

# MAZDA

## 10.C.1

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### TRIODE HEPTODE FREQUENCY CHANGER

Indirectly heated - for series operation

RATING	Triode	Heptode
Heater Current (amps)	$I_h$	0.1
Heater Voltage (volts)	$V_h$	28
Maximum Anode Voltage (volts)	$V_a(max)$ 150	250
Maximum Screen Voltage (volts)	$V_{g2}$	250
Maximum Mean Cathode Current-Heptode (mA)	$Max. I_{k(h)av}$	10.0
Maximum Mean Cathode Current-Triode (mA)	$Max. I_{k(t)av}$ 6.5	
Maximum Anode Dissipation (watts)	$P_a$	1.0
Maximum Screen Dissipation (watts)	$P_{g2}$	0.75
Mutual Conductance (mA/V)	$E_m$ • 4.0	† 2.5
Amplification Factor	$\mu$ 17	† 2.5
Maximum Potential Heater/Cathode (volts RMS)	$V_{h-k(max)}$	••200

• Taken at  $V_a(t) = 100V$ ;  $V_g(t) = 0V$ .  
 † Taken at  $V_a(h) = 175V$ ;  $V_{g2}(h) = 100V$ ;  $V_{g1}(h) = -2.5V$ .  
 ••Measured with respect to the higher potential heater pin.

**INTER-ELECTRODE CAPACITANCES**

(Triode Section)

	$\S$	†
Anode/Earth ( $\mu F$ )	$C_{out(t)}$ 1.7	3.0
Anode/Grid 1 ( $\mu F$ )	$C_a(t), g(t)$ 1.8	2.0
Grid 1/2arth ( $\mu F$ )	$C_{in(t)}$ 7.7	9.0

(Heptode Section)

Anode/All ( $\mu F$ )	$C_a(h), all$	3.0
Anode/Grid 1 ( $\mu F$ )	$C_a(h), g1(h)$	.003
Grid 1/All ( $\mu F$ )	$C_{g1(h), all}$	8.3
Heptode Grid/Triode Grid ( $\mu F$ )	$C_{g1(h), g(t)}$	.12
Heptode Grid/Triode Anode ( $\mu F$ )	$C_{g1(h), a(t)}$	.013

§ Inter-electrode capacitances with holder capacitance balanced out.  
 † These capacitances include a Benjamin B.S.A. Holder measured at a frequency of 1 Mc/s.

"Earth" denotes electrodes of any second valve section and the remaining earthy potential electrodes of the section under measurement, heater and shields joined to Cathode.

**DIMENSIONS**

Maximum Overall Length (mm)	67
Maximum Diameter (mm)	22
Maximum Seated Height (mm)	54
Radius Over Location Key (mm)	12.25
Approximate Nett Weight (ozs)	1
Approximate Packed Weight (ozs)	1

**MOUNTING POSITION** - Unrestricted.

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TYPICAL OPERATION(Triode Section)

Anode Voltage (volts)	$V_a(t)$	80
Approximate Anode Current (mA)	$I_a(t)$	4 to 6

(Heptode Section)

Anode Voltage (volts)	$V_a(h)$	175
Initial Screen Voltage (volts)	$V_{g2}(h)$	100
Grid Bias (volts -ve)	$V_{g1}(h)$	2.5
Conversion Conductance ( $\mu A/Volt$ )	$g_c$	650
Peak Heterodyne Voltage (volts)	$V_{(pk)het}$	9
Approximate Anode Current (mA)	$I_a(h)$	3.0
Approximate Screen Current (mA)	$I_{g2}(h)$	6.0
Anode Impedance (Megohms)	$r_a(w)$	2.2
Input Loss at 45 Mc/s.	$r_{g1,k}(w)$	5500
Input Capacitance Working (Hot) ( $\mu F$ )	$c_{in}(w)$	• 9.7
Change in Input Capacitance produced by biasing valve to cut-off ( $\mu F$ )	$\Delta c_{in}(w)$	1.3
Equivalent Grid Noise Resistance (ohms)	$r_{eq}$	60,000

• Inter-electrode capacitance with holder capacitance balanced out.

BULB ClearBASE B.S.A.

