

Type 2J2

HIGH VOLTAGE HALF WAVE RECTIFIER
Indirectly heated—for flyback E.H.T. supplies

RATING

Heater Voltage (volts)	V_h	2.0
Heater Current (amps)	I_h	0.35
Maximum Peak Inverse Voltage (Design Centre) (kV)	PIV (max)	23.5
Maximum Peak Inverse Voltage (Absolute) (kV)	PIV (max)	27
Maximum Mean Anode Current with Pulse Operation (mA)	I_a (max av)	$\Delta 0.2$
Maximum Peak Anode Current (mA)	I_a (max pk)	*80
Δ Maximum current Pulse Duration 6.0 μ secs. Maximum frequency of operation 15,000 pps.		

* This maximum rating is an absolute value not a design centre.

INTER-ELECTRODE CAPACITANCES (pF)

Anode to Heater, Cathode and Shield	$C_{a-h,k,s}$	$\dagger 0.9$
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$\dagger$ Total capacity including unscreened B9A ceramic holder, i.e., without can or skirt.

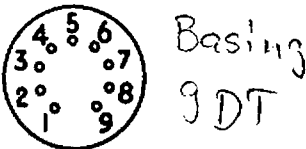
DIMENSIONS

Maximum Overall Length (mm)	76
Maximum Diameter (mm)	21
Maximum Seated Height (mm)	69

MOUNTING POSITION—Unrestricted

BULB—Clear
CAP—CTI
BASE—Noval B9A

BASE E9-1
BULB T6 1/2



Viewed from free end of pins

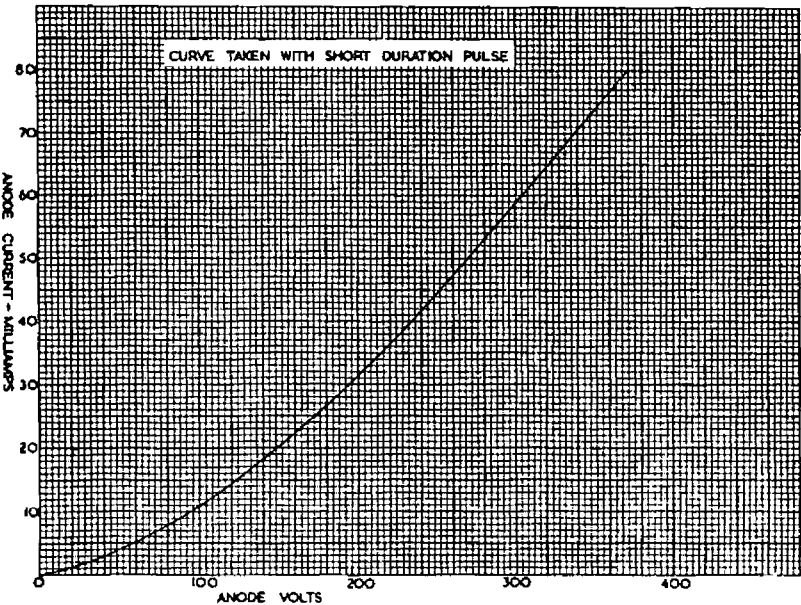
CONNECTIONS

Pin 1	Heater, Cathode and Shield	h,k,s
Pin 2	Heater	h
Pin 3	See below	$\dagger$
Pin 4	Heater, Cathode and Shield	h,k,s
Pin 5	Heater	h
Pin 6	Heater, Cathode and Shield	h,k,s
Pin 7	See below	$\dagger$
Pin 8	Heater	h
Pin 9	Heater, Cathode and Shield	h,k,s
Cap	Anode	a

$\dagger$ Pins 3 and 7 are floating, but must not be left unconnected. They should be connected to the external circuit with not more than 100v between adjacent pins.

The Cathode, shield and one end of the heater are connected to pins 1, 4, 6 and 9. The other end of the heater is connected to pins 2, 5 and 8.

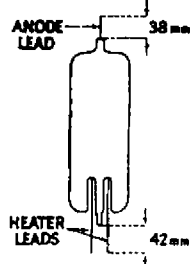
NOTE.—Some early experimental samples may have pins 3 and 7 connected to cathode.



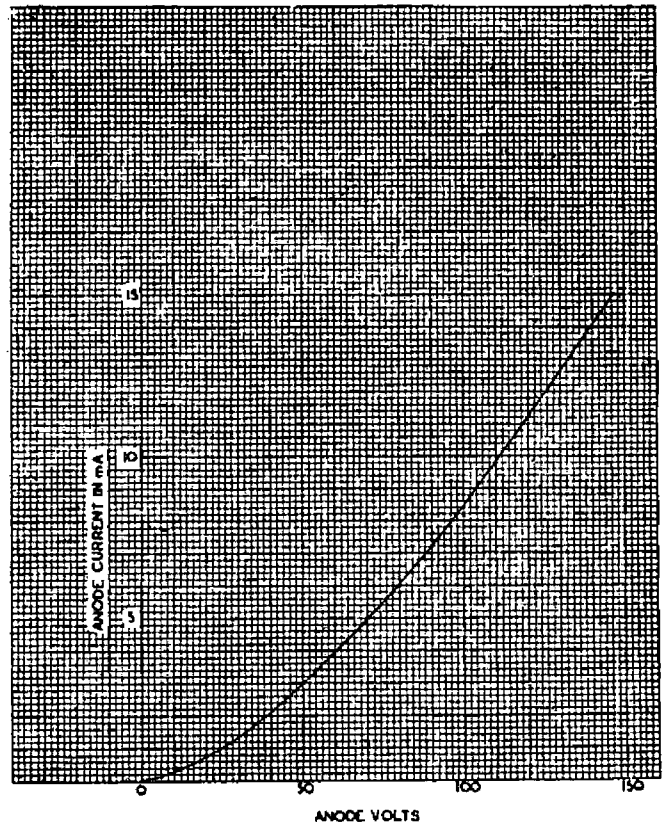
TYPE 2L2

MINIATURE HIGH VOLTAGE H.W. RECTIFIER Indirectly Heated—for R.F. and "Fly-back" E.H.T. Supply

RATING				
Heater Voltage (volts)	V_h			2.0
Heater Current (amps)	I_h			0.2
		Oscillator		Fly-back
		250 Kc	350 Kc	Pulse
Maximum Frequency				
Maximum Peak Inverse Voltage (no load)(kV)	P.I.V.(max)	22	16.5	\$ 22
Maximum Peak Inverse Voltage (on load)(kV)	P.I.V.(max)	19	15	\$ 19
Maximum Anode Voltage (RMS) (kV)	V_a (max)	7.8	5.85	
Maximum Rectified Voltage (volts DC)(kV)			7.0	\$ 16
Maximum Mean Anode Current (mA)	I_a (av)(max)	0.5	0.5	\$ 0.2
Maximum Peak Anode Current (mA)	I_a (pk)(max)	15	15	\$ 25
* 16 kV is a Design Centre Rating. An absolute rating of 18kV must not be exceeded. \$ The pulse ratings are for Television Line Scan where the duty cycle does not exceed 15% and the pulse duration does not exceed 15 μ secs.				
INTER-ELECTRODE CAPACITANCES				
Anode/heater and Cathode (pF)	C_p, h and k			0.6
DIMENSIONS				
Maximum Overall Length (excluding leads) (mm)				58
Maximum Bulb Diameter (mm)				19
MOUNTING POSITION - Unrestricted				
BULB - Clear				
BASE - Wire Leads				



AVERAGE CHARACTERISTIC CURVES



THE EDISON SWAN ELECTRIC COMPANY LTD.

TYPES 6EC7 - 13EC7*

GENERAL

The 6F18 is a variable-mu HF. Pentode intended for use in AM/FM Receivers having parallel connected heater chains, and is suitable for use on A.C. Mains.

RATING

Heater Voltage (volts)	V _h	6.3
Heater Current (amps)	I _h	0.2
Maximum Anode Voltage (volts)	V _{a(max)}	250
Maximum Screen Voltage (volts)	V _{g2(max)}	250
Maximum Anode Dissipation (watts)	P _a	2.25
Maximum Screen Dissipation (watts)	P _{g2}	0.5
Maximum Heater to Cathode Voltage (Volts D.C.)	V _{h-k(max)}	150

INTER-ELECTRODE CAPACITANCES (pF)

Control Grid/Earth	c _{in}	5.2*	6.5**
Anode/Earth	c _{out}	5.0	6.3
Control Grid/Anode	c _{a-g1}	0.0017	0.0021

"Earth" denotes the remaining earthy potential electrodes, heater and shields connected to cathode.

* Inter-electrode capacity with holder capacity balanced out but with cylindrical screen can.

** Total capacity including Carr Fastener holder type 76/840E/T with radial shield and cylindrical screen. The c_{a-g1} holder Capacity can be reduced to 0.00004 pF by the insertion of a shield between pins 4 and 5, 9 and 1. If an unscreened holder is used (without can or skirt) the total a to g1 capacity with holder becomes 0.0025 pF.

DIMENSIONS

Maximum Overall length	(mm)	56.0
Maximum Diameter	(mm)	22.2 7/8
Maximum Seated Height	(mm)	49.0
Approximate Nett Weight	(ozs)	1/4
Approximate Packed Weight	(ozs)	3/4

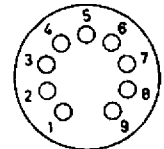
MOUNTING POSITION Unrestricted

TYPICAL OPERATION

Anode Voltage (volts)	V _a	175	175
Screen Voltage (volts)	V _{g2}	100	175
Grid Bias Voltage (volts)	V _{g1}	-1.3	
Anode Current (mA)	I _a	12.0	
Screen Current (mA)	I _{g2}	3.5	
Mutual Conductance (mA/V)	g _m	4.4	
Anode Impedance (kΩ)	r _a	220	
Bias to give mutual conductance of 100 μA/V (volts)			-19.5
Input Capacity working (Hot) (pF)	c _{in}	7.1	
Input Capacity change at cut-off (pF)	Δc	1.7	
Input Loss at 38 Mc/s, cathode pins strapped (kΩ)			16

BULB Clear T 6 1/2

BASE Noval (B.9.A.) E 9-1



View from free end of Pins

CONNECTIONS

Pin 1	Cathode	k
Pin 2	Control Grid	g1
Pin 3	Cathode	k
Pin 4	Heater	h
Pin 5	Heater	h
Pin 6	Internal Shield	s
Pin 7	Anode	a
Pin 8	Screen Grid	g2
Pin 9	Suppressor Grid	g3

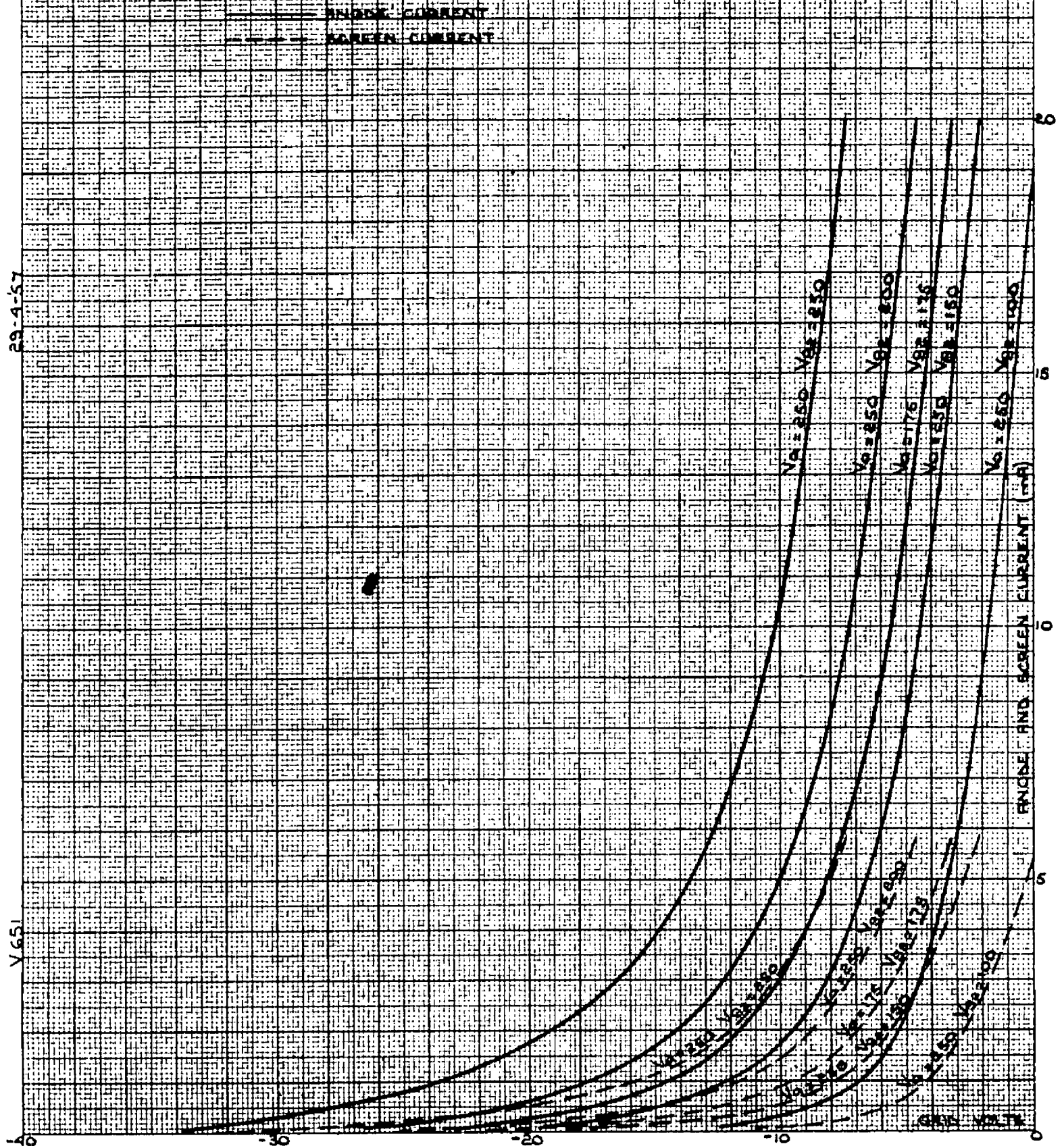
NOTES

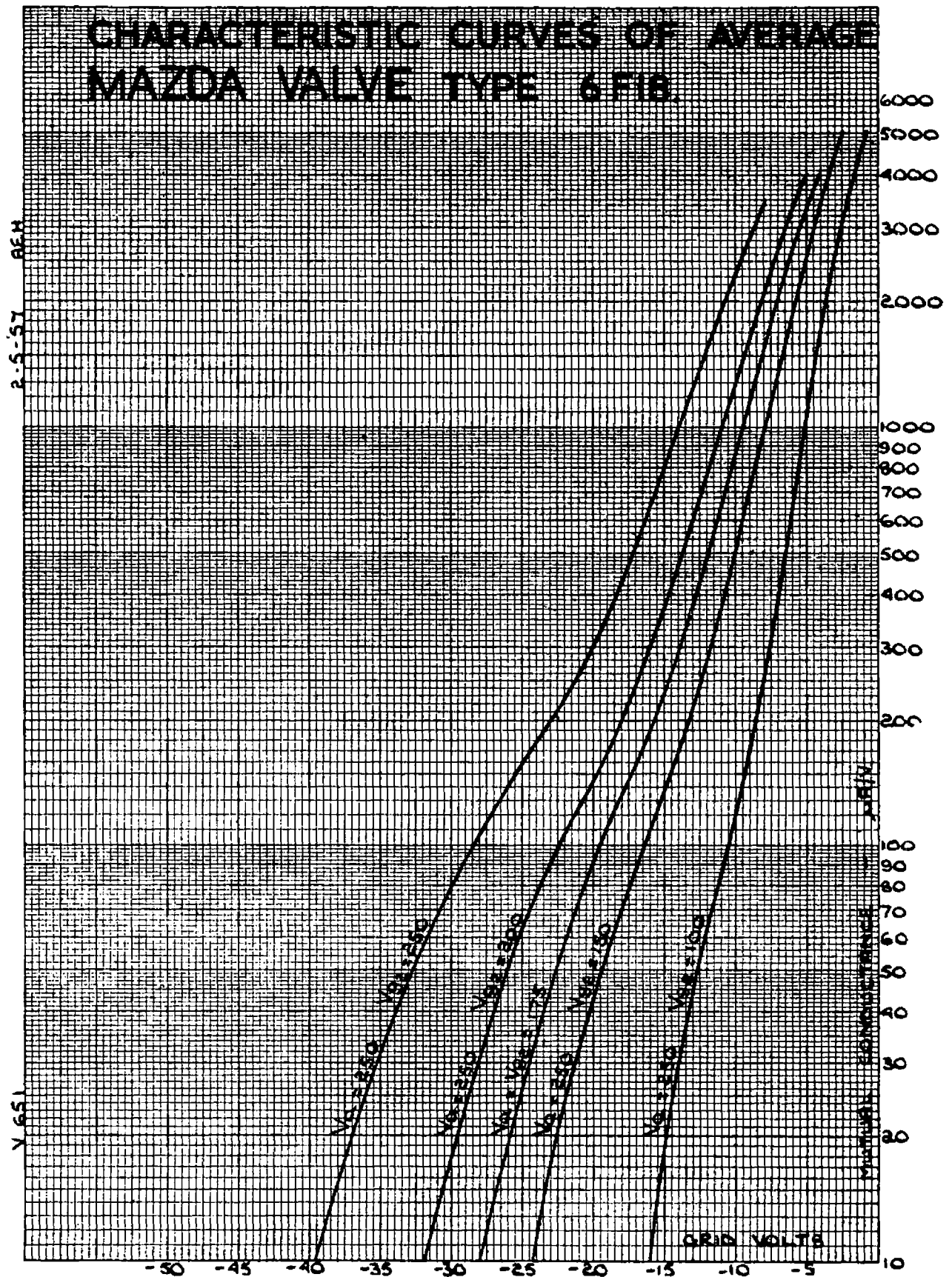
If only one cathode pin is required it is recommended that Pin 3 be used.

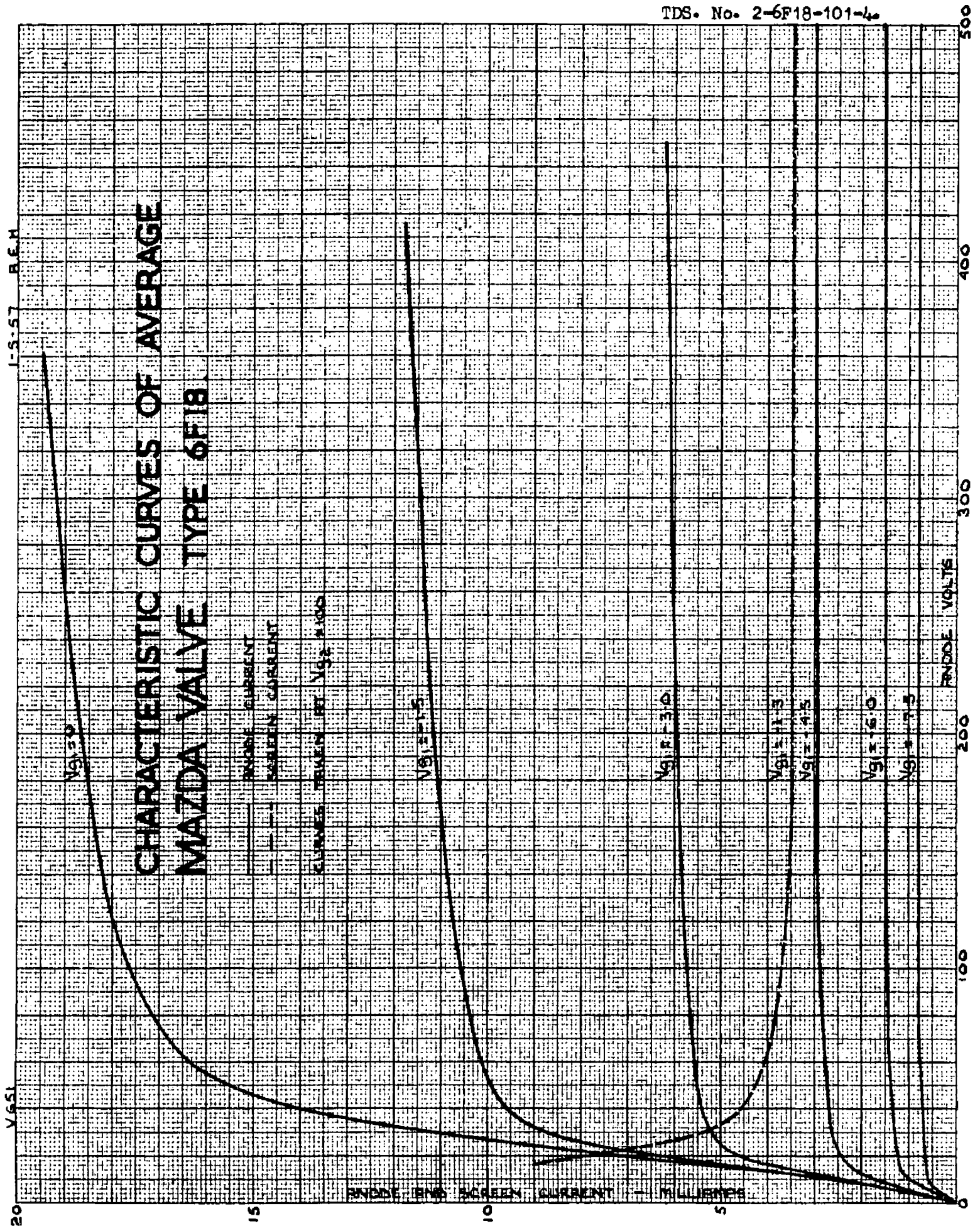
SIEMENS EDISON SWAN LIMITED

*The type 13EC7 is identical to the 6EC7, except for heater ratings of 13 volts @ 100 ma.

CHARACTERISTIC CURVES OF AVERAGE MAZDA VALVE TYPE 6F18







Mazda Radio Valve Engineering Dept.

JEDEC NO. 6EL7

Siemens Edison Swan Limited Gasos Works, Brimsdown, Enfield, Middlesex.

CHIEF ENGINEER'S OFFICE.

DATE 18th February, 1959.

SUBJECT

T.D.S. No. 2-4548-01A

TENTATIVE.

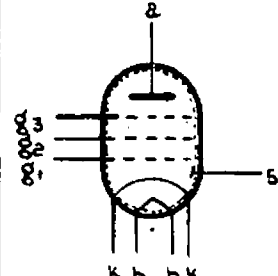
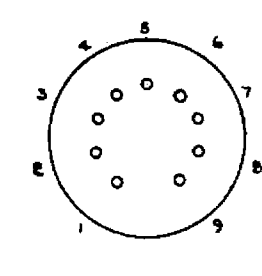
VALVE TYPE 6F23

DIMENSIONS			M.M.	TYPE	Screened H.F. Pentode.
OVERALL LENGTH	MAX.		67.5	CATHODE	Indirectly Heated.
DIAMETER	MAX.		22.2	USE	AC Mains or AC/DC Mains.
SEATED HEIGHT	MAX.		60.5		

RATING

Heater Volts		6.3	NOTE
Heater Current	(amps)	0.3	
Maximum Anode Volts		250	
Maximum Screen Volts		250	
Mutual Conductance	(mA/V)	9.2	A
Inner Amplification Factor (g_1 to g_2)		64	A
Maximum Anode Watts.		3	B
Maximum Screen Watts		1	B
Maximum Heater to Cathode Volts	(RMS)	200	C
Maximum Resistance Control Grid to Cathode	(ohms)	600,000	D

American Base E9-1. Bulb T6 1/2

CAPACITANCES μF				BASING	BASE. B.9.A. (NOVAL)	CAP.
	\$	*	**			
g_1 -E	9.0	9.0	10.0	PIN ELECTRODE		
a-E	3.7	4.0	5.0	1 k		
g_1 -a	0.007	0.008	0.009	2 g_1		
				3 k		
				4 h		
				5 h		
				6 B		
				7 a		
				8 g_2		
				9 g_3		

MOUNTING POSITION: Unrestricted.

Basing 9AQ

TYPICAL OPERATION.

Anode Volts.....	170
Screen Volts.....	170
Self Bias Resistance.....(ohms).....	150
Grid Bias Volts.....(Approx).....	-1.9
Anode Current.....(mA).....	10
Screen Current.....(mA).....	2.6
Mutual Conductance.....(mA/V).....	9.2
Equivalent Grid Noise Resistance.....(ohms)	670
Input Loss at 38 Mc/s $\dagger$(ohms)	8,500
Input Capacity working $\dagger$(μF) Note E.	12.1
Change in Input Capacity produced by biasing valve to cut-off. (μF) (Note E)	2.45

NOTES. $\dagger$ The two cathodes strapped and joined directly to earth.
 A. At $V_a = V_{g2} = 170$. $I_a = 10\text{mA}$.
 B. With a grid cathode resistance not exceeding 10,000ohms.
 C. From cathode to higher potential heater pin.
 D. With maximum anode dissipation = 2watts; maximum screen dissipation = 0.5 watts.
 Assuming a common anode and screen decoupling resistance of not less than $2200 \pm 10\%$.
 E. Hot capacity measurements taken at a frequency of 38 Mc/s.
 * Interelectrode capacities with holder capacity balanced out.
 ** Total interelectrode capacity including B9A ceramic holder with-out skirt or
 radial shield (Plessey holder type CP180014/1)
 § Interelectrode capacities in fully shielded jig, without can

INDICATES A CHANGE SINCE PREVIOUS ISSUE.

