

RADIOTRON

1J6-G

CLASS B TWIN AMPLIFIER

1J6-G

Filament	Coated	
Voltage	2.0	d-c volts
Current	0.24	amp.
Maximum Overall Length		4-1/8"
Maximum Seated Height		3-9/16"
Maximum Diameter		1-9/16"
Bulb		ST-12
Mounting Position		Vertical, Base Down
Base		Small Shell Octal 8-Pin
Pin 1-No Connection		Pin 5-Grid (T ₁)
Pin 2-Filament +		Pin 6-Plate (T ₁)
Pin 3-Plate (T ₂)		Pin 7-Filament—
Pin 4-Grid (T ₂)		Pin 8-No Connection



BOTTOM VIEW (G-7AB)

(for convenience, one triode unit is identified as T₁, the other as T₂)

Maximum Ratings are Design-Centre Values.

CLASS B (AUDIO FREQUENCY) POWER AMPLIFIER.

Plate Voltage	135	max.	volts
Peak Plate Current (per plate)	50	max.	mA.
Typical Operation:			
Filament Voltage	2.0	2.0	2.0
Plate Voltage	135	135	135
Grid Voltage	-4.5	-4.5	-4.5
Zero-Sig. Plate Cur. (total)	1.4	1.4	1.4
Max. Sig. Plate Cur. (total)	13.8	18.0	24.5
Effective Load Res. (plate to plate)	20000	15000	10000
Peak A-F Grid-to-Grid Voltage	42	60	66
Average Power Input*	38	90	120
Power Output	1.0	1.25	1.6

R-F POWER AMPLIFIER AND OSCILLATOR - CLASS C.

Maximum Ratings on Request.

- ◊ Horizontal operation permitted if pins 1 and 4 are in vertical plane.
- * Applied between grids to give indicated value of power output.
- # One type 1K5-G, connected as a triode, may be used as a driver under the following conditions:- Plate volts 135, grid volts -4.5, plate current 3.5 mA., driver transformer ratio 2.2:1 primary to half-secondary.

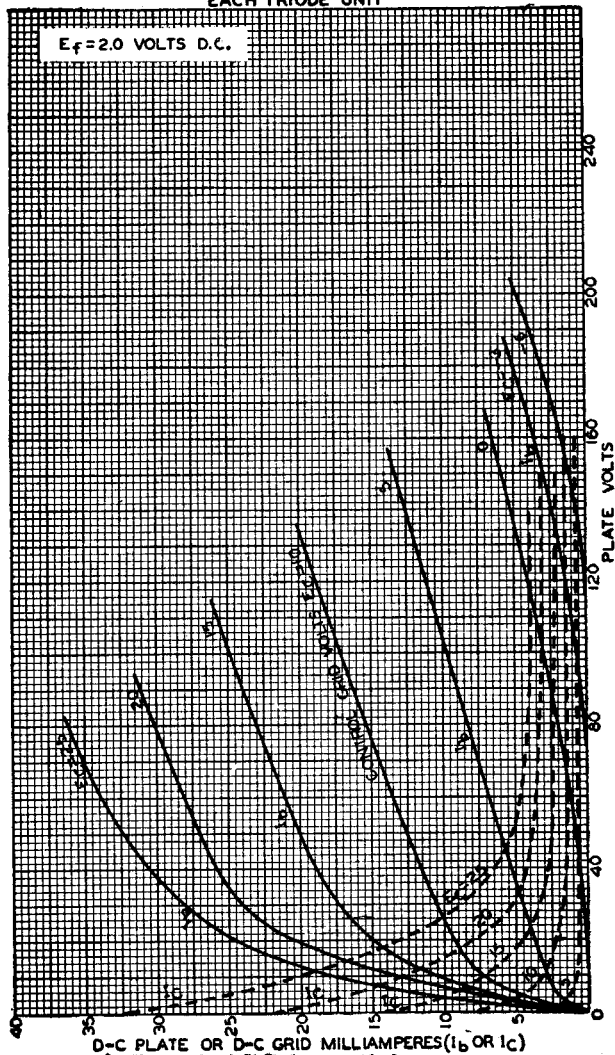
← Indicates a change.

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IJ6-G

AVERAGE PLATE CHARACTERISTICS EACH TRIODE UNIT

$E_f = 2.0$ VOLTS D.C.



92C-4882

RADIOTRON

1K4

1K4
1K5-G
SHEET 1



PENTODE AMPLIFIER

Filament	Coated	
Voltage	2.0	d-c volts
Current	0.12	amp.
Maximum Overall Length		4-15/16"
Maximum Diameter		1-9/16"
Bulb		ST-12
Cap		Small Metal
Mounting Position		Any
Base		Small 4-Pin
Pin 1-Filament +		Pin 4-Filament -
Pin 2-Plate		Cap -Grid
Pin 3-Screen		



BOTTOM VIEW (4M)

Maximum Ratings, Interelectrode Capacitances, Typical Operating Conditions and Curves are the same as for type 1K5-G. Types 1K4 and 1K5-G are identical electrically.

RADIOTRON

1K5-G



PENTODE AMPLIFIER

Filament	Coated	
Voltage	2.0	d-c volts
Current	0.12	amp.
Direct Interelectrode Capacitances*:		
Pentode Connection:-		
Grid to Plate	0.010 max.	μμF.
Input	6.0	μμF.
Output	9.5	μμF.
Triode Connection*:-		
Grid to Plate	3.5	μμF.
Grid to Filament	2.5	μμF.
Plate to Filament	15.5	μμF.

Maximum Overall Length	4-29/32"
Maximum Diameter	1-9/16"
Bulb	ST-12
Cap	Skirted Miniature
Mounting Position	Any
Base	Small Shell Octal 7-Pin
Pin 1-No Connection	Pin 5-No Connection
Pin 2-Filament +	Pin 7-Filament -
Pin 3-Plate	Pin 8-No Connection
Pin 4-Screen	Cap -Grid



BOTTOM VIEW (G-5Y)

* With shield-can connected to negative filament terminal.
Screen connected to plate.

1K5-G

RADIOTRON

1K5-G

PENTODE AMPLIFIER

(continued from preceding page)

AMPLIFIER - Class A₁ (Pentode Connection)

Plate Voltage	180 max. volts
Screen Voltage	135 max. volts
Screen Supply Voltage	180 max. volts
Plate Dissipation	0.5 max. watt
Screen Dissipation	0.13 max. watt

Typical Operation:-

Filament Voltage	2.0	2.0	2.0	2.0 d-c	volts
Plate Voltage	90	135	135	135	volts
Screen Voltage	67.5	30	45	67.5	volts
Grid Voltage	0	0	0	0	volts
Plate Current	2.48	0.65	1.25	2.5	mA.
Screen Current	0.95	0.23	0.48	0.93	mA.
Plate Resistance (approx.)	0.75	2.9	1.75	1.0	megohm
Transconductance	1020	620	820	1050	μmhos

AMPLIFIER - Class A₁ (Triode Connection).*

Plate Voltage	180 max. volts
Plate & Screen Dissipation (total)	1.1 max. watts

Typical Operation:-

Filament Voltage	2.0	2.0	2.0 d-c	volts
Plate Voltage	90	135	180	volts
Grid Voltage	-3.0	-4.5	-6.0	volts
Plate Current	1.5	3.5	5.9	mA.
Plate Resistance	14,800	10,700	9,000	ohms
Transconductance	1,000	1,400	1,700	μmhos
Amplification Factor	14.8	15.0	15.3	
Load Resistance	30,000	15,000	10,000	ohms
Total Harmonic Distortion	5	5	5	%
Power Output	13	50	100 approx.	mW.

* Negative Filament Return. The grid circuit resistance should not exceed 3 megohms except under resistance coupled conditions.

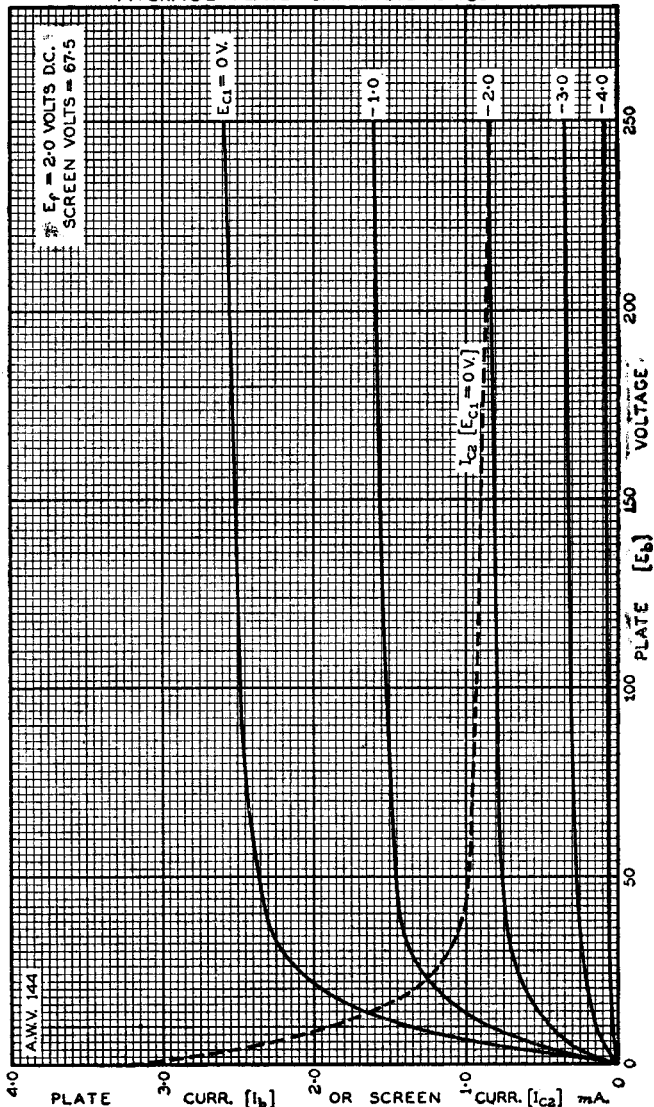
* Screen connected to plate.