Viewed from free end of pins

CONNEXIONS

Pin 1	Heater	h
Pin 2	Heptode Anode	a <sub>h</sub>
Pin 3	Triode Anode	a <sub>t</sub>
Pin 4	Triode Grid 1 & Heptode Grid 3	$E_1(t)$
Pin 5	Heptode Grid 2 & Grid 4	$E_3(h)$ $E_2(h)$ $E_4(h)$
Pin 6	Heptode Grid 1	$E_1(h)$
Pin 7	Cathode & Shield	k & s
Pin 8	Heater	h

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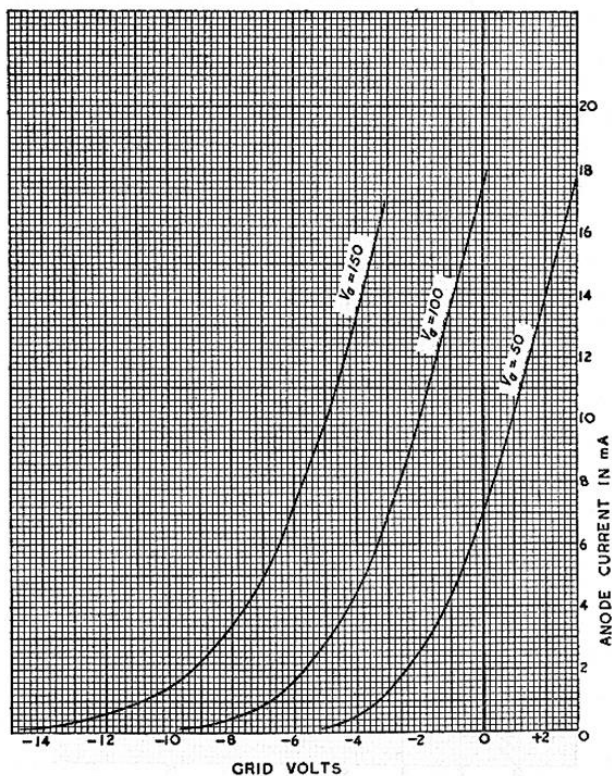
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CHARACTERISTIC CURVES OF AVERAGE

**MAZDA VALVE 10C1**

(TRIODE SECTION)

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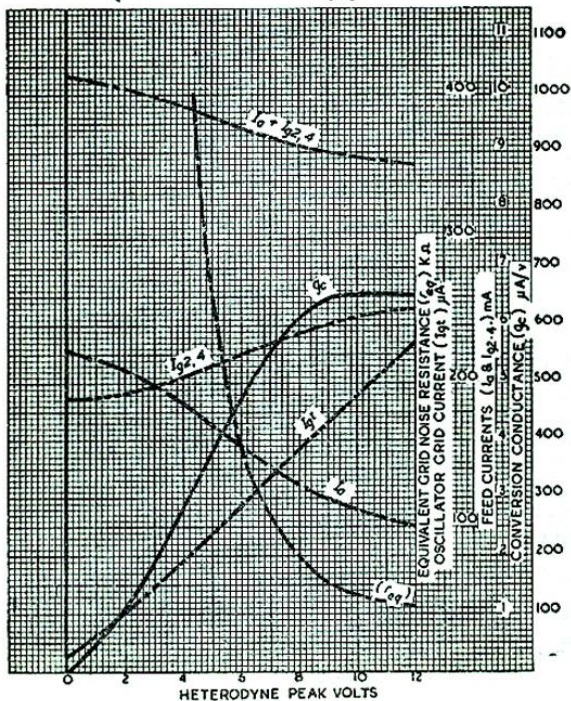
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### AVERAGE CHARACTERISTIC CURVES

Curves taken under following conditions:—

$V_b$	$V_{g2-4}$	$V_{gt}$	$R_{gt}(A.)$	$V_{g1}$	$V_{sig}(rms)$
175	100	Self bias	47,000	-2.5	0.1

- Key
- Equivalent Grid Noise Resistance ( $r_{eq}$ )
  - Conversion Conductance ( $g_c$ )
  - Heptode Anode Current ( $I_a$ )
  - Anode plus Screen Current ( $I_a + I_{g2-4}$ )
  - Triode Grid Current ( $I_{gt}$ )
  - Screen Current ( $I_{g2-4}$ )



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TYPICAL CIRCUIT USING 10. C. 1