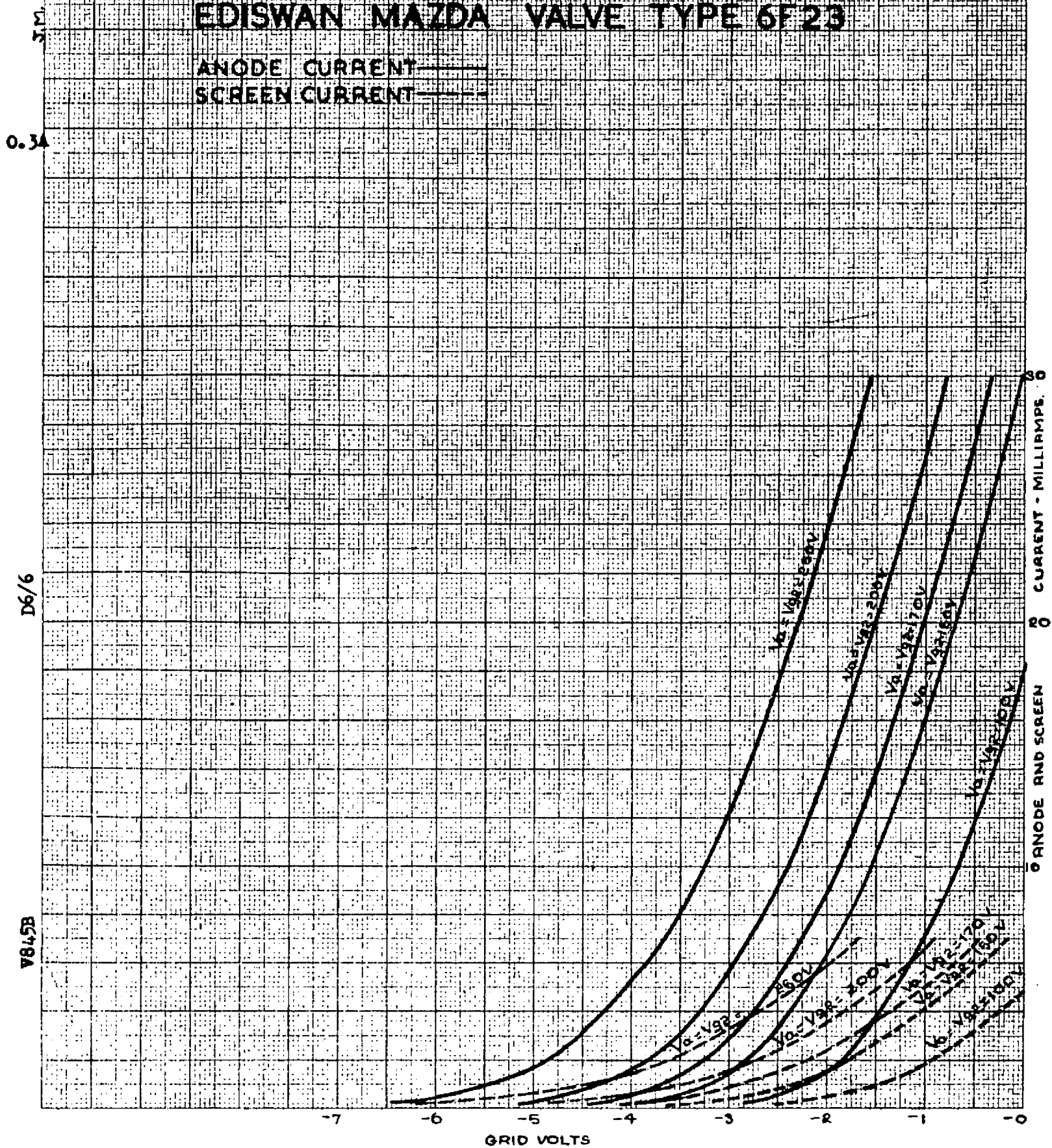
V845B

T.D.S.
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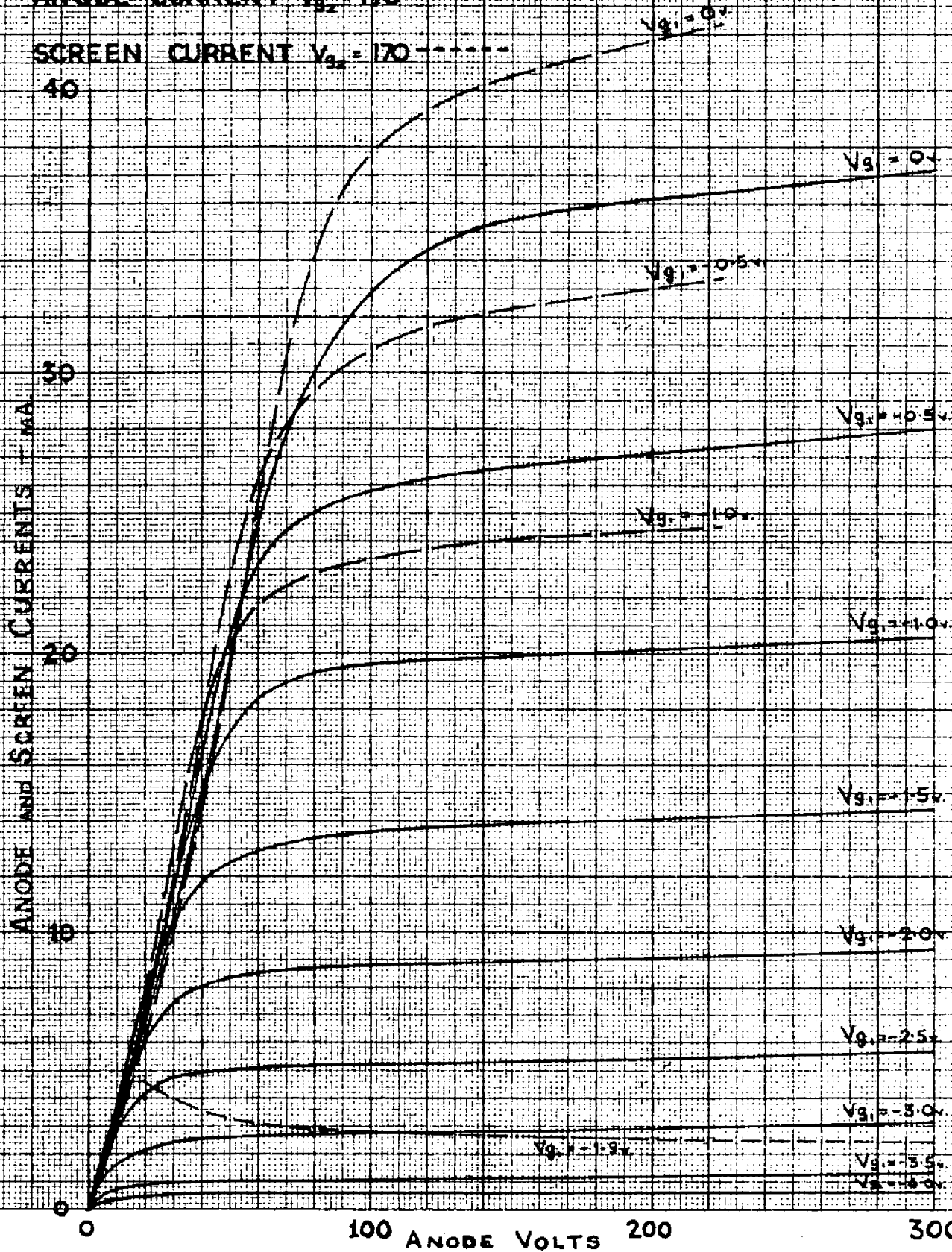
TDS 2-Y845B-101-1

TENTATIVE CHARACTERISTIC CURVES OF EDISWAN MAZDA VALVE TYPE 6F23

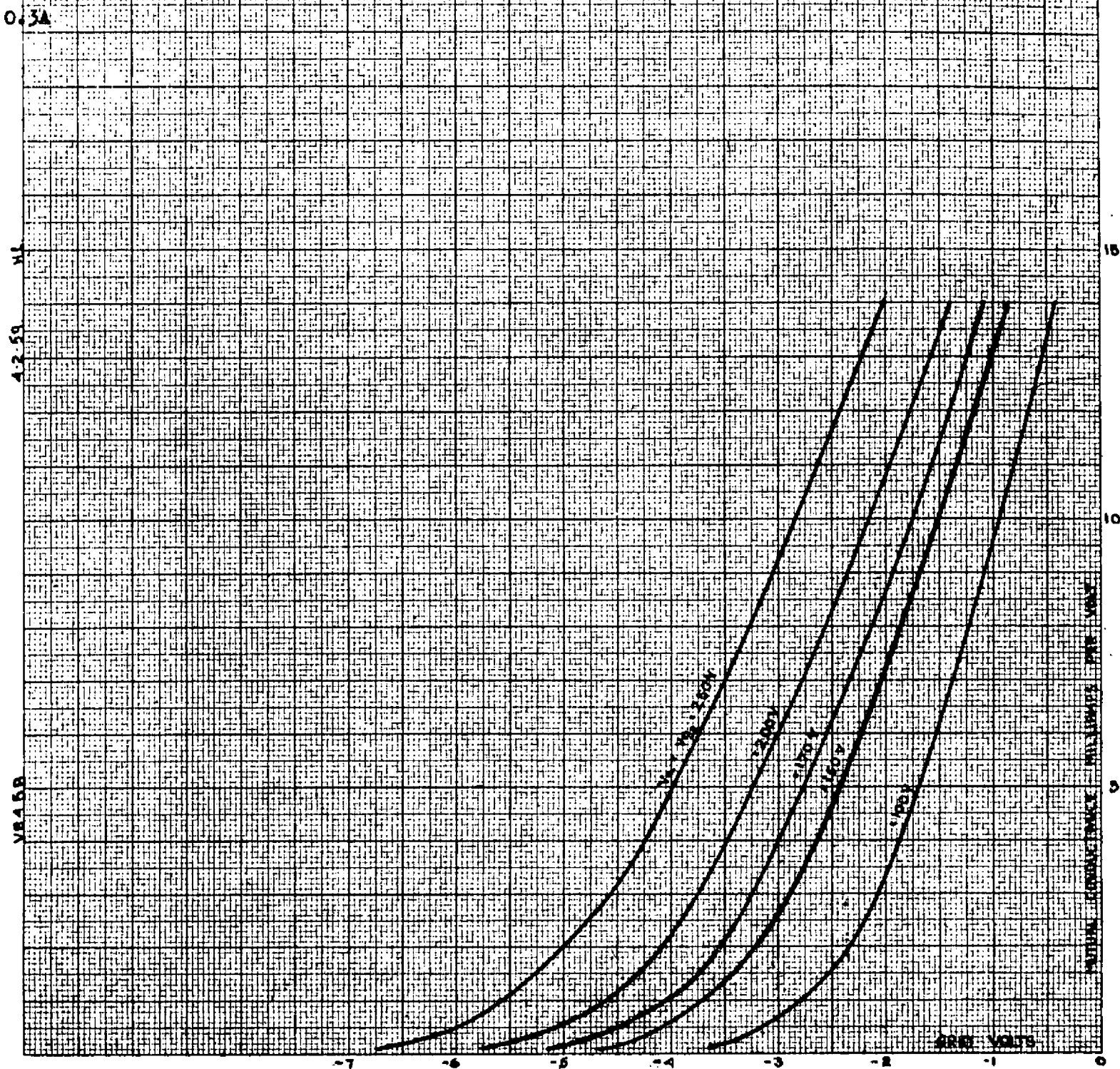
ANODE CURRENT ———
SCREEN CURRENT - - -



TENTATIVE CHARACTERISTIC CURVES OF EDISWAN MAZDA VALVE TYPE 6F23

ANODE CURRENT $V_{g_2} = 170$ ———ANODE CURRENT $V_{g_2} = 190$ - - -SCREEN CURRENT $V_{g_2} = 170$ - - - - -

0.34



TYPE 6GA8

GENERAL

This General Purpose Twin Triode is intended for use in television receivers and is suitable for A.C., D.C. or A.C. operation.

RATING

		Notes
Heater Voltage (volts)	V_h	6.3
Heater Current (amps)	I_h	0.3
Mutual Conductance (mA/V)	g_m	3.4 (a)
Amplification Factor	μ	18 (a)
Maximum Anode Voltage (volts)	V_a (max)	250
Maximum Anode Dissipation (watts) (either section)	P_a (max)	2.0 (b)
Maximum Total Anode Dissipation (watts)	P_a (tot) max	2.5 (b)
Maximum Heater to Cathode Voltage (volts) (RMS)	V_{h-k} (max)	150 (c)

Notes

(a) $V_a = 200$ volts. $I_a = 10$ mA.

(b) The permissible anode dissipation rating is dependent on the grid-cathode resistance, and the circuit employed. For the values quoted, the grid-cathode resistance should not exceed 0.25 megohms with cathode self bias.

(c) Measured with respect to the higher potential heater pin.

The potential of the internal shield must not be positive to that of either cathode.

INTER-ELECTRODE CAPACITANCES (pF)

		†	‡
Grid 1/Earth	$c_{g',E}$	2.5	3.5
Grid 2/Earth	$c_{g'',E}$	2.4	3.5
Anode 1/Earth	$c_{a',E}$	2.1	3.2
Anode 2/Earth	$c_{a'',E}$	2.0	2.9
Grid 1/Anode 1	$c_{g',a'}$	2.5	2.8
Grid 2/Anode 2	$c_{g'',a''}$	2.5	2.8
Grid 1/Grid 2	$c_{g',g''}$	0.006	0.0064
Anode 1/Anode 2	$c_{a',a''}$	0.038	0.038
Grid 1/Anode 2	$c_{g',a''}$	0.014	0.015
Anode 1/Grid 2	$c_{a',g''}$	0.012	0.012

† Inter electrode capacity with holder capacity balanced out.

‡ Total inter electrode capacity including B9A ceramic holder (Carr Fastener holder type 77 076).

"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.

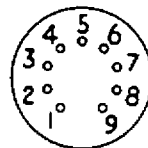
DIMENSIONS

Maximum Overall Length (mm)	(mm)	56
Maximum Diameter (mm)	(mm)	22.2
Maximum Seated Height (mm)	(mm)	49
Approximate Nett Weight (ozs)	(ozs)	$\frac{1}{2}$
Approximate Packed Weight (ozs)	(ozs)	$\frac{3}{4}$

MOUNTING POSITION—Unrestricted

BULB—Clear T 6 1/2

BASE—NOVAL (B9A) E 9-1

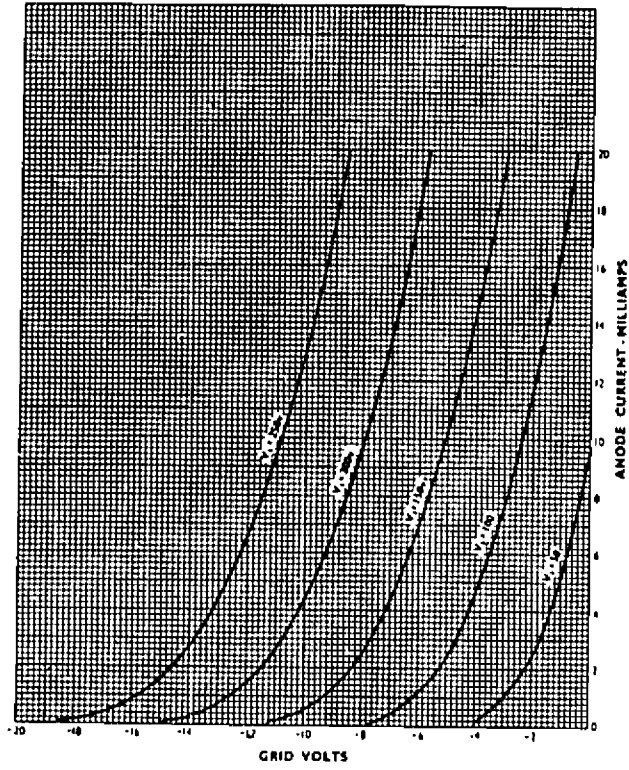


Viewed from Free End of Pins

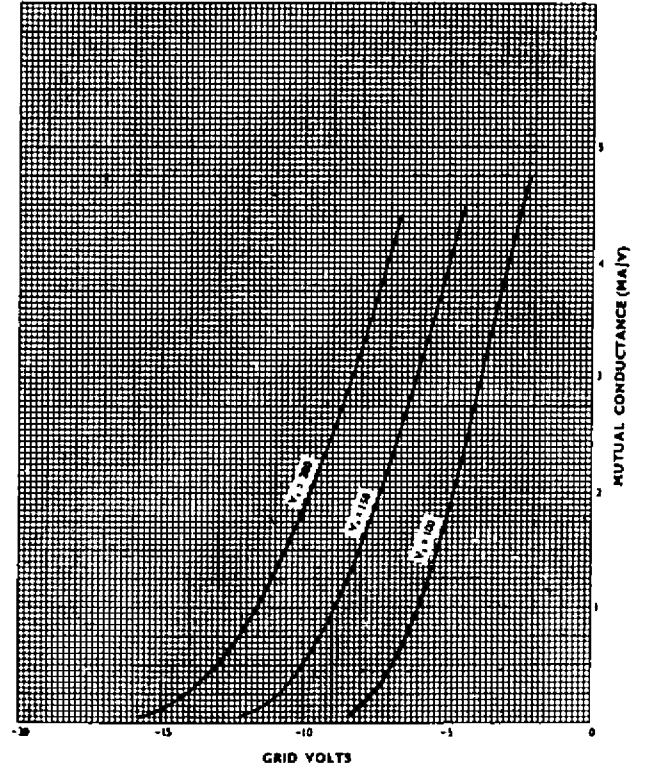
CONNECTIONS

Pin 1	Anode 2	a''
Pin 2	Grid 2	g''
Pin 3	Cathode 2	k''
Pin 4	Heater	h
Pin 5	Heater	h
Pin 6	Anode 1	a'
Pin 7	Grid 1	g'
Pin 8	Cathode 1	k'
Pin 9	Shield	s

AVERAGE CHARACTERISTIC CURVES



AVERAGE CHARACTERISTIC CURVES



GENERAL

The 30F5 is intended for use as a straight television pentode and is suitable for AC/DC series operation.

RATING

Heater Current (amps)	I_h	0.3
Heater Voltage (volts)	V_h	7.3
Maximum Anode Voltage (volts)	$V_a(\text{max})$	250
Maximum Screen Voltage (volts)	$V_{g2}(\text{max})$	250
Maximum Anode Dissipation (watts)	$P_a(\text{max})$	3.5
Maximum Screen Dissipation (watts)	$P_{g2}(\text{max})$	1.5
Maximum Heater to Cathode Voltage (volts) (r.m.s.)	$V_{h-k}(\text{max})$	200†
Maximum Resistance Control Grid to Cathode (k Ω)	$R_{g-k}(\text{max})$	600‡
Mutual Conductance (mA/V)	g_m	8.8*
Inner Amplification Factor	μ_{g1-g2}	55*

* At $V_a = V_{g1} = 170$ volts. $V_{g2} = -1.9$

‡ With a grid cathode resistance not exceeding 10,000 ohms

† From Cathode to higher potential heater pin

‡ With maximum anode dissipation 2 watts, maximum screen dissipation 0.5 watts and assuming a common anode and screen decoupling resistance of not less than 2,200 ohms $\pm 10\%$

INTER-ELECTRODE CAPACITANCES (pF)

		‡	§
Grid/Earth	C_{in}	9.0	10.3
Anode/Earth	C_{out}	4.4	5.7
Anode/Grid	C_{g1-a}	0.0073	0.0077

"Earth" denotes the remaining earthy potential electrodes, shields and heater joined to cathode.

‡ Inter-electrode capacitances with holder capacitance balanced out.

§ Total inter-electrode capacity including B9A ceramic holder without skirt or radial shield (Carr Fastener holder type 77,076).

DIMENSIONS

Maximum Overall Length (mm)	67.5
Maximum Diameter (mm)	22.2
Maximum Seated Height (mm)	60.5
Approximate Nett Weight (ozs)	1
Approximate Packed Weight (ozs)	1

215/16
78
23/8

MOUNTING POSITION—Unrestricted.

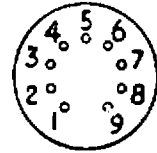
TYPICAL OPERATION

Anode Voltage (volts)	V_a	170
Screen Voltage (volts)	V_{g2}	170
Grid Bias Voltage (volts)	V_{g1}	-1.9
Anode Current (mA)	I_a	10
Screen Current (mA)	I_{g2}	2.6
Mutual Conductance (mA/V)	g_m	8.8
Input Loss at 45 Mc/s (ohms)	$r_{g1-k}(w)$	16,000*
Equivalent grid noise resistance (ohms)	R_{eq}	750

* With grid circuit ONLY returned to pin 3

BULB—Clear T 6 1/2

BASE—Noval (B9A) E 9-1



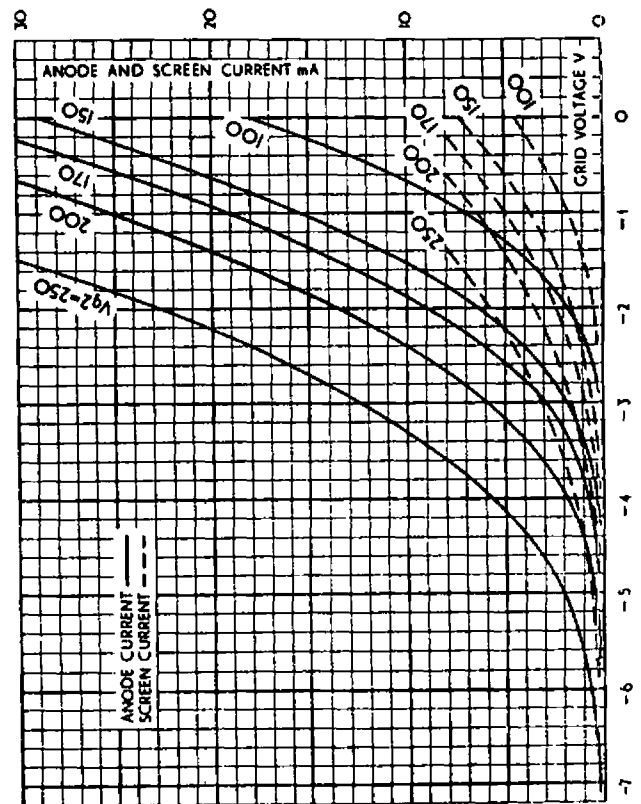
Viewed from Free End of Pins

CONNECTIONS

9AQ

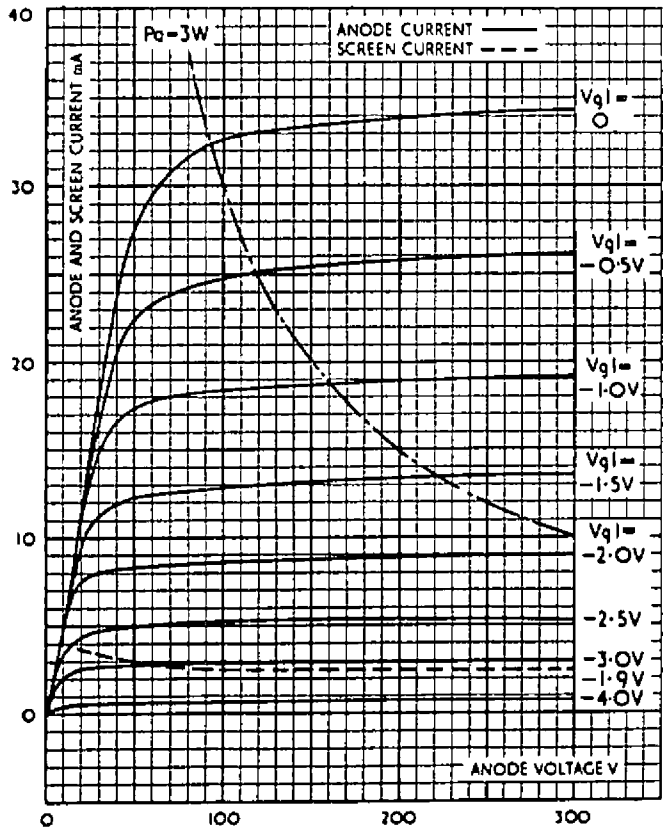
Pin 1	Cathode	k
Pin 2	Control Grid	g1
Pin 3	Cathode	k
Pin 4	Heater	h
Pin 5	Heater	h
Pin 6	Shield	s
Pin 7	Anode	a
Pin 8	Screen Grid	g2
Pin 9	Suppressor Grid	g3

AVERAGE CHARACTERISTIC CURVES: $I_a, I_{g2}/V_g$
 $V_a = 250V.$

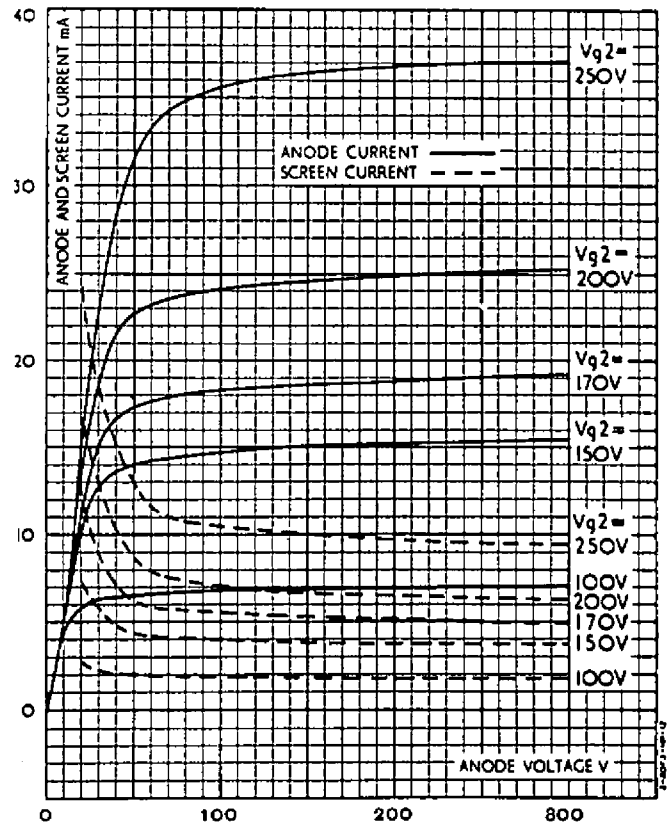


TYPE 7ED7

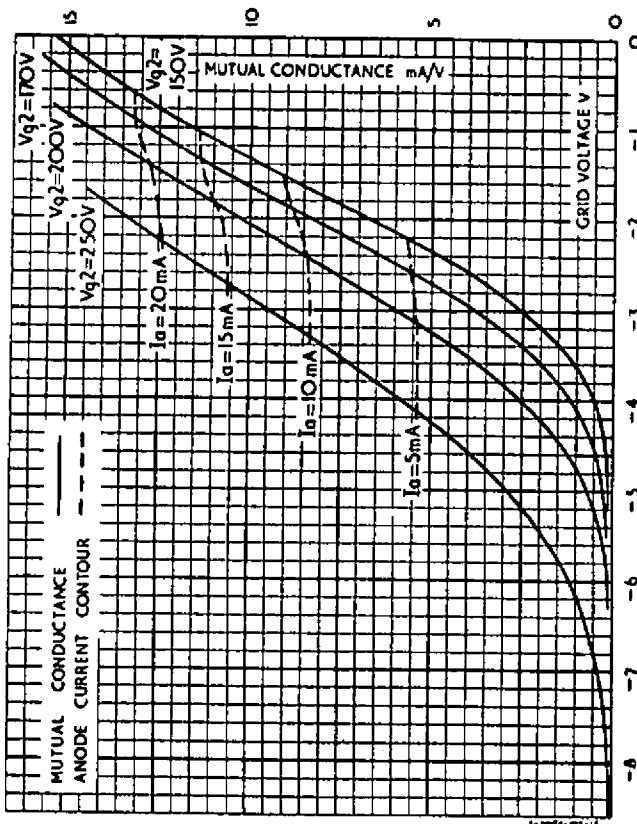
AVERAGE CHARACTERISTIC CURVES: $I_a, I_{g2}/V_a$
 $V_{g2} = 170V$.



