SP.41

A.C. MAINS H.F. PENTODE

RATING.

Heater Voltage	4·0
Heater Current (Amps.)	0·95
Maximum Anode Voltage	250
Maximum Screen Voltage	250
*Mutual Conductance (mA/V)	8·5

*Taken at Ea=200 ; Es=200 ; Eg=1·5.

TYPICAL OPERATION.

Anode Voltage	—	200	200	250
Screen Voltage	250†	200	200	250
Grid Voltage	1·0	1·8	1·5	2·1
Anode Current (mA)	22†	8·5	10·9	11·1
Screen Current (mA)	5·5†	2·1	2·7	2·8
Mutual Conductance (mA/V)	—	7·6	8·5	8·4
Input Capacity Working ($\mu\mu$F.)	—	15	15·25	15·25
(Change in Input Capacity poduced by biasing valve to cut-off ΔC) ($\mu\mu$F.)	—	4·0	4·25	4·25
Self Bias Resistance (ohms)	37	170	110	150
Input Loss at 45 Mc. (ohms)	—	2,500	2,200	2,300

† Maximum permissible rating as Video Output valve, anode volts must not exceed 200 volts. Grid cathode circuit resistance should not appreciably exceed 5,000 ohms.

INTER-ELECTRODE CAPACITIES.

*Anode to Earth	5·0 $\mu\mu$F.
*Grid to Earth	10·75 $\mu\mu$F.
Anode to Grid	0·003 $\mu\mu$F.

* "Earth" denotes the remaining earthy potential electrodes and metallising joined to cathode.

DIMENSIONS.

Maximum Overall Length	95 mm.
Maximum Diameter	32 mm.

GENERAL.

The SP.41 is a screened H.F. Pentode for use in A.C. mains in the H.F. and I.F. stages of a television receiver. It may also be used in the video output stage where the capacity across the output load is comparitively low. The bulb is of small dimensions and metallised. The valve is fitted with a Mazda octal base, the connexions to which are given overleaf.

MAZDA

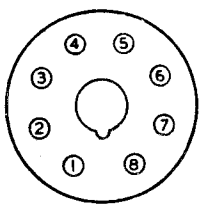
APPLICATION.

H.F. and I.F. Amplifiers.—Particular care has been taken in the design of the valve to reduce the input loss at high frequencies to a minimum, and the equivalent input resistance at 45 Mc. is shown in the tables on page 1. When designing circuits for use at very high frequency where the valve capacities form a large percentage of circuit capacity, difficulty is often experienced in obtaining control of amplification without adversely affecting response curves. This is largely on account of the change of the portion of capacity between grid and cathode due to space charge (designated $\triangle C$) caused by biasing back G1. In the SP.41 this change of capacity is about 4·25 $\mu\mu$F. when the valve is biased to cut-off or 3.25 for a reduction of amplification to 1/7th. This capacity change can be reduced from 3·25 to about $\pm$ 0·25 by biasing back the suppressor grid in addition to the control grid, and the circuit given at the end of the section shows how this may be accomplished. It will be seen that the bias applied to the control grid is about 1/17th of that applied to the suppressor grid. With this method of control the input loss also remains constant with variation of amplification.

Frequency Changers.—The SP.41 makes an exceptionally good frequency changer for television receivers when used in conjunction with a separate oscillator. It is recommended that the heterodyne voltage be injected in the grid circuit and the P.41 has been designed to fulfil the function of oscillator. A suitable circuit for the complete frequency changer employing these two valves is given at the end of the section, and conversion conductances up to the order of 3,000 μA. per volt may be obtained with this arrangement.

Video Output.—The suitability of the SP.41 for the output stage depends on the sensitivity of the cathode ray tube and the maximum permissible value of the anode load. In the case of the Mazda CRM.71, 91 and 121 cathode ray tubes, the SP.41 running at its maximum rating will deliver the required output with loads down to the order of 2,600 to 3,000 ohms. For larger outputs the SP.42 is recommended.

BASINGS.



Viewed from the free end of the base.

Pin No. 1.	Heater.
2.	Cathode.
3.	Anode.
4.	Screen.
5.	Suppressor Grid.
6.	Metallising.
7.	Omitted.
8.	Heater.
Top Cap.	Control Grid.

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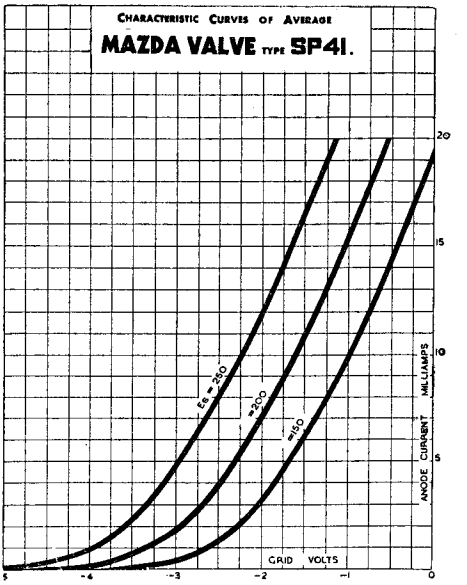

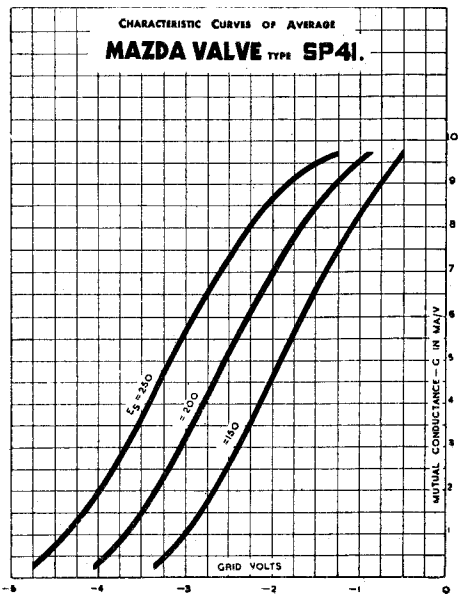

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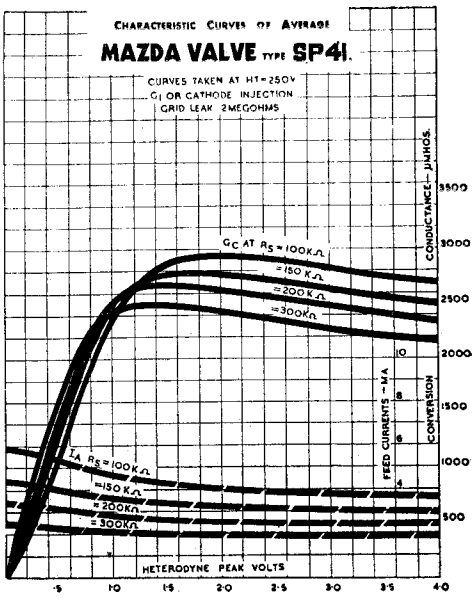

Mazda Radio Valves are manufactured in Great Britain for the British Thomson-Houston Co., Ltd., London and Rugby, and distributed by

THE EDISON SWAN ELECTRIC CO., LTD.
155, CHARING CROSS ROAD, LONDON, W.C.2