QP. 240

BATTERY DOUBLE PENTODE OUTPUT VALVE

RATING.

Filament Volts	2·0
Filament Current (amps.)	0·45
Maximum Anode Volts	150
Maximum Screen Volts	150
*Mutual Conductance (mA/V)	4·0

* At Ea=100 ; Es=100 ; Eg=0.

DIMENSIONS.

Maximum Overall Length	108 mm.
Maximum Diameter	39 mm.

GENERAL.

The QP.240 is a double pentode for use in the output stage of battery receivers employing Quiescent Push-pull. The valve is based in a standard 9-pin base, the connections to which are given overleaf.

APPLICATION.

The two sections of the valve are distinguished by the letters "A" and "B" stamped on the base opposite pins 2 and 7.

Valves are carefully matched before dispatch, but to obtain the greatest economy in anode current it is recommended that the screen voltage be adjusted for individual sections of the valve. To enable this to be done the valves are further marked with code letters on the base to conform to the following table. The screen voltage should be adjusted to the values shown for corresponding values of anode and grid voltage.

The recommended operating anode voltage is 135, and tappings should be supplied in $7\frac{1}{2}$-volt steps on the high tension battery down to $103\frac{1}{2}$ volts. These tappings are required for matching by adjustment of screen voltage. The screen of each section of the valve should be connected to the voltage tap as indicated by the grade letter on the side of the bulb. Values of screen voltage for anode voltages of 120, 135 and 150 are given in the table overleaf.

The intervalve transformer ratio will depend on the type of detector valve used, for power grid detection the ratio should be about 1 : 8. If the Mazda Valve Types HL.21/DD and L.21/DD are used as detector amplifiers the transformer ratios should be 1 : 2 and 1 : 4 respectively.

All symmetrical push-pull circuits are liable to generate parasitic oscillation. This can be avoided by connecting resistances up to 50,000 ohms in series with the pentode grids close to the valve pins or, alternatively, by connecting condensers 0·001 mf. capacity between the anodes and filament, or by a combination of both.

OUTPUT CIRCUIT.

The loudspeaker is coupled to the pentode by means of a centre tapped transformer in an identical manner to the more common method of push-pull.

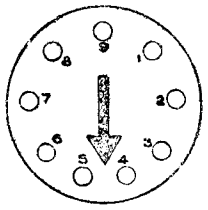
$$\text{Transformer ratio} = \sqrt{\frac{\text{Anode to Anode Load}}{\text{Minimum Speaker Impedance.}}}$$

The recommended value of anode to anode load is 16,000 ohms.

In order to prevent undue impedance rise in the output circuit at the higher audio frequencies with consequent harmonic distortion, a

condenser resistance filter must be connected across the primary of the output transformer. A suitable value of resistance is 15,000 ohms and condenser ·015 mfd. The absolute value of filter components will depend on the type of loudspeaker employed, and may be modified to produce the degree of tone correction required.

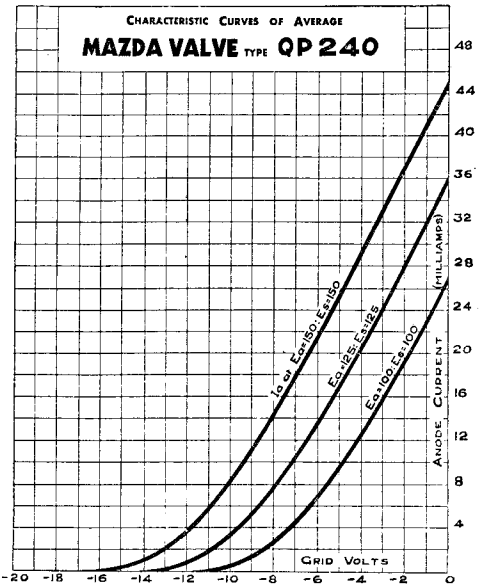
Anode Volts	Grid Bias	Screen Voltage for Code Letters.					Anode to Anode (Load ohms)	Approx. Total Quiescent Anode Current mA
		P.	Q.	R.	S.	T.		
150	−11·5	112·5	121·5	130·5	139·5	148·5	15,000	4·0
135	−10·5	103·5	111	118·5	126	133·5	16,000	3·3
120	− 9·0	91·5	97·5	103·5	109·5	115·5	17,000	3·0



Viewed from the free end of the base.

BASING.

Pin No. 1. Control Grid (a).
2. Anode (a).
3. Screen (a).
4. Filament.
5. Filament.
6. ——
7. Screen (b).
8. Anode (b).
9. Control Grid (b).



Note. The diagram indicates the anode current characteristic of one half of the valve only.

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