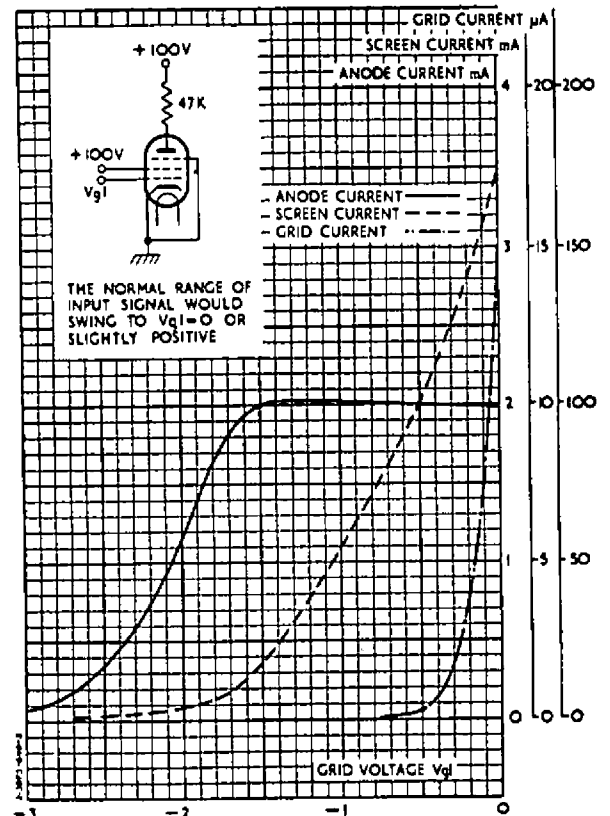
AVERAGE CHARACTERISTIC CURVES: $I_a, I_{g2}/V_a$
 $V_{g1} = -1.0V$.



AVERAGE CHARACTERISTIC CURVES: g_m/V_g
 $V_a = 250V$.



AVERAGE CHARACTERISTIC CURVES: $I_a, I_{g2}, I_{g1}/V_{g1}$
 Used as a limiter in a synchronising separator circuit.



T1368

Mazda Radio Valve Engineering Dept.

Siemens Edison Swan Limited, Cosmos Works, Brimsdown, Middlesex

CHIEF ENGINEER'S OFFICE.

DATE 24th November, 1958.

T.D.S. No. 2-V718-0-16

SUBJECT

TENTATIVE

VALVE TYPE 30L15

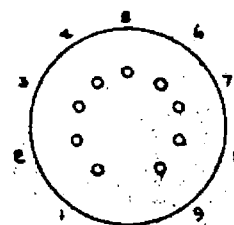
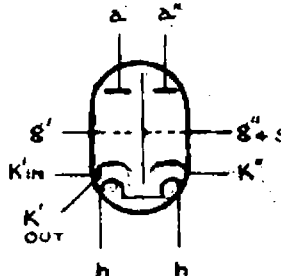
DIMENSIONS			M.M.	TYPE	Twin Triode.
OVERALL LENGTH	MAX.		56	CATHODE	Indirectly Heated.
DIAMETER	MAX.		22.2	USE	Cascode R.F. Amplifier.
SEATED HEIGHT	MAX.		49		

RATING

Heater Volts		7.0	NOTE
Heater Current	(amps)	0.3	
Mutual Conductance	(mA/V)	9.0	A
Amplification Factor	(approx.)	26	A
Maximum Anode Volts		250	
Maximum Anode Dissipation	(Watts) (either Sect.)	2.0	
Maximum Cathode Current per Section	(mA)	16	
Maximum Grid to Cathode Resistance	(ohms) Section (1)	500,000	
Maximum Negative Grid Volts		50	
Maximum Effective Grid to Earth Resistance	(ohms) Section (2)	150,000	B
Maximum Grid to Cathode Resistance	(ohms) Section (2)	22,000	C

American Base E9-1 Bulb T6 1/2

CAPACITANCES				SYMBOLS INDICATES SHIELD AND EARTH PARTS OF THE VALVE HOLDER MEASURED WITH VALVE COLD.	BASING		BASE. B.9.A. (NOVAL)	CAP.
ELECTRODES	*	μF	**		PIN	ELECTRODE		
g' TO k'hs	3.1	4.4			1	k"		
a" TO k'hs	3.6	4.5			2	g" s		
a' TO k'hs	1.9	2.8			3	a"		
k" TO k'hs	5.4	6.3			4	h		
a' TO g'	1.5	1.5			5	h		
a" TO k"	.19	.21			6	g'		
a' TO a"	.011	.013			7	k' in		
g' TO a"	.0058	.0096			8	k' out		
TO					9	a'		



VIEW OF FREE END

MOUNTING POSITION: Unrestricted.

Basing 9DD

TYPICAL CASCODE OPERATION. (See TDS No. 2-V718-0-3.)**Notes-**

- A. $V_a = 90V$ $I_a = 15mA$ $V_{g1} = -1.2V$.
 B. With potentiometer bias from H.T. Line.
 C. Grid Current bias.

* Inter-electrode Capacity with holder capacity balanced out but with cylindrical screen can.

** Total capacity including ceramic B9A holder with cylindrical screen. (Flessey holder type CP. 180024/3)

INDICATES A CHANGE SINCE PREVIOUS ISSUE

O.3A

V718

T.D.S.
012.

Ediswan Mazda Applications Department

Siemens Edison Swan Limited, Cosmos Works, Brimsdown, Enfield, Middlesex.

SUBJECT

CHIEF ENGINEER'S OFFICE
(APPLICATIONS)DATE: 8th December, 1958
T.D.S. No. 2-V718-0-3TENTATIVETYPICAL CASCODE OPERATION.

Input triode connected as a grounded cathode stage and coupled directly to section 2 connected as a grounded grid stage. The valve sections are series fed i.e. anode of section 1 connected directly to cathode of section 2.

		<u>Circuit I.†</u>	<u>Circuit II.††</u>
H.T. Supply Voltage		200	200
Anode decoupling resistor, section 2.	(ohms)	2,200	3,300
Anode current	(mA)	15.3	14.8
Grid bias voltage, section 1. (supplied by cathode resistor)		-1.53	-1.2
Combined mutual conductance ($\Delta i_a / \Delta v_{g1}$)	(mA/V)	8.5	8.6
Approx. A.G.C. Volts to give combined mutual conductance of 100 $\mu A/V$.		-7	-12
Self bias resistor, section 1.	(ohms)	100	82
Input capacity working*	(pF)	6.0	6.0
Change in input capacity by biasing valve to cut off. (pF)		1.2	1.2

Notes.

- †. Circuit I. Valve section 2, Potentiometer bias from H.T. line, see TDS. sheet 2-V718-210-1.
- ††. Circuit II. Valve section 2, Grid current bias, see TDS sheet 2-V718-210-1.
- *. Inter-electrode capacity with holder capacity balanced out but with cylindrical screen can.

0.3A

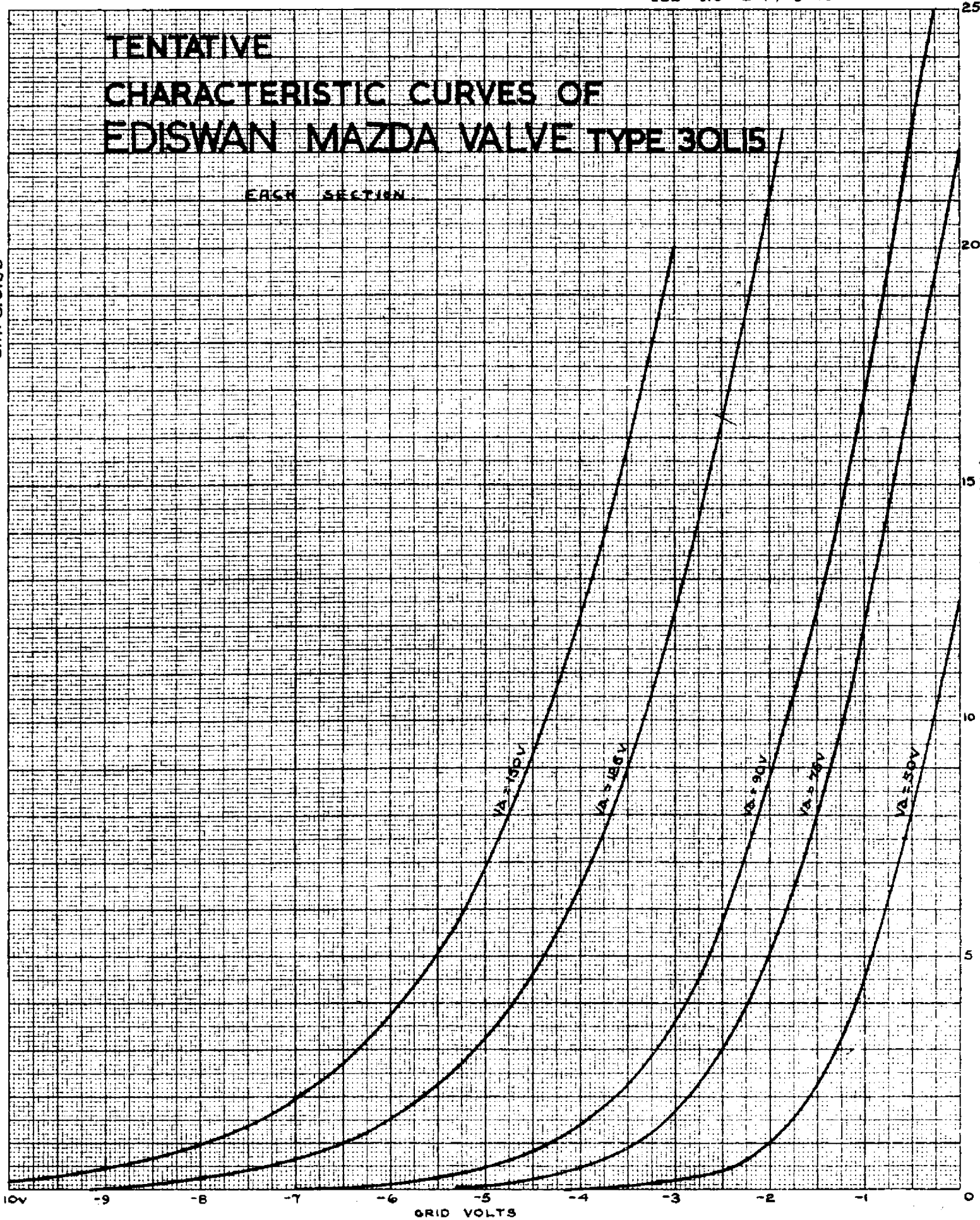
V718.

TENTATIVE CHARACTERISTIC CURVES OF EDISWAN MAZDA VALVE TYPE 30L15

EACH SECTION

G.M. 3.6.58

ANODE CURRENT (MILLIAMPS)



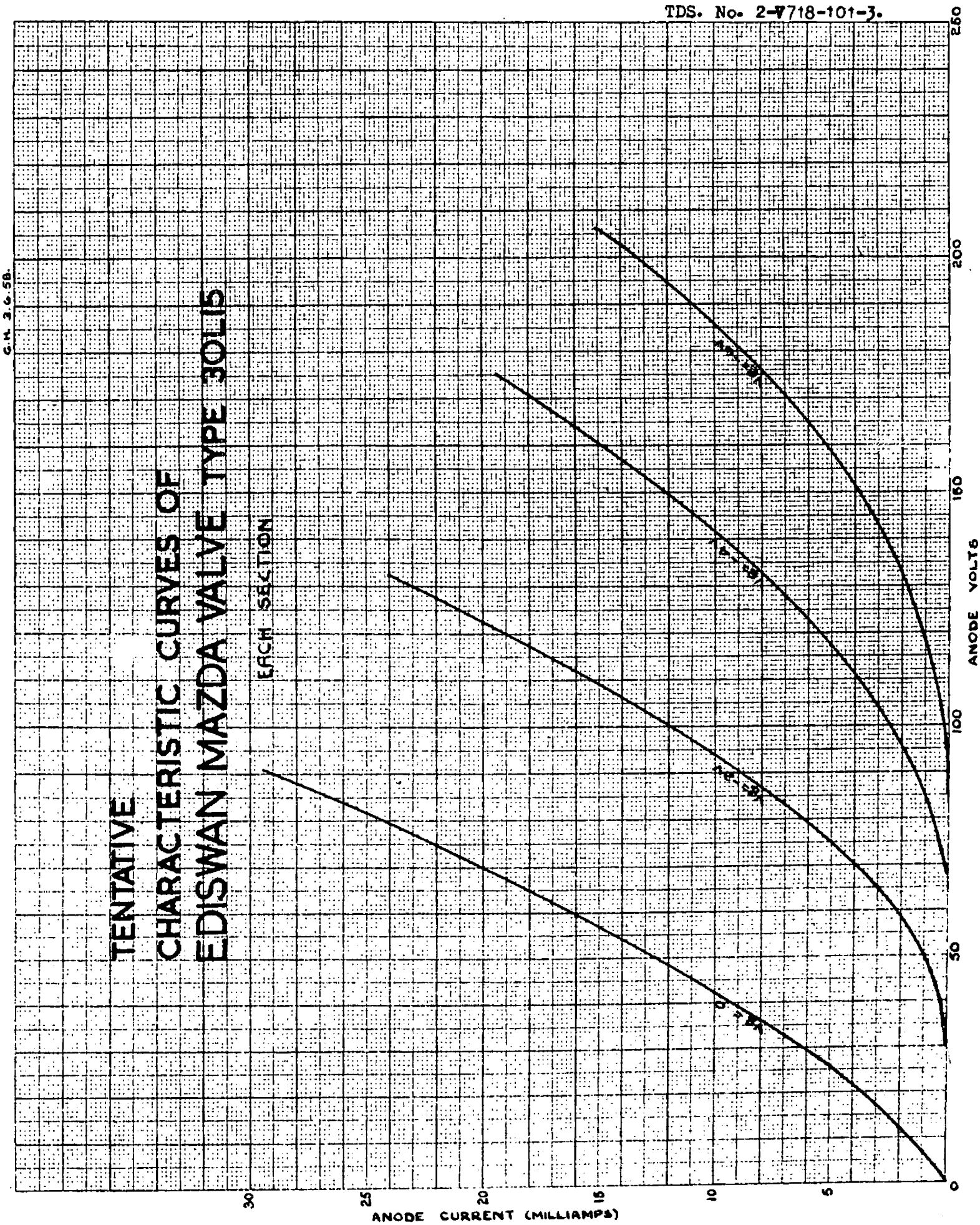
TDS. No. 2-7718-101-3.

012/9 (V2)

V718

TENTATIVE
CHARACTERISTIC CURVES OF
EDISWAN MAZDA VALVE TYPE 30L15

EACH SECTION



G.M. 3-6-58

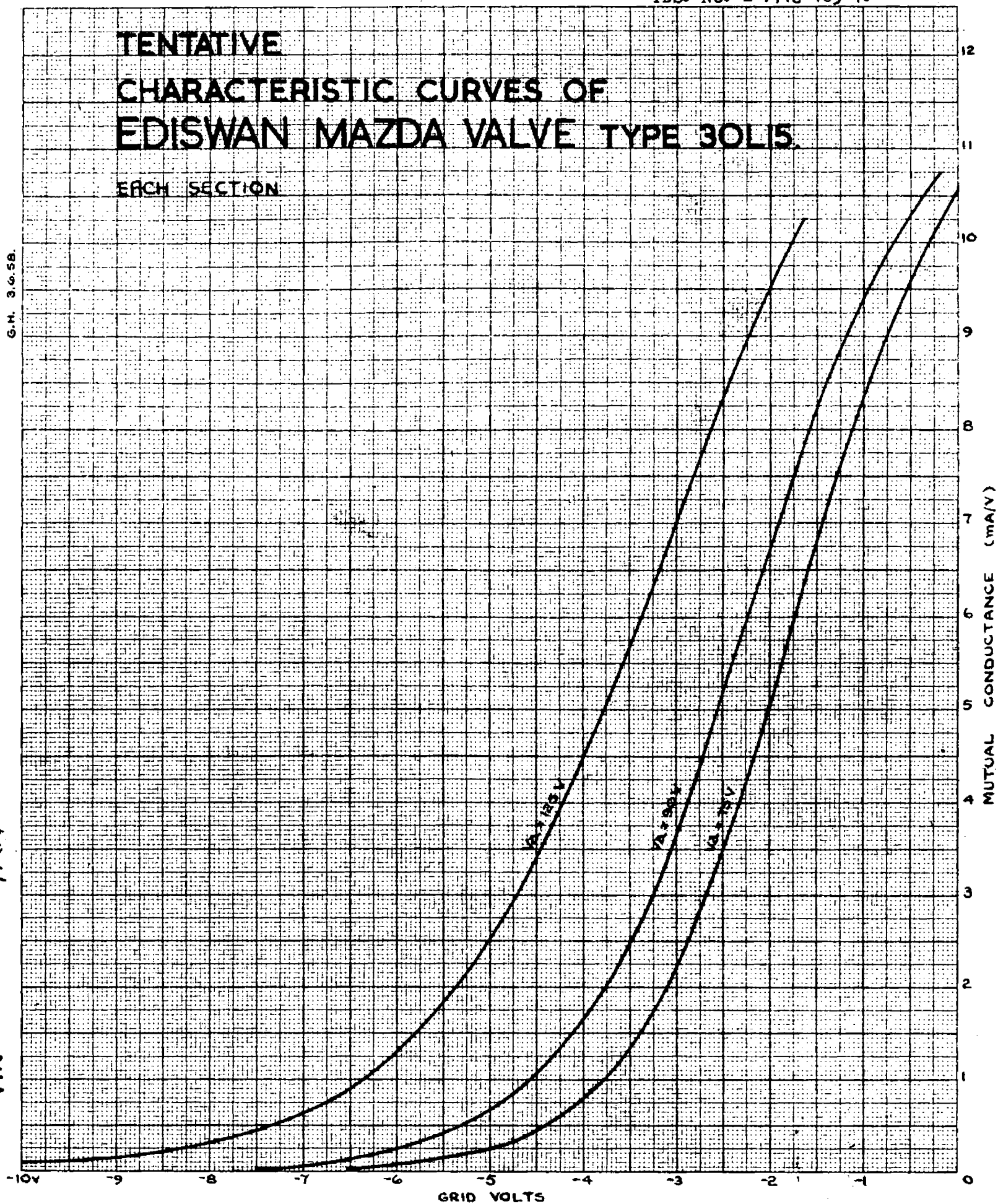
TENTATIVE CHARACTERISTIC CURVES OF EDISWAN MAZDA VALVE TYPE 30L15.

EACH SECTION

G.M. 3.6.58.

D12/9 (12)

V718



Ediswan Mazda Applications Department

Siemens Edison Swan Limited, Cosmos Works, Brimsdown, Enfield, Middlesex.

SUBJECT

DATE: 11th December, 1958.

T.D.S. No. 2-V718-210-1

CHIEF ENGINEER'S OFFICE

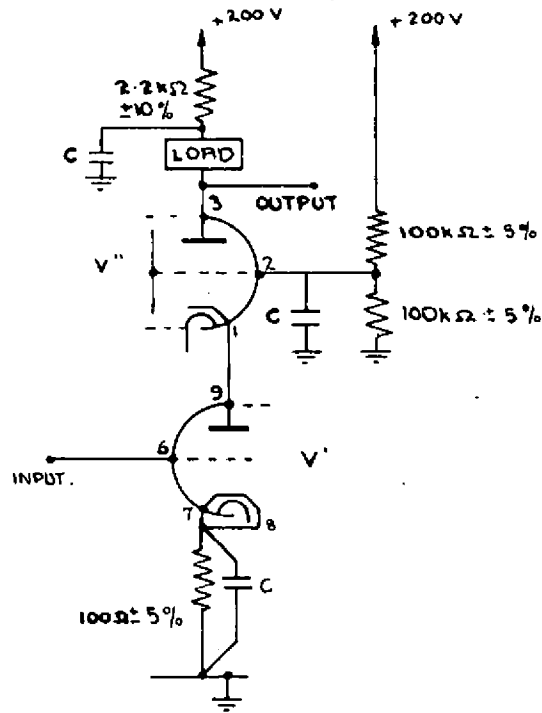
(APPLICATIONS)

TENTATIVE

TYPICAL 30L15 CASCODE BIAS CIRCUIT.

CIRCUIT. I.

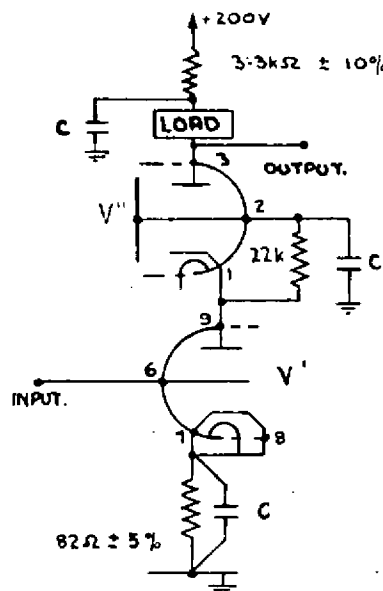
Valve section 2, Potentiometer Bias Arrangement.



C. DECOUPLING CONDENSERS.

CIRCUIT. II.

Valve section 2, Grid Current Bias Arrangement.



Note: Application of bias to section 1 in the Potentiometer Bias arrangement effecticly controls both triodes giving this combination a shorter grid base than the Grid Current Bias circuit.

O-3A

812A

Ediswan Mazda Applications Department

Siemens Edison Swan Limited, Cosmos Works, Brimsdown, Enfield, Middlesex.

SUBJECT

9EN7

CHIEF ENGINEER'S OFFICE
(APPLICATIONS)

DATE: 4th February, 1959.
T.D.S. No. 2-V873-0-1D.

VALVE TYPE 9EN7

DIMENSIONS	m. m.	TYPE	Triode Pentode.
OVERALL LENGTH	MAX. 56	CATHODE	Indirectly Heated.
DIAMETER	MAX. 22.2	USE	AC/DC Mains Television Receivers.
SEATED HEIGHT	MAX. 49		V.H.F. Frequency Changer.

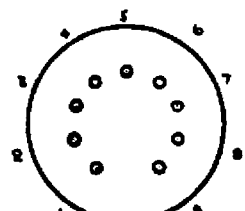
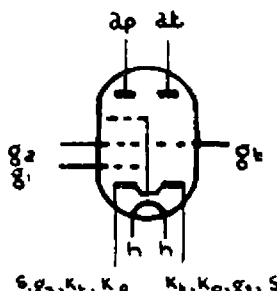
RATING.

	Pentode.	Note.	Triode.	NOTE
Heater Volts	9.0		-	
Heater Current (amps)	0.3		-	
Maximum Anode Volts	250		250	
Maximum Screen Volts	175		-	
Mutual Conductance (mA/V)	8.5	B	5.0	A
Amplification Factor			20	
Maximum Anode Dissipation (Watts)	1.7		1.5	
Maximum Screen Dissipation (Watts)	0.5			
Maximum Cathode Current (mA)	14		14	
Maximum Heater to Cathode Volts (r.m.s.)	200			

American Base E9-1. Bulb T6 1/2

CAPACITANCES PF					BASING † 9LM BASE B9A (NOVAL)		CAP
ELECTRODES	*	**			PIN	ELECTRODE	
g1 TO all	6.7	7.6			1	kp, & pin8	
ap TO all	5	6			2	g2	
g1 TO ap	0.014	0.017			3	ap	
					4	h	
gt TO E	3.2	4			5	h	
at TO E	3.2	4			6	at	
gt TO at	1.6	1.8			7	gt	
					8	kt, g3, s, kp	
					9	g1	

The symbol 'E' denotes the electrodes of any second valve section and the remaining secondary electrodes of the section under measurement. * & ** pined to cathode unless otherwise stated. † Measurement with valve cold.



VIEW OF FREE END.

MOUNTING POSITION: Unrestricted.

TYPICAL OPERATION. TENTATIVE.

As Frequency Changer with Oscillator Volts applied to gt.

Pentode.

Supply Voltage.....	200
Anode Volts.... (Decoupling Resistance = 4.7k Ω).....	164
Screen Volts... (Rg2 = 27 k Ω).....	138
g1 Resistance for Grid Current Bias..... (ohms).....	100,000
g1 Current..... (mA).....	33
Conversion Conductance..... (mA/V).....	3,300
Heterodyne Volts Peak.....	3.7
Anode Current..... (approx) (mA).....	7.6
Screen Current..... (approx) (mA).....	2.3

Triode.

Anode Volts.....	120
Anode Current..... (mA) (average).....	6

Notes.

- A. Va = 100V. Ia = 14mA. B. Va = 170V. Vg2 = 170V. Ia = 10mA.
- † Basing arranged to minimise pentode cathode lead inductance effects.
- * Inter-electrode Capacity with holder capacity balanced out but with cylindrical screen cap.
- ** Total capacity including ceramic B9A holder with cylindrical screen. (Plessey holder type CP18002A/3.)
- The basing of the 9EN7 is particularly suitable for printed circuit use. The triode is identical to that in the 90C1.

