



## PD.220 and PD.220.A

### BATTERY DOUBLE TRIODE OUTPUT VALVES

| RATINGS.                                                           | PD.220 | PD.220.A |
|--------------------------------------------------------------------|--------|----------|
| Filament Voltage ... ..                                            | 2.0    | 2.0      |
| Filament Current (amps.) ... ..                                    | 0.2    | 0.2      |
| Maximum Anode Voltage ... ..                                       | 150    | 150      |
| Quiescent Current (mA) ... ..                                      | 0.8    | 2.5      |
| Maximum Permissible Peak Anode Current<br>(per Triode) (mA) ... .. | 45     | 50       |
| *Mutual Conductance ... ..                                         | 0.9    | 1.6      |

\*At  $E_a = 100$  ;  $E_g = 0$ .

| TYPICAL OPERATION.                     | PD.220       | PD.220.A    |
|----------------------------------------|--------------|-------------|
| Anode Volts ... ..                     | 120 135 150  | 120 135 150 |
| Bias Volts ... ..                      | 0.8 1.0 1.15 | 4.8 5.5 6.0 |
| Total Quiescent Feed Current mA ... .. | 0.7 0.75 0.8 | 1.9 2.0 2.5 |

#### DIMENSIONS (Both Types).

|                               |         |
|-------------------------------|---------|
| Maximum Overall Length ... .. | 110 mm. |
| Maximum Diameter ... ..       | 39 mm.  |

#### GENERAL.

The valves are low consumption twin output valves for "Class B" positive drive output stage for battery operated receivers. They will deliver an exceptionally high power output for a very economical anode current and will operate a moving-coil loudspeaker at full volume. The valves are fitted with standard 7-pin bases, the connections to which are given overleaf.

#### APPLICATION.

In the case of all "Class B" positive drive valves, the power output is essentially determined by the power available from the driver. An L.2 valve will provide sufficient output for most purposes, but a P.220 should be used if a maximum possible power is required.



The bias of the driver and output valves should be obtained by means of a potentiometer across the bias battery. The actual values of the resistances for the potentiometer will depend upon the type of battery used, but the bias voltage should decrease at from 25 to 30 per cent. faster than the rate of fall of the H.T. battery voltage. The required initial bias of the output valves, as well as the total feed current at different anode voltages are given in the table overleaf. The PD.220 valve may be operated with zero bias, but in order to obtain optimum quality it is essential the bias values given in the table should be employed.

With some circuit lay-outs parasitic oscillations may be developed in the output stage. The likelihood of these oscillations being encountered will depend upon the design of the individual transformers used. These parasitic oscillations may be cured by connecting condensers (about .001 to .002  $\mu$ F.) between anodes and H.T. +.

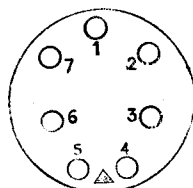
A resistance-condenser filter should be incorporated so as to keep the impedance of the anode to anode load constant with frequency.

### PRECAUTIONS.

Do not allow the valve to generate parasitic oscillations. The anode voltage should not be disconnected when a signal is applied to the grids of the output valve.

| Driver Valve        | Anode Voltage       | Driver Anode Current mA | Anode-Anode Load Ohms |          | Overall Driver Transformer |           |
|---------------------|---------------------|-------------------------|-----------------------|----------|----------------------------|-----------|
| PD.220 and PD.220.A | PD.220 and PD.220.A | PD.220 and PD.220.A     | PD.220                | PD.220.A | PD.220                     | PD.220.A. |
| Mazda L.2           | 120                 | 1.5                     | 17,000                | 14,000   | 2:1                        | 1:35:1    |
|                     | 135                 | 2.0                     | 16,000                | 14,000   | 2:1                        | 1:35:1    |
|                     | 150                 | *2.0                    | 15,000                | 14,000   | 2:1                        | 1:35:1    |
| Mazda P.220         | 120                 | 2.70                    | 11,500                | 10,000   | 1.5:1                      | 1:2:1     |
|                     | 135                 | 3.0                     | 11,500                | 10,000   | 1.6:1                      | 1:2:1     |
|                     | 150                 | 3.5                     | 10,000                | 10,000   | 1.6:1                      | 1:2:1     |

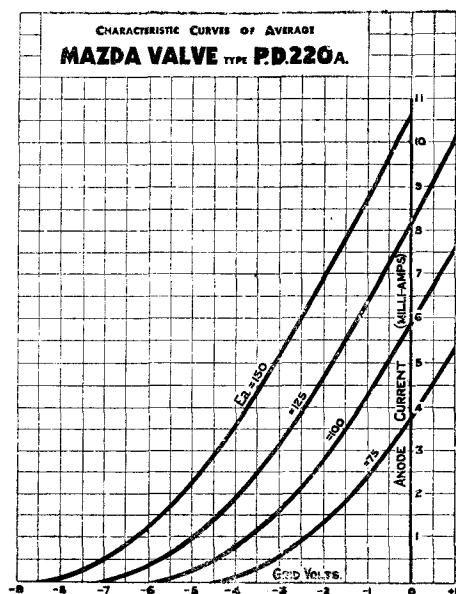
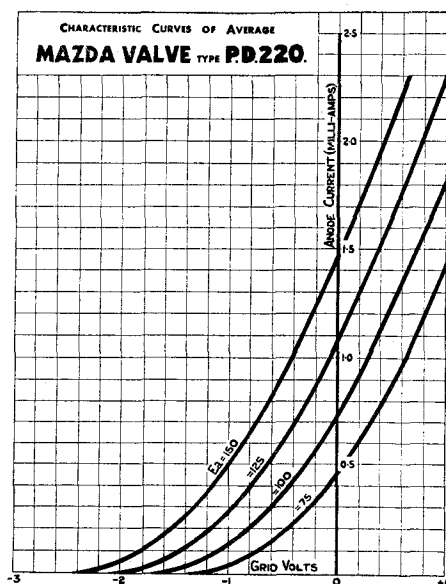
### BASING.



- Pin No. 1. Control Grid 2.  
 2. Control Grid 1  
 3. Anode 1.  
 4. Filament.  
 5. Filament.  
 6. —  
 7. Anode 2.

Viewed from the free end of the base.

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

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