



## TH 41

### A.C. MAINS TRIODE HEPTODE

#### RATING.

|  |     |     |     |     |     |     |     |
|--|-----|-----|-----|-----|-----|-----|-----|
| Heater Voltage   | ... | ... | ... | ... | ... | ... | 4.0 |
| Heater Current (Amps.)                                       | ... | ... | ... | ... | ... | ... | 1.3 |
| <b>Heptode.</b>  |     |     |     |     |     |     |     |
| Maximum Anode Voltage  | ... | ... | ... | ... | ... | ... | 250 |
| Maximum Screen Voltage                                       | ... | ... | ... | ... | ... | ... | 250 |
| *Mutual Conductance (mA/V)                                   | ... | ... | ... | ... | ... | ... | 3.1 |
| *Taken at $E_a=250$ ; $E_s=100$ ; $E_{g1}=-2$ ; $E_{g2}=0$ . |     |     |     |     |     |     |     |
| <b>Triode.</b>   |     |     |     |     |     |     |     |
| Maximum Anode Voltage  | ... | ... | ... | ... | ... | ... | 150 |
| Maximum Peak Anode Current (mA)                              | ... | ... | ... | ... | ... | ... | 15  |
| *Amplification Factor  | ... | ... | ... | ... | ... | ... | 16  |
| *Mutual Conductance (mA/V)                                   | ... | ... | ... | ... | ... | ... | 5.3 |
| *Taken at $E_a=100$ ; $E_{g2}=0$                             |     |     |     |     |     |     |     |

#### TYPICAL OPERATION.

|   |     |     |     |     |     |      |      |
|---|-----|-----|-----|-----|-----|------|------|
| <b>Heptode.</b>   |     |     |     |     |     |      |      |
| Anode Voltage   | ... | ... | ... | ... | ... | 250  | 250  |
| Screen Voltage  | ... | ... | ... | ... | ... | 100  | 100  |
| Grid Bias   | ... | ... | ... | ... | ... | -3   | -2.5 |
| Anode Current (mA)  | ... | ... | ... | ... | ... | 3.0  | 3.8  |
| Screen Current (mA)   | ... | ... | ... | ... | ... | 6.0  | 7.5  |
| Conversion Conductance ( $\mu A/V$ )  | ... | ... | ... | ... | ... | 750  | 870  |
| Anode A.C. Resistance (megohms)   | ... | ... | ... | ... | ... | 1.6  | 1.2  |
| Heterodyne Volts (peak)   | ... | ... | ... | ... | ... | 9.0  | 9.0  |
| Working G1-E Capacity (Hot) ( $\mu\mu F$ )  | ... | ... | ... | ... | ... | 12.2 |      |
| *Maximum Input Signal Handling Capacity ( $E_{g2}=-43$ ; $E_s=250$ ) (Peak Carrier Volts) | ... | ... | ... | ... | ... |      | 10   |
| *Conversion Conductance ( $E_{g2}=-43$ ; $E_s=250$ ) ( $\mu A/V$ ) (approx.)              | ... | ... | ... | ... | ... |      | 3    |

\*For 5 per cent. Total Audio Harmonic Distortion at 60 per cent. modulation.

#### Triode.

|                    |     |     |     |     |     |     |        |
|--------------------|-----|-----|-----|-----|-----|-----|--------|
| Anode Voltage      | ... | ... | ... | ... | ... | ... | 80     |
| Anode Current (mA) | ... | ... | ... | ... | ... | ... | 4 to 5 |