CHARACTERISTIC CURVES OF AVERAGE MAZDA VALVE TYPE 9EN7

GRID SECTION

17 2 56

832 (PCF80)

40

30

MILLIAMPS

20

ANODE CURRENT

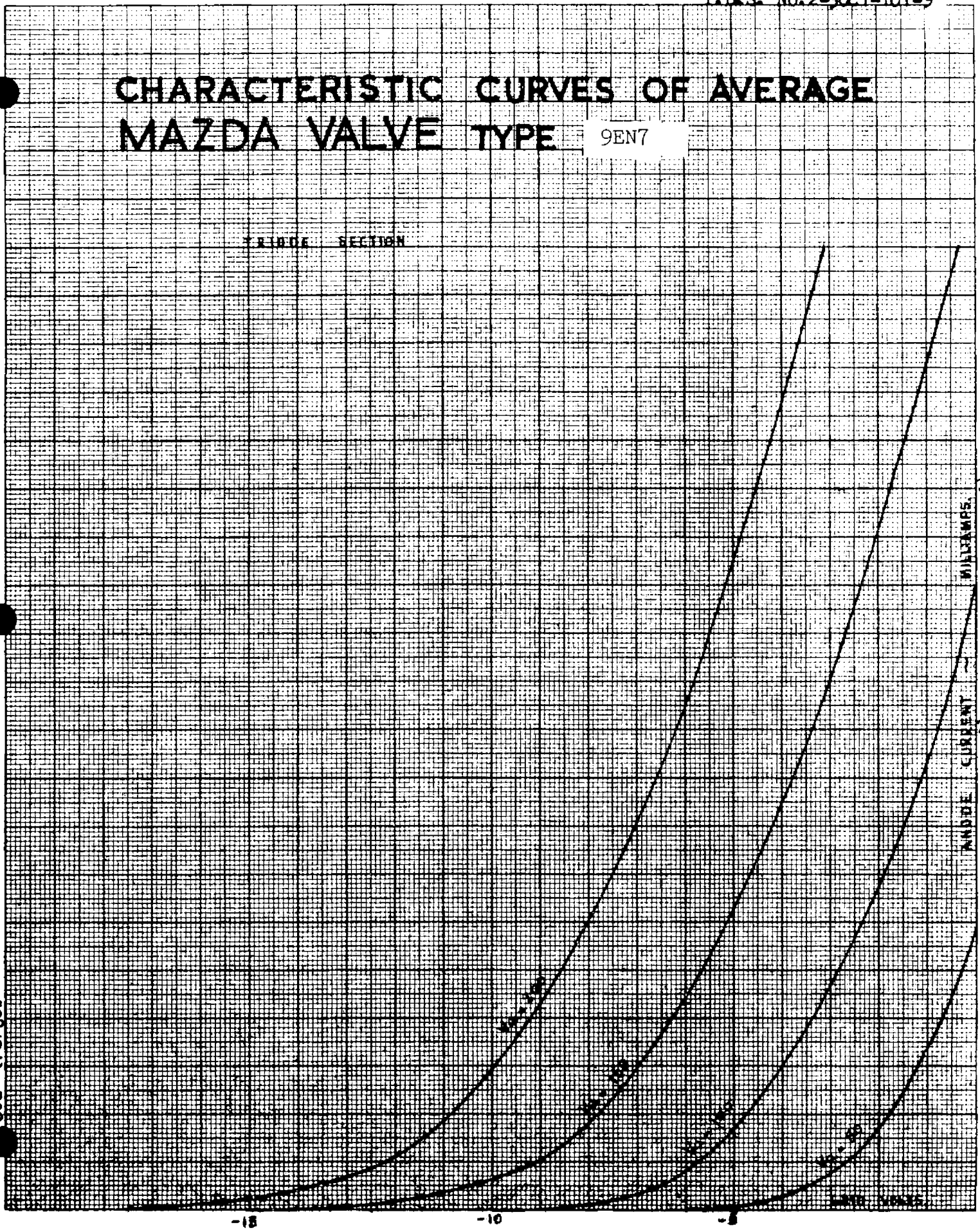
10

-15

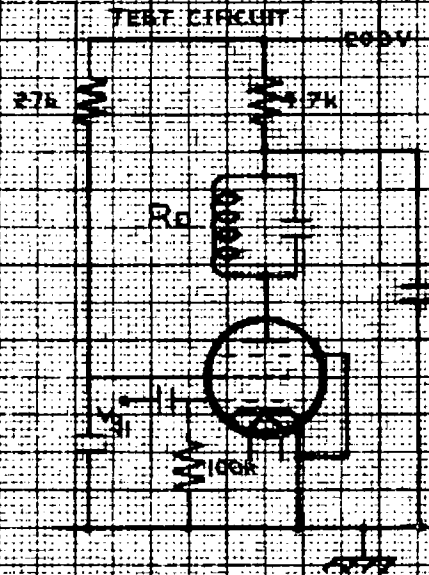
-10

-5

200 VOLTS



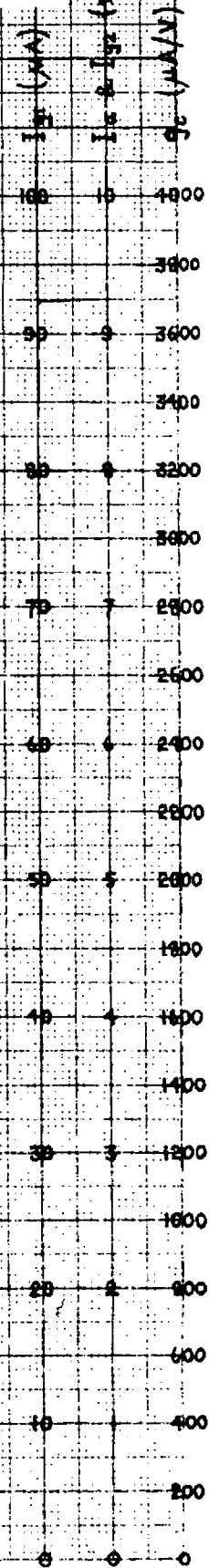
TENTATIVE CHARACTERISTIC CURVES OF EDISWAN MAZDA VALVE TYPE 9EN7 CONVERSION CONDUCTANCE



V_b R_L R_{g2} R_{g1}
200 4.7k 27k 100k

R_D I_h P C_{g1}
10-5k 0-3A 1Mc 0-50pF
HETERODYNE INJECTED
INGI

PEAK HETERODYNE VOLTS

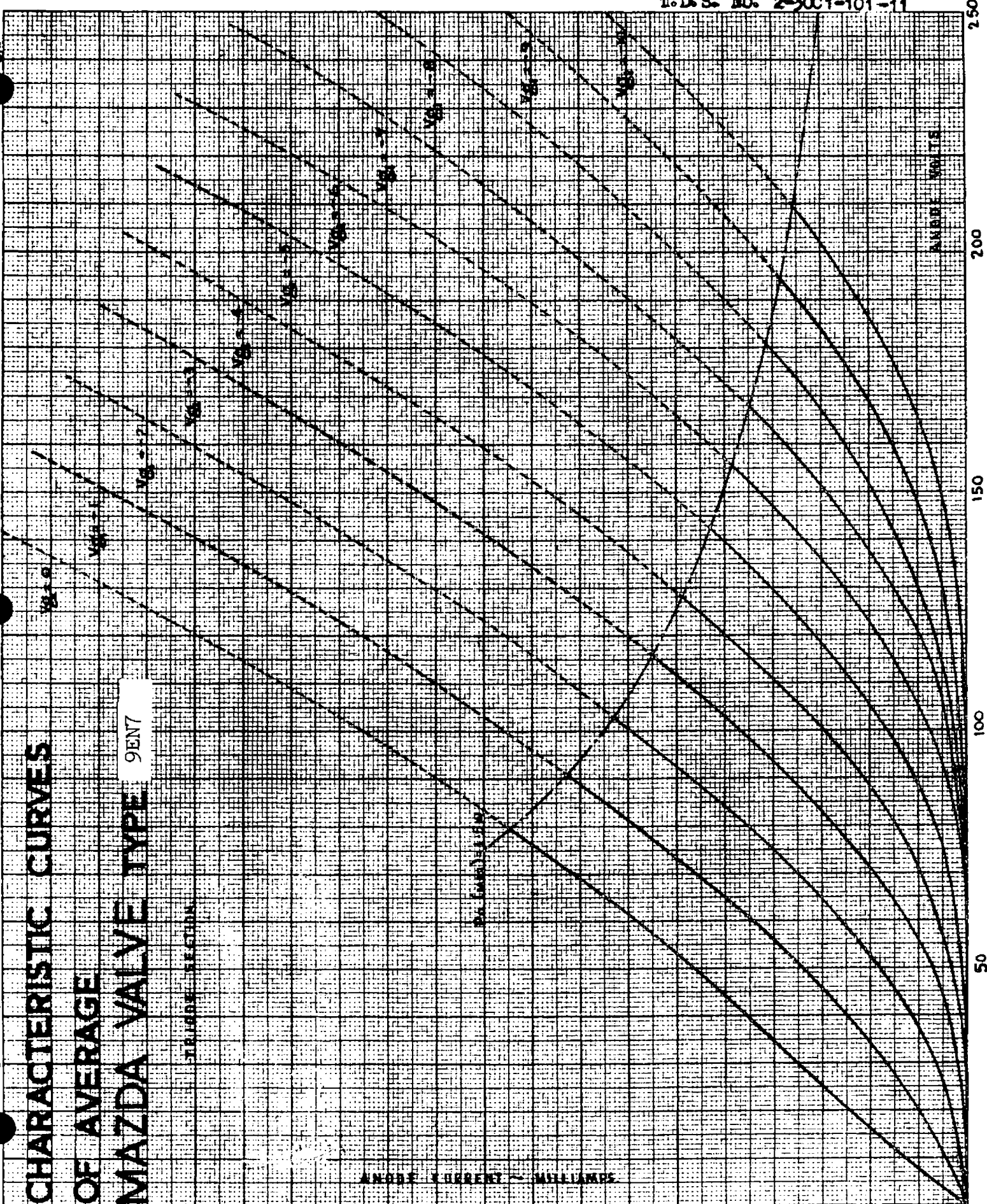


CHARACTERISTIC CURVES OF AVERAGE MAZDA VALVE TYPE 9EN7

TRIODE SECTION

ANODE CURRENT - MILLIAMPS

ANODE VOLTS



GENERAL

This triode beam tetrode valve combination has a medium mu triode and a high slope beam tetrode and is intended for use in the Video Output or Sync Separator stages of AC/DC Mains Television receivers having series connected heaters.

RATING

		Tetrode	Triode
Heater Voltage (volts)	V_h	9.4	—
Heater Current (amps)	I_h	0.3	—
Maximum Anode Voltage (volts)	$V_a(\max)$	250	250
Maximum Screen Voltage (volts)	$V_{g2}(\max)$	250	—
Mutual Conductance (mA/V)	g_m	†7.5	*3.4
Amplification Factor	μ		*18
Maximum Anode Dissipation (watts)	$P_a(\max)$	3	2
Maximum Screen Dissipation (watts)	$P_{g2}(\max)$	1.0	
Maximum Heater to Cathode Voltage (volts r.m.s.)	$V_{h-k}(\max)$ ‡	150	

Notes

* $V_a = 200$ volts. $I_a = 10$ mA.

† $V_a = 170$ volts. $V_{g2} = 170$ volts. $I_a = 10$ mA. $V_{g1} = -2.1$ volts.

‡ Measured with respect to the higher potential heater pin.

INTER-ELECTRODE CAPACITANCES (pF)

Grid 1/Earth	$c_{g1,E}$	7.9	89.2
Anode q/Earth	$c_{aq,E}$	3.2	4.5
Grid 1/Anode q	$c_{g1,aq}$	0.03	0.048
Grid t/Earth	$c_{gt,E}$	3.6	4.6
Anode t/Earth	$c_{at,E}$	2.6	3.6
Grid t/Anode t	$c_{gt,a}$	2.7	3.0
Grid t/Anode q	$c_{gt,aq}$	0.0068	0.0074
Grid 1/Anode t	$c_{g1,at}$	0.0083	0.010
Anode q/Anode t	$c_{aq,at}$	0.037	0.0374

|| Measured with holder capacity balanced out.

†† Measured to include capacity of Carr-Fastener ceramic holder without screen or skirt. If a skirted holder is used the total C_{g1-aq} is 0.035 μ F.

DIMENSIONS

Maximum Overall Length (mm)	56.0
Maximum Diameter (mm)	22.2
Maximum Seated Height (mm)	49.0
Approximate Nett Weight (ozs)	$\frac{1}{2}$
Approximate Packed Weight (ozs)	$\frac{3}{4}$

MOUNTING POSITION—Unrestricted

BASE—Noval (B9A) **E 9-1**

BULB **T 6 ½**



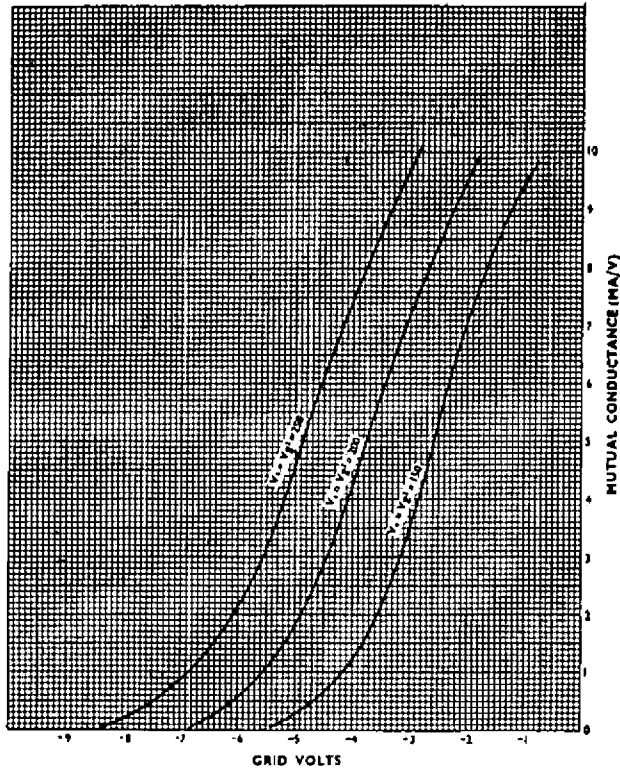
Viewed from Free End of pins

CONNECTIONS

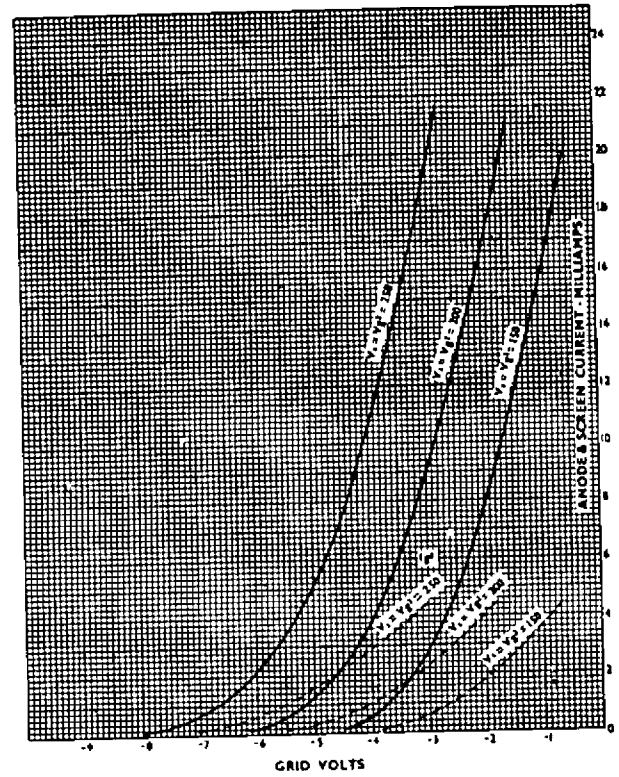
9DA

Pin 1	Triode Anode	a_t
Pin 2	Triode Grid	g_t
Pin 3	Triode Cathode	k_t
Pin 4	Heater	h
Pin 5	Heater	h
Pin 6	Tetrode Anode	a_q
Pin 7	Tetrode, Screen Grid	g_s
Pin 8	Tetrode Control Grid	g_1
Pin 9	Tetrode Cathode, Beam Plates Shield	k_q, bp, s

AVERAGE CHARACTERISTIC CURVES



AVERAGE CHARACTERISTIC CURVES



GENERAL

The 30P12 has been designed for use in the output stage of Audio Amplifiers or Frame Time Bases, and is suitable for AC or AC/DC operation.

RATING

Heater Current (amps)	I_h	0.3
Heater Voltage (volts)	V_h	12.6
Maximum Anode Voltage (volts)	$V_a(\text{max})$	250
Maximum Screen Voltage (volts)	$V_{g2}(\text{max})$	250
Maximum Anode Dissipation (watts)	$P_a(\text{max})$	6.0
Maximum Screen Dissipation (continuous)(watts)	$P_{g2}(\text{max})$	1.8
Maximum Screen Dissipation (Speech and Music)(watts)	$P_{g2}(\text{max})$	2.7
Maximum Cathode Current (mA)	$I_k(\text{max})$	50
Maximum Heater to Cathode Voltage (volts) (r.m.s.)	$V_{h-k}(\text{max})$	150*
Mutual Conductance (mA/V)	g_m	8.3†

† Measured with respect to the higher potential heater pin.

* Taken at $V_a = 170\text{v}$; $V_{g2} = 180$; $V_{g1} = -9.4\text{v}$; $I_a = 35\text{mA}$

DIMENSIONS

Maximum Overall Length (mm)	78.5
Maximum Diameter (mm)	22.2
Maximum Seated Height (mm)	71.5
Approximate Nett Weight (ozs)	$\frac{1}{2}$
Approximate Packed Weight (ozs)	$1\frac{1}{4}$

MOUNTING POSITION—Unrestricted

BULB—Clear $T 6 \frac{1}{2}$

BASE—Noval (B9A) $E 9-1$

TYPICAL OPERATION—Class A Audio Output

Anode Supply Voltage (volts)	$V_a(b)$	170
Screen Supply Voltage (volts)	$V_{g2}(b)$	180
Grid Bias Voltage (volts)	V_{g1}	-10.3
Anode Current (quiescent) (mA)	$I_a(o)$	31
Screen Current (quiescent) (mA)	$I_{g2}(o)$	7.3
Anode Load (ohms)	R_a	5,000‡
Power Output (watts)	P_{out}	2.25‡
Input Swing (volts) (r.m.s.)	$V_{in}(r.m.s.)$	3.9‡

The above operating conditions were taken with fixed DC potentials.

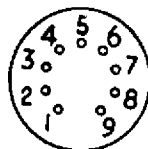
The grid to cathode circuit resistance must not exceed 0.5 megohms with cathode self-bias.

‡ For 5% Third Harmonic and Second Harmonic not exceeding 5%.

TYPICAL OPERATION—Frame Time-Base

The frame output stage should be designed to allow for valve spread and deterioration during life in addition to component variation. Values of total tetrode peak-anode current available for a new average valve and at the assumed end of life point on any valve are as follows :

	V_a	V_{g2}	V_{g1}	$I_a(\text{mA})$
Average New Valve	50	180	-1	110
Assumed End of Life Condition	50	180	-1	72



Viewed from Free End of Pins

CONNECTIONS

9CV

Pin 1	Internal connection†	IC
Pin 2	Control Grid	g_1
Pin 3	Cathode	k
Pin 4	Heater	h
Pin 5	Heater	h
Pin 6	Internal Connection†	IC
Pin 7	Anode	a
Pin 8	Internal Connection†	IC
Pin 9	Screen Grid	g_2

† "Internal connection" indicates that the pin is connected internally to an electrode for the purpose of improving mechanical rigidity of the valve. The connection may not always be made to the same electrode on a given valve type and it is essential that the corresponding valve holder socket be left unconnected.

PRELIMINARY CHARACTERISTIC CURVES OF MAZDA VALVE TYPE 30P12

16.11.55

30/11

1838A

-40

-35

-30

-25

-15

-10

-5

0

HEATER CURRENT = 0.3 AMPS.

ANODE CURRENT

SCREEN CURRENT

 $V_{G2} = 250$ $V_{G2} = 200$ $V_{G2} = 150$

ANODE AND SCREEN CURRENT IN MILLIAMPS

GAIN MOUNTA

GENERAL

This valve is a dual type, consisting of a Triode and an Output Beam Tetrode in the same envelope, each section having its own cathode. It is suitable for use in the Audio Amplifier or Frame Time-Base stages of television receivers designed for AC/DC mains operation and having series connected heater chains.

RATING

		Tetrode	Triode
Heater Current (amps)	I_h	0.3	
Heater Voltage (volts)	V_h	13.0	
Maximum Anode Voltage (volts)	$V_a(\text{max})$	250	250
Maximum Screen Voltage (volts)	$V_{g_1}(\text{max})$	250	
Maximum Anode Dissipation (watts)	$P_a(\text{max})$	5.5†	2.0†
Maximum Screen Dissipation (Continuous) (watts)	$P_{g_1}(\text{max})$	1.5†	
Maximum Screen Dissipation (Speech and Music) (watts)	P_{g_2}	2.2	
Mutual Conductance (mA/V)	g_m	6.5§	3.4*
Amplification Factor	μ		18*
Anode Impedance (ohms)	r_a		5,300*
Maximum Heater to Cathode Voltage (volts) (r.m.s.)	$V_{h-k}(\text{max})$	150‡	

* Measured at $V_a = 200\text{v}$. $I_a = 10\text{mA}$.

§ Measured with $V_a = 170\text{v}$. $V_{g_2} = 180\text{v}$. $I_a = 32\text{mA}$.

† The total anode dissipation of both sections not to exceed 6 watts.

‡ Measured with respect to the higher potential heater pin.

The characteristics for the triode section of the 30PL1 are the same as for the 6/30L2 triode.

MOUNTING POSITION—Unrestricted

TYPICAL OPERATION—Class A Power Output

Tetrode Section

Anode Supply Voltage (volts)	$V_a(b)$	170
Screen Supply Voltage (volts)	$V_{g_1}(b)$	180
Grid Bias Voltage (volts)	V_{g_2}	-9.6
Anode Current (quiescent) (mA)	$I_a(o)$	28
Screen Current (quiescent) (mA)	$I_{g_1}(o)$	6.5
Anode Load (ohms)	R_a	6,000† 5,300 ‡
Power Output (watts)	P_{out}	2.0† 2.35 ‡
Input Swing (volts) (r.m.s.)	$V_{in}(\text{r.m.s.})$	3.3† 3.9 ‡

The above operating conditions are taken with fixed D.C. potentials.

† For 5% Third Harmonic and Second Harmonic not exceeding 5%.

‡ For 7% Third Harmonic and Second Harmonic not exceeding 7%.

The grid to cathode circuit resistance of the tetrode must not exceed 0.5 megohms with cathode self-bias when used at the maximum wattage rating.

INTER-ELECTRODE CAPACITANCES (pF)

Triode Section

		†	‡
Grid/Earth	$C_{in}(t)$	2.6	3.7
Anode/Earth	$C_{out}(t)$	2.0	3.0
Anode/Grid	$C_a(t).g(t)$	2.4	2.7

Tetrode Section

Grid 1/Earth	$C_{in}(q)$	9.8	11.0
Anode/Earth	$C_{out}(q)$	7.3	8.6
Anode/Grid 1	$C_a(q).g_1(q)$	0.21	0.21
Tetrode Anode/Triode Anode	$C_a(q).a(t)$	1.0	1.0
Tetrode Grid 1/Triode Grid	$C_{g_1}(q).g(t)$	0.014	0.016
Tetrode Anode/Triode Grid	$C_a(q).g(t)$	0.093	0.093
Tetrode Grid 1/Triode Anode	$C_{g_1}(q).a(t)$	0.1	0.18

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

† Inter-electrode capacitances with holder capacitance balanced out.

‡ Total capacity including ceramic B9A unskirted holder without radial shield. Carr Fastener holder type 77/076.

DIMENSIONS

Maximum Overall Length	(mm)	67.5
Maximum Diameter	(mm)	22.2
Maximum Seated Height	(mm)	60.5
Approximate Nett Weight	(ozs)	$\frac{1}{2}$
Approximate Packed Weight	(ozs)	$\frac{3}{4}$

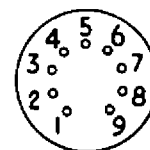
TYPICAL OPERATION—Frame Time-Base

The frame output stage should be designed to allow for valve spread and deterioration during life in addition to component variation. Values of total tetrode peak anode current available for a new average valve and at the assumed end of life point on any valve are as follows:

	V_a	V_{g_1}	V_{g_2}	$I_a(\text{mA})$
Average New Valve	50	180	-1	96
Assumed End of Life Condition	50	180	-1	62

BULB—Clear T 6 ½

BASE—Noval (B9A) E 9-1



Viewed from Free End of Pins

CONNECTIONS 9KZ

Pin 1	Triode Anode	a_t
Pin 2	Triode Grid	g_t
Pin 3	Triode Cathode	k_t
Pin 4	Heater	h
Pin 5	Heater	h
Pin 6	Tetrode Anode	a_q
Pin 7	Tetrode Cathode, Beam Plates	k_q, bp
Pin 8	Tetrode Screen Grid	g_s
Pin 9	Tetrode Control Grid	g_1

PRELIMINARY CHARACTERISTIC CURVES OF MAZDA VALVE TYPE 30PL1

TETRODE SECTION

METER CURRENT (mA) 0.3

— ANODE CURRENT

— SCREEN CURRENT

12-3-56

V_{ANODE}
(0-100 V. D.C.)

ANODE AND SCREEN CURRENT - MILLIAMPS

120
100
80
60
40
20
0

V_{G1} = 0 V. P.A.C.
V_{G2} = 0 V. P.A.C.
V_{G3} = 0 V. P.A.C.
V_{G4} = 0 V. P.A.C.
V_{G5} = 0 V. P.A.C.
V_{G6} = 0 V. P.A.C.
V_{G7} = 0 V. P.A.C.
V_{G8} = 0 V. P.A.C.
V_{G9} = 0 V. P.A.C.
V_{G10} = 0 V. P.A.C.

