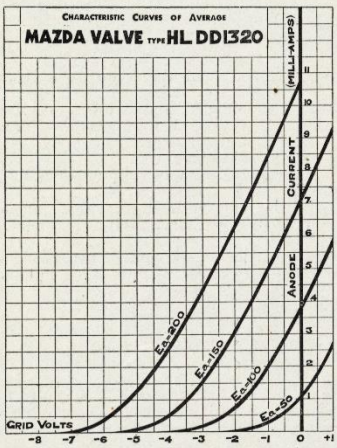
# MAZDA

# HL.DD 1320

## AC/DC Indirectly heated Double-diode Triode




### RATING.

| | |
|---|---|
| Filament Volts ... ... ... ... | 13.0 |
| Filament Current (amps.) ... ... | 0.2 |
| Anode Volts (max.) ... ... ... | 200 |
| Amplification Factor ... ... ... | 30 |
| Anode A.C. Resistance (ohms.) ... | 15,000 |
| Mutual Conductance (mA/V.) ... | 2.0 |

### INTER-ELECTRODE CAPACITIES.

| | |
|---|---|
| Grid to Anode ... ... ... ... | 2.0 $\mu\mu$F. |
| Triode (input) ... ... ... ... | 4.0 $\mu\mu$F. |
| Triode (output) ... ... ... ... | 10.5 $\mu\mu$F. |
| Diode (input) ... ... ... ... | 3.75 $\mu\mu$F. |
| Diode to Diode ... ... ... ... | 0.45 $\mu\mu$F. |

### DIMENSIONS.

| | |
|---|---|
| Max. Overall Length ... ... ... | 125 m.m. |
| Max. Diameter ... ... ... ... | 39 m.m. |

PRICE **15/6**

### GENERAL.

The Mazda valve Type HL.DD 1320 is an indirectly heated double-diode triode valve designed for use in DC., AC/DC., and Automobile receivers, and has a 13 volt .2 amp. heater.

The valve consists of two separate diodes and a triode on a common cathode sleeve. In operation the two diodes and the triode are completely independent of and screened from each other. This independence permits great flexibility in circuit design.

The valve is metallised, thus reducing undesirable external coupling effects to a minimum.


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.,
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## APPLICATION.

Typical methods of applying the valve are as follows:—

Half-wave or full-wave detector, followed by triode amplifier.
Half-wave or full-wave detector, followed by triode amplifier with non-delayed automatic volume control.
Half-wave detector with delayed A.V.C., followed by triode amplifier.
Amplified delayed A.V.C. using half-wave detection.

If half-wave rectification only is employed, and the other diode is not utilised for other purposes, both diode anodes should be connected together.

## DIODE DETECTOR.

The main advantage of diode detection is that the diode detector cannot be overloaded, and the higher the input signal, the smaller will be the distortion present.

A further advantage lies in the fact that since no H.F. voltages are applied to the triode grid, and as the triode may be operated at a fixed optimum bias, a larger output may be obtained without distortion than in the case of a triode used as a cumulative grid detector.

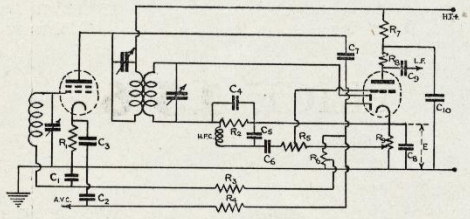
It is recommended that the diode load resistance should be between 100,000 and 500,000 ohms.

When automatic volume control is employed the diode connected to Pin No. 3 should be used to supply the A.V.C. bias and the heater lead connected to Pin 5 should be connected to H.T.−ve.

It is essential to ensure that the effective impedance to audio frequencies of the circuit between the diode anode and cathode is as nearly equal as possible to the D.C. resistance of this circuit, otherwise distortion at high modulation percentages will occur.

The use of detector at high signal inputs necessitates the provision of a low frequency gain control between the detector output and the first low frequency amplifying valve, to prevent any possibility of overloading this amplifier.

### TYPICAL CIRCUIT FOR DETECTION WITH A.V.C.




| | |
|---|---|
| $R_1$ = 300 ohms. | $C_1$ = 0.1 mfd. |
| $R_2$ = 0.1—0.5 meg. | $C_2$ = 0.1 mfd. |
| $R_3$ = 1.0 meg. | $C_3$ = 0.1 mfd. |
| $R_4$ = 1.0 meg. | $C_4$ = .0001—.0002 mfd. |
| $R_5$ = 0.5—1.0 meg. | $C_5$ = .0001—.0002 mfd. |
| $R_6$ = 2.0 meg. | $C_6$ = .01 mfd. |
| $R_7$ = 10,000 ohms | $C_7$ = .0001 mfd. |
| $R_8$ = 50,000 ohms | $C_8$ = 10 mfd. |
| $R_9$ = 1,000 ohms | $C_9$ = 0.1 mfd. |
| | $C_{10}$ = 2.0 mfd. |

Between $R_9$ and Earth a resistance of 0—1,000 ohms is connected, the valve depending on the delay voltage "E" required.

## HEATERS.

The heaters of Mazda A.C./D.C. Valves are designed to operate at a constant current of 0.2 amp., and when the heaters are wired in series the ballast resistance should be such that the current has this value at the average line voltage. If a resistance is employed to control the heater current it is recommended that it be tapped every 10 v. in the 200-250 v. range. When used in automobile receivers, the heater should be connected across the battery without appreciable series resistance.

The connections to the 7-pin base are given below:—

Pin No. 1.—Diode Anode.
Pin No. 2.—Metal Coating.
Pin No. 3.—Diode Anode.
Pin No. 4.—Heater.
Pin No. 5.—Heater.
Pin No. 6.—Cathode.
Pin No. 7.—Anode.
Top Cap.—Control Grid

BRITISH RADIO VALVE MANUFACTURERS' ASSOCIATION BVA