RADIOTRON

1K5-G

AVERAGE PLATE CHARACTERISTICS

1K5-G
SHEET 2

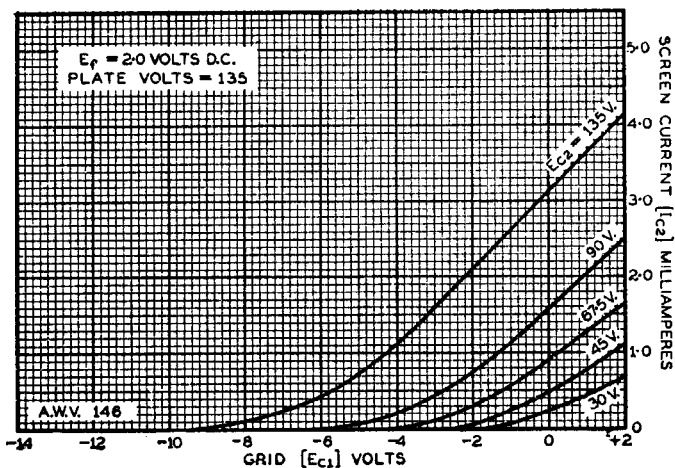
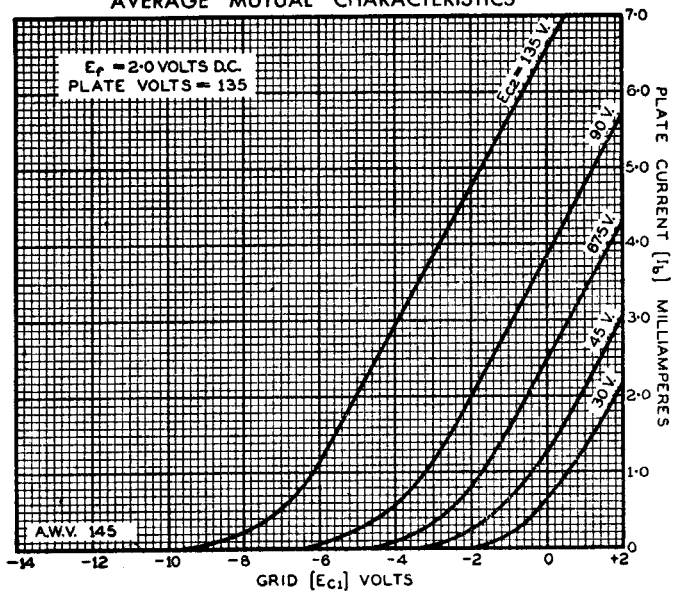