PRELIMINARY CHARACTERISTIC CURVES OF MAZDA VALVE TYPE 30PL1

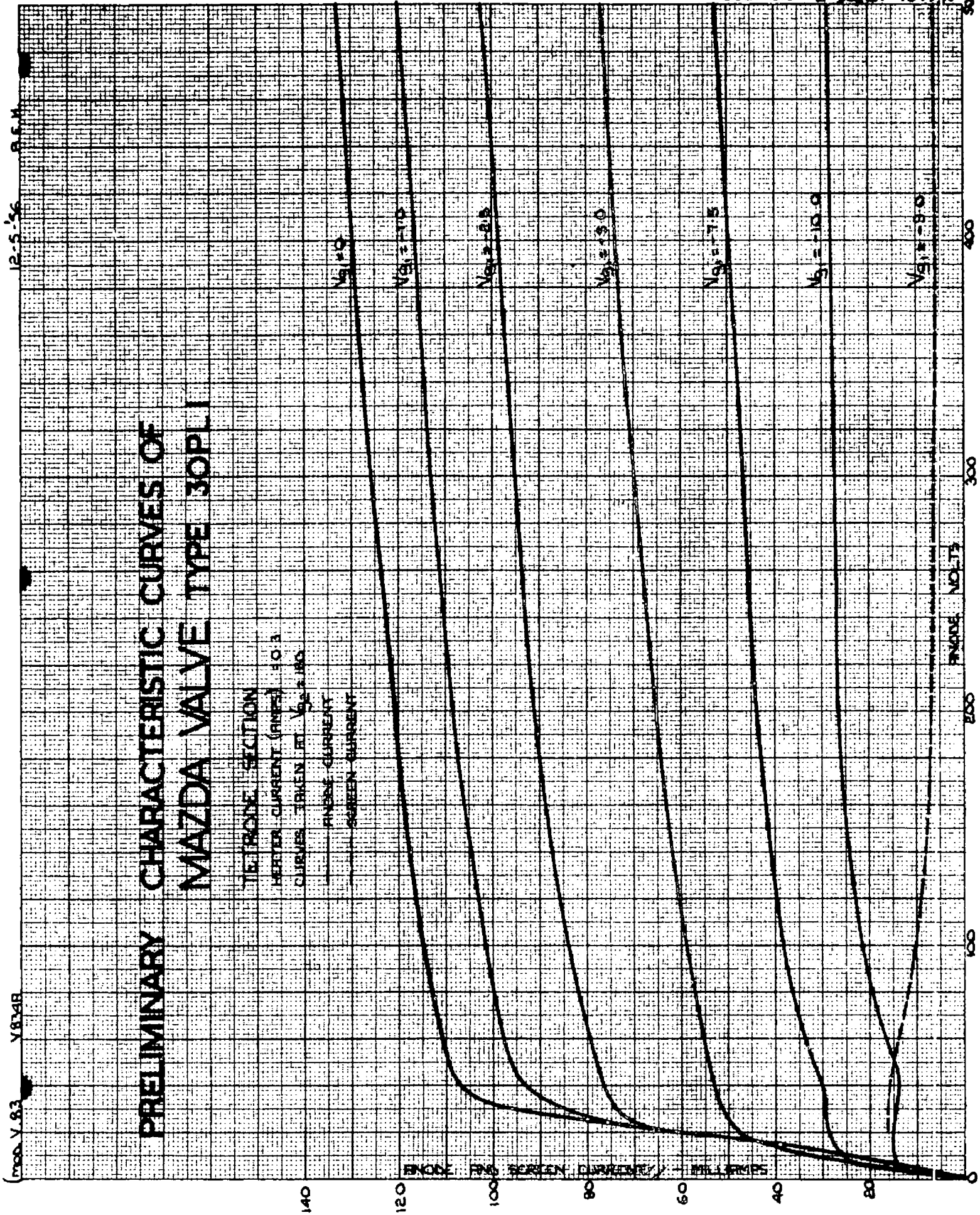
TETRODE SECTION

HEATED CURRENT (AMPS) 10.3

CURVES TAKEN AT $V_{G2} = 180$

— ANODE CURRENT

— SCREEN CURRENT



Ediswan Mazda Applications Department

Siemens Edison Swan Limited, Cosmos Works, Brimsdown, Enfield, Middlesex.

SUBJECT

CHIEF ENGINEER'S OFFICE

DATE: 13th January, 1959.
T.D.S. No. 2-V863B-0-1A

TENTATIVE

(APPLICATIONS)

DEVELOPMENTAL						VALVE TYPE 30PL13					
DIMENSIONS			m.m.			TYPE			Triode Output Beam Tetrode		
OVERALL LENGTH MAX.			78.5			CATHODE			Indirectly Heated		
DIAMETER MAX.			22.2			USE			AC/DC Mains Television Receivers		
SEATED HEIGHT MAX.			71.5						Frame Time Base		
RATING											
						Tetrode	Note	Triode	NOTE		
Heater Current (Amps)						0.3					
Heater Volts						16					
Maximum Anode Dissipation (Watts)						7.0		1.0			
Maximum Screen Dissipation (Watts)						2.4					
Maximum Anode Volts						250	A	250			
Maximum Screen Volts						250					
Maximum Heater to Cathode Volts (rms)						150	B	150	B		
Mutual Conductance								3.4	C		
Amplification Factor								18	C		
Maximum Mean Cathode Current (ma)						75					
Maximum Resistance Grid 1 to Cathode (Self Bias) (MΩ)						2	D				
CAPACITANCES pF						BASE B9A (NOVAL)					
ELECTRODES						CAP					
The symbol 'E' denotes the electrodes of any second valve section and the remaining earthy potential electrodes of the section under measurement. h & H joined to cathode unless otherwise stated. Measurement with valve cold.						PIN.	ELECTRODE				
						1	gt				
						2	kq, bp, s				
						3	g1				
						4	h				
						5	h				
						6	aq				
						7	g2				
						8	kt				
						9	at				
						Backg9JE					
						VIEW OF FREE END					
MOUNTING POSITION:						Unrestricted					
						American Base E9-1. Bulb T6½					
TYPICAL OPERATION.											
Frame Time Base											
The output stage should be designed to allow for valve spread and deterioration during life in addition to component variation. Values of total peak anode current available for a new average valve and at assumed end of life point for any valve are as follows:-											
						Va	Vg2	Vg1	Ia(mA)		
Average New Valve.						.55	170	-1	175		
Assumed End of Life Condition.						.50	170	-1	110		
Notes											
The V863B and 6/30L2 triode characteristics are identical.											
A. Maximum Peak Anode Voltage(Pulse Positive, 2.0kV. Maximum Peak Anode Voltage(Pulse Negative) 500V. Maximum pulse duration 4% of one cycle with a maximum of 800 μ secs.											
B. Measured with respect to the higher potential heater pin.											
C. Va = 200V. Ia = 10mA.											
D. Maximum Tetrode Resistance Grid 1 to Cathode (Fixed Bias) 1 megohm.											

— INDICATES A CHANGE SINCE PREVIOUS ISSUE.

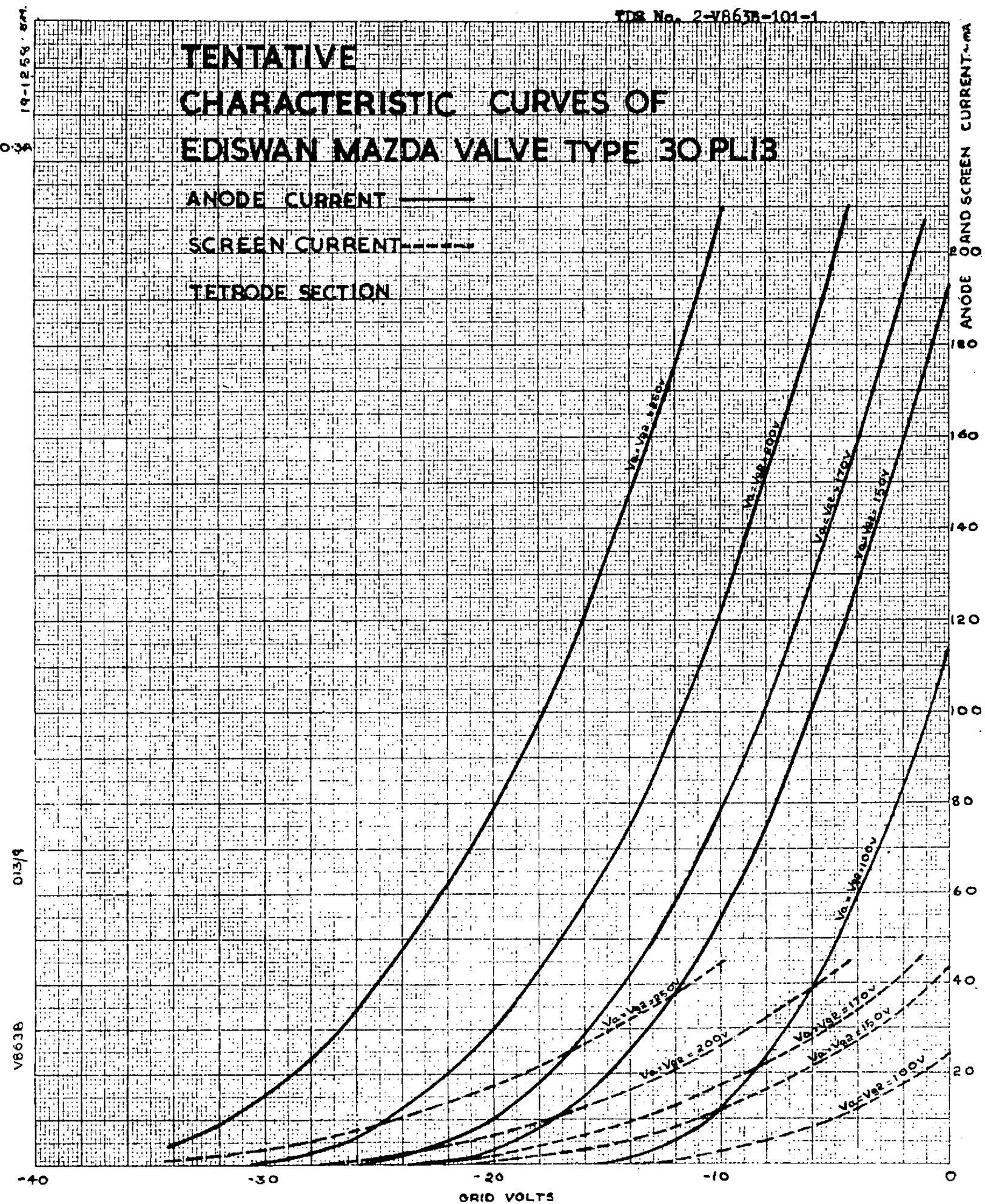
• 8598A

TENTATIVE CHARACTERISTIC CURVES OF EDISWAN MAZDA VALVE TYPE 30 PL13

ANODE CURRENT ———

SCREEN CURRENT - - - - -

TETRODE SECTION



**TENTATIVE CHARACTERISTIC CURVES OF
EDISWAN MAZDA VALVE TYPE 30PL13.**

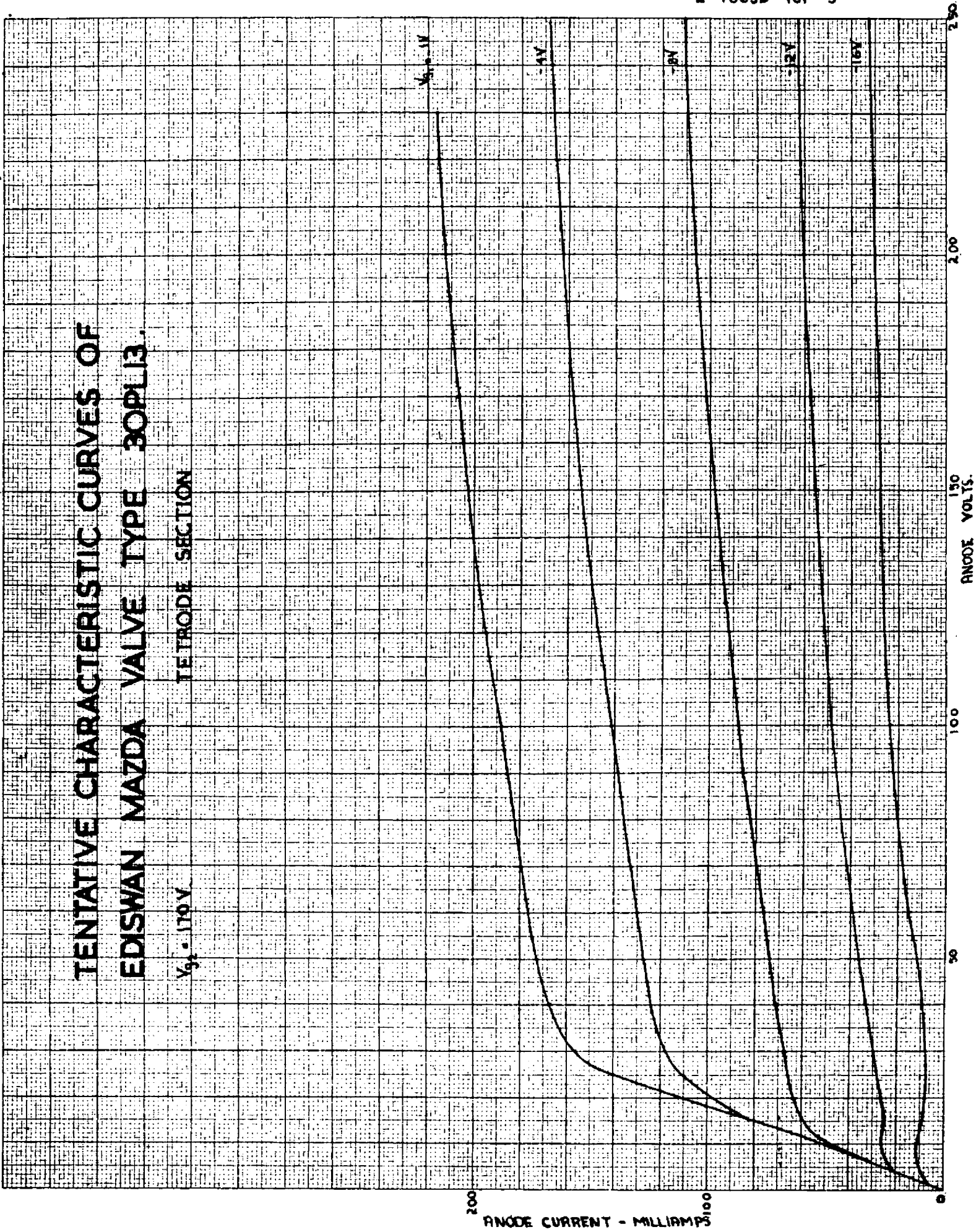
$V_{gt} = 170V$

TETRODE SECTION

D13A

0 19.12.58 H.L.

Y863B



PRELIMINARY
CHARACTERISTIC CURVES OF
MAZDA VALVE TYPE 30PL13.

HEATER CURRENT = 0.3 AMPS

TRIODE SECTION

28.965.

V. 712.

ANODE CURRENT - MILLIAMPS

-20

-18

-16

-14

-12

-10

-8

-6

-4

-2

0

GRID VOLTS.

20

18

16

14

12

10

8

6

4

2

0

$V_{g2} = 30V$

$V_{g2} = 20V$

$V_{g2} = 15V$

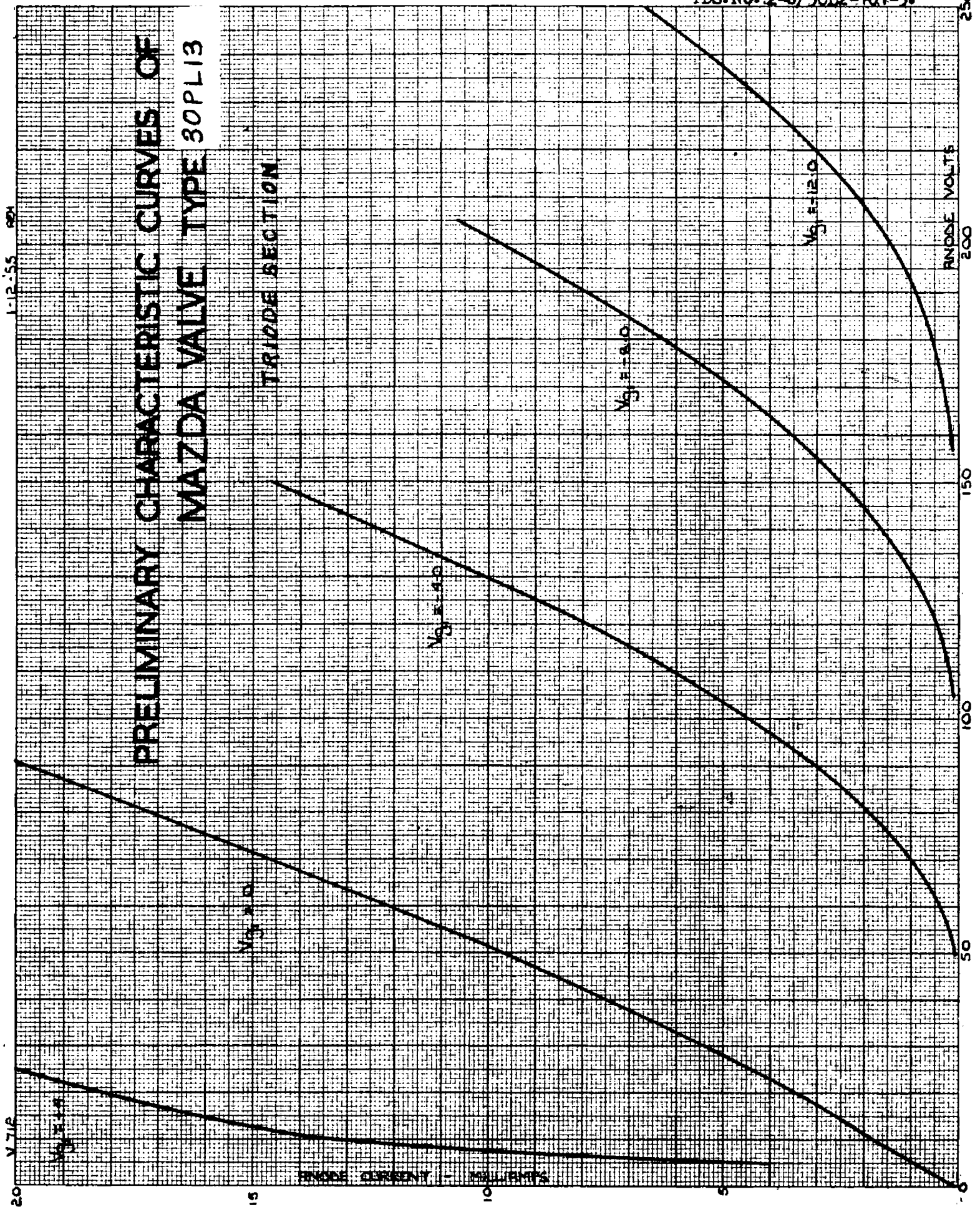
$V_{g2} = 10V$

$V_{g2} = 5V$

TDS.No. 2-6/30L2-101-3.

PRELIMINARY CHARACTERISTIC CURVES OF
MAZDA VALVE TYPE 30PL13

TRIODE SECTION



TDS. No. 2-6/3012-103-1.

PRELIMINARY
CHARACTERISTIC CURVES OF
MAZDA VALVE TYPE 30PL13

HEATER CURRENT - 0.3 AMPERE

TRIODE SECTION

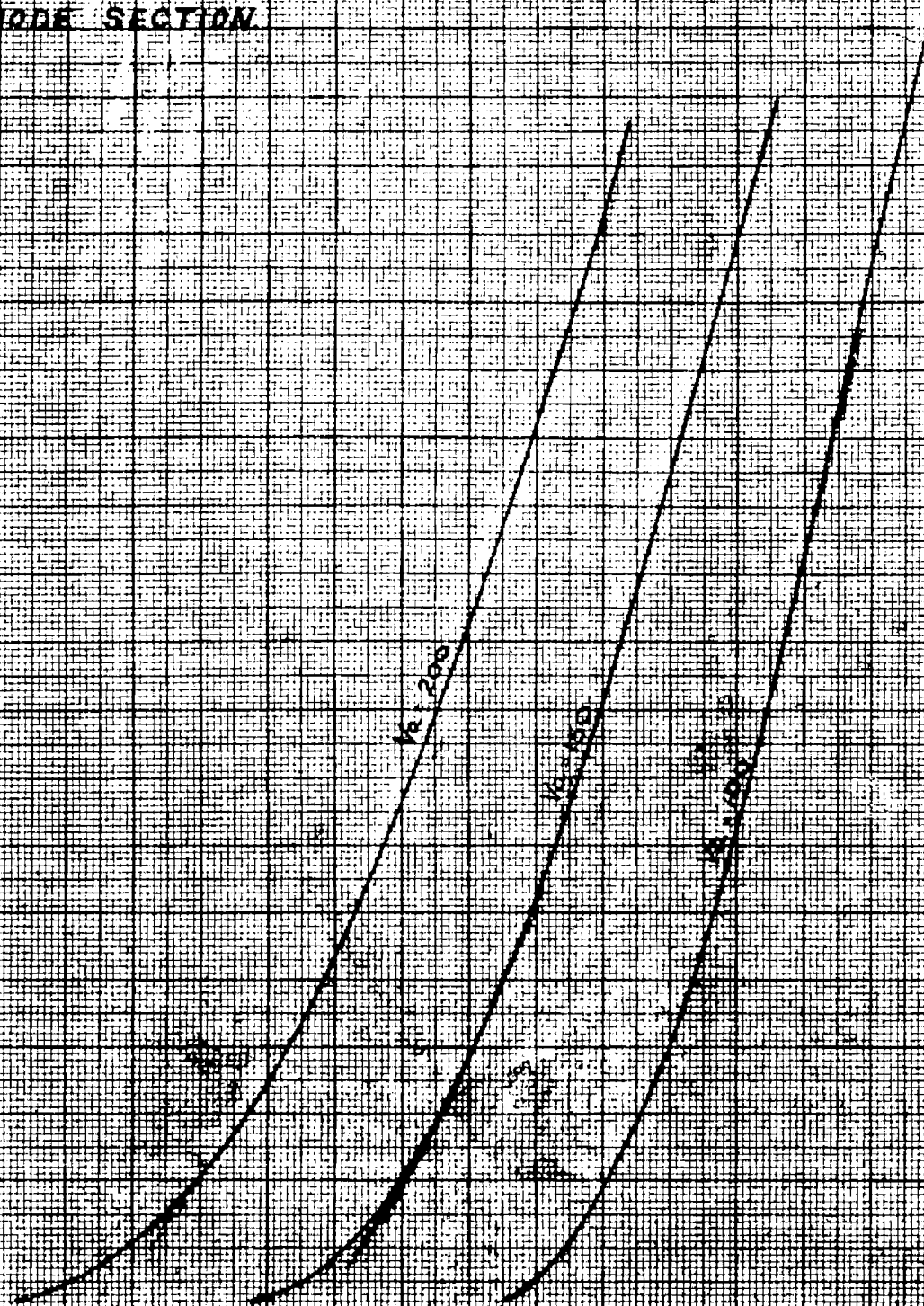
MUTUAL CONDUCTANCE (mA/V)

2

3

5

GRID VOLTS.



20 9 55.

V 712

-20

-15

-10

-5

0

Type 19CS4

EFFICIENCY DIODE Indirectly heated—for series operation

GENERAL

The U191 is intended for use as an Efficiency Diode in television receivers having series connected heaters and is suitable for A.C./D.C. operation.

RATING

Heater Current (amps)	I_h	0.3
Heater Voltage (volts)	V_h	19.0
Maximum Peak Inverse Anode P.I.V. (max) Voltage (kV)		4.5*†
Maximum Anode Current (mean) (mA)	I_a (av) max	120 150
Maximum Anode Current (peak) (mA)	I_a (pk) max	600 450
Maximum Heater-Cathode Voltage (volts) (h—ve, D.C. + Peak A.C.)	V_{h-k} (max)	900†
Maximum Heater-Cathode Voltage (h—ve, pulse) (kV)	V_{h-k} (pk) max	4.5*‡
Maximum Heater to Anode Volts (h+ve pulse) (kV)	V_{a-h} (max)	3*

* Rated for T.V. Line Scan where the duty cycle does not exceed 15% and the pulse duration does not exceed 15 μ secs.

† Measured with respect to the higher potential heater pin. The D.C. component should not exceed 600 volts.

‡ 4.5 kV is a Design Centre Rating. The absolute rating of 5.3 kV must not be exceeded.

INTER-ELECTRODE CAPACITANCES (pF)

Anode to Heater plus Cathode	$C_{a-h,k}$	7.7
Cathode to Heater plus Anode	$C_{k-h,a}$	9.0

DIMENSIONS

Maximum Overall Length (mm)	90
Maximum Diameter (mm)	32
Maximum Seated Height (mm)	77
Approximate Nett Weight (ozs)	1½
Approximate Packed Weight (ozs)	2½

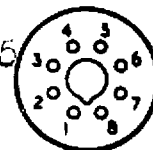
MOUNTING POSITION—Unrestricted.

BULB—Clear

TOP CAP—CT1

BASE—International Octal (IO5)

BASE B.5-85
I9



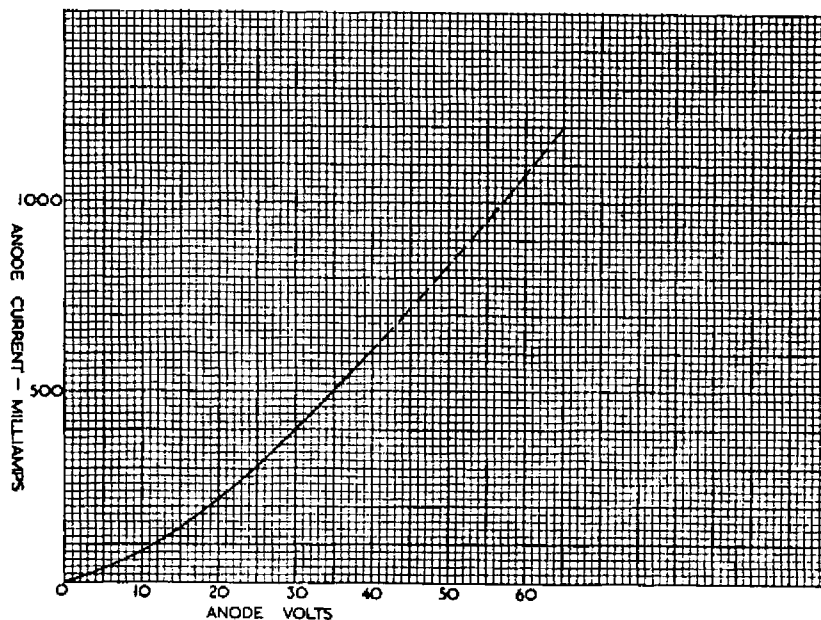
Basing
8JT

Viewed from Free End of Pins

CONNECTIONS

Pin 1	No Pin	NP
Pin 2	Internal Connection	IC
Pin 3	Internal Connection	IC
Pin 4	No Pin	NP
Pin 5	Anode	a
Pin 6	No Pin	NP
Pin 7	Heater	h
Pin 8	Heater	h
Cap	Cathode	k

NOTE: When the anode is pulsed, it is recommended that contacts 1 and 6 on the valve holder should be removed.



TYPE 25GF6

TELEVISION BEAM POWER AMPLIFIER Indirectly heated—for AC/DC series operation

GENERAL

The 30P4 is primarily intended for use in the Magnetic Scanning Line Output Stage of A.C./D.C. Television Receivers with series connected heaters.

