of the half-secondary winding
 n = transformer ratio; primary winding/half-secondary winding.
 R_1 = extra resistance when total resistance is too low.