1K5-G

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1K5-G

AVERAGE MUTUAL CHARACTERISTICS

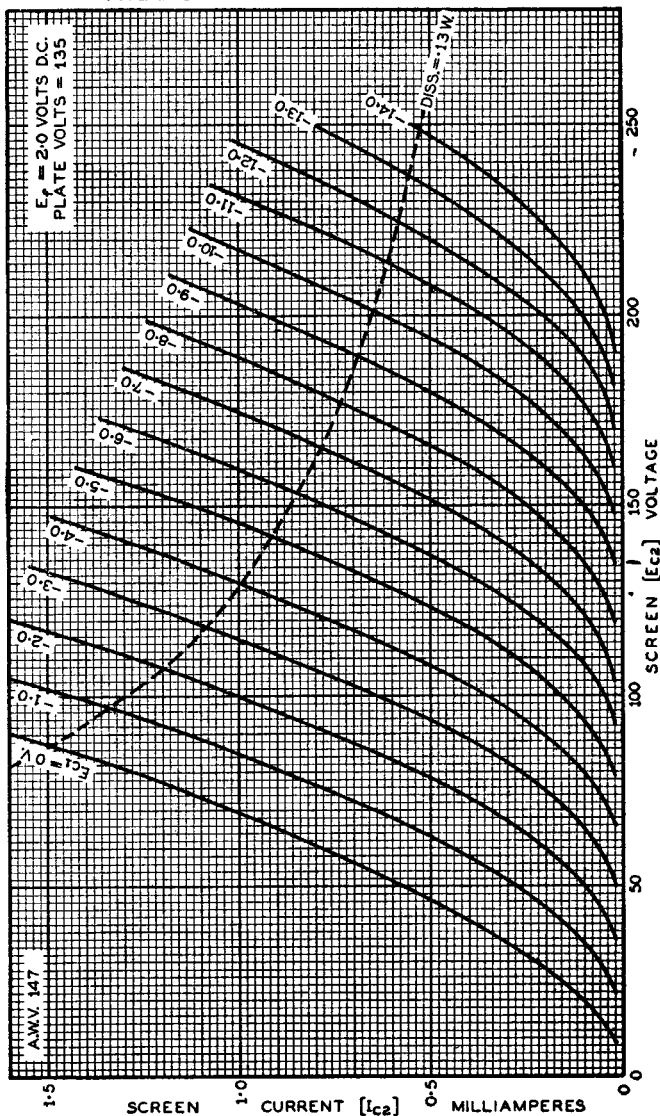


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1K5-G

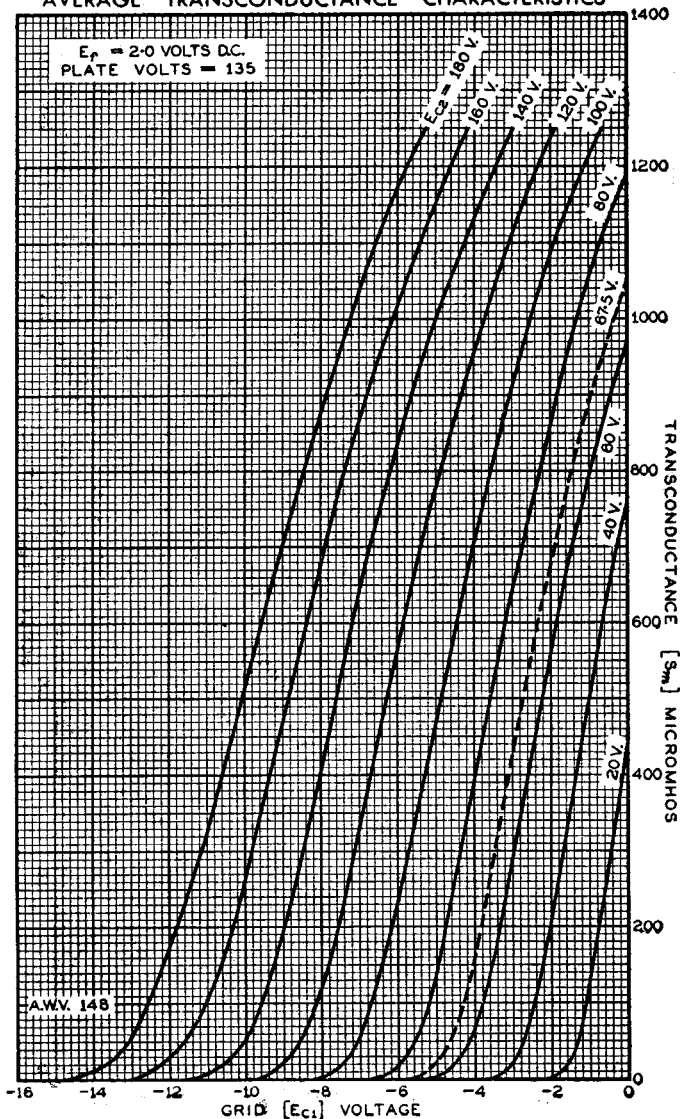
AVERAGE SCREEN CHARACTERISTICS

1K5-G
SHEET 3



1K5-G

$E_f = 2.0$ VOLTS D.C.
PLATE VOLTS = 135

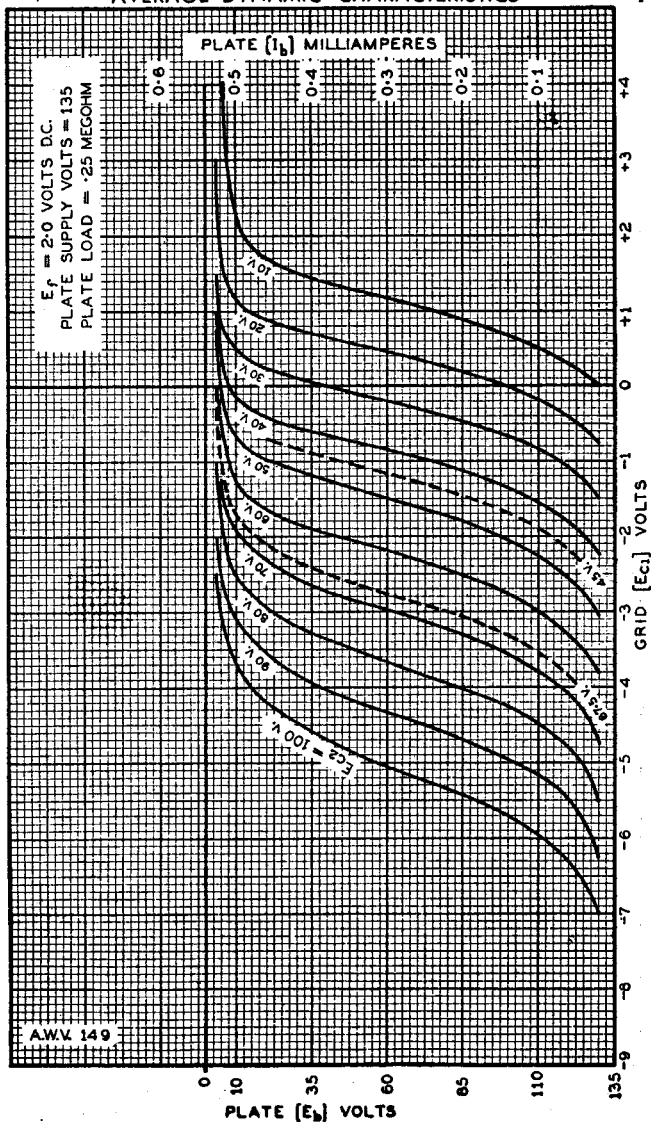


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1K5-G

AVERAGE DYNAMIC CHARACTERISTICS

1K5-G
SHEET 4

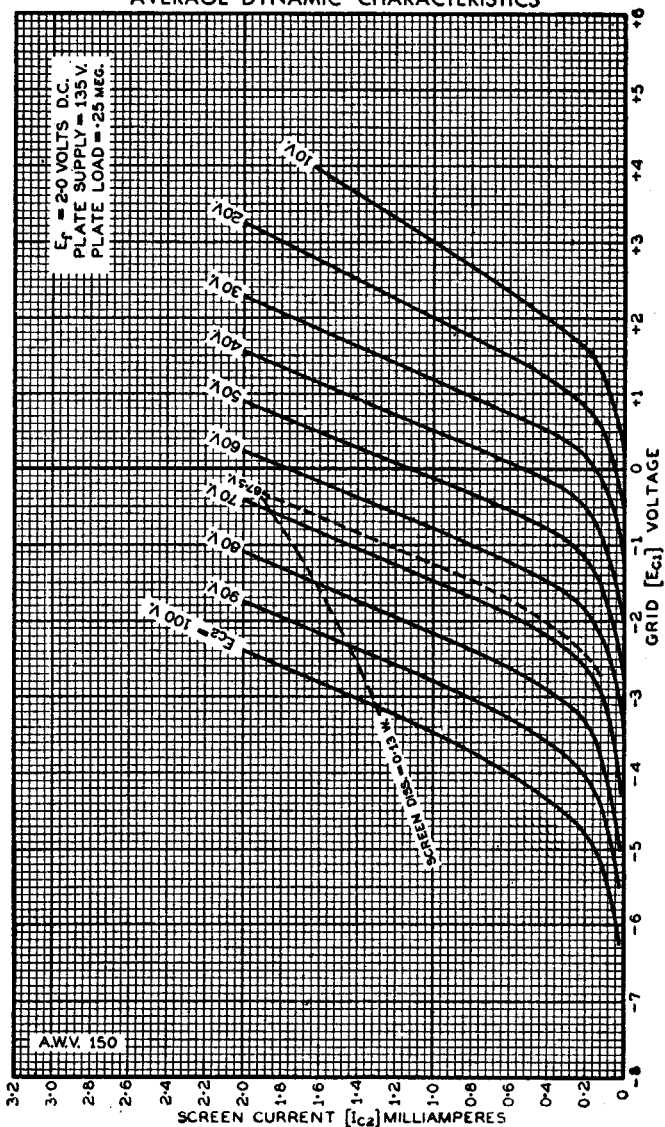


1K5-G

RADIOTRON

1K5-G

AVERAGE DYNAMIC CHARACTERISTICS

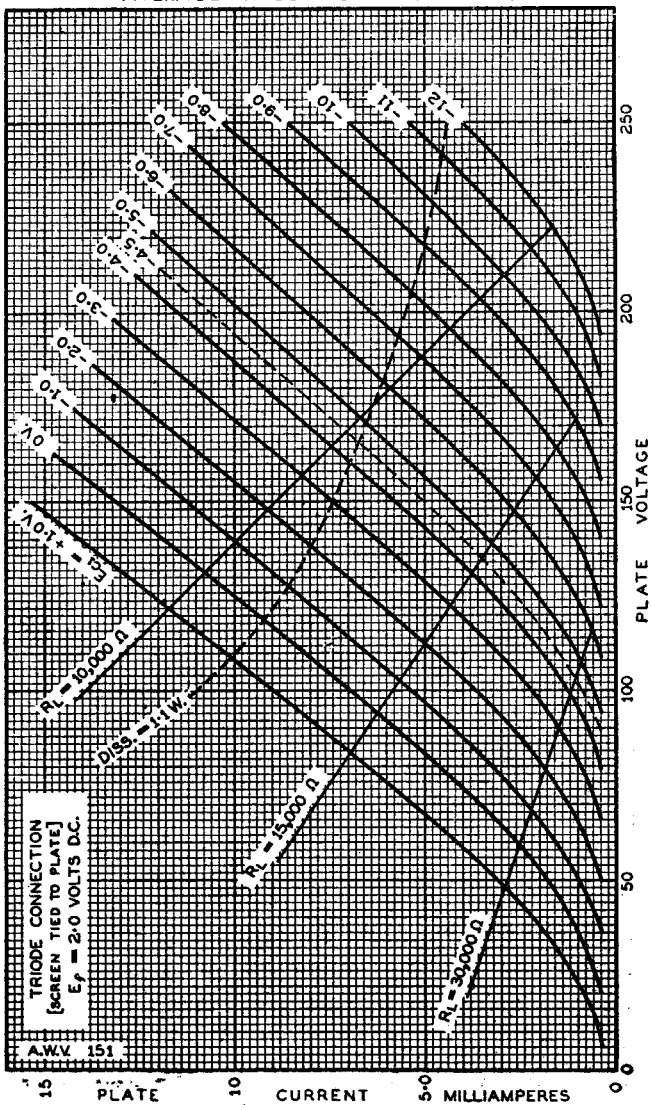


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1K5-G

AVERAGE TRIODE CHARACTERISTICS

1K5-G
SHEET 3

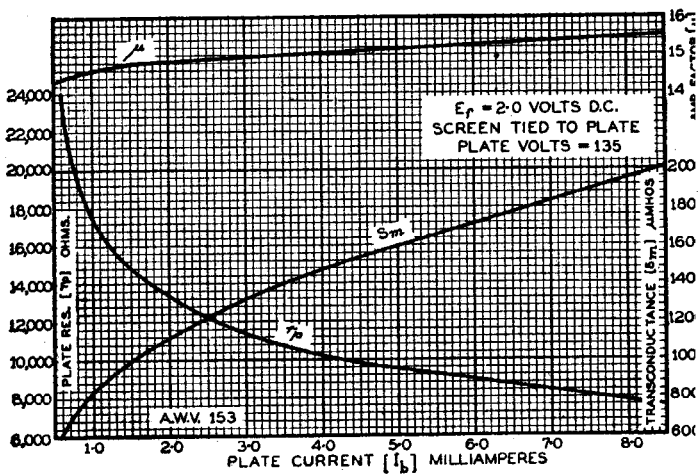
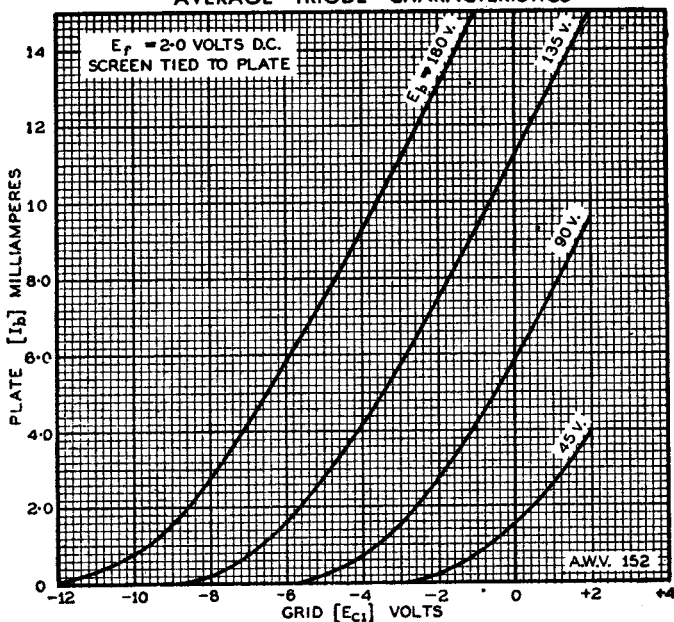


1K5-G

RADIOTRON

1K5-G

AVERAGE TRIODE CHARACTERISTICS



RADIOTRON

RESISTANCE COUPLED PENTODES

(Continued)

RESISTANCE COUPLED PENTODES

GROUP IV.

Type	Total Supply	Grid Bias Volts (Bat- tery Types)	Screen Dropping Resistor (Megohms)	Cathode Bias Resis- tor Ohms (A.C. Types)	Plate Load Resistor (Megohms)	Following Grid Resistor (Megohms)	RATIO Out- put/Input Voltages at 400~ 0.25V. Input	Decibels Gain per Stage at 400~	Peak Volt- age Output at 3% Distortion
1K4 1K5-G }	90	-1.5	0.75	—	0.25	—	59	35.4	25
	135	-1.5	0.75	—	0.25	0.5	48	33.6	20
	180	-1.5	1.0	—	0.25	0.5	75	37.5	36
1K6 1K7-G }	90	-1.5	1.0	—	0.25	0.5	62.5	35.9	30
	135	-1.5	1.0	—	0.25	0.5	88.5	39.0	48
	180	-1.5	1.0	—	0.25	0.5	74	37.4	40
	135	-1.5	1.0	—	0.25	0.5	54	34.7	22
	180	-1.5	1.0	—	0.25	0.5	45	33.1	18
							76	37.6	34
							63	36.0	28
							83	38.4	45
							69	36.8	38

GROUP V.

6C6	—	0.3	2,000	0.1	1.0	98	39.8	85
6J7-G	—	0.3	2,000	0.1	0.5	82	38.3	78
57	250	—	—	—	0.25	70	36.9	67
1603	400	—	—	—	1.0	105	41.4	135
	*	—	—	—	0.5	92	39.3	124
					0.25	80	38.1	106

RADIOTRON

1K6

1K6
1K7-G
SHEET 1

DUO-DIODE PENTODE

Filament	Coated	
Voltage	2.0	d-c volts
Current	0.12	amp.
Maximum Overall Length		4-15/16"
Maximum Diameter		1-9/16"
Bulb		ST-12
Cap		Small Metal
Mounting Position		Any

Base		Small 6-Pin
Pin 1-Filament +		Pin 4-Diode Plate #1
Pin 2-Plate		Pin 5-Screen
Pin 3-Diode Plate # 2		Pin 6-Filament -
		Cap -Grid



BOTTOM VIEW (6WA)

Maximum Ratings, Interelectrode Capacitances, Typical Operating Conditions and Curves are the same as for type 1K7-G. Types 1K6 and 1K7-G are identical electrically.

