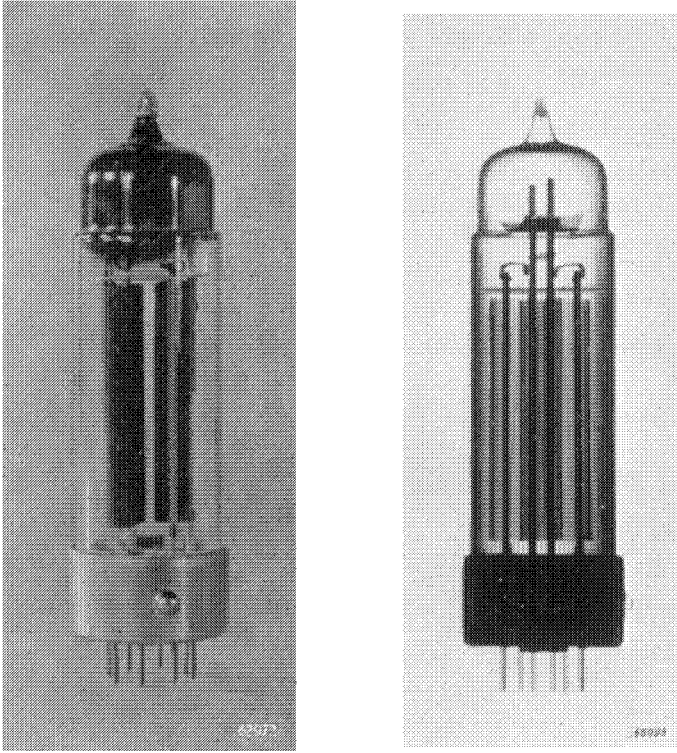# AZ 41 Full-wave rectifying valve

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 2×300 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 2×500 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_t, 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_t 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,

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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

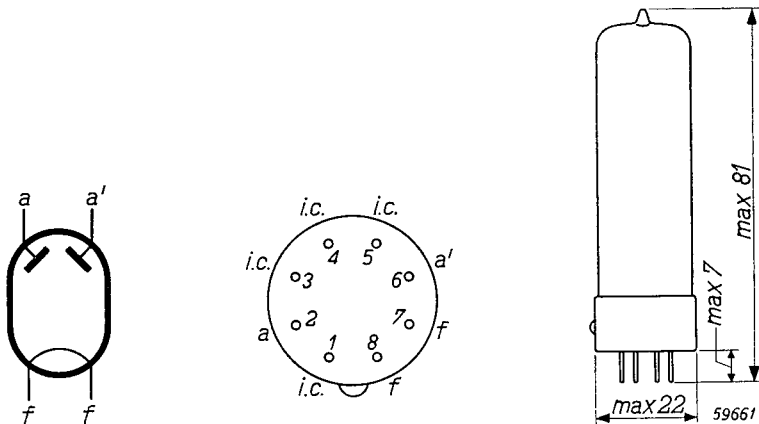|					
Alternating input voltage . .	V_{tr}	=	2×300	2×400	2×500 V_{RMS}
Direct-current output . . .	I_o	= max. 70		60	60 mA
Total resistance in anode circuits (minimum)	R_t	=	2×100	2×150	2×200 Ω
Input capacitance of smoothing filter	C_{filt}	= max. 50		50	50 μF

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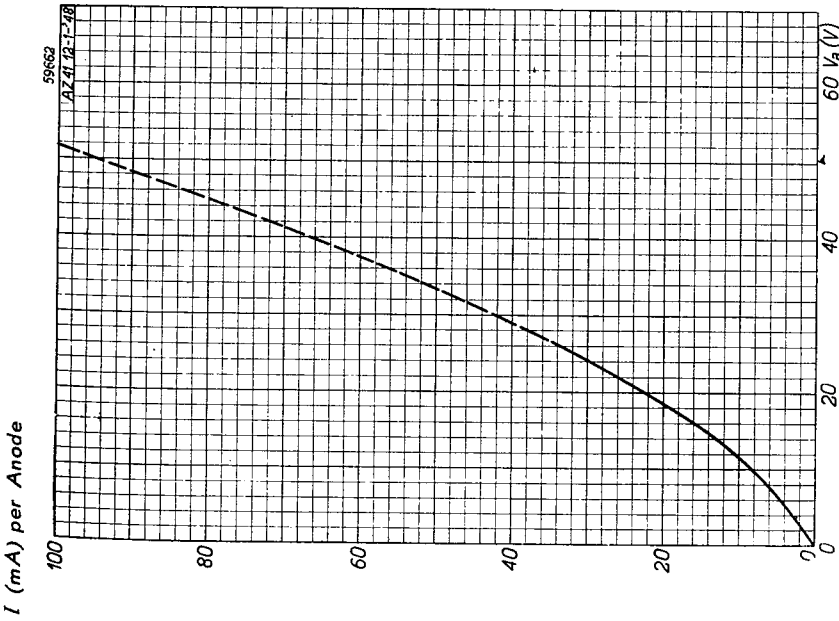
Fig. 4. Regulation curves of the AZ 41 (D.C. output voltage V_o as a function of the direct output current I_o).

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.
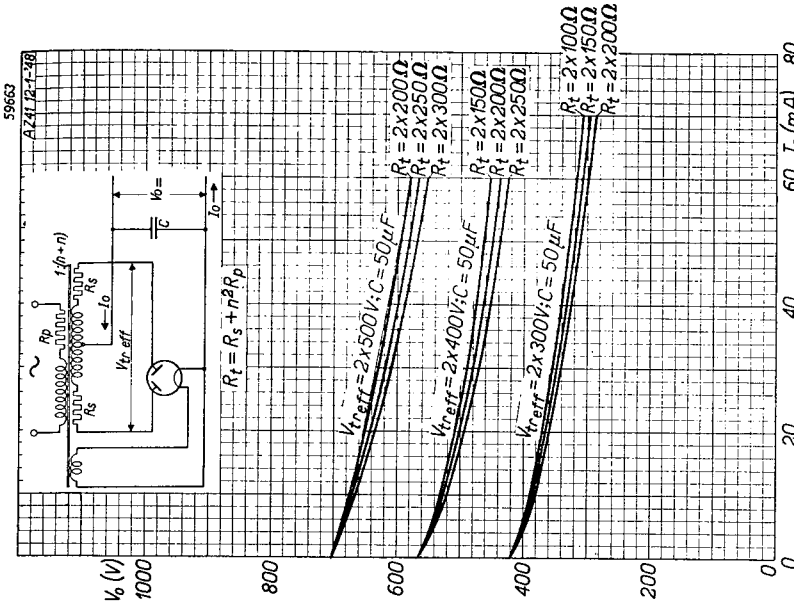
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