RATING

		Note
Heater Current (amps)	I_h	0.3
Heater Voltage (volts)	V_h	25
Maximum Anode Voltage (volts)	$V_a(\text{max})$	400 (a)
Maximum Screen Voltage (volts)	$V_{gs}(\text{max})$	250
Maximum Cathode Current (mA)	$I_k(\text{max})$	160
Maximum Screen Dissipation (watts)	$P_{gs}(\text{max})$	4.0
Maximum Anode Dissipation (watts)	$P_a(\text{max})$	10.0
Maximum Peak Anode Voltage (Pulse positive) (volts)	$V_a(\text{pk}) \text{ max}$	6,000 (c)
Maximum Heater to Cathode (volts) (R.M.S.)	$V_{h-k}(\text{max})$	200 (b)
Maximum Grid to Cathode Circuit Resistance (Megohms)	$R_{g1-k}(\text{max})$	1.0
Maximum Peak Screen Voltage (Pulse negative) (volts)	$V_{gs}(\text{pk}) \text{ max}$	2,000

Rating (continued overleaf)

NOTES

- (a) V_a may be increased to 550v. where a "recovered Voltage" of more than 200 volts is available.
 - (b) Heater Cathode voltage is measured with respect to the higher potential heater pin.
 - (c) Rated for Television Line Scan where the duty cycle does not exceed 15% and the pulse duration does not exceed 15 microseconds.
- The maximum rating of 6 kV is a design centre rating. The absolute rating of 7.5 kV maximum must not be exceeded.

INTER-ELECTRODE CAPACITANCES (pF)

Control Grid to Earth	C_{in}	20.0
Anode to Earth	C_{out}	10.0
Anode to Control Grid	C_{a-g1}	0.3

"Earth" denotes the remaining earthy potential electrodes, heater and shields connected to cathode.

DIMENSIONS

Maximum Overall Length (mm)	113	4.45
Maximum Diameter (mm)	32	1.26
Maximum Seated Height (mm)	99	3.9
Approximate Nett Weight (ozs)	1½	
Approximate Packed Weight (ozs)	4	

MOUNTING POSITION

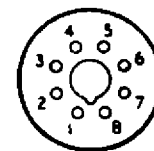
If mounted horizontally it is recommended that pins 4 and 8 should be in a vertical plane.

BULB—Clear

TOP CAP—CT1 C1-2

BASE—International Octal (IO7)

SIEMENS EDISON SWAN LIMITED



Viewed from Free End of Pins

CONNECTIONS

Pin 1	No connection*	NC
Pin 2	Heater	h
Pin 3	Internal Connection†	IC
Pin 4	Screen Grid	g_2
Pin 5	Control Grid	g_1
Pin 6	No Pin	NP
Pin 7	Heater	h
Pin 8	Cathode	k
Top Cap	Anode	a

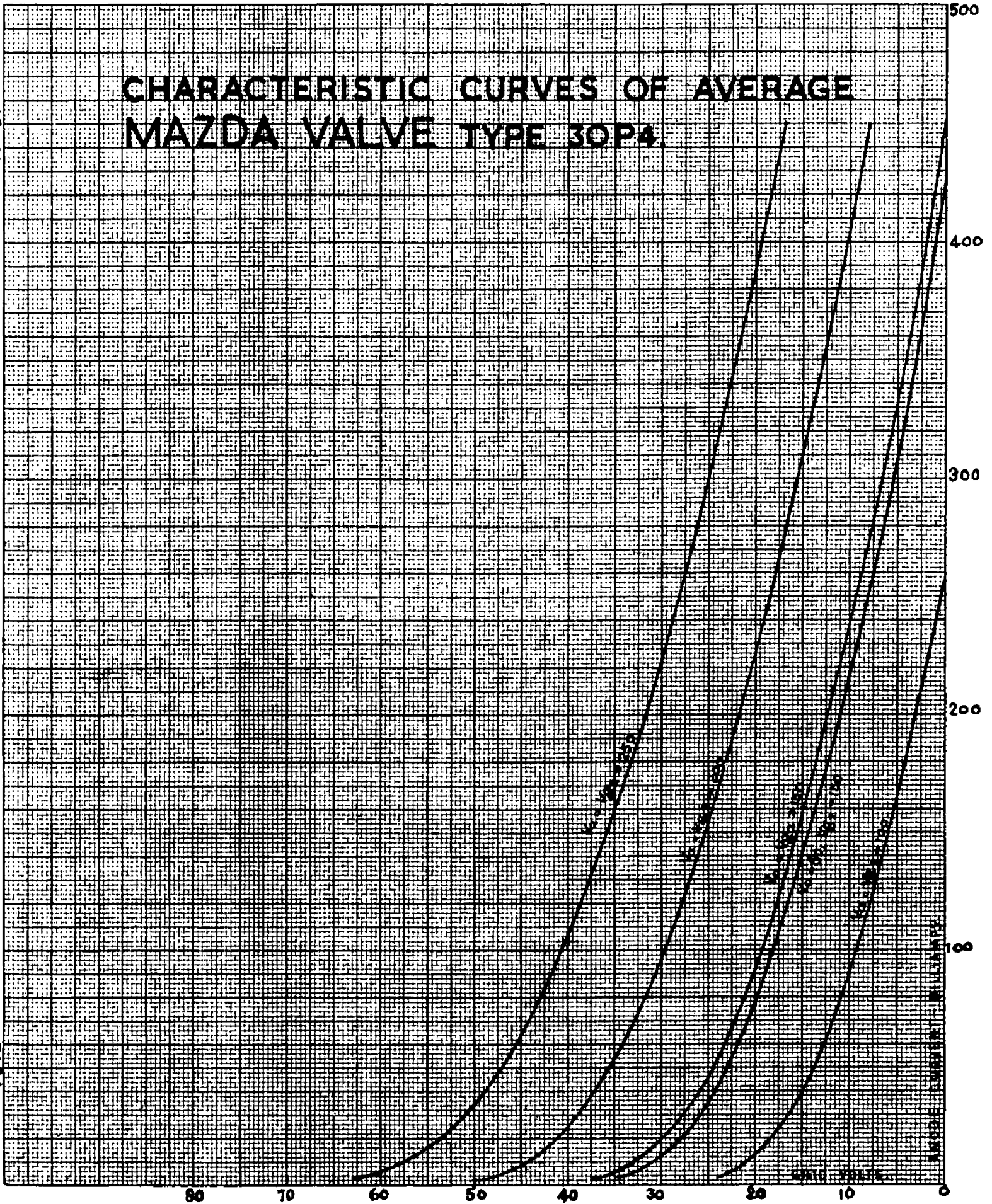
* Pin with no internal connection.

† "Internal connection" indicates that the pin is connected internally to an electrode for the purpose of improving mechanical rigidity of the valve. The connection may not always be made to the same electrode on a given valve type and it is essential that the corresponding valve holder socket be left unconnected.

CHARACTERISTIC CURVES OF AVERAGE MAZDA VALVE TYPE 30P4

4-3-53

VR42

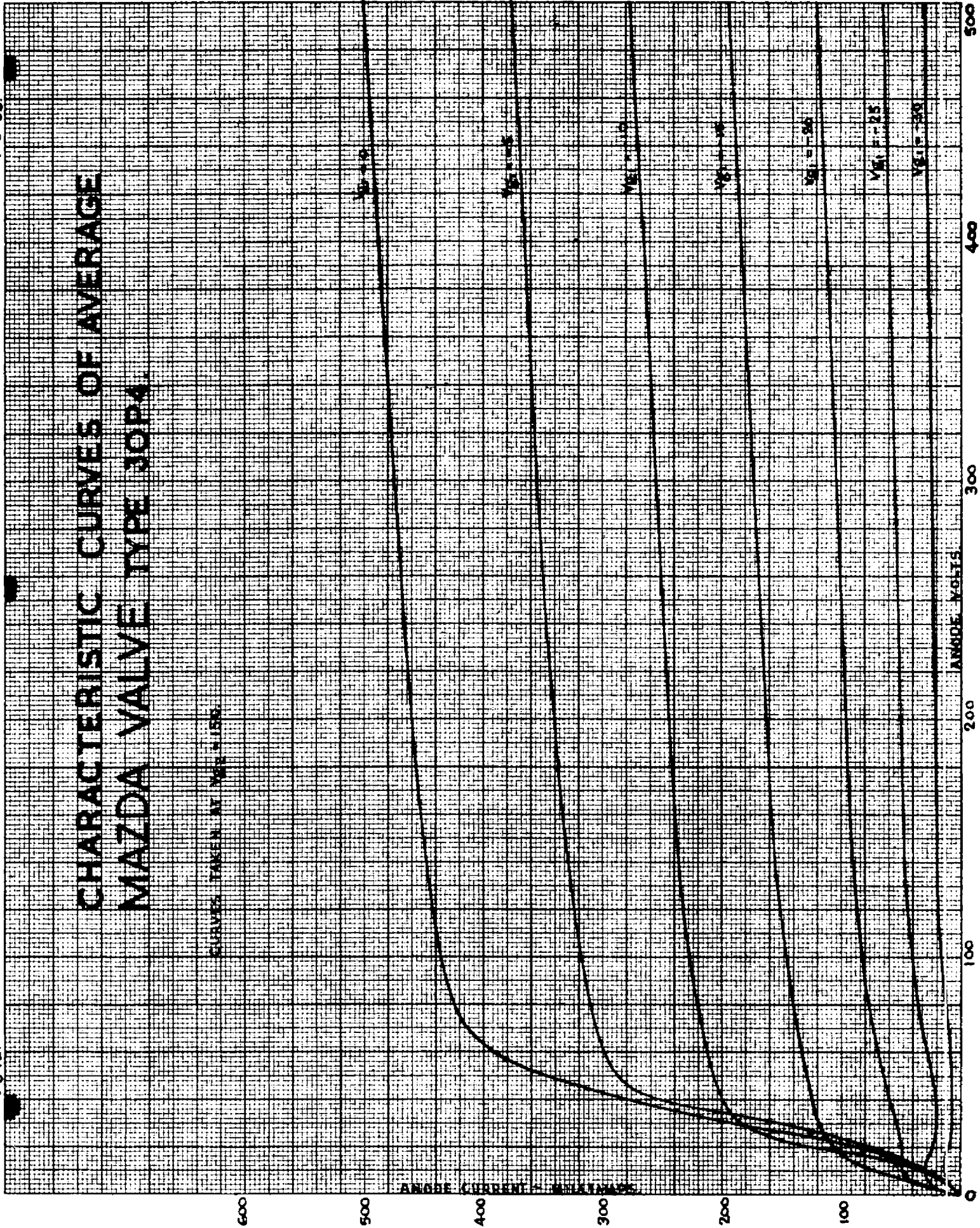


4.3.53.

CHARACTERISTIC CURVES OF AVERAGE MAZDA VALVE TYPE 30P4

CURVES TAKEN AT $V_{g1} = 150$

V842.



Data for Tube Type 6532

Tube Type: 6532

Description: High vacuum half wave rectifier or damping diode.
Hard glass envelope. Overall height $9\frac{1}{2}$ " (max.), diameter $2\frac{5}{16}$ " (max.)

Base: Goliath Edison Screw Cap.

Base Connections:	Base thread	Heater (Note 7).
	Base button	Heater (Note 7).
	Top cap	Anode.

Heater voltage: 4.0 volts.

Heater current: 4.0 amps.

Maximum Ratings: (absolute).

Anode current as normal rectifier (R. M. S.) 350 mA.

Anode current as normal rectifier (Mean). 250 mA.

Peak Anode Current.

A. Under short pulse conditions. 10.0 amps. (Note 1.)

B. Under rectifier conditions. 1.0 amp. (Note 2.)

Peak Inverse Voltage:

A. Under short pulse conditions or
transients. 27.0 KV (Note 1.)

B. Under short pulse conditions or
transients. (Fault condition.) 35.0 KV (Note 3.)

C. As a power rectifier (on load) .18.0 KV

D. As a power rectifier (no load) .20.0 KV

E. As delay line charging diode
(Fault condition.) 30.0 KV (Note 4.)

Anode Dissipation. 32.0 watts. (Note 5.)

Impedence. (Nominal.) (at 8 amps. peak.)
100 ohms.

Notes:

1. For pulses of the order of 2 micro-seconds or less.
2. For rectifier conditions a minimum surge limiting resistance of 1,600 ohms should be inserted in the anode circuit.
3. For a maximum period of 50 milliseconds.

from JETEC release #1344, Aug. 16, 1954

sponsor: The Edison Swan Electric Company Ltd.

4. For a maximum period of 5 seconds.
5. This figure may be increased to 38 watts. provided the peak inverse voltage does not exceed 75 % of the rated value.
6. The heater must be switched on for 30 seconds before the anode voltage is applied.
7. As the cathode is connected to the centre of the heater the H.T. return should preferably go to the centre tap of the heater transformer. If this cannot be done the ratings for peak and mean anode current should be reduced.

EDISWAN
511E12
SPECIAL QUALITY BEAM TETRODE
Indirectly heated—for parallel operation
TENTATIVE

GENERAL

The 511E12 is a Special Quality Beam Tetrode intended for use as a series or shunt control valve in stabilised power supply units, and has similar characteristics (within ratings) to the 12E1. It is indirectly heated and should be parallel connected to the supply. A special shock resistant construction is employed which gives increased reliability and life expectancy.

Quality tests are performed on electrical characteristics, vibration noise, base strain, glass strain, electrode resonance, vibration fatigue, shock resistance, heater cycling, stability and life.

RATING

Heater Voltage	(volts)	V_h	6.3
Heater Current	(amps)	I_h	1.6
Maximum Anode Voltage	(volts)	$V_a(\text{max})$	800
Maximum Screen Voltage	(volts)	$V_{g2}(\text{max})$	300
Maximum Control Grid Voltage	(volts)	$V_{g1}(\text{max})$	—100
Maximum Voltage between Grids 1 and 2	(volts)	$V_{g1-g2}(\text{max})$	400
Mutual Conductance	(mA/V)	g_m	13.5*
Inner Mu		μ_{g1-g2}	5.5*
Maximum Anode Dissipation	(watts)	$P_a(\text{max})$	28
Maximum Screen Dissipation	(watts)	$P_{g2}(\text{max})$	5
Maximum Cathode Current	(mA)	$I_k(\text{max})$	300
Maximum Heater to Cathode Voltage (DC heater negative)	(volts)	$V_{h-k}(\text{max})$	350
Maximum Heater to Cathode Voltage (DC heater positive)	(volts)	$V_{h-k}(\text{max})$	150
Maximum Resistance Grid 1 to Cathode—Fixed Bias	(ohms)	$R_{g1-k}(\text{max})$	100,000
Maximum Resistance Grid 1 to Cathode—Cathode Follower	(MΩ)	$R_{g1-k}(\text{max})$	1

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SIEMENS EDISON SWAN LIMITED

EDISWAN
511E12 JEDEC Type 7971
SPECIAL QUALITY BEAM TETRODE
Indirectly heated—for parallel operation
TENTATIVE

Maximum Acceleration (continuous operation)	(g)	2
Maximum Shock (short duration)	(g)	500
Maximum Peak Anode Voltage (Scanning Operation)	(volts) $V_a(\text{pk})_{\text{max}}$	1,500†

* Measured at $V_a = V_{g2} = 150 \text{ v}$; $I_a = 200 \text{ mA}$; $I_{g2} = 12 \text{ mA}$; $V_{g1} = -8.5 \text{ v}$.

† For duty cycle of 1/25 and maximum pulse duration 200 μ seconds.

All maximum ratings are Absolute Values not Design Centres.

INTER-ELECTRODE CAPACITANCES (pF)

Anode/Grid 1	C_{a-g1}	1.8
Grid 1/Earth	C_{in}	19.5
Anode/Earth	C_{out}	16.5

"Earth" denotes the remaining earthy potential electrodes, heater and shields connected to cathode.

DIMENSIONS

Maximum Overall Length	(mm)	98
Maximum Diameter	(mm)	44
Maximum Seated Height	(mm)	83
Approximate Nett Weight	(ozs)	2½
Approximate Packed Weight	(ozs)	5½

MOUNTING POSITION Vertical. If run horizontally then it is recommended that the axis AB be on a horizontal plane.

BULB Clear.

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SIEMENS EDISON SWAN LIMITED

JEDEC Type 7971

EDISWAN

MAZDA

SIIE12

SPECIAL QUALITY BEAM TETRODE

Indirectly heated—for parallel operation

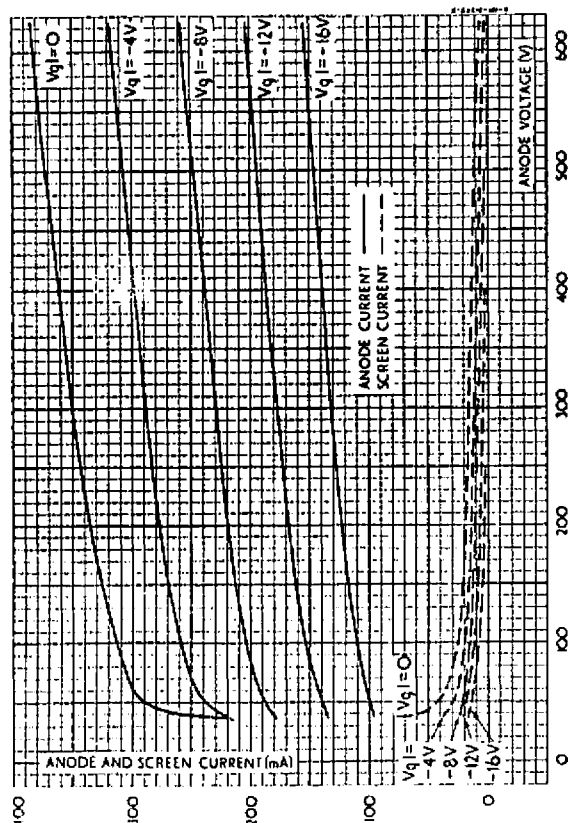
AVERAGE CHARACTERISTIC CURVES: $I_a, I_{g2}/V_a$

$V_{g2} = 150V$

Curves taken with short duration pulse

Pulse Length = $12\mu\text{sec}$.

Pulse Ratio = 400:1



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SIEMENS EDISON SWAN LIMITED

SIIE12

SIIE12

EDISWAN

MAZDA

SIIE12

SPECIAL QUALITY BEAM TETRODE

Indirectly heated—for parallel operation

AVERAGE CHARACTERISTIC CURVES: I_a/V_g

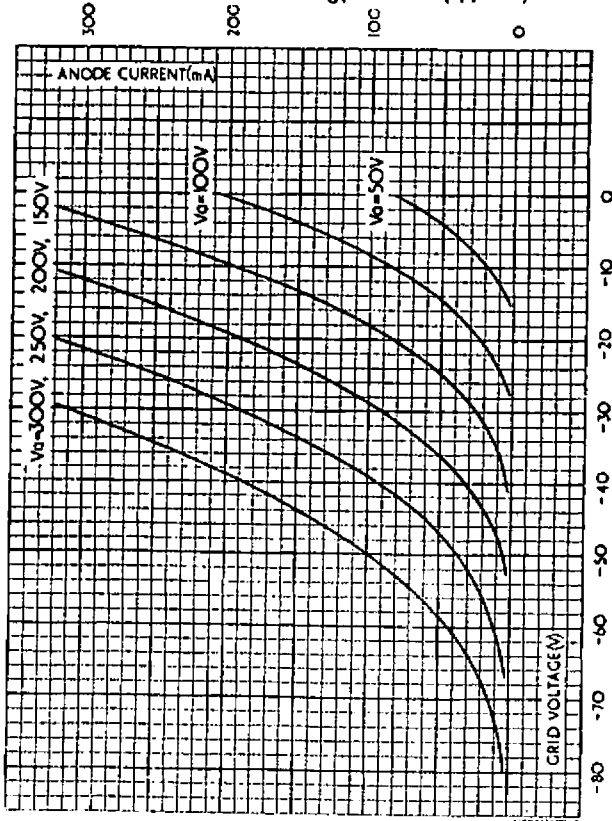
TRIODE CONNECTED

Curves taken with short duration pulse

Pulse Length = $12\mu\text{sec}$.

Pulse Ratio = 400:1

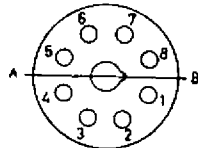
Grid Current starts at $V_{g1} = -1.0V$ (approx.)



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EDISWAN
MAZDA
S11E12
SPECIAL QUALITY BEAM TETRODE
Indirectly heated—for parallel operation
TENTATIVE

BASE—International Octal.
BASING—8KY



Viewed from free end of pins

CONNECTIONS

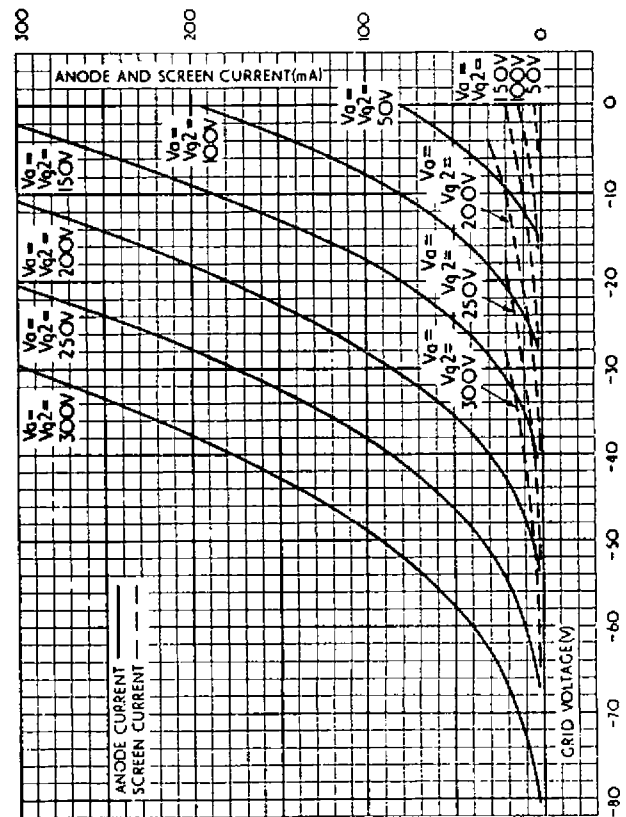
Pin	Internal Connection	IC
Pin 1		
Pin 2	Heater	h
Pin 3	Anode	a
Pin 4	Grid 2	g2
Pin 5	Grid 1	g1
Pin 6	Beam Plates	bp
Pin 7	Heater	h
Pin 8	Cathode	k

Note.—Pins 6 and 8 should be connected together at the valve holder.

EDISWAN
MAZDA
S11E12
SPECIAL QUALITY BEAM TETRODE
Indirectly heated—for parallel operation

AVERAGE CHARACTERISTIC CURVES: $i_a, i_{g2}/V_{g1}$

Curves taken with short duration pulse
Pulse Length = $12\mu\text{sec}$. Pulse Ratio = 400:1
Grid Current starts at $V_{g1} = -1.0\text{V}$ (approx.)

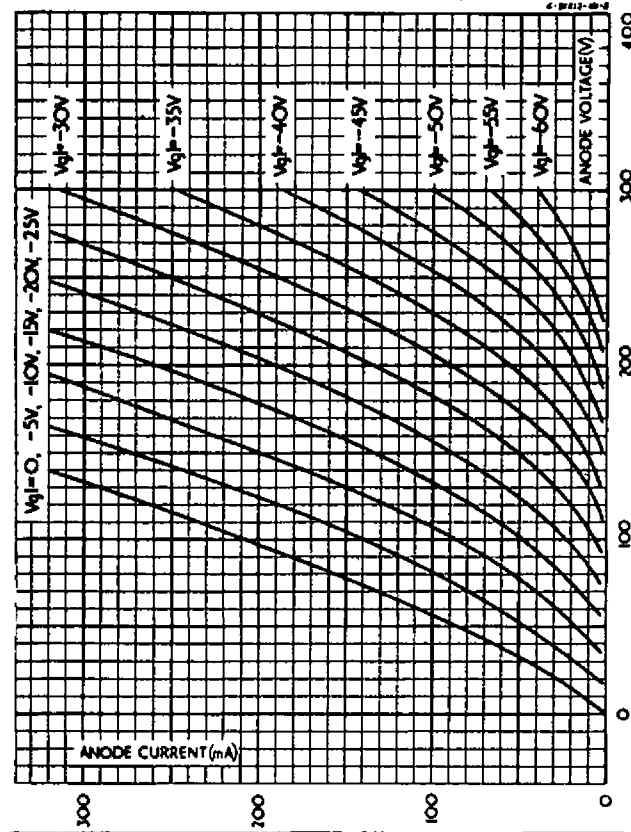


JEDEC Type 7971

EDISWAN
MAZDA
SIIE12

SPECIAL QUALITY BEAM TETRODE
Indirectly heated—for parallel operation

AVERAGE CHARACTERISTIC CURVES: I_a/V_a
TRIODE CONNECTED
Curves taken with short duration pulse
Pulse Length = 12μ sec. Pulse Ratio = 400 : 1
Grid Current starts at $V_{g1} = -1.0$ V (approx)



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EDISWAN

13E1

BEAM TETRODE

Indirectly heated—for D.C. Control Applications

GENERAL

This Low Impedance Beam Tetrode is intended for general D.C. Control applications and has a centre tapped heater. It is suitable for Triode connection and has a maximum anode dissipation of 90 watts.

RATING

Heater Voltage (volts)	V_h	26.0	13.0
Heater Current (amps)	I_h	1.3	2.6
Maximum Anode Voltage (volts)	$V_a(\text{max})$	800	1500† ←
Maximum Screen Voltage (volts)	$V_{g2}(\text{max})$	300	
Maximum Control Grid Voltage (volts)	$V_{g1}(\text{max})$	—100	
Maximum Anode Dissipation (watts)	$P_a(\text{max})$	90	
Maximum Screen Dissipation (watts)	$P_{g2}(\text{max})$	10	
Maximum Anode plus Screen Dissipation (Triode Connection) (watts)	$P_a + g2(\text{max})$	95	←
Maximum Control Grid Dissipation (watts)	$P_{g1}(\text{max})$	1	←
Maximum Cathode Current (mA)	$I_k(\text{max})$	800	5000† ←
Maximum Heater/Cathode Voltage (volts D.C.) (Heater—ve)	$V_{h-k}(\text{max})$	300	
Mutual Conductance (Triode Connection) (mA/V)	g_m	35*	
Amplification Factor (Triode Connection)	μ_t	4.5*	
Anode Resistance ($\delta V_a / \delta I_a$) Triode Connection) (ohms)	$r_a(t)$	130*	
* $V_a = 150$ volts $I_a = 500$ mA.			

All maximum ratings are absolute values not design centres.

† Series pulse rating. For peak currents greater than 2 amps, the product of the peak current and pulse duration in amp-microseconds should not exceed 10. The valve should not operate for longer than 5 μ s in any 100 μ s period.