RADIOTRON

1K7-G



DUO-DIODE PENTODE

Filament	Coated	
Voltage	2.0	d-c volts
Current	0.12	amp.
Direct Interelectrode Capacitances - Pentode Unit*		
Grid to Plate	0.015 max.	μμF.
Input	5.0	μμF.
Output	10.5	μμF.

Maximum Overall Length	4-29/32"
Maximum Diameter	1-9/16"
Bulb	ST-12
Cap	Skirted Miniature
Mounting Position	Any

Base		Small Shell Octal 8-Pin
Pin 1-No Connection		Pin 6-Pentode Screen
Pin 2-Filament +		Pin 7-Filament -
Pin 3-Pentode Plate		Pin 8-No Connection
Pin 4-Diode Plate # 2		Cap -Pentode Grid
Pin 5-Diode Plate # 1		



BOTTOM VIEW (G-7AE)

Diode Plate # 2 is at positive end of filament; Diode Plate # 1 is at negative end of filament.

* With shield-can connected to negative filament terminal.

RADIOTRON

1K7-G

DUO-DIODE PENTODE

(continued from preceding page)

AMPLIFIER - Class A₁ (Pentode Connection)

Plate Voltage	180 max. volts
Screen Voltage	135 max. volts
Screen Supply Voltage	180 max. volts
Plate Dissipation	0.35 max. watt
Screen Dissipation	0.07 max. watt

Typical Operation:-

Filament Voltage	2.0	2.0	2.0	2.0	d-c	volts
Plate Voltage	135	135	135	135		volts
Screen Voltage	45	67.5	90	135		volts
Grid Voltage*	0	0	-3	-4.5		volts
Plate Current	0.9	1.8	0.9	1.5		mA.
Screen Current	0.35	0.7	0.35	0.5		mA.
Plate Resistance (approx.)	2.0	1.25	2.0	1.4		megohm
Transconductance	620	800	600	700		μmhos

AMPLIFIER - Class A₁ (Triode Connection).#

Plate Voltage	180 max. volts
Plate & Screen Dissipation (total)	0.7 max. watt

Typical Operation:-

Filament Voltage	2.0	2.0	d-c	volts
Plate Voltage	135	180		volts
Grid Voltage*	-4.5	-6		volts
Plate Current	2.0	3.5		mA.
Plate Resistance	16500	15000		ohms
Transconductance	900	1000		μmhos
Amplification Factor	15	15		
Load Resistance	30000	40000		ohms
Total Harmonic Distortion	5	5		%
Power Output	38	60	approx.	mW.

* Negative Filament Return. The grid circuit resistance should not exceed 3 megohms except under resistance coupled conditions.

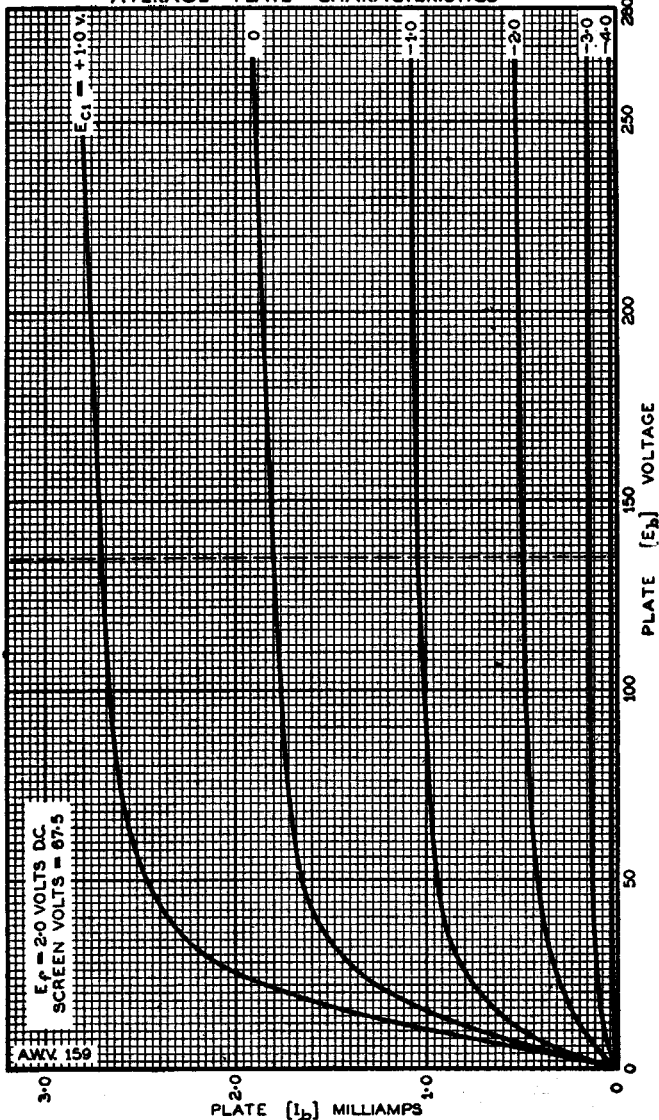
Screen connected to plate.

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1K7-G

AVERAGE PLATE CHARACTERISTICS

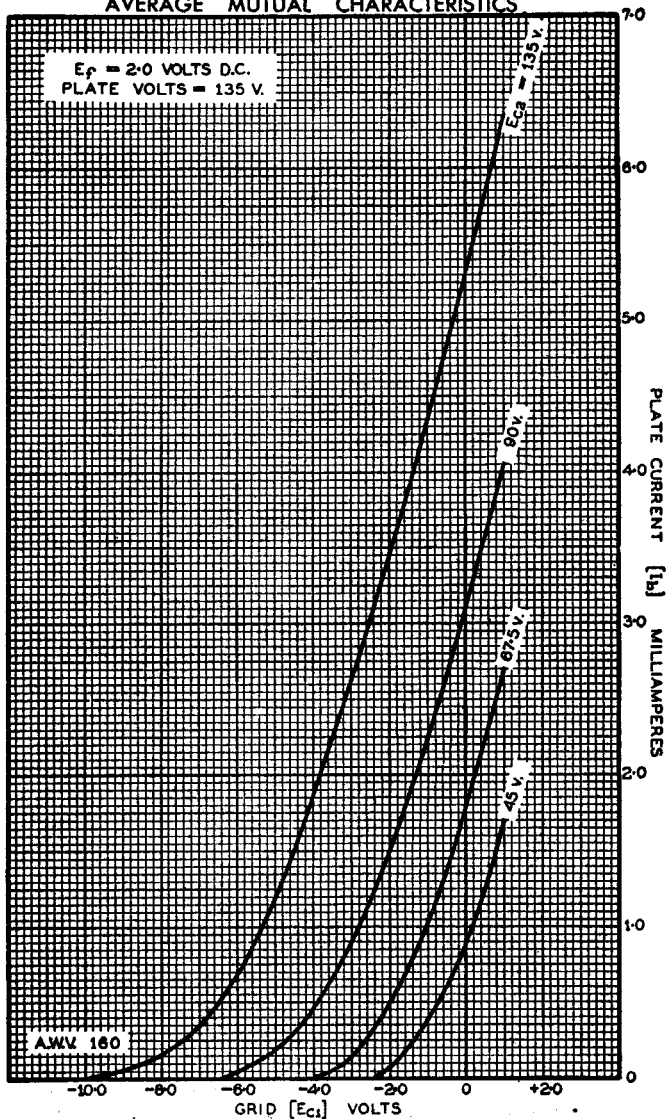
1K7-G
SHEET 2



RADIOTRON

1K7-G

AVERAGE MUTUAL CHARACTERISTICS



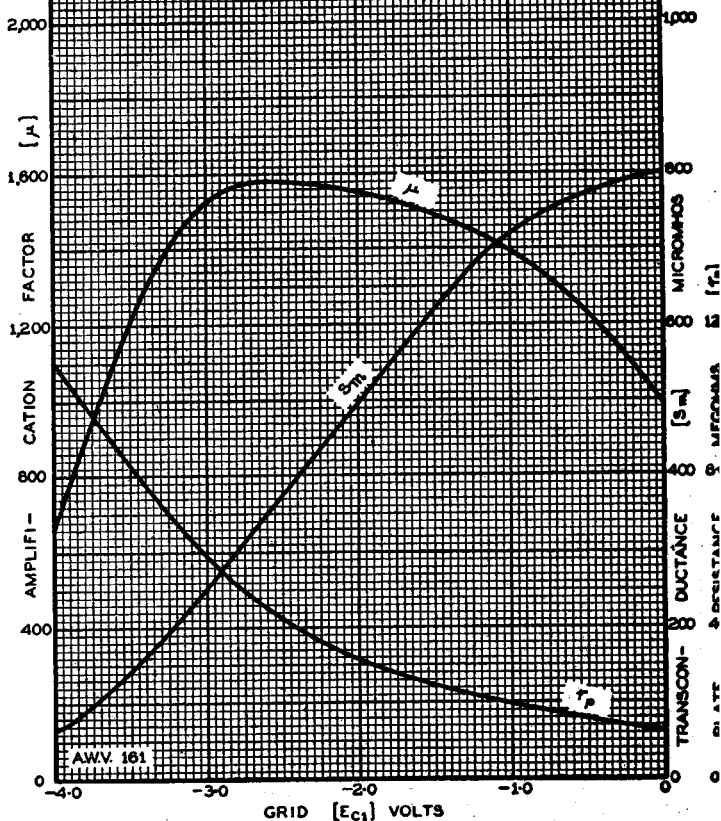
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1K7-G