#### INTER-ELECTRODE CAPACITIES.

|                                 |     |     |     |     |     |        |              |
|---------------------------------|-----|-----|-----|-----|-----|--------|--------------|
| <b>Heptode.</b>                 |     |     |     |     |     |        |              |
| *Anode to Earth                 | ... | ... | ... | ... | ... | 11.25  | $\mu\mu F$ . |
| *Grid to Earth                  | ... | ... | ... | ... | ... | 9.25   | $\mu\mu F$ . |
| Anode to Grid                   | ... | ... | ... | ... | ... | 0.0005 | $\mu\mu F$ . |
| <b>Triode.</b>                  |     |     |     |     |     |        |              |
| *Anode to Earth (less G0 to A0) | ... | ... | ... | ... | ... | 3.5    | $\mu\mu F$ . |
| *Grid to Earth (less G0 to A0)  | ... | ... | ... | ... | ... | 10.5   | $\mu\mu F$ . |
| Anode to Grid                   | ... | ... | ... | ... | ... | 2.4    | $\mu\mu F$ . |

\*"Earth" denotes the electrodes of any second valve section and the remaining earthy potential electrodes of the section under measurement, H and M joined to cathode.

#### DIMENSIONS.

|                        |     |     |     |     |     |         |
|------------------------|-----|-----|-----|-----|-----|---------|
| Maximum Overall Length | ... | ... | ... | ... | ... | 108 mm. |
| Maximum Diameter       | ... | ... | ... | ... | ... | 32 mm.  |

# MAZDA

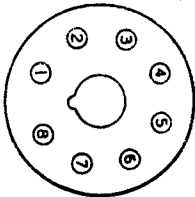
## GENERAL.

The TH.41 is a triode heptode frequency changer for use in A.C. mains receivers. It has been specially designed to meet the requirements of all-wave receivers, and the inter-reaction between the input and the oscillator circuit has been reduced to a minimum. A high conversion conductance is provided with a large initial grid bias, thus ensuring that no grid current is taken on the short wave bands. The characteristics have been so designed as to provide large signal handling capacity with low cross modulation and low harmonic response. The valve is of small dimensions and is fitted with a Mazda Octal base, the connexions to which are given below.

## APPLICATION.

The triode oscillator should be used with a parafeed tuned anode circuit and the component values required are given in the circuit shown. If any trouble is experienced with "squegging" at the highest frequency the grid leak resistance may be reduced to 25,000 ohms. On the short wave bands the mean anode current of the triode would be of the order of 4 to 4.5 milliamps, while on the medium and long waves the current taken by the triode will be of the order of 3 to 3.5 milliamps. An average heterodyne voltage of 9 to 10 volts peak is required at the grid of the triode. The value of the grid resistance R3 will depend very largely on the design of the coils and the effect of stray capacities across the grid of the triode. On the short wave band this resistance is usually of the order of 50 to 60 ohms. The peak anode current of the triode should never be allowed to exceed 15 mA. If parasitic oscillations are generated, these may be stopped by connecting a small resistance (R6) of 2.5 to 5 ohms close to the screen pin.

## BASING.



Viewed from the free end of the base.

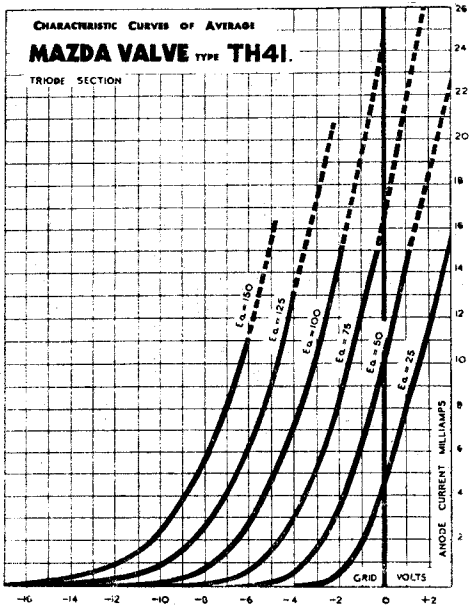
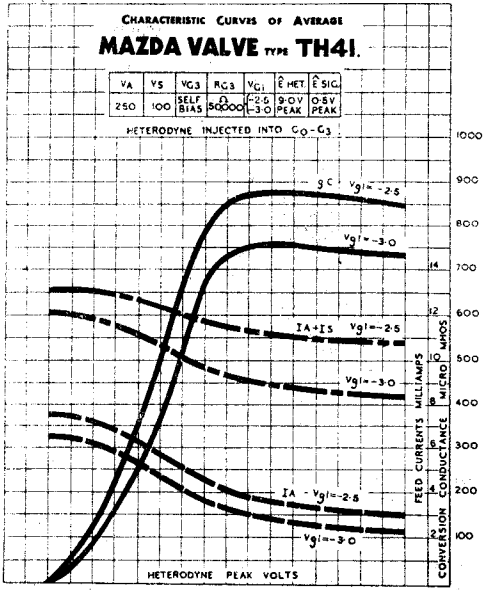
- |            |                       |
|------------|-----------------------|
| Pin No. 1. | Heater.               |
| 2.         | Cathode.              |
| 3.         | Heptode Anode.        |
| 4.         | Oscillator Anode.     |
| 5.         | Oscillator Grid.      |
| 6.         | Metallising.          |
| 7.         | Heptode Screen.       |
| 8.         | Heater.               |
| Top Cap.   | Heptode Control Grid. |



CHARACTERISTIC CURVES OF AVERAGE  
**MAZDA VALVE TYPE TH41.**

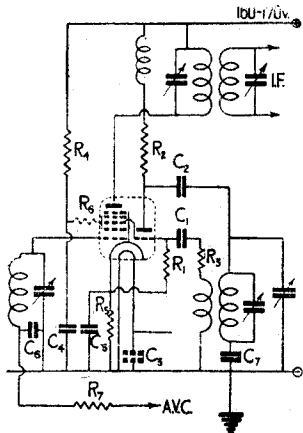
|                |                |                 |                 |                 |                  |                  |
|----------------|----------------|-----------------|-----------------|-----------------|------------------|------------------|
| V <sub>A</sub> | V <sub>S</sub> | V <sub>G3</sub> | R <sub>G3</sub> | V <sub>G1</sub> | E <sub>HET</sub> | E <sub>SIG</sub> |
| 250            | 100            | 15000           | 50000           | -3.0            | 2.5              | 0.5V             |
|                |                | BIAS            | SCREEN          |                 | PEAK             | PEAK             |

HETERODYNE INJECTED INTO C<sub>0</sub>-C<sub>3</sub>



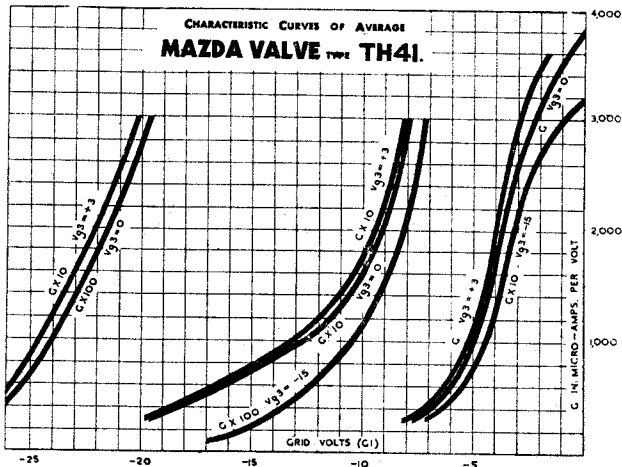


**SUGGESTED CIRCUIT DIAGRAM USING TH41**



Values of the components in the circuit diagram :—

- |      |                         |      |              |
|------|-------------------------|------|--------------|
| R.1. | 50,000 ohms.            | C.1. | .0001 mfd.   |
| R.2. | 40,000 ohms.            | C.2. | .0001 mfd.   |
| R.3. | See above.              | C.3. | .01 mfd.     |
| R.4. | 25,000 ohms.            | C.4. | 0.1—0.5 mfd. |
| R.5. | 230—160 ohms.           | C.5. | 0.1—0.5 mfd. |
| R.6. | 2.5—5 ohms (see above). |      |              |



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

**THE EDISON SWAN ELECTRIC CO., LTD.  
155, CHARING CROSS ROAD, LONDON, W.C.2.**

