

MAZDA

6.C.9

TRIODE HEPTODE FREQUENCY CHANGER

Indirectly heated - for parallel operation

<u>RATING</u>		<u>Triode</u>	<u>Heptode</u>
Heater Voltage (volts)	V_h		6.3
Heater Current (amps)	I_h		0.45
Maximum Anode Voltage (volts)	$V_a(\max)$	150	250
Maximum Screen Voltage (volts)	V_{g2}		250
Maximum Mean Cathode Current-Heptode (mA)	$I_{k(h)av(\max)}$		10
Maximum Mean Cathode Current-Triode (mA)	$I_{k(t)av(\max)}$	6.5	
Maximum Anode Watts	P_a		1.0
Maximum Screen Watts	P_{g2}		0.75
Mutual Conductance (mA/V)	g_m	4.0	± 2.5
Amplification Factor	μ	17.0	
Maximum Potential Heater/Cathode (volts DC)	$V_{h-k(\max)}$		150
‡ Taken at $V_a(h) = 250v$; $V_{g2}(h) = 100v$; $V_g(h) = -2.5v$. * Taken at $V_a(t) = 100v$; $V_g(t) = 0$.			
<u>INTER-ELECTRODE CAPACITANCES</u>			
<u>(Triode Section)</u>		<u>q</u>	<u>s</u>
Anode/Earth ($\mu\mu F$)	$C_{out(t)}$	1.7	3.0
Anode/Grid 1 ($\mu\mu F$)	$C_a(t), g(t)$	1.8	2.0
Grid 1/Earth ($\mu\mu F$)	$C_{in(t)}$	7.7	9.0
<u>(Heptode Section)</u>			
Anode/All ($\mu\mu F$)	$C_a(h), all$	3.0	4.5
Anode/Grid 1 ($\mu\mu F$)	$C_a(h), g1(h)$.003	.0045
Grid 1/All ($\mu\mu F$)	$C_{g1(h), all}$	8.3	9.8
Heptode Grid/Triode Grid ($\mu\mu F$)	$C_{g1(h), g(t)}$.12	.13
Heptode Grid/Triode Anode ($\mu\mu F$)	$C_{g1(h), a(t)}$.013	.014
† Inter-electrode capacitances with holder capacitance balanced out. ‡ These capacitances include a Benjamin 88A 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.			
<u>DIMENSIONS</u>			
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)			$\frac{1}{2}$
Approximate Packed Weight (ozs)			1
<u>MOUNTING POSITION</u> - 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)	$V_a(h)$	250
Initial Screen Voltage (volts)	$V_{g2}(h)$	100
Grid Bias (volts-ve)	$V_{g1}(h)$	-2.5
Peak Heterodyne Voltage (volts)	$V(pk)_{het}$	9.0
Conversion Conductance ($\mu A/Volt$)	g_c	650
Approximate Anode Current (mA)	$I_a(h)$	3.0
Approximate Screen Current (mA)	$I_{g2}(h)$	6.0
Approximate Anode Impedance (megohms)	$R_a(w)$	3.0
Input Loss at 45 Mc/s	$R_{l,k}(w)$	5,500
Input Capacitance Working (Hot) (μF)	$C_{in}(w)$	9.7
Change in input capacitance produced by biasing valve to cut-off (μF)	$\Delta C_{in}(w)$	1.3
Equivalent grid noise resistance (ohms)	R_{eq}	60,000

|| Inter-electrode capacitance with holder capacitance balanced out.

BULB Clear

BASE E.S.A.



Viewed from free end of pins.

CONNEXIONS

Pin 1	Heater	h
Pin 2	Heptode Anode	ah
Pin 3	Triode Anode	at
Pin 4	Triode Grid 1 and Heptode Grid 3	$E1(t)$ $E3(h)$
Pin 5	Heptode Grid 2 and Grid 4	$E2(h)$ $E4(h)$
Pin 6	Heptode Grid 1	$E1(h)$
Pin 7	Cathode & Shield	k & s
Pin 8	Heater	h

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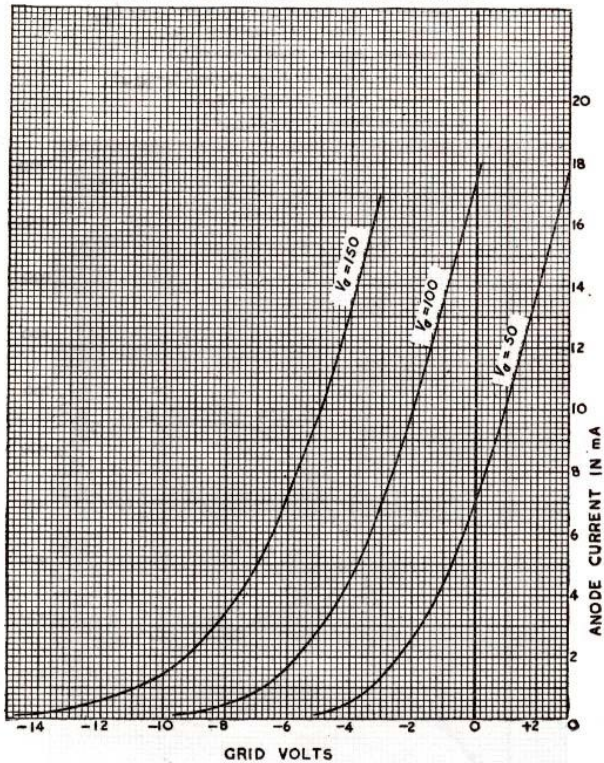
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AVERAGE CHARACTERISTIC CURVES



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AVERAGE CHARACTERISTIC CURVES

Curves taken under following conditions:—

V_0	V_{g2+4}	V_{g1} Self Bias	$R_{g1}(\Omega)$	V_{g1}	$V_{sig}(rms)$	V_h
250	100	Self Bias	47,000	-2.5	0.1	6.3

- 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_{g1})
 - Screen Current ($I_{g2,4}$)