AVERAGE CHARACTERISTICS

1K7-G
SHEET 9

$E_p = 200$ VOLTS D.C.
PLATE VOLTS = 135
SCREEN VOLTS = 67.5



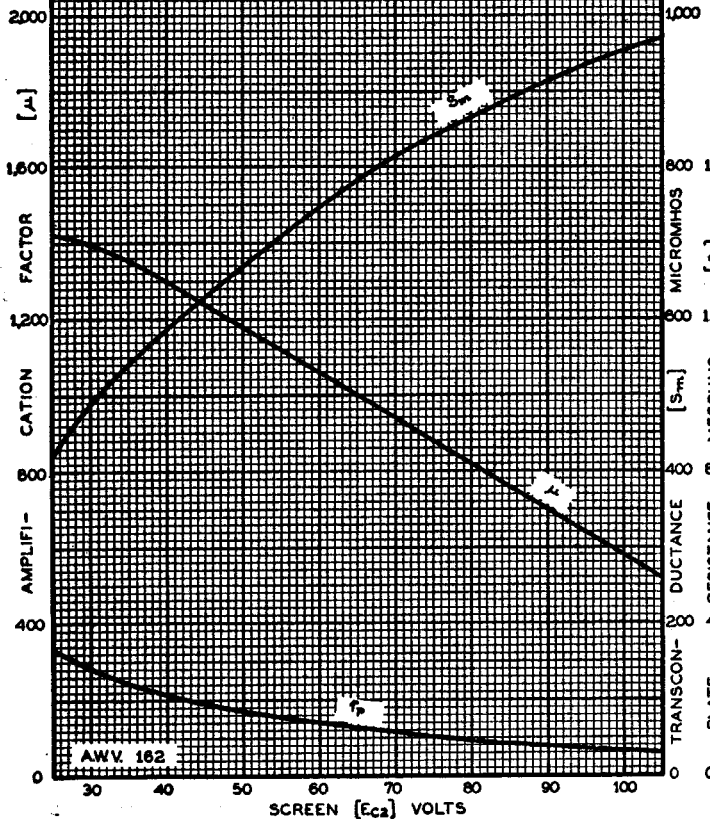
1K7-G

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1K7-G

AVERAGE CHARACTERISTICS

$E_p = 20$ VOLTS D.C.
 PLATE VOLTS = 135
 GRID VOLTS = 0

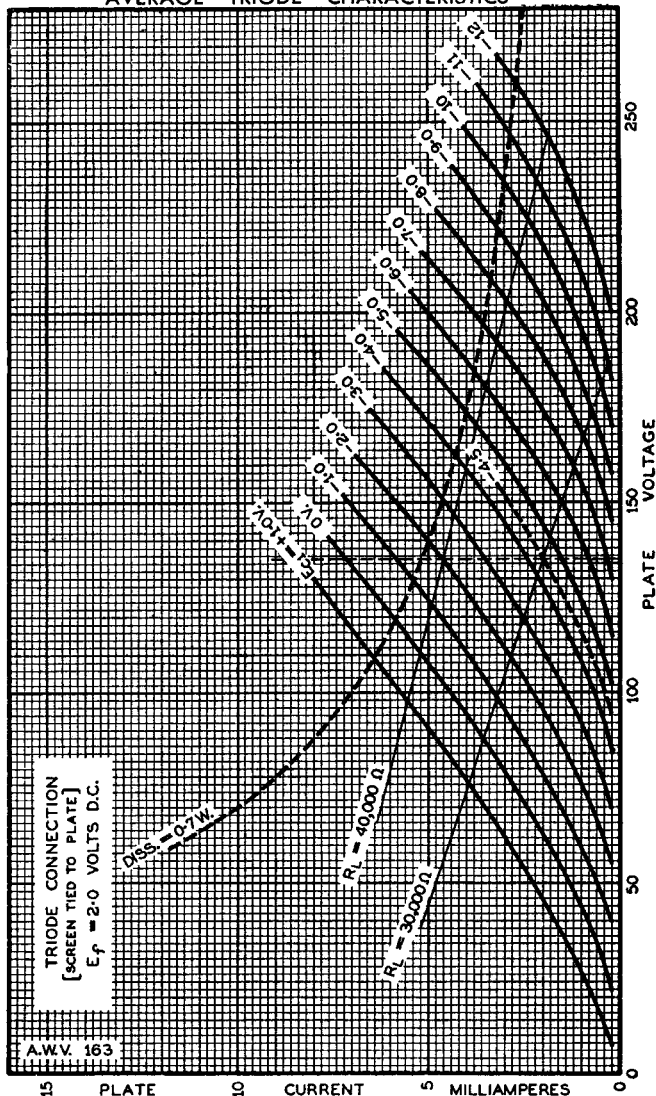


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1K7-G

AVERAGE TRIODE CHARACTERISTICS

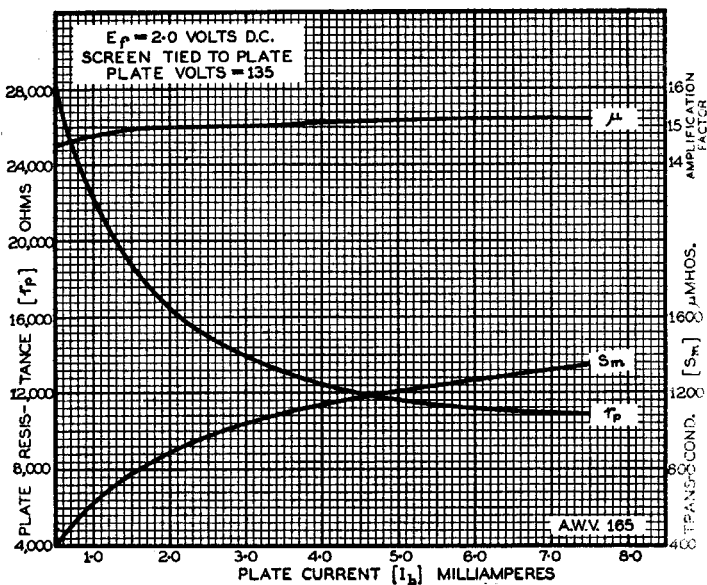
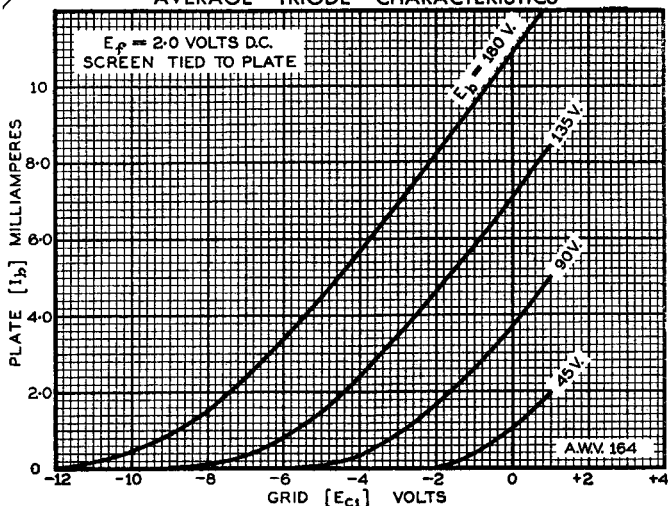
1K7-G
SHEET 4



RADIOTRON

1K7-G

AVERAGE TRIODE CHARACTERISTICS



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RESISTANCE COUPLED PENTODES

(Continued)

RESISTANCE COUPLED PENTODES									
GROUP IV.									
Type	Total Supply	Grid Bias Volts (Bat- tery Types)	Screen Dropping Resistor (Megohms)	Cathode Bias Resis- tor Ohms (A.C. Types)	Plate Load Resistor (Megohms)	Following Grid Resistor (Megohms)	RATIO Out- put/Input Voltages at 400~ 0.25V. Input	Decibels Gain per Stage at 400~	Peak Volt- age Output at 3% Distortion
1K4 1K5-G }	90	-1.5	0.75	—	0.25	—	59	35.4	25
	135	-1.5	0.75	—	0.25	0.5	48	33.6	20
	180	-1.5	1.0	—	0.25	0.5	75	37.5	36
1K6 1K7-G }							62.5	35.9	30
							88.5	39.0	48
							74	37.4	40
	90	-1.5	1.0	—	0.25	0.5	54	34.7	22
	135	-1.5	1.0	—	0.25	0.5	45	33.1	18
	180	-1.5	1.0	—	0.25	0.5	76	37.6	34
GROUP V.									
6C6 6J7-G 5Y 1603 }		—	0.3	2,000	0.1	1.0	98	39.8	85
						0.5	82	38.3	78
	250					0.25	70	36.9	67
	400	—	0.3	2,000	0.1	1.0	105	41.4	135
	*					0.5	92	39.3	124
						0.25	80	38.1	106

RADIOTRON

1L5-G

POWER AMPLIFIER PENTODE

1L5-G
SHEET 1

Filament	Coated	
Voltage	2.0	d-c volts
Current	0.24	amp.

Direct Interelectrode Capacitances

Pentode Connection:-		
Grid to Plate	1.0	μ F.
Input	8.0	μ F.
Output	11.0	μ F.
Triode Connection:-		
Grid to Plate	2.6	μ F.
Input	6.4	μ F.
Output	13.7	μ F.

Maximum Overall Length

4-21/32"

Maximum Diameter

1-13/16"

Bulb

ST-14

Mounting Position

Vertical, Base Down

Base

Medium Shell Octal 7-Pin

Pin 1-No Connection

Pin 5-Grid

Pin 2-Filament +

Pin 7-Filament -

Pin 3-Plate

BOTTOM VIEW (G-6X) Pin 8-No Connection

Pin 4-Screen

AMPLIFIER - CLASS A₁ (Pentode Connection)

Plate Voltage	180	max. volts
Screen Voltage	180	max. volts
Plate Dissipation	1.8	max. watts
Screen Dissipation	0.5	max. watt

Typical Operation:

Filament Voltage	2.0	2.0	2.0	d-c volts
Plate Voltage	90	135	180	volts
Screen Voltage	90	135	180	volts
Grid Voltage*	-2.5	-4.5	-6.0	volts
Cathode Resistor	555	600	508	ohms
Peak A-F Grid Voltage	-2.75	-4.75	-6.25	volts
Plate Resistance (approx.)	0.175	0.15	0.137	megohm
Transconductance	1830	2150	2400	μ mhos
Zero-Sig. Plate Current	3.6	6.0	9.5	mA.
Max.-Sig. Plate Current	3.6	6.4	9.7	mA.
Zero-Sig. Screen Current	0.9	1.5	2.3	mA.
Max.-Sig. Screen Current	1.5	2.4	4.0	mA.
Load Resistance	25000	15000	15000	ohms
Total Harmonic Distortion	10	10	8	%
Power Output	120	340	750	mW.

