

MAZDA

6. C. 31

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		0.83
Maximum Anode Voltage (volts)	$V_a(max)$	150	250
Maximum Screen Voltage (volts)	V_{g2}		250
Mutual Conductance (mA/V)	g_m	• 5.3	: 3.1
Amplification Factor	μ	• 16	
Maximum Peak Anode Current (mA)	$I_a(pk)max$	15	
Maximum Potential Heater/Cathode (volts DC)	$V_{h,k}$		150

: Taken at $V_a = 250v$; $V_{g2} = 100v$; $V_{g3} = 0$; $V_{g1} = -2v$.

• Taken at $V_{at} = 100v$; $V_{gt} = 0v$.

INTER-ELECTRODE CAPACITANCES

Heptode Section

Anode/Earth (μF)	$C_{a(h),E}$	13.0
Anode/Grid (μF)	$C_{a(h),g1(h)}$	0.0012
Grid 1/Earth (μF)	$C_{g1(h),E}$	9.5
Heptode Grid/Triode Grid (μF)	$C_{g1(h),g(t)}$	0.09

Triode Section

Anode/Earth (μF)	$C_{out(t)}$	4.4
Anode/Grid (μF)	$C_{a(t),g(t)}$	3.0
Grid/Earth (μF)	$C_{in(t)}$	11.5

DIMENSIONS

Maximum Overall Length (mm)	103
Maximum Diameter (mm)	32
Maximum Seated Height (mm)	90
Approximate Nett Weight (ozs)	1 $\frac{1}{2}$
Approximate Packed Weight (ozs)	2 $\frac{1}{4}$

MOUNTING POSITION - Unrestricted.

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TYPICAL OPERATION

Heptode Section

Anode Voltage (volts)	$V_a(h)$	250	250
Screen Voltage (volts)	$V_{g2}(h)$	100	100
Grid Bias (volts - ve)	$V_{g1}(h)$	-3.0	-2.5
Peak Heterodyne Voltage (volts)	$V_{(pk)het}$	9.0	9.0
Conversion Conductance (mA/volt)	g_c	750	870
Anode Current (mA)	$I_a(h)$	3.0	3.8
Screen Current (mA)	$I_{g2}(h)$	6.05	7.5
Anode Impedance (megohms)	$r_a(w)$	1.6	1.2
Input Capacitance Workings (Hot) (μF)	$C_{in}(w)$	12.5	13.0
Conversion Conductance at $V_g = -43v$; $V_{g2} = 250v(\mu A/V)$ (approx.)			3
Input signal handling capacity (Peak carrier volts)			• 10

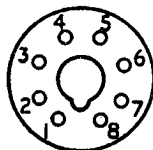
- For 5% Total Audio Harmonic Distortion at 60% Modulation.

Triode Section

Anode Voltage (volts)	80
Anode Current (mA) (average)	5

BULB Metallised

BASE International octal (IO8)



Viewed from free end of pins.

CONNEXIONS

Pin 1	Metallising	M
Pin 2	Heater	h
Pin 3	Heptode Anode	ah
Pin 4	Grid 2, Grid 4	g_2, g_4
Pin 5	Grid 3, Triode Grid	g_3, g_t
Pin 6	Triode Anode	at
Pin 7	Heater	h
Pin 8	Cathode	k
Top Cap	Grid	gl

NOTE

The 6.C.31 is identical to the TH.41 with the exception of heater characteristics, basing and inter-electrode capacitance.

