UY 42 Half-wave rectifying valve

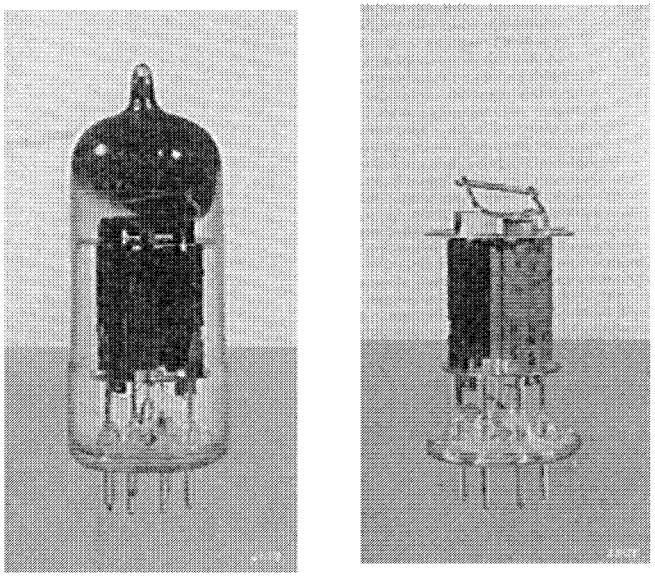

Fig. 1
The UY 42, showing the electrode system (approximately actual size).

The UY 42, in common with the UY 41, is a high-vacuum, indirectly heated half-wave rectifying valve capable of delivering a maximum of 100 mA direct current, but, whereas the UY 41 is suitable for all conventional mains voltages up to 250 V_{RMS}, the UY 42 can be used only at voltages up to 110 V_{RMS}. The reason for the development of this valve to supplement the UY 41 will be seen on comparing the regulation of the two valves for a mains voltage of 110 V : on A.C. mains, the D.C. output of the UY 42 is about 10 V greater than that of the UY 41, and on D.C. mains about 5 V greater. According to the operating characteristics of the output valve UL 41, such a rise in supply voltage increases the output of this valve by about 25% (roughly 12% on D.C. mains). In view of the relatively low output of the UL 41 at a supply voltage of the value in question, this may be regarded as a distinct advantage.
The higher output of the UY 42 has been secured by reducing considerably the internal resistance as compared with the UY 41 (cf. the I_a/V_a characteristics of the two valves).
If it is intended to employ the UY 42 on mains voltages over 110 V, a limiting resistor should be included in the anode circuit to suppress sputtering (momentary flash-over between anode and cathode). At the same time, this completely counteracts all the advantages of the valve, for which reason the UY 41 is the obvious choice for higher mains voltages.

UY 42

TECHNICAL DATA OF THE HALF-WAVE RECTIFIER UY 42

Heater data

Heating : indirect, A.C. or D.C., series feed			
Heater current	I_f	=	100 mA
Heater voltage	V_f	=	31 V

Operating characteristics and limiting values

Mains voltage	V_i	= max.	110 V_{RMS}
Rectified current	I_o	= max.	100 mA
Input capacitance, smoothing filter	C_{filt}	= max.	50 µF
Limiting resistance	R_i	=	0 Ω
Peak voltage between heater and cathode	V_{fk}	= max.	350 V

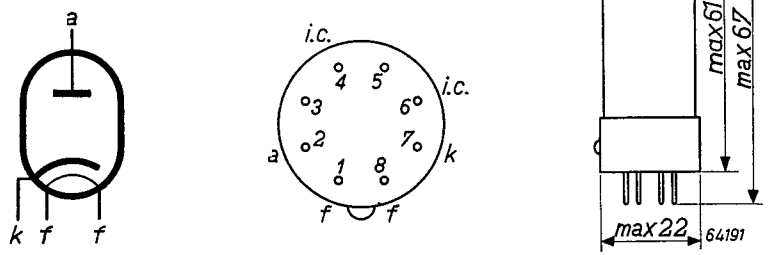

Fig. 2
Electrode arrangement, electrode connections and maximum dimensions in mm of the UY 42.

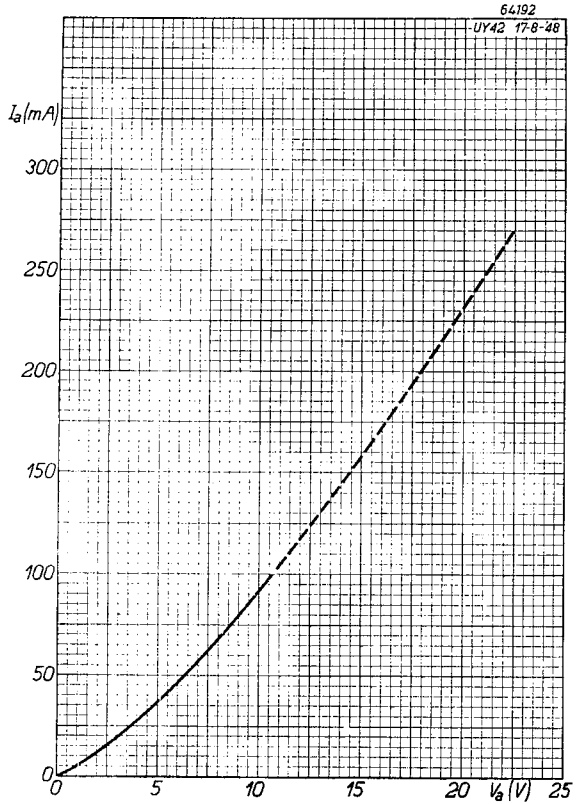

Fig. 3
Anode current (I_a) of the UY 42 as a function of the applied direct voltage (V_a).

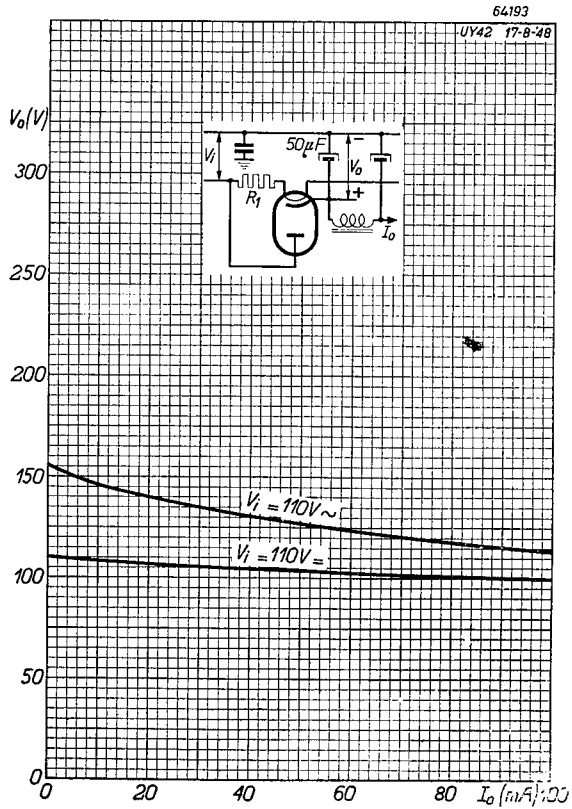

Fig. 4
Regulation of the UY 42 (output voltage V_o as function of the D.C. output current I_o).
Upper curve : valve operated on A.C. mains.
Lower curve : valve operated on D.C. mains.