AMPLIFIER - CLASS A₁ (Triode Connection)[#]

Plate Voltage	180	max. volts
Plate & Screen Dissipation (total)	2.0	max. watts
Cathode Current	13.0	max. mA.

Typical Operation:

Filament Voltage	2.0	d-c volts
Plate Voltage	135	volts
Grid Voltage	-6.0	volts
Peak A-F Grid Voltage	6.25	volts
Zero-Sig. Plate Current	4.4	mA.
Max.-Sig. Plate Current	4.7	mA.
Plate Resistance	6750	ohms
Transconductance	1940	μ mhos
Amplification Factor	13.1	
Load Resistance	12000	ohms
Second Harmonic Distortion	5	%
Power Output	105	mW.

* Horizontal operation permitted if pins 2 and 7 are in a vertical plane.

* Relative to Negative Filament Return. The d-c resistance in the grid circuit should be limited to 1.0 megohm.

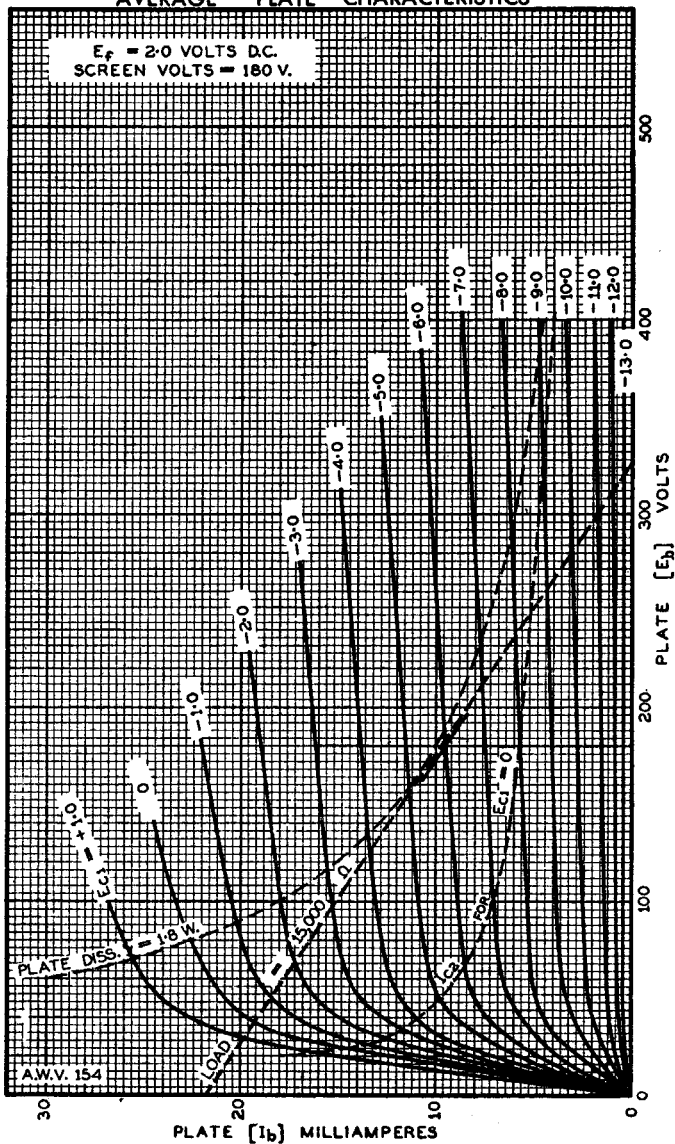
[#] Screen connected to plate.

1L5-G

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1L5-G

AVERAGE PLATE CHARACTERISTICS



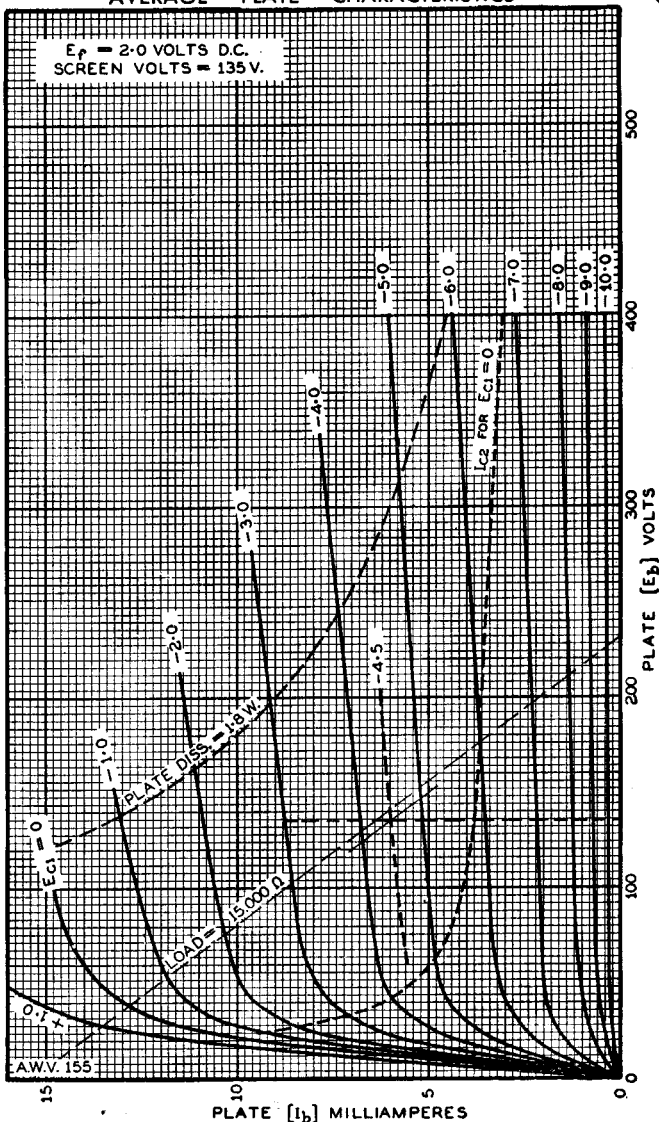
RADIOTRON

1L5-G

AVERAGE PLATE CHARACTERISTICS

1L5-G
SHEET 2

$E_f = 2.0$ VOLTS D.C.
SCREEN VOLTS = 135 V.

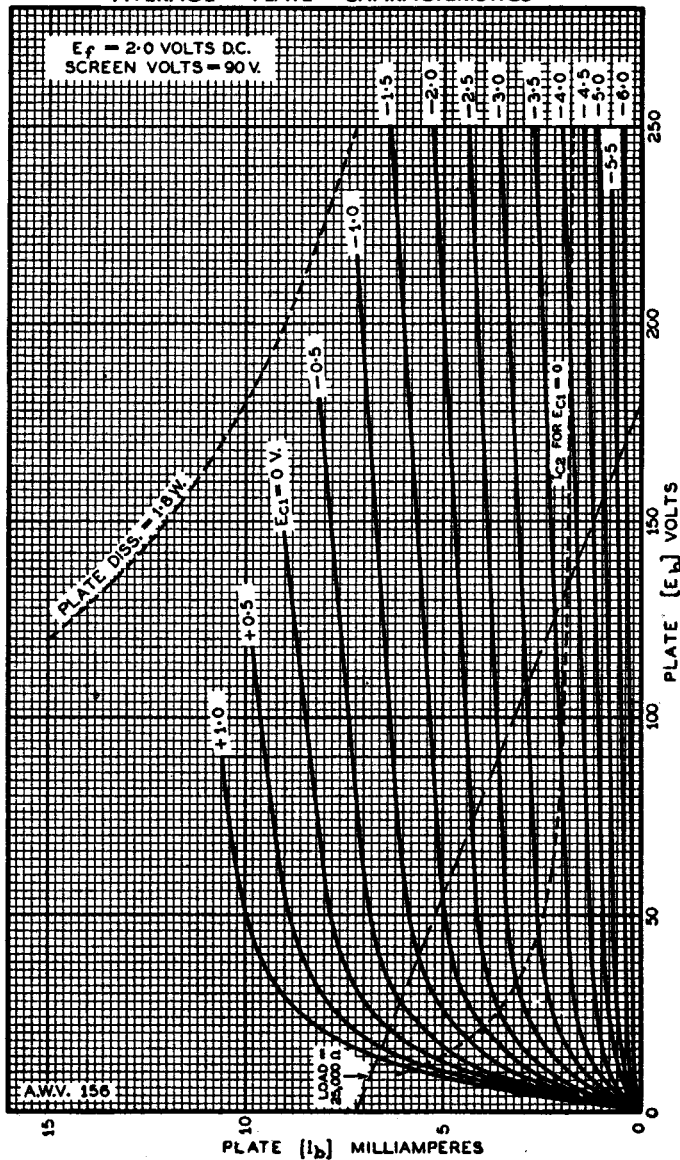


1L5-G

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1L5-G

AVERAGE PLATE CHARACTERISTICS

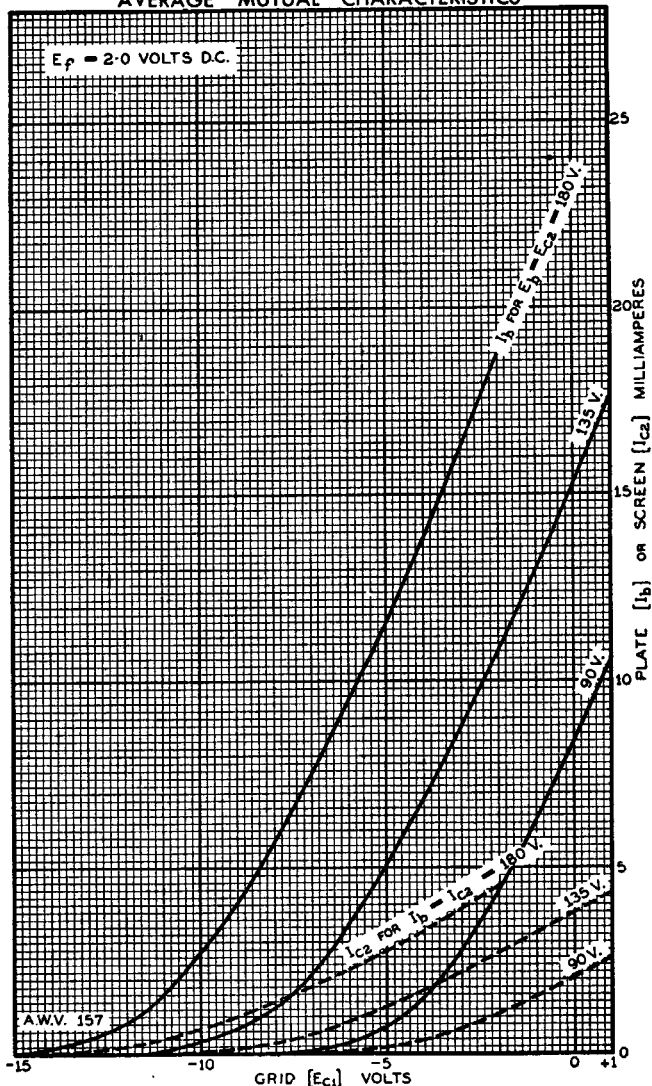


RADIOTRON

1L5-G

1L5-G
SHEET 3

AVERAGE MUTUAL CHARACTERISTICS

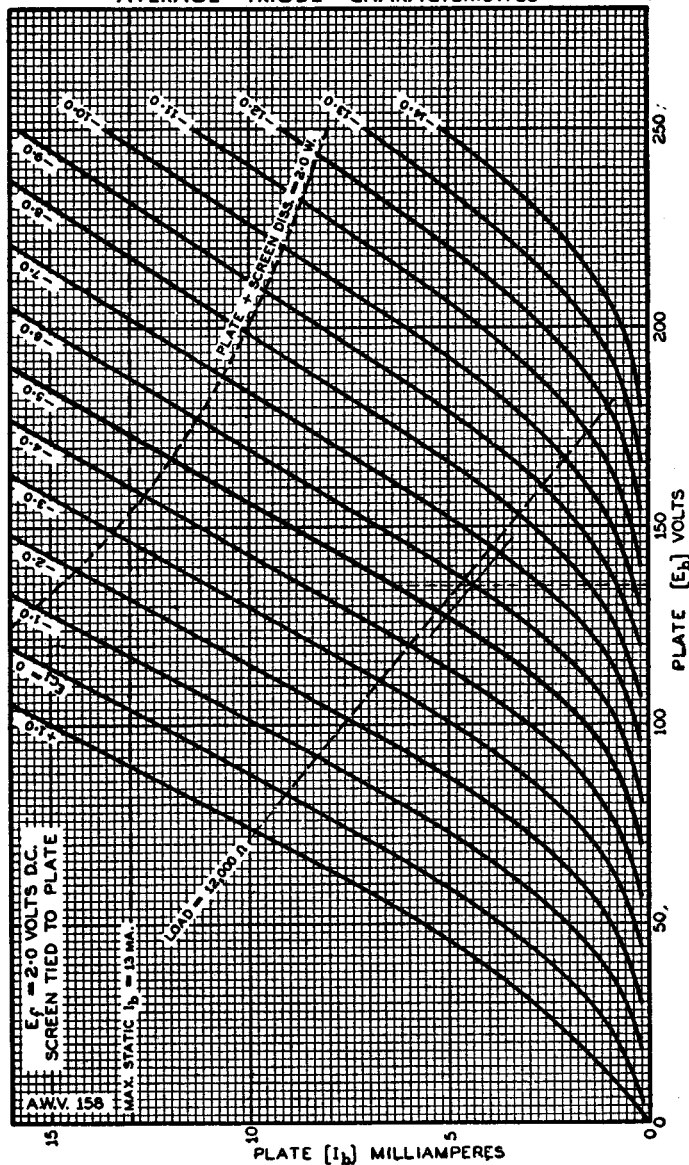


1L5-G

RADIOTRON

1L5-G

AVERAGE TRIODE CHARACTERISTICS



RADIOTRON

1M5-G

SUPER CONTROL R.F. AMPLIFIER PENTODE

 1M5-G
SHEET 1

Filament	Coated		
Voltage	2.0		d-c volts
Current	0.12		amp.
Direct Interelectrode Capacitances*:			
Grid to Plate	0.010	max.	μ F.
Input	6.0		μ F.
Output	9.5		μ F.
Maximum Overall Length			4-29/32"
Maximum Diameter			1-9/16"
Bulb			ST-12
Cap			Skirted Miniature
Mounting Position			* Vertical
Base			Small Shell Octal 7-Pin
Pin 1-No Connection			Pin 5-No Connection
Pin 2-Filament +			Pin 7-Filament -
Pin 3-Plate			Pin 8-No Connection
Pin 4-Screen			Cap -Grid



BOTTOM VIEW (G-5Y)

AMPLIFIER - Class A₁

Plate Voltage	180 max. volts
Screen Voltage	90 max. volts
Screen Supply Voltage	180 max. volts
Grid Voltage	0 min. volts
Plate Dissipation	0.5 max. watt
Screen Dissipation	0.1 max. watt

Typical Operation:					
Filament Voltage	2.0	2.0	2.0	2.0	d-c volts
Plate Voltage	135	135	135	135	volts
Screen Voltage	30	45	67.5	90	volts
Grid Voltage ^Δ	0	0	0	-3	volts
Plate Current	0.65	1.25	2.5	1.5	mA.
Screen Current	0.25	0.5	0.9	0.5	mA.
Plate Resistance (approx.)	2.54	1.56	0.8	1.85	megohms
Transconductance	600	780	1000	700	μ hos
Transconductance [◊]	-	-	4	-	μ hos

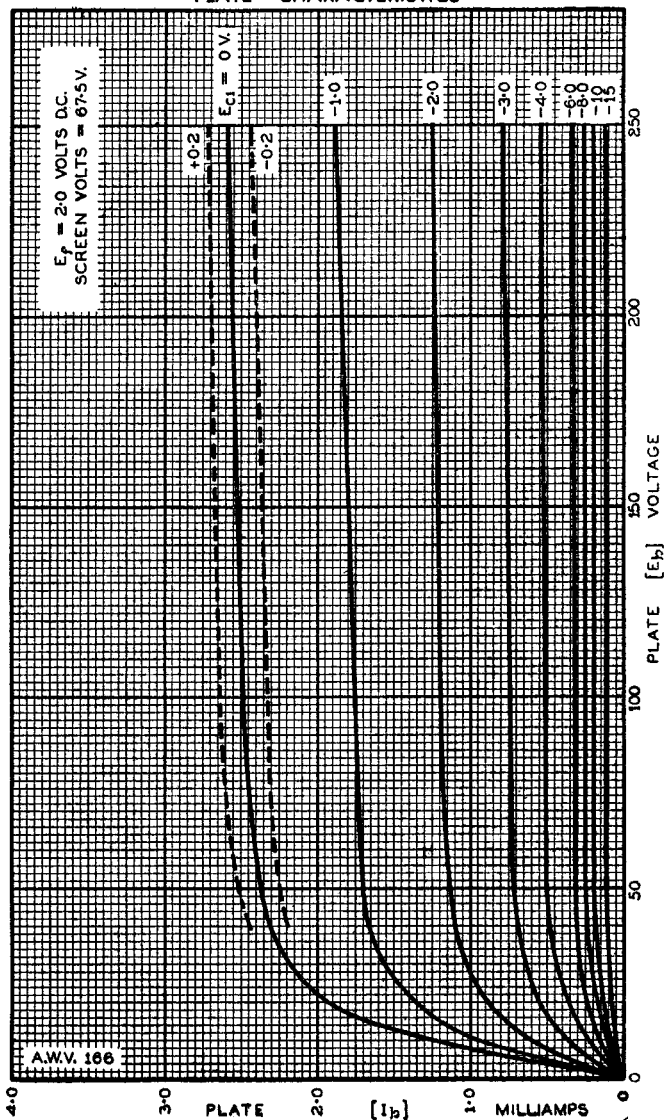
- * With shield-can connected to negative filament terminal.
- * Horizontal operation permitted if plane of filament is vertical.
- ^Δ Negative filament return. The grid circuit resistance should not exceed 3 megohms for a single controlled stage, 2.5 megohms for two controlled stages, or 2 megohms for three controlled stages.
- [◊] For a negative grid bias of -16.0 volts.

1M5-G

RADIOTRON

1M5-G

PLATE CHARACTERISTICS



RADIOTRON

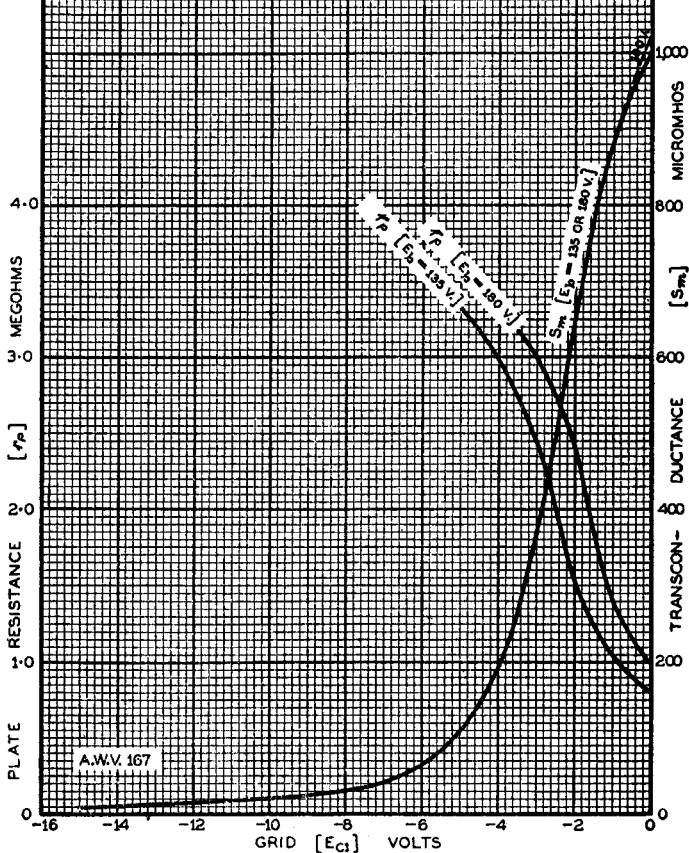
1M5-G

AVERAGE CHARACTERISTICS

1M5-G
SHEET 2

$E_f = 2.0$ VOLTS D.C.

