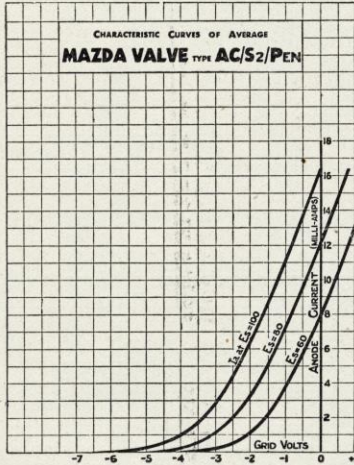


MAZDA

AC/S2.PEN

A.C. Mains Screened H.F. Pentode



RATING.

Heater Volts	...	4.0
Heater Current	...	1.0
Maximum Anode Voltage	...	250
Screen Voltage	...	100
*Mutual Conductance (mA/V)	...	5.5

* at $E_a = 200$; $E_s = 100$; $E_g = 0$

OPERATING CONDITIONS AS FREQUENCY CHANGER.

Conversion Conductance	...	2.400
With a peak Het. Volts	...	3.25
Anode Voltage	...	250
Screen Voltage	...	120
Anode Current (mA)	...	5.25
Screen Current	...	1.75
Grid Bias	...	4.25

INTERELECTRODE CAPACITIES.

Residual Anode—Grid005 m.m.f.
Input Capacity	...	13.5 "
Output Capacity	...	8.0 "
Grid—Cathode	...	9.0 "

Note.—The input capacity represents the capacity between the control grid and cathode with the screen and earth grid connected to cathode. The grid—cathode capacity is that obtained by direct measurement.

DIMENSIONS.

Maximum Overall Length	...	130 m.m.
Maximum Diameter	...	45 m.m.

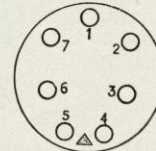
PRICE 17/6

GENERAL.

The Mazda AC./S2.Pen. is a very high slope screened pentode valve for use as a frequency changer, detector or amplifier. It is fitted with a seven-pin base and top cap, the connections to which are as follows:—

- | | |
|-----------------------------|----------------------------|
| Pin No. 1.—Metal Coating. | Pin No. 6.—Cathode. |
| Pin No. 2.—Control Grid. | Pin No. 7.—Auxiliary Grid. |
| Pin No. 3.—Suppressor Grid. | Top Cap.—Anode. |
| Pins Nos. 4 & 5.—Heater. | |

It is recommended that the voltage across the heater pins should be 4 volts $\pm 5\%$ under working conditions.



THE EDISON SWAN ELECTRIC CO. LTD.
Radio Division Showrooms:
 155 Charing Cross Road, London, W.C.2
Showrooms in all the Principal Towns
 Mazda Valves are manufactured in Great Britain for
 The British Thomson-Houston Co., Ltd.,
 London and Rugby

EDISWAN

MAZDA

AC/S2.PEN

FREQUENCY CHANGING.

The efficiency of the valve as a frequency changer may be expressed in terms of the "Conversion Conductance," which is—

$$\frac{\text{Amplitude of Intermediate frequency component of } I_a}{\text{Signal Volts Input}}$$

the values being either peak or r.m.s.

To obtain the gain of the valve to the primary of the I.F. transformer, the conversion conductance should be multiplied by the dynamic resistance of the primary under working conditions, which in the case of the AC./S2.Pen. is over $1\frac{3}{4}$ megohms.

With a high gain transformer having a dynamic resistance of over 200,000 the valve will give a conversion gain of over 400.

SELF OSCILLATING FREQUENCY CHANGERS.

The valve will be particularly suitable for use as a self-oscillating frequency changer with cathode injection. For this purpose only about two turns will be required in the cathode coil on medium waves.

The anode volts should be kept high, of the order of 200-250, and the screen volts may be obtained from a voltage dropping resistance of about 150,000 ohms, and the metallised coating should be connected to the earth lead. The screen decoupling condenser should also be returned to earth potential.

High gain self-oscillating frequency changers tend inherently to "squegger," and to avoid this the time constant of the resistance and by-pass condenser should be kept low. A self bias resistance of 1,000 ohms will be suitable, and the value of the by-pass condenser should not exceed 0.1 mfd., a lower value being preferable.

A grid leak of $\frac{1}{2}$ -1 meg. should also be included in the grid circuit to limit the damping that may be introduced in the tuned circuit by excessive grid currents. This leak should be by-passed by a condenser.

As re-radiation is dependent on the magnitude of the grid-cathode capacity all additions to this capacity by stray wiring should be avoided.

