SP. 181

A.C./D.C. MAINS H.F. PENTODE

RATING.

Heater Voltage	18.0
Heater Current (Amps.)	0.2
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	175	200	200
Screen Voltage	175	200	200
Grid Voltage	1.8	1.8	1.5
Anode Current (mA)	6.3	8.5	10.9
Screen Current (mA)	1.6	2.1	2.7
Mutual Conductance (mA/V)	6.6	7.6	8.5
Input Capacity Working ($\mu\mu$F.)	15.0	15	15.25
Change in Input Capacity produced by biasing valve to cut-off ΔC ($\mu\mu$F.)	3.75	3.75	4.0
Self Bias Resistance (ohms)	230	170	110
Input Loss at 45 Mc. (ohms)	2,510	2,400	2,150

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.

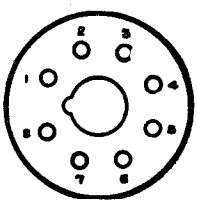
The SP.181 is a screened H.F. Pentode for use in the H.F. stages of Short Wave A.C./D.C. receivers. The bulb is of small dimensions and metallised. The valve is fitted with a Mazda octal base, the connexions to which are given overleaf.

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 ΔC) caused by biasing back G1. In the SP.181 this change of capacity is about 4 $\mu\mu$F. when the valve is biased to cut-off. This capacity change can be reduced by biasing back the suppressor grid in addition to the control grid, and the circuit given at the end of the section for the SP.41 shows how this may be accomplished. With this method of control the input loss also remains constant with variation of amplification.

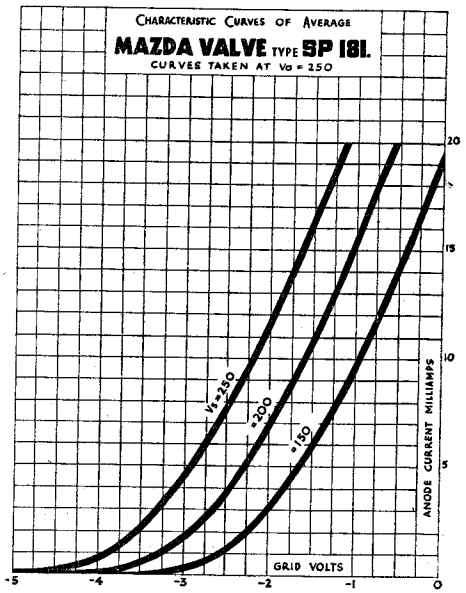
BASING

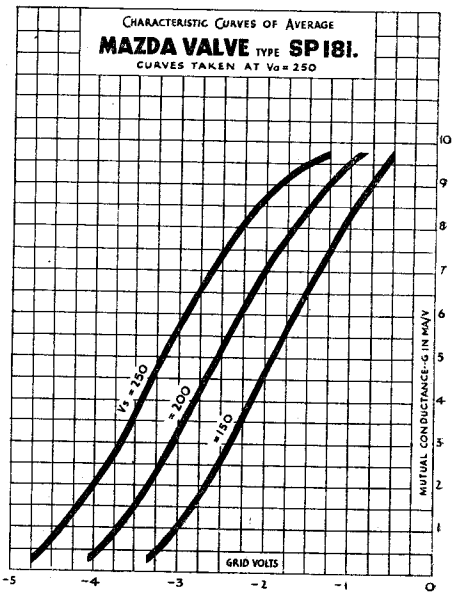


Viewed from the free end of the base.

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

MAZDA


CHARACTERISTIC CURVES OF AVERAGE
MAZDA VALVE TYPE SP 181.
CURVES TAKEN AT Va = 250
Vs = 250
= 200
= 150
ANODE CURRENT MILLIAMPS
GRID VOLTS
20
15
10
5
0
-5
-4
-3
-2
-1


CHARACTERISTIC CURVES OF AVERAGE
MAZDA VALVE TYPE SP 181.
CURVES TAKEN AT Va = 250
Vs = 250
= 200
= 150
MUTUAL CONDUCTANCE-G IN MA/V
GRID VOLTS
10
9
8
7
6
5
4
3
2
1
0
-5
-4
-3
-2
-1