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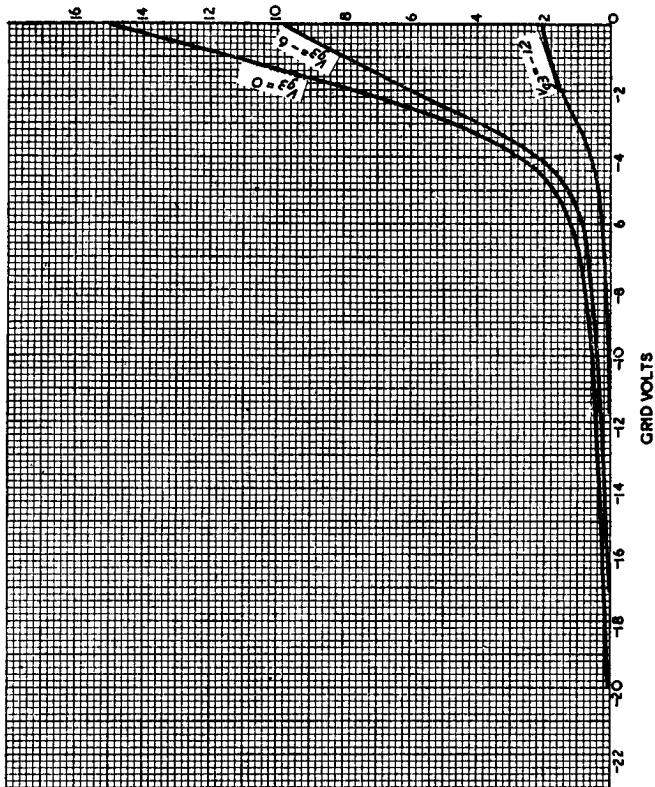
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AVERAGE CHARACTERISTIC CURVES

Curves of heptode section taken at $V_0=250$, $V_{g2}=100$

ANODE CURRENT IN mA



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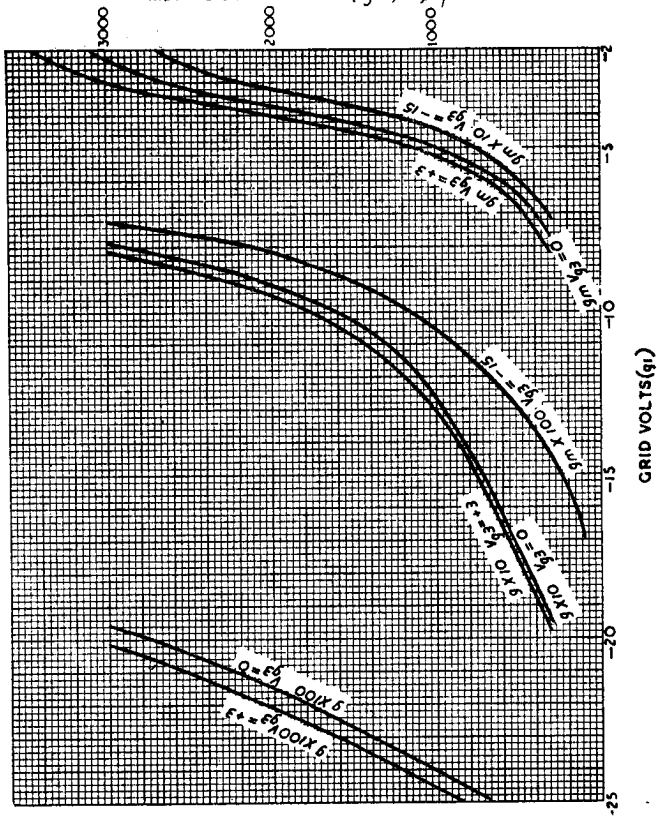
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AVERAGE CHARACTERISTIC CURVES

Curves of heptode section taken at $V_g = 250, V_{g2} = 100$

MUTUAL CONDUCTANCE (g_m) IN $\mu A/V$



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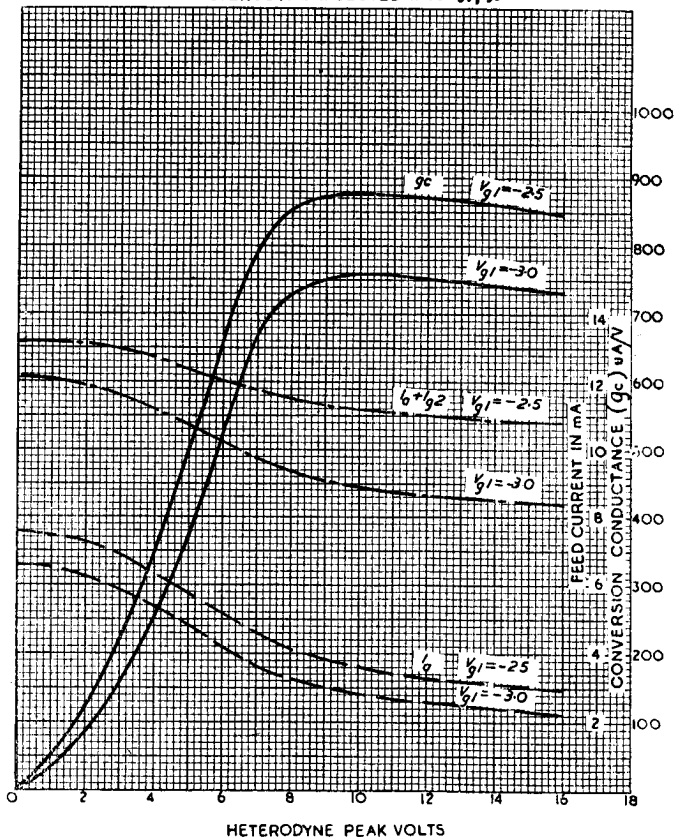
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AVERAGE CHARACTERISTIC CURVES

V_0	V_{g2}	V_{g3}	R_{g3}	V_{g1}	V_{sig}
250	100	Grid current bias	50,000 Ω	-2.5 -3.0	0.5v Peak

HETERODYNE INJECTED INTO g_1, g_3 

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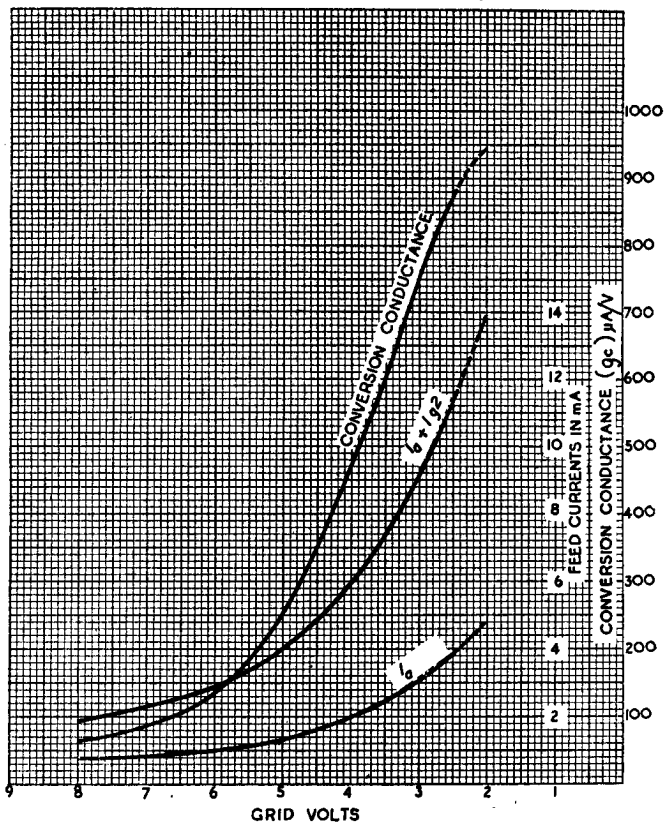
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AVERAGE CHARACTERISTIC CURVES

V_g	V_{g2}	V_{g3}	A_{p3}	V_{het}	V_{sig}
250	100	self bias	50,000 Ω	9.0 Peak	0.5v Peak

HETERODYNE INJECTED INTO g_1, g_3



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AVERAGE CHARACTERISTIC CURVES

V_b	V_{g2}	R_{g2}	V_{gt}	R_{gt}, k	V_{het}	Mod-ulation
250	$V_{g1} = -3$ Rising	24.8k Ω	self bias	50	9.0 Peak	60%

— 5% Total audio harmonic distortion
 - - 10% Total audio harmonic distortion
 Heterodyne injected in 9t, 93