Indicates a change ←

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SIEMENS EDISON SWAN LIMITED

EDISWAN

13E1 JEDEC Type 7972

BEAM TETRODE

Indirectly heated—for D.C. Control Applications

INTER-ELECTRODE CAPACITANCES (pF)

Control Grid/Earth	c_{in}	56
Anode/Earth	c_{out}	20.4
Anode/Control grid	c_{a-g1}	1.3

DIMENSIONS

Maximum Overall Length	(mm)	140.0 ←
Maximum Diameter	(mm)	65.0 ←
Maximum Seated Height	(mm)	128.0 ←
Approximate Nett Weight	(ozs)	6.0
Approximate Packed Weight	(ozs)	30.0

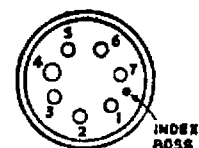
MOUNTING POSITION—Vertical

BULB—Clear

BASE—B7A

BASING—7GF

Viewed from free
end of pins.



VALVEHOLDER—Ediswan Clix Cat. No. VH117/701

CONNECTIONS

Pin 1	Heater	h
Pin 2	Heater Centre Tap	h tap
Pin 3	Control Grid	g1
Pin 4	Cathode	k
Pin 5	Screen Grid	g2
Pin 6	Anode	a
Pin 7	Heater	h

Indicates a change ←

July 1959

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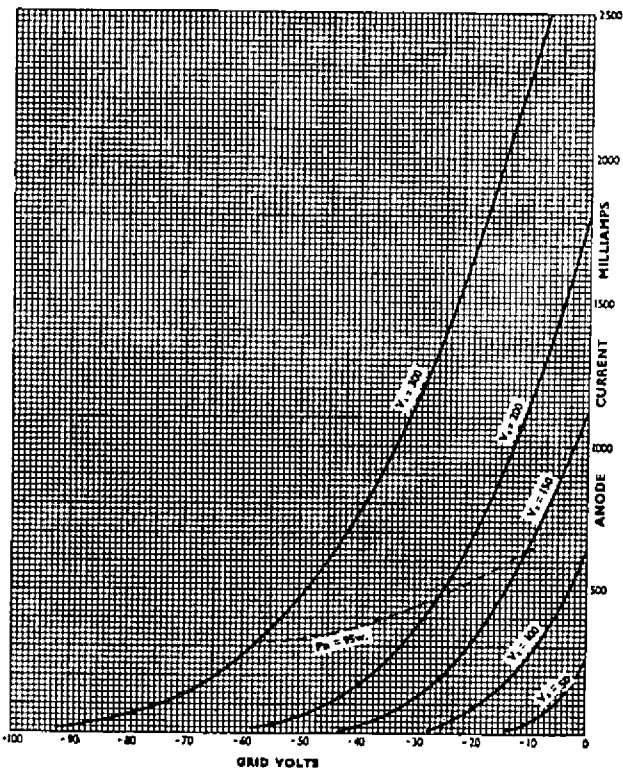
SIEMENS EDISON SWAN LIMITED

EDISWAN
13E1

BEAM TETRODE

Indirectly heated—for D.C. Control Applications

AVERAGE CHARACTERISTIC CURVES : I_a/V_{g1}
TRIODE CONNECTED
Curves taken with short duration pulse

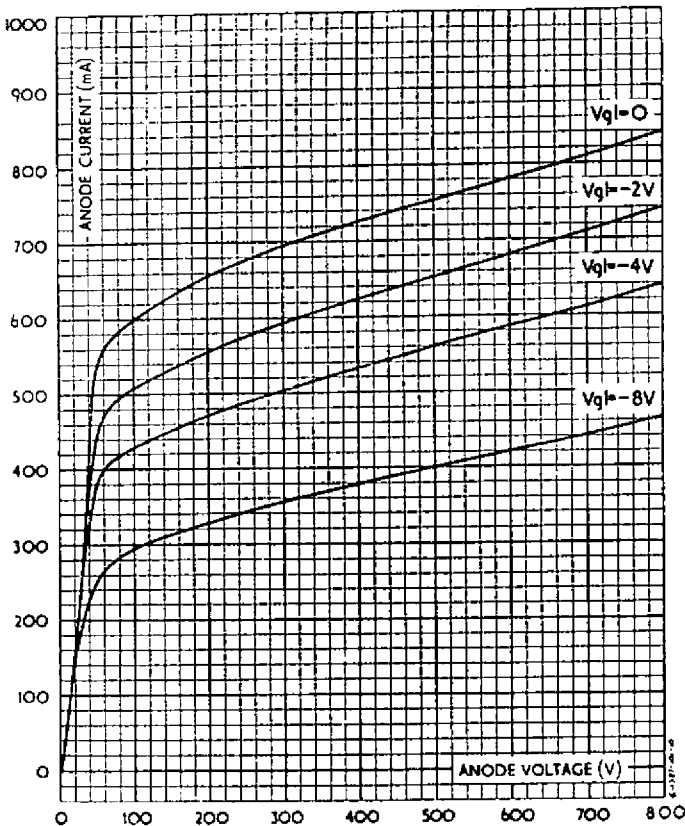


EDISWAN
13E1

BEAM TETRODE

Indirectly heated—for D.C. Control Applications

AVERAGE CHARACTERISTIC CURVES : I_a/V_a
 $V_{g2} = 100V$
Curves taken with short duration pulse



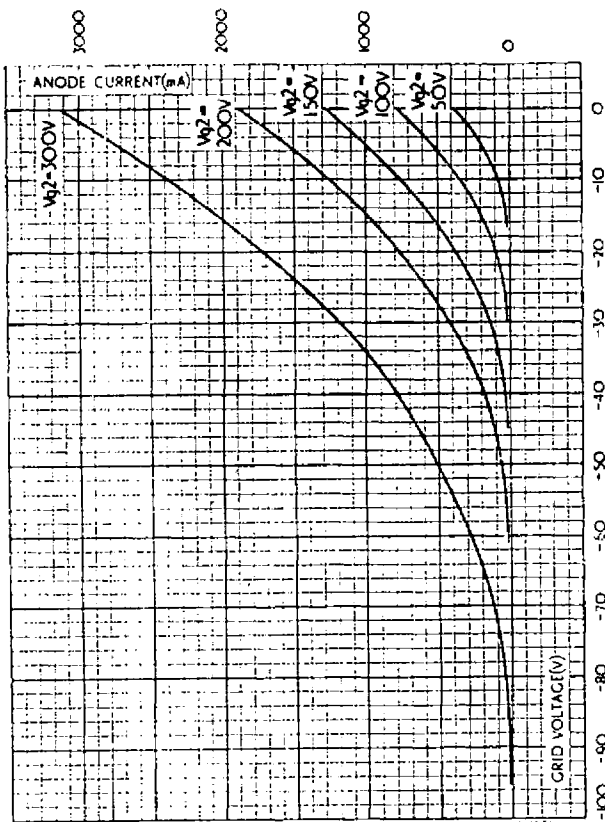
EDISWAN
13E1

BEAM TETRODE

Indirectly heated—for D.C. Control Applications

AVERAGE CHARACTERISTIC CURVES: I_a/V_{g1}
 $V_a=600V$

Curves taken with short duration pulse



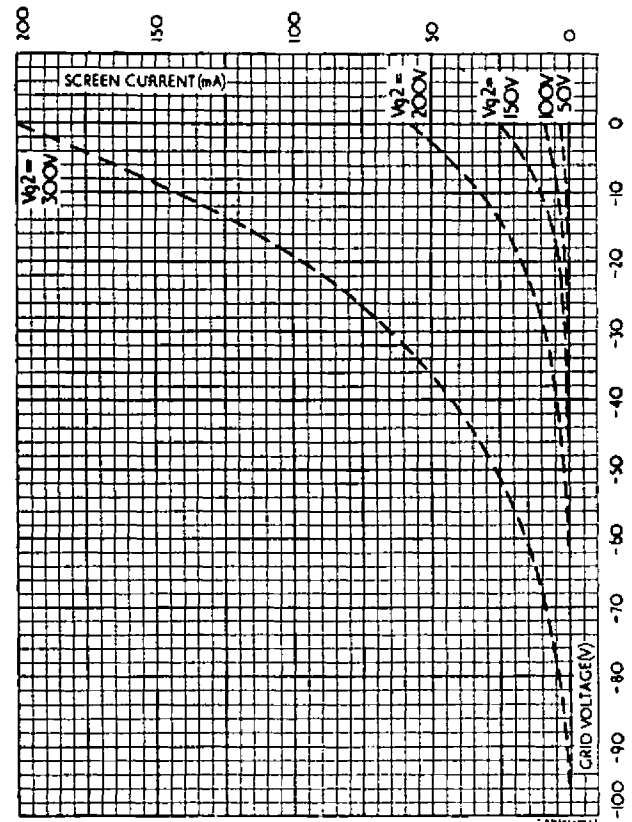
EDISWAN
13E1

BEAM TETRODE

Indirectly heated—for D.C. Control Applications

AVERAGE CHARACTERISTIC CURVES: I_{g2}/V_{g1}
 $V_a=600V$

Curves taken with short duration pulse



JEDEC Type 7972

EDISWAN

13E1

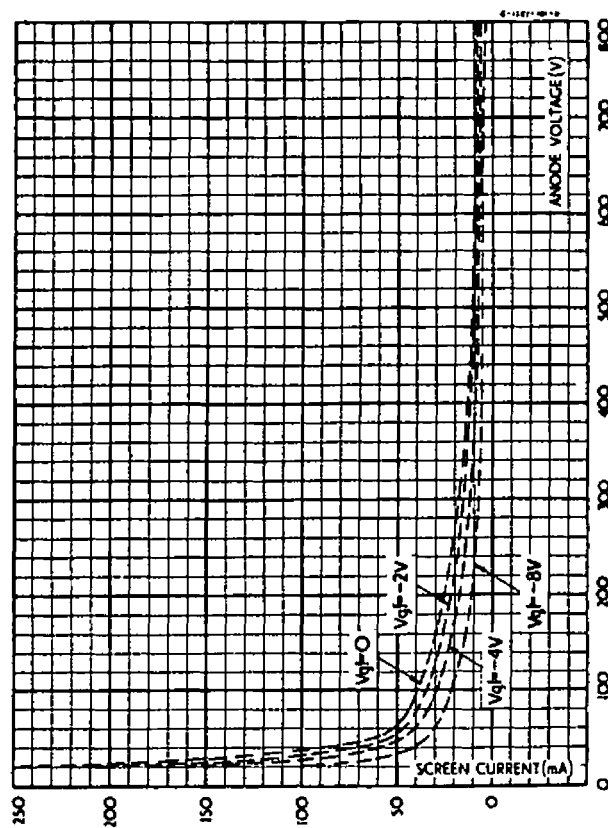
BEAM TETRODE

Indirectly heated—for D.C. Control Applications

AVERAGE CHARACTERISTIC CURVES: I_{g2}/V_a

$V_{g2}=100V$

Curves taken with short duration pulse



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INDUSTRIAL
VALVE & CRT DIVISION

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SIEMENS EDISON SWAN LIMITED

ASSOCIATED ELECTRICAL INDUSTRIES LIMITED

T1687

Applications Laboratory
Radio & Electronic Components Division
Brimsdown, Enfield, Middlesex.

Subject: General

Date: 1st February, 1960
TDS No. 6-S2P20-0-1

VALVE TYPE S2P20 JEDEC Type 7973			
DIMENSIONS		mm	TYPE Special Quality Beam Tetrode
OVERALL LENGTH	MAX	67.5	CATHODE Directly heated
DIAMETER	MAX	22.2	USE R.F. Power Amplifier up to 100Mc/s where
SEATED HEIGHT	MAX	60.5	dependable performance is required under
			shock and vibration conditions.
RATING. Δ NOTE			
Filament Voltage	(V)	2.5	5.0
Filament Current	(A)	0.46	0.23
Maximum Anode Dissipation	(W)	5	
Maximum Screen Dissipation	(W)	2	
Maximum Anode Voltage	(V)	150	
Maximum Screen Voltage	(V)	150	
Maximum Operating Frequency	(Mc/s)	100	
Maximum Shock (short duration)	(g)	500	
Maximum Acceleration (continuous operation)	(g)	2.5	
NOTES:-			
CAPACITANCES PF		BASE E9-1 Bulb T6 1/2	
ELECTRODES *		PIN	ELECTRODE
g1	TO E	1	a
a	TO E	2	NC
a	TO g1	3	bp
	TO	4	f
	TO	5	f+
	TO	6	g2
	TO	7	g1
	TO	8	bp
	TO	9	fc tap
The symbol 'E' denotes the electrodes of any heated valve section and the remaining nearby potential electrodes of this section under measurement. It is joined to cathode unless otherwise stated. Measurement with valve cold.			
CAP			
MOUNTING POSITION:- Unrestricted		Basing 9L	
TYPICAL OPERATION.			
Filament Voltage	(V)	5	
Anode Voltage	(V)	150	
Screen Voltage	(V)	150	
Control Grid Voltage	(V)	-10	
Beam Plates Voltage	(V)	0	
Anode Current	(mA)	28	
Screen Current	(mA)	2	
Mutual Conductance	(mA/V)	4.3	

from JEDEC release #3143, Feb. 13, 1961

* Interelectrode capacitances in fully shielded socket without can and skirt.
 Δ All limiting values are Absolute Values not Design Centres.

INDICATES A CHANGE SINCE PREVIOUS ISSUE.

TYPICAL OPERATION AS CLASS C POWER AMPLIFIER AT 70 Mc/s

Anode Voltage	(V)	150
Screen supply voltage	(V)	150
Screen feed resistor.	(kΩ)	3.9
Anode Current	(mA)	40
Control grid Current.	(mA)	1
Control grid voltage	(V)	-22
Grid bias resistor	(kΩ)	22
R.F. Power output (min)	(W)	2.4

ASSOCIATED ELECTRICAL INDUSTRIES LIMITED

Applications Laboratory

Radio & Electronic Components Division

Brimsdown, Enfield, Middlesex.

JEDEC Type 7973

Subject: Limits of
Characteristics $\Delta\Delta$ Date: 29th January, 1960
TDS No. 6-S2P20-Q-3

Test	Conditions					Life Period	Limits		Units
	$V_{f(a)}$ (V)	V_a^* (V)	V_{g2}^* (V)	V_{g1}^* (V)	V_{bp}^* (V)		Min	Max	
Filament Current	5	-	-	-	-	Initial	0.21	0.25	A
Anode Current	5	150	150	-10	0	Initial	21	35	mA
Screen Current	5	150	150	-10	0	Initial	-	4	mA
Mutual Conductance	5	150	150	-10	0	Initial	3.2	5.4	mA/V
Grid No.1 Cut-off Voltage ($I_a = 2\text{mA}$)	5	150	150	-	0	Initial	-	-25	V
Peak Anode Current† $V_a(b) = 120\text{V}$, $R_L = 320\Omega$, $V_{sig} = 20\text{V r.m.s.}$, $R_{g1} = 22\text{k}\Omega$	5	-	120	-	0	Initial 250 hrs	110 100	- -	mA mA
Change in Peak Anode Current	4.5	-	120	-	0	Initial	-	25	mA
Change in Peak Anode Current	5	-	120	-	0	Initial to 1 hr	-	20	%
Reverse Grid Current	5	150	150	-10	0	Initial 250hrs	- -	2 4	μA μA
Interelectrode Leakage Resistance									
V_{g1} to all $= -100\text{V}$	0	-	-	-	-	Initial 250hrs	- -	100 50	M Ω M Ω
V_{g2} to all $= -300\text{V}$	0	-	-	-	-	Initial 250hrs	- -	100 50	M Ω M Ω
V_a to all $= -300\text{V}$	0	-	-	-	-	Initial 250hrs	- -	100 50	M Ω M Ω
V_{bp} to all $= -300\text{V}$	0	-	-	-	-	Initial 250hrs	- -	100 50	M Ω M Ω
Vibration Noise Output Voltage Δ $V_a(b) = 150\text{V}$, $R_L = 2\text{k}\Omega$	5	-	150	-10	0	Initial	-	500	mV r.m.s.
<u>Life Test Conditions</u>									
Adjust Grid No1 Voltage to give $I_a = 33\text{mA}$	5V r.m.s.	150	150	-	0				
Capacitances Measured in fully shielded socket, without can and skirt.	Electrodes		g1 to E a to E a to g1				6.5 5.6 -	10.5 7.6 0.17	pF pF pF

* Voltages measured with respect to filament negative (pin 4)

† All power supplies shall have negligible impedance to operating frequency.
Grid signal impedance shall be less than 5 ohms: voltage sinusoidal. Δ Preheat for 15 mins before test at Anode Current test conditions. $\Delta\Delta$ The test limits are for guidance in equipment design. The quality is controlled statistically to ensure that only a small percentage are outside these limits. The quality control levels are related to the importance of the characteristic being tested.

SPECIAL TESTSGlass Envelope Strain Test

A statistical sample is tested to control glass quality. No voltages are applied to the electrodes.

The valves are completely immersed in boiling water at a temperature between 97°C and 100°C for 15 seconds and then immediately plunged into ice cold water for 5 seconds. The valves are then examined for glass cracks.

Base Strain Test.

A statistical sample is tested to control base strain. No voltages are applied to the electrodes.

The pins of the valves are forced over a specified cone, valves and cones are then completely submerged in boiling water at a temperature between 97°C and 100°C for 10 seconds. The valves and cones are allowed to cool to room temperature on a wooden support before examining for glass cracks.

Fatigue Tests

A statistical sample is tested to control heater failures and other mechanical defects. The heaters are successively run at 5V rms for 1 minute and switched off for 3 minutes, no other voltages applied.

The valves are rigidly mounted on a vibrating machine and vibrated for at least 100 hours, for not less than 30 hours in each of 3 mutually perpendicular planes at a frequency of 170 c/s with a minimum peak acceleration of 5 g.

Shock Test

A statistical sample is tested to control mechanical defects likely to be caused by shock. No voltages are applied to the electrodes.

The valves are subjected to 5 blows of approximately 500 g acceleration in each of 4 directions.

Holding Period Inoperatives Control.

After completing the test specification the valves are held for at least 28 days and are then retested to ensure that there has been no deterioration on storage.

PSM9 - VX6137 - CV4097

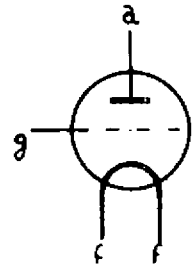
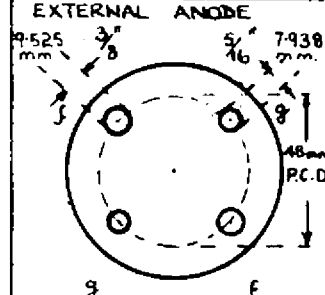
Associated Electrical Industries Limited

Applications Laboratory
Radio & Electronic Components Division
Brimdawn, Enfield, Middlesex.

SUBJECT

TENTATIVE

DATE: 24th March, 1960.
T.D.S. No. 6-V1609-0-1

VALVE TYPE 16P12 JEDEC Type 7974														
DIMENSIONS				mm	TYPE									
OVERALL LENGTH				MAX	211	Water cooled triode with integral cooling.*								
						Cathode Thoriated Tungsten Filament.								
RATINGS														
*Filament Voltage					(V)	8.0 ± 5%		NOTE						
Filament Current					(A)	26.0								
Maximum D.C. Anode Voltage					(kV)	8.0								
Maximum Peak Cathode Current					(A)	6.0								
Maximum Anode Dissipation					(kW)	3.0								
Maximum Operating Frequency														
(Limited by water connections)					(Mc/s)	10								
(Limited by valve)					(Mc/s)	40								
NOTES:- * Filament is suitable for direct switching.														
CAPACITANCES PF					BASE									
ELECTRODES					PIN ELECTRODE									
g	TO	a	11.5											
g	TO	f	14.5											
a	TO	f	0.8											
	TO													
	TO													
	TO													
	TO													
	TO													
	TO													
	TO													
The symbol 'E' denotes the electrodes of any second valve section and the remaining empty potential electrodes of the section under measurement. h & M joined to cathode unless otherwise stated. Measurement with valve cold.					CAP									
					EXTERNAL ANODE									
														
					VIEW OF FREE END									
					MOUNTING POSITION :-									
					CHARACTERISTICS									
					Anode Voltage					(kV)	5			
					Anode Current					(mA)	400			
					Mutual Conductance					(mA/V)	7.5			
					Amplification Factor						24			

from JEDEC release #3143, Feb. 13, 1961

* This is the water cooled version of the 8SA1500 with integral water cooling.

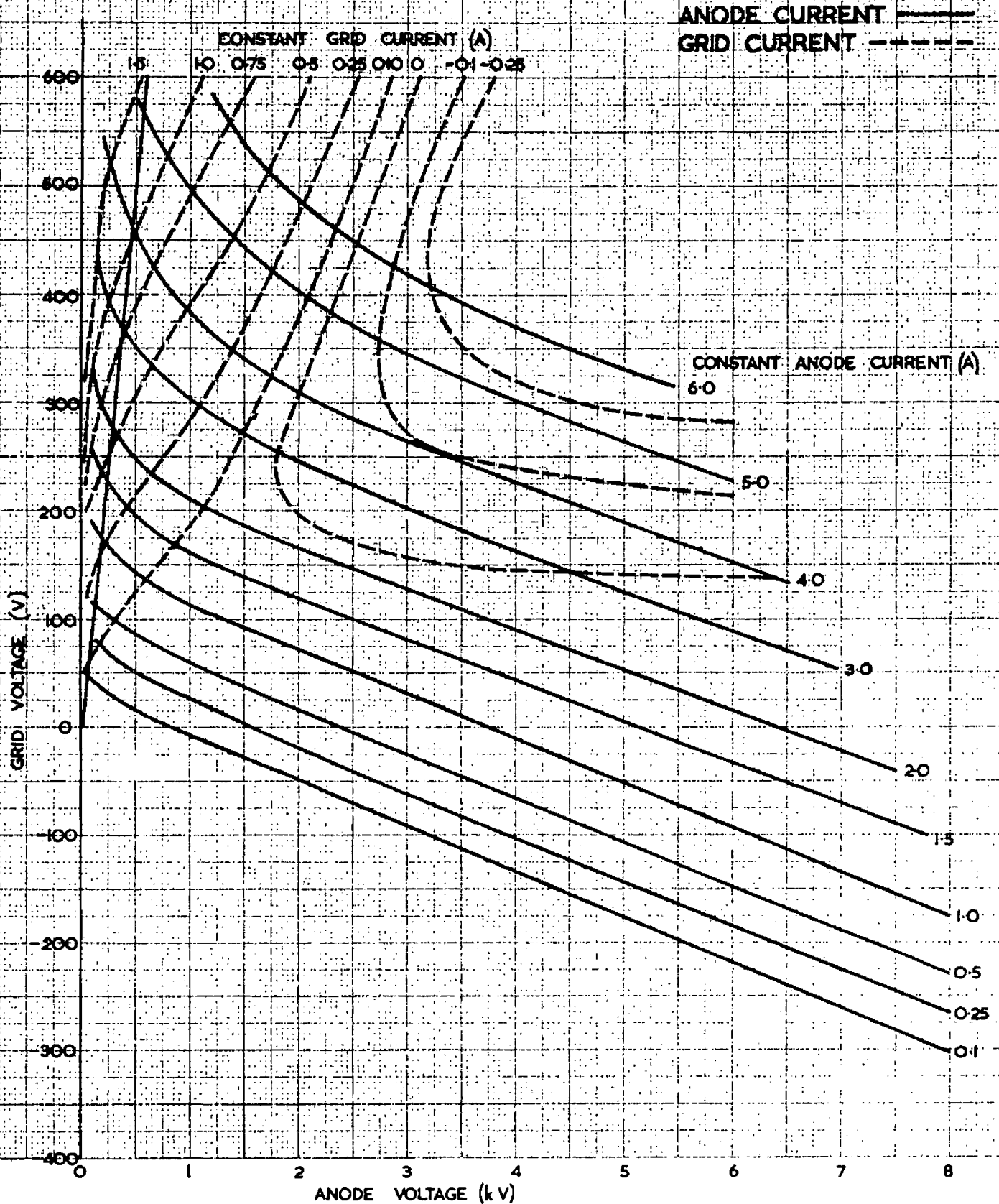
18-8-60.

V1609

GII

TENTATIVE CHARACTERISTIC CURVES OF EDISWAN VALVE TYPE 16P12

CONSTANT CURRENT CHARACTERISTICS



f.d. 12.9.60.

V1609 CI

Associated Electrical Industries Limited

Applications Laboratory

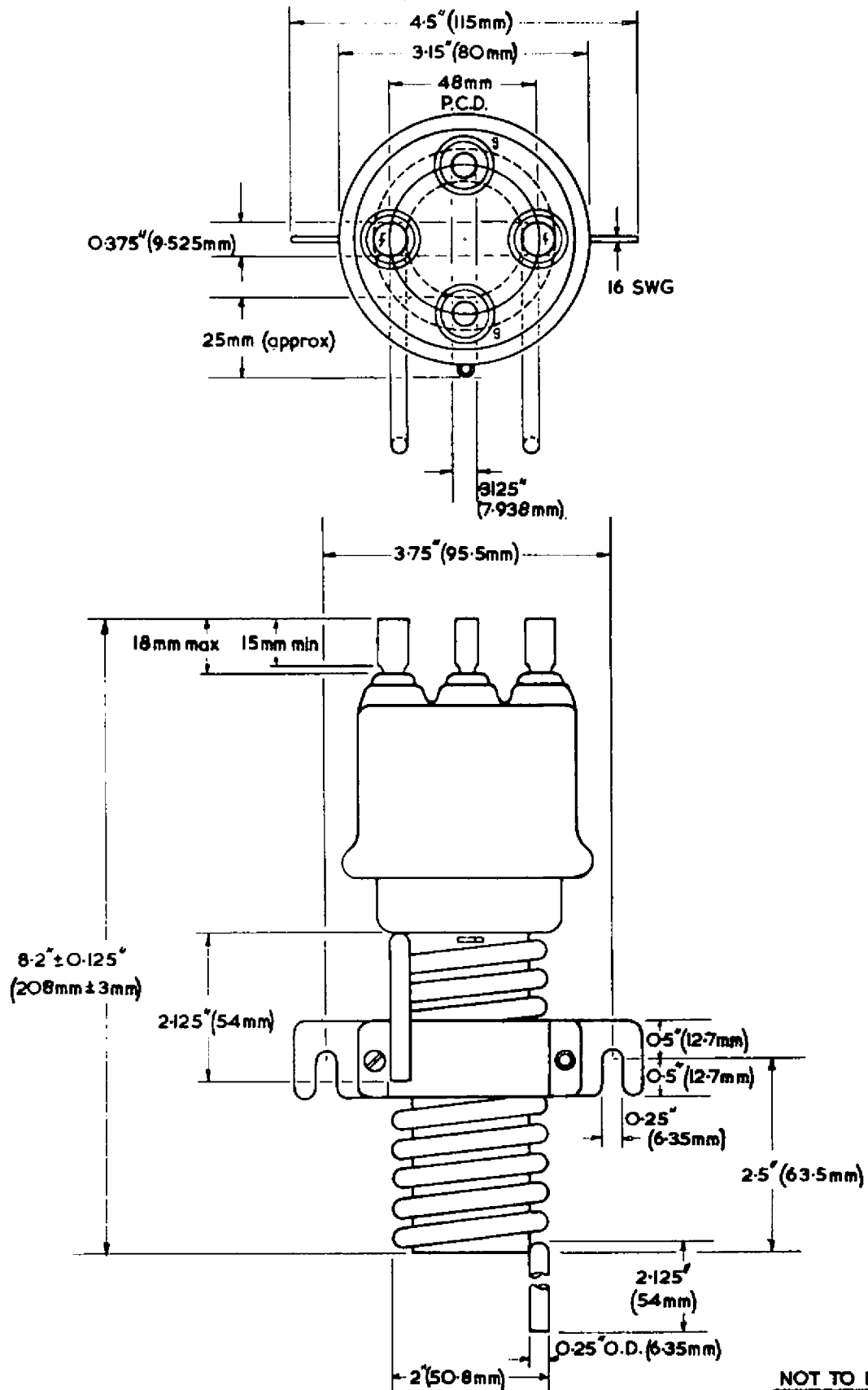
Radio & Electronic Components Division
Brimdawn, Enfield, Middlesex.

