AZ 41 Full-wave rectifying valve

Fig. 1
Normal and X-ray photographs of the AZ 41 (approximately actual size).

The AZ 41 is a directly heated, high-vacuum, full-wave rectifier capable of delivering a current of 70 mA for a transformer voltage of $2 \times 300 \ V_{RMS}$. This is sufficient to supply a receiver containing the valves ECH 42 (or ECH 41), $2 \times$ EAF 42 and EL 41, leaving enough in hand to operate an extra R.F. stage and tuning indicator.

For higher transformer voltages, up to a maximum of $2 \times 500 \ V_{RMS}$, the valve will deliver 60 mA.

In order to avoid sputtering, or momentary flash-over between filament and anode, a D.C. resistance $R_f$, the minimum value of which is specified in the following table, should be included in each of the anode circuits. In practice, this resistance $R_f$ is often present in the form of the D.C. resistance of the primary and secondary windings of the mains transformer.

Let $R_p$ be the D.C. resistance of the primary, $R_s$ that of half the secondary,
and $n$ the transformation ratio between the primary and half the secondary winding. The effective resistance $R_t$ in each anode circuit is then given by:

$$R_t = R_s + n^2 R_p.$$

If the value thus obtained is less than the minimum value specified in the operating data, extra resistance must be added in each anode circuit.

**TECHNICAL DATA OF THE FULL-WAVE RECTIFIER AZ 41**

**Filament data**

- **Heating:** direct by A.C.
- **Filament voltage** $V_f = 4.0$ V
- **Filament current** $I_f = 0.72$ A

**Limiting values**

- **Alternating input voltage** $V_{ir} = 2 \times 300 \quad 2 \times 400 \quad 2 \times 500$ V<sub>RMS</sub>
- **Direct-current output** $I_o = \max. \quad 60 \quad 60$ mA
- **Total resistance in anode circuits (minimum)** $R_t = 2 \times 100 \quad 2 \times 150 \quad 2 \times 200$ Ω
- **Input capacitance of smoothing filter** $C_{filt} = \max. \quad 50 \quad 50 \quad 50 \ \mu$F

Fig. 2. Electrode arrangement, electrode connections and maximum dimensions in mm. The letters i.c. at pins 1, 3, 4 and 5 indicate that these pins must not be connected externally for any purpose whatsoever.
Fig. 3. Anode current ($I_a$) per anode as a function of the anode voltage ($V_a$). As the maximum permissible current is 35 mA per anode, the curve above this point is shown by a dotted line.

Fig. 4. Regulation curves of the AZ 41 (D.C. output voltage $V_o$ as a function of the direct output current $I_o$).