



## PEN 46

### TELEVISION BEAM POWER AMPLIFIER

#### RATING.

Heater Voltage ... ..	4.0
Heater Current (Amps.) ... ..	1.75
Maximum Anode Voltage ... ..	330
Maximum Screen Voltage ... ..	220
*Mutual Conductance (mA/V) ... ..	8.5
Maximum Screen Watts ... ..	3.0
Maximum Anode Watts ... ..	20.0
Maximum Peak Anode Voltage ... ..	3,000

\*Taken at  $E_a=100$ ,  $E_s=100$ ,  $E_g=0$ .

#### TYPICAL OPERATION.

Anode Voltage ... ..	315
Screen Voltage ... ..	210
Anode Current (mA) (per valve) ... ..	63.0
Screen Current (mA) (per valve) ... ..	14.0
Grid Bias (volts) ... ..	6.9
Minimum Instantaneous Anode Volts ... ..	> 80
Maximum Peak Anode Volts ... ..	3,000
Self-Bias Resistance per valve (ohms) ... ..	90
Maximum Available Output in Volt-Amperes in Anode Circuit ... ..	25.0

Note. The values given above for feed currents and operating voltages are for the specified output. Voltages are referred to Cathode.

#### INTER-ELECTRODE CAPACITIES.

*Anode to Earth ... ..	6.0 $\mu\mu\text{F}$
*Grid to Earth ... ..	22.0 $\mu\mu\text{F}$
Anode to Grid ... ..	1.25 $\mu\mu\text{F}$

\*"Earth" denotes the remaining earthy potential electrodes joined to cathode.

#### DIMENSIONS.

Maximum Overall Length ... ..	129 mm.
Maximum Diameter ... ..	54 mm.

#### GENERAL.

The PFN.46 is a beam power amplifier designed for use in the output stage of a time base for magnetic scanning. The valve has been designed to stand the high peak anode voltages required by this class of service, and is based in a Mazda Octal Base, the connexions to which are given overleaf.

#### APPLICATION.

It is recommended that the valve should be operated with an anode voltage of the order of 300 and a screen voltage not exceeding 220. The screen voltage should be preferably dropped from the higher voltage through a series resistance and decoupled with a condenser, the latter

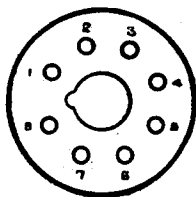


being returned to cathode. The valve should always be used under the self bias method of operation, and, due to the high dissipation, it should preferably be mounted in a vertical position. The T.41 thyratron is recommended for use with this valve. In order to keep the screen dissipation from rising above the normal value, and, to prevent excessive distortion, it is recommended that the instantaneous anode voltage should not be allowed to drop below 80 volts.

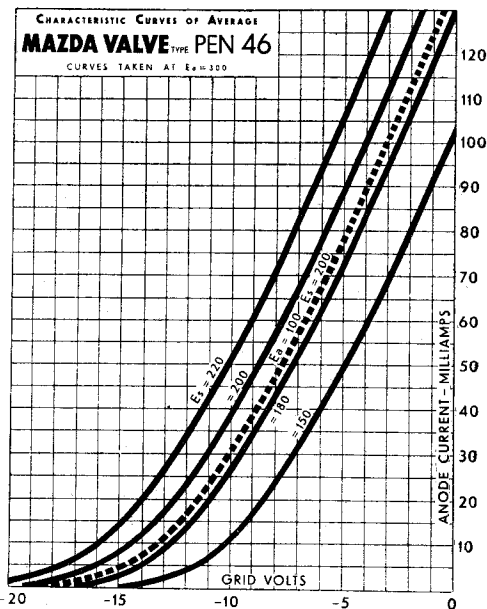
The output transformer should be designed to provide a suitable load across which the voltage drop due to its resistive and inductive load components will meet the conditions on page 1. Unless a high H.T. time base supply voltage is employed, the output of the valve will be limited by the allowable screen dissipation of 3 watts rather than the maximum anode dissipation of 20 watts. Care should therefore be taken when designing the circuit to ensure that the screen wattage under normal conditions does not exceed the rating of the valve. The bias and screen resistances must also be calculated for these working conditions, as the screen current rises appreciably with the input signal while the anode current falls. It is recommended that the equivalent grid to cathode resistance per valve should be kept as low as possible, and in any case should not exceed 1 megohm for anode dissipation not exceeding 18 watts, and  $\frac{1}{2}$  megohm for an anode dissipation not exceeding 20 watts.

**BASING.**

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



Viewed from the free end of the base.



Mazda Radio Valves are manufactured in Great Britain for the British Thomson-Houston Co., Ltd. London and Rugby, and distributed by  
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155, CHARING CROSS ROAD, LONDON, W.C.2