JEDEC Type 7974

SUBJECT

DATE: 18th October, 1960.
T.D.S. No. 6-V1609-90-1

OUTLINE DRAWING FOR VALVE TYPE 16PI2

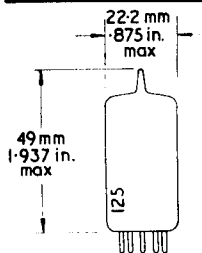


NOT TO BE SCALED

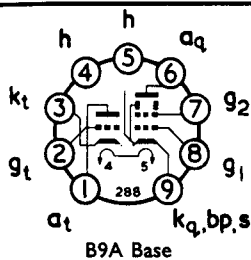
← INDICATES A CHANGE SINCE PREVIOUS ISSUE.

V1609

f.b. 18.10.60.



TRIODE BEAM TETRODE

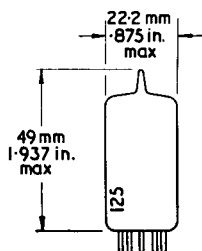


GENERAL

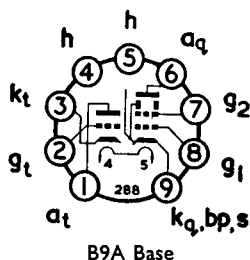
This valve is identical to the PCF812/30FL2 except for the heater rating.

Heater Voltage	V_h 6.3	V
Heater Current	I_h 0.5	A

For all other data and curves please see PCF812/30FL2.



TRIODE BEAM TETRODE



GENERAL

This triode beam tetrode valve with separate cathodes is an improved 30FL1/PCE800 in which the construction and processing of the beam tetrode and triode have been optimised for use respectively as a sync. separator and line scan oscillator in TV receivers. The triode section has identical characteristics to the 6/30L2/ECC804.

Heater Current	I_h	0.3	A
Heater Voltage	V_h	10.4	V

RATINGS

		Triode	Tetrode	
Maximum Anode Dissipation	$P_a(\max)$	2.0	3.0	W
Maximum Screen Grid Dissipation	$P_{g2}(\max)$	—	1.0	W
Maximum Anode Voltage	$V_a(\max)$	250	250	V
Maximum Screen Grid Voltage	$V_{g2}(\max)$	—	250	V
Maximum Heater to Cathode Voltage (R.M.S.)	$V_{h-k(r.m.s.)\max}$	150*	150*	V

* Measured with respect to the higher potential heater pin.

INTER-ELECTRODE CAPACITANCES

	$\dagger$	$\S$	$\ddagger$	
Grid 1 to Earth	C_{g1-E}	7.8	8.0	9.1 pF
Anode Tetrode to Earth	C_{aq-E}	2.4	2.7	3.8 pF
Grid 1 to Anode Triode	C_{g1-at}	0.033	0.047	0.075 pF
Grid Triode to Earth	C_{gt-E}	2.2	2.45	3.25 pF
Anode Triode to Earth	C_{at-E}	2.1	2.3	3.0 pF
Grid Triode to Anode Triode	C_{gt-at}	2.3	2.4	2.7 pF
Grid 1 to Anode Triode	C_{g1-at}	0.0065	0.016	0.03 pF
Grid Triode to Anode Tetrode	C_{gt-aq}	0.0073	0.012	0.015 pF
Anode Tetrode to Anode Triode	C_{aq-at}	0.035	0.043	0.046 pF
Grid 1 to Grid Triode	C_{g1-gt}	0.002	0.0055	0.0094 pF

$\dagger$ In fully shielded socket without can.

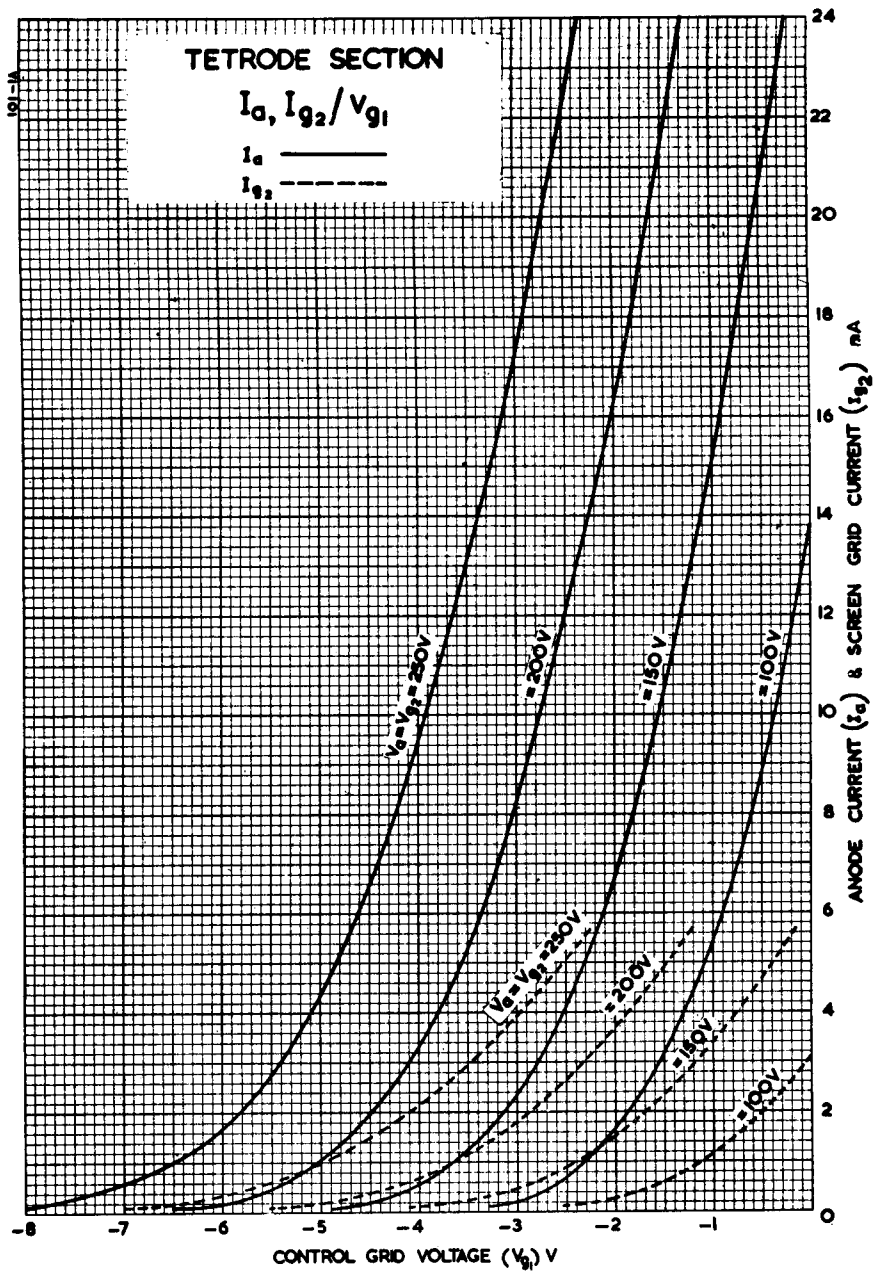
$\S$ With holder capacitance balanced out.

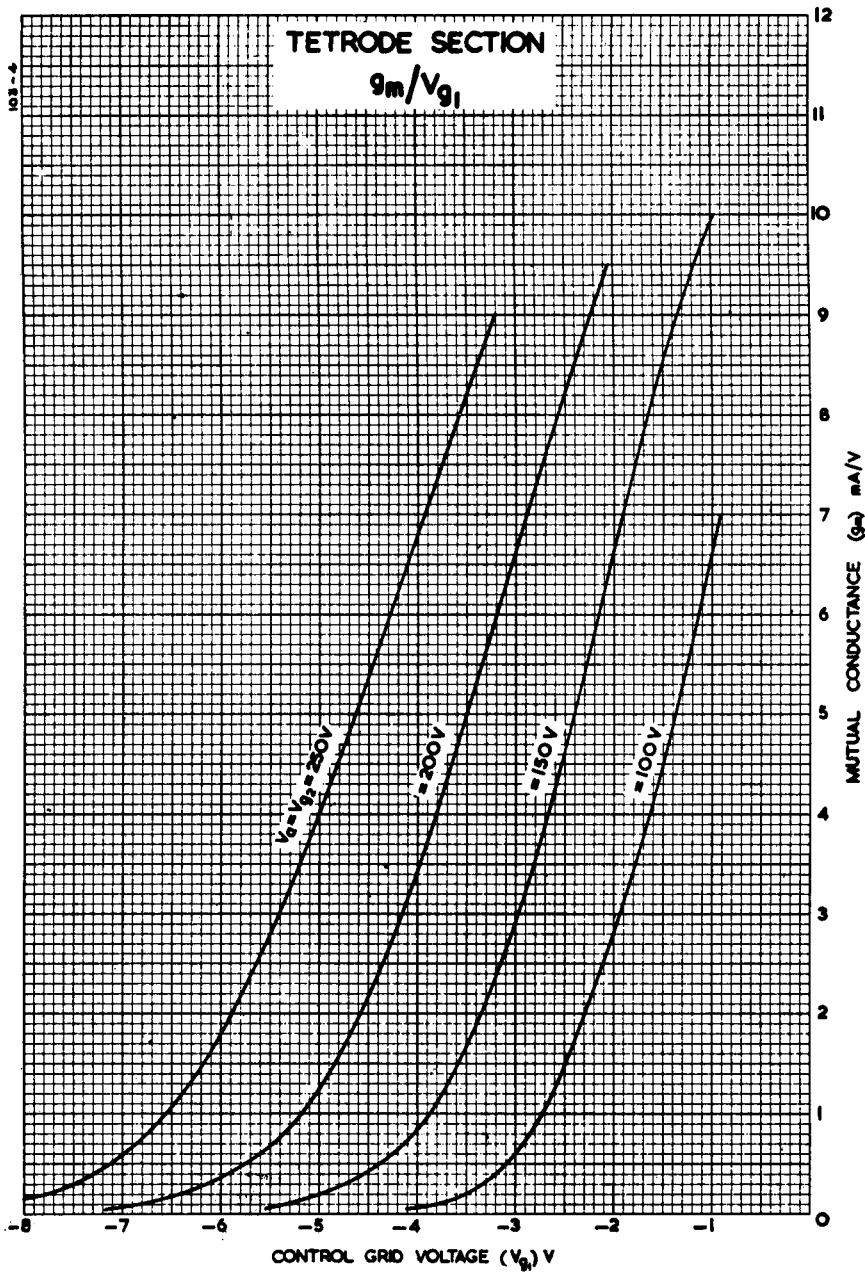
$\ddagger$ Total capacity including B9A nylon phenolic holder without skirt or radial shield. "Earth" denotes the electrodes of any second valve section and the remaining earthy potential electrodes of the section under measurement, heater and shields joined to cathode.

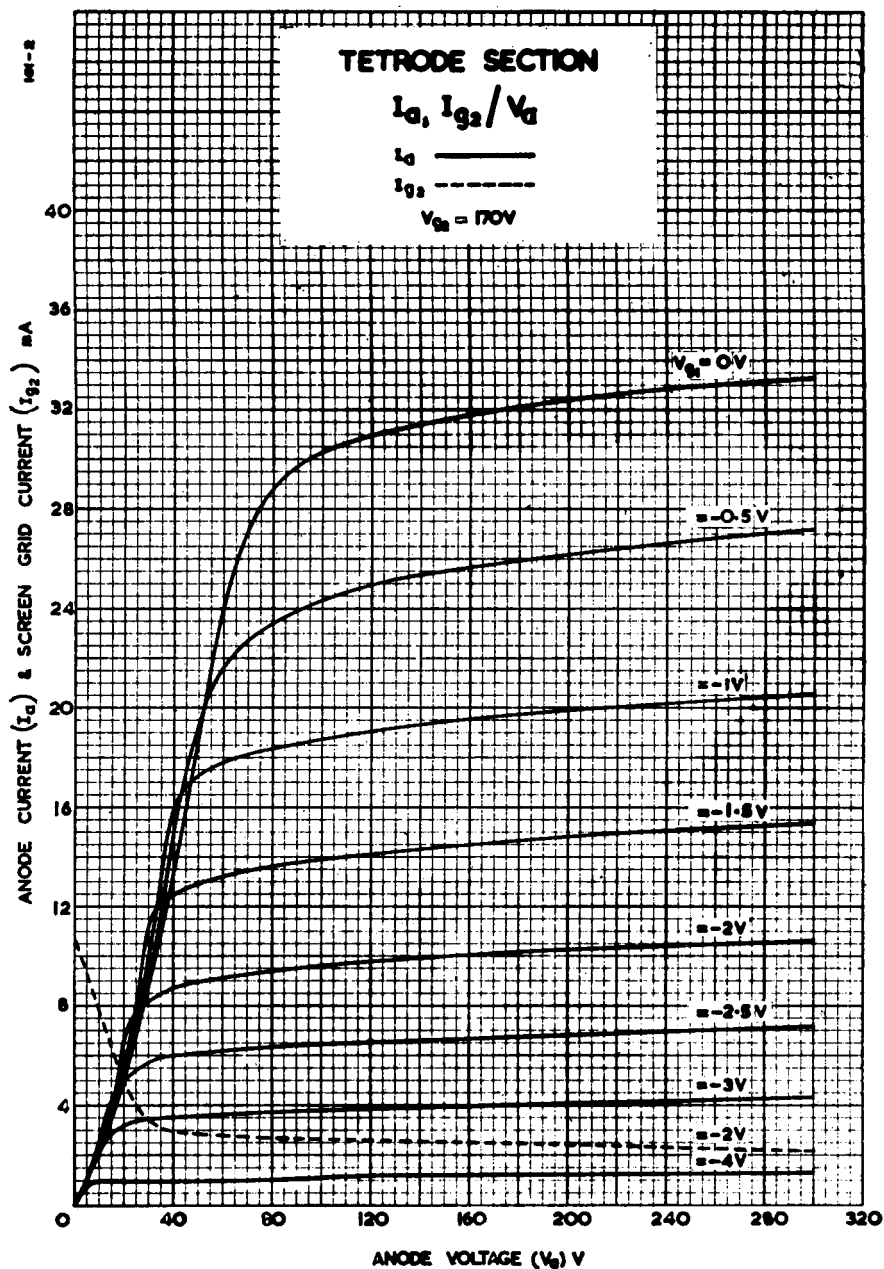
CHARACTERISTICS

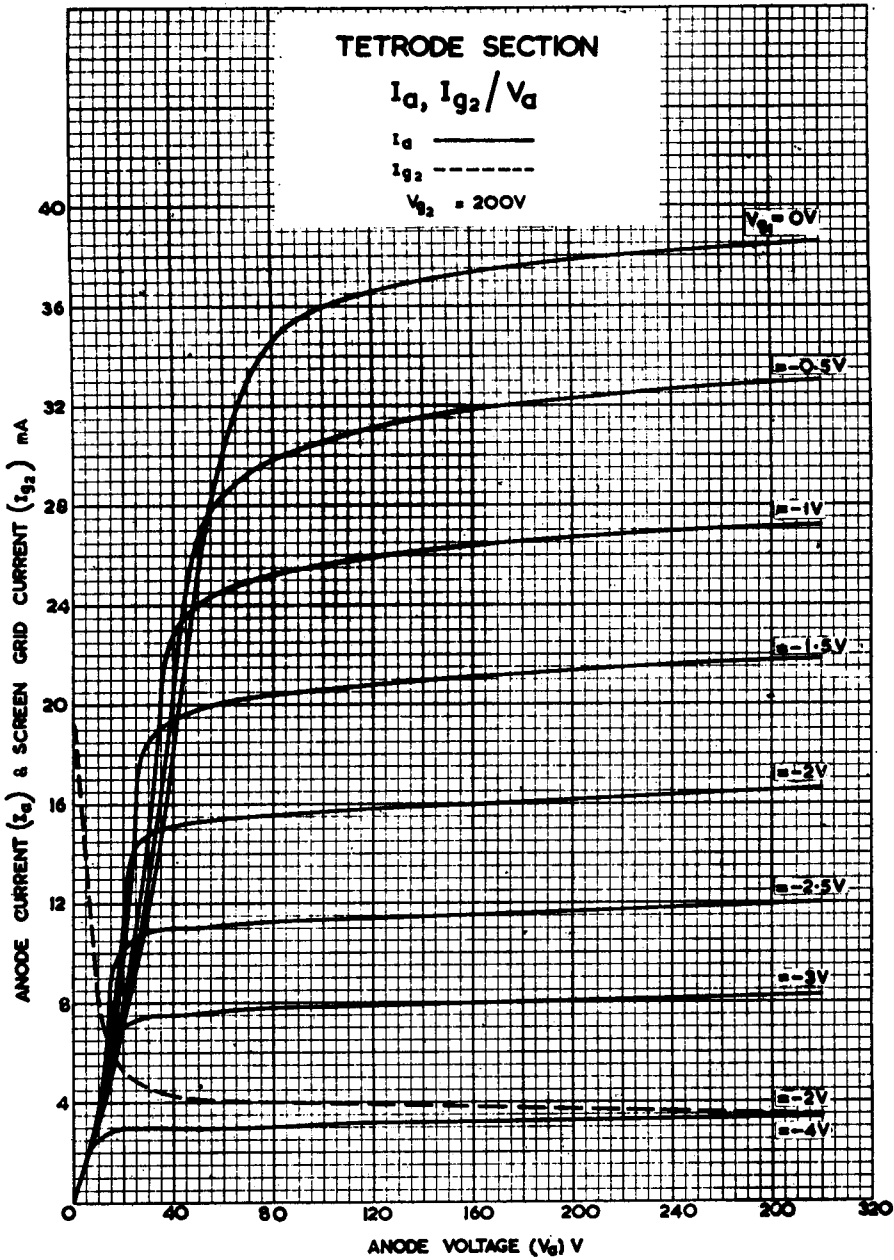
		Triode	Tetrode	
Anode Voltage	V_a	200	170	V
Screen Grid Voltage	V_{g2}	—	170	V
Control Grid Voltage	V_{g1}	-7.7	-2.0	V
Anode Current	I_a	10	10	mA
Screen Grid Current	I_{g2}	—	2.5	mA
Mutual Conductance	g_m	3.4	8.0	mA/V
Amplification Factor	μ	18	—	
Inner Amplification Factor	μ_{g1-g2}	—	44	

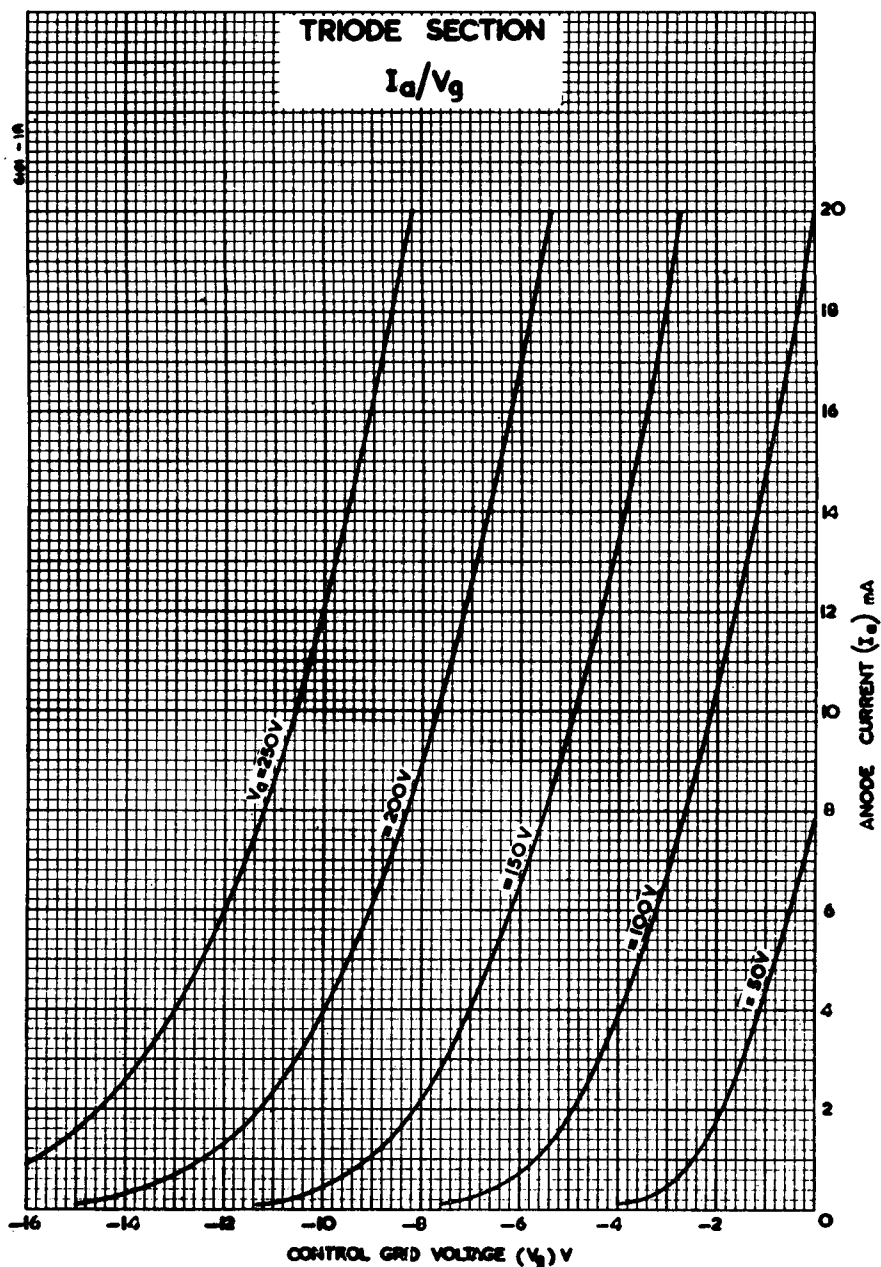
MOUNTING POSITION—Unrestricted.

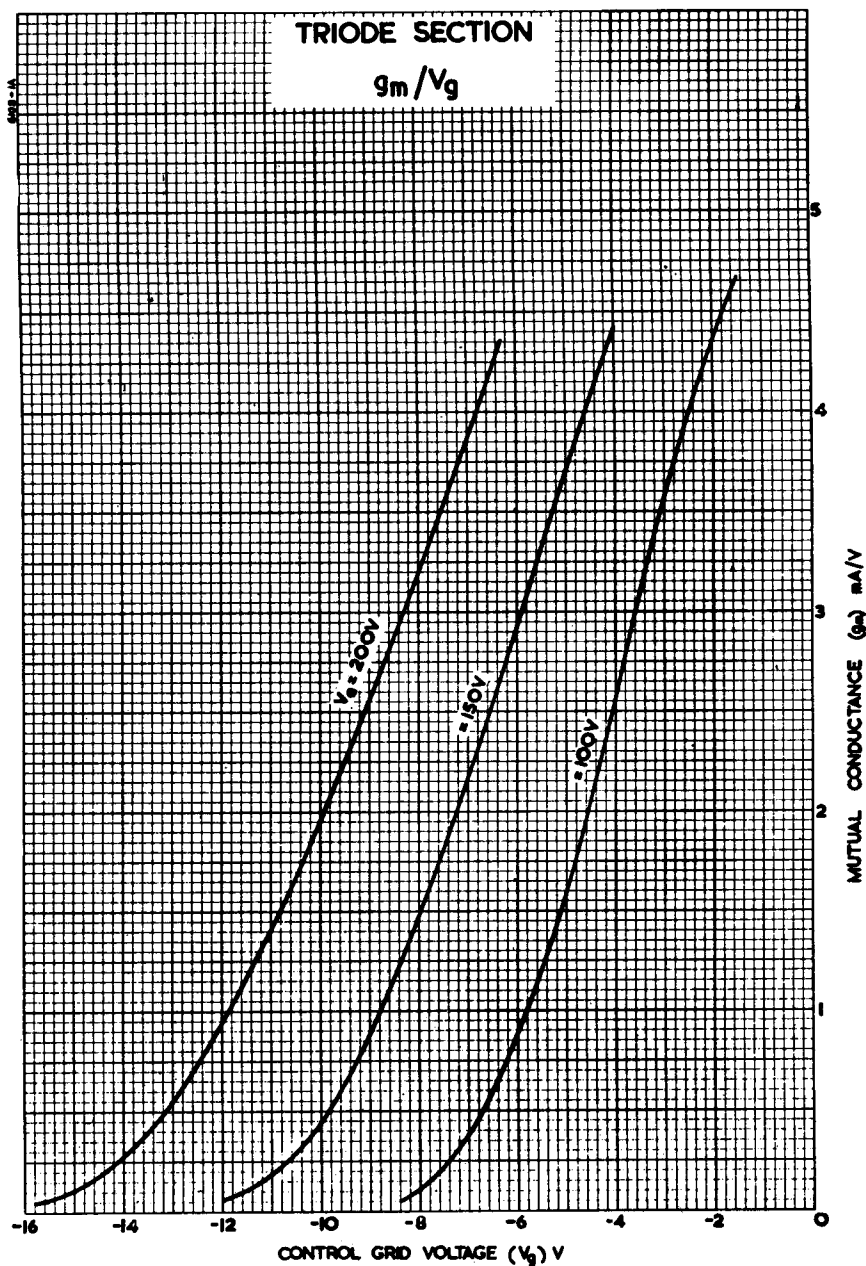












TETRODE SECTION

Used as limiter in a synchronising separator circuit.