SCREEN VOLTS = 67.5



AMALGAMATED WIRELESS VALVE CO. PTY. LTD.

JULY 1941

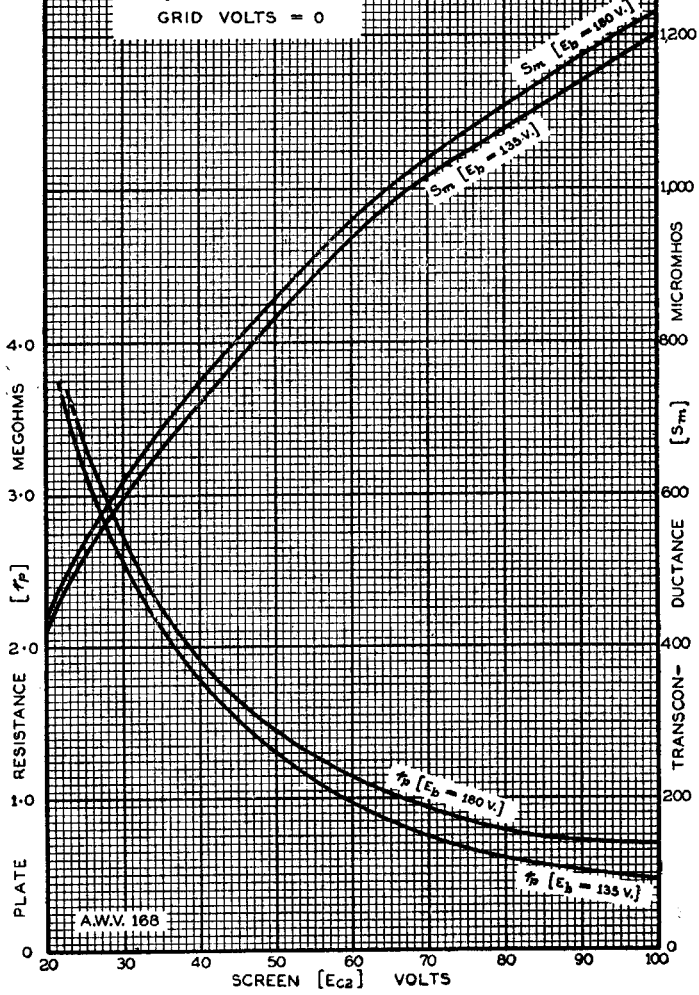
SYDNEY, AUSTRALIA

1M5-G

RADIOTRON

1M5-G
AVERAGE CHARACTERISTICS

$E_f = 2.0$ VOLTS D.C.
GRID VOLTS = 0



A.W.V. 168

RADIOTRON

4 2

POWER AMPLIFIER PENTODE

Heater	Coated Unipotential Cathode	
Voltage	6.3	a-c or d-c volts
Current	0.7	amp.
Maximum Overall Length		4-11/16"
Maximum Seated Height		4-1/16"
Maximum Diameter		1-13/16"
Bulb		ST-14
Base		Medium 6-Pin
Pin 1-Heater		Pin 4-Grid
Pin 2-Plate		Pin 5-Cathode
Pin 3-Screen		Pin 6-Heater



BOTTOM VIEW (6B)

For additional data and curves, refer to type 6F6-G.

RADIOTRON

4 5

POWER AMPLIFIER TRIODE

Filament	Coated	
Voltage	2.5	a-c or d-c volts
Current	1.5	amp.
Direct Interelectrode Capacitances:		
Grid to Plate	7.0	μF
Grid to Filament	4.0	μF
Plate to Filament	3.0	μF
Maximum Overall Length		4-11/16"
Maximum Seated Height		4-1/16"
Maximum Diameter		1-13/16"
Bulb		ST-14
Base		Medium 4-Pin
Pin 1-Filament		Pin 3-Grid
Pin 2-Plate		Pin 4-Filament
Mounting Position		0 Vertical, Base Down



BOTTOM VIEW (4D)

SINGLE VALVE AMPLIFIER-Class A1

Plate Voltage				300 max. volts
Plate Dissipation				10 max. watts
Typical Operation:				
Filament Voltage	2.5	2.5	2.5	a-c volts
Zero-Sig. Plate Voltage	180	250	275	volts
Zero-Sig. Grid Volts*	-31.5	-50	-56	volts
Cath. Bias Res.	1020	1470	1550	ohms
Zero-Sig. Plate Cur.	31	34	36	mA.
Amplification Factor	3.5	3.5	3.5	
Plate Resistance	1650	1810	1700	ohms
Transconductance	2125	2175	2050	μmhos
Load Resistance	2700	3900	4600	ohms
Dominant Harmonic	2nd.	2nd.	2nd.	
Total Harm. Dist.	5	5	5	%
Max. Sig. Pwr. Output	.825	1.6	2.0	watts

PUSH-PULL AMPLIFIER-Class A1

Plate Voltage		300 max. volts
Plate Dissipation (per valve)		10 max. watts

RADIOTRON

45

POWER AMPLIFIER TRIODE

Typical Operation:

Filament Voltage	2.5	2.5	2.5	a-c volts
Zero-Sig. Plate Voltage	180	250	275	volts
Zero-Sig. Grid Volts*	-31.5	-50	-56	volts
Zero-Sig. Cath. Bias Res.**	510	735	775	ohms
Zero-Sig. Plate Cur.**	62	68	72	mA.
Load Resistance (P-P)	3200	4200	3900	ohms
Dominant Harmonic	3rd.	3rd.	3rd.	
Total Harm. Dist.	2	1	1	approx. %
Max. Sig. Pwr. Output**	1.85	4.6	5.5	watts

PUSH-PULL AMPLIFIER-Class AB₁

Plate Voltage	300 max. volts
Plate Dissipation (per valve)	10 max. watts

Typical Operation. Fixed Bias:

Filament Voltage	2.5	2.5	2.5	a-c volts
Plate Voltage	250	275	300	volts
Grid Voltage*	-56.5	-69.5	-71.5	volts
Peak A-F Volts (G-G)	110	136	140	volts
Zero-Sig. Plate Cur.**	38	28	40	mA.
Max.-Sig. Plate Cur.**	68	82	81.2	mA.
Plate Supply Res.	0	0	0	ohms
Load Resistance (P-P)	3900	4000	3850	ohms
Dominant Harmonic	3rd.	3rd.	3rd.	
Total Harm. Dist.	2	2	1	approx. %
Max. Sig. Pwr. Output**	4.85	6.0	7.5	watts

Typical Operation. Self Bias:

Filament	2.5	2.5	2.5	a-c volts
Plate Voltage	250	275	300	volts
Cathode Resistor**	830	850	1000	ohms
Peak A-F Volts (G-G)*	110	136	140	volts
Zero-Sig. Plate Cur.**	61	67	64.5	mA.
Max.-Sig. Plate Cur.**	68	82	72	mA.
Plate Supply Res.	0	0	0	ohms
Load Res. (P-P)	3900	4000	5000	ohms
Dominant Harmonic	3rd.	3rd.	3rd.	
Total Harm. Dist.	2	2	1	approx. %
Max. Sig. Pwr. Output**	4.85	6.0	7.4	watts

PUSH-PULL AMPLIFIER-Class AB₂

Plate Voltage	300 max. volts
Plate Dissipation (per valve)	10 max. watts

Typical Operation. Fixed Bias:

Filament Voltage	2.5	2.5	2.5	a-c volts
Plate Voltage	275	275	275	volts
Grid Voltage*	-56	-68	-76	volts
Peak A-F Volts (G-G)	183	195	239	volts
Peak Grid Current	5.3	6.73	8.36	mA.
D-C Grid Current**	2.5	2.74	4.0	mA.
Grid Input Peak Pwr.	486	656	1000	mW.
Plate Supply Res.	0	0	0	ohms
Zero-Sig. Plate Cur.**	72	28	10	mA.
Max.-Sig. Plate Cur.**	133	138	136	mA.
Load Res. (P-P)	3900	3200	3490	ohms
Total Harm. Dist.	5	5	5	%
Max. Sig. Pwr. Output**	17	18.2	19.1	watts

Typical Operation. Self Bias:

Filament Voltage	2.5	2.5	2.5	a-c volts
Plate Voltage	275	275	275	volts
Cathode Resistor**	775	775	775	ohms
Zero-Sig. Grid Volts*	-56	-56	-56	volts
Max.-Sig. Grid Volts	-68	-69.5	-75.5	volts

RADIOTRON

45

POWER AMPLIFIER TRIODE

45
SHEET 2

Peak A-F Volts (G-G)	186.6	210	221.8	volts
Peak Grid Current	5.02	10.8	7.4	mA.
D-C Grid Current ⁺⁺	2.66	4.0	3.92	mA.
Grid Input Peak Pwr.	464 [■]	1110 [▲]	820	mW.
Plate Supply Res.	1000	1000	0	ohms
Zero-Sig. Plate Cur. ⁺⁺	72	72	72	mA.
Max.-Sig. Plate Cur. ⁺⁺	84	86	94	mA.
Max.-Sig. Plate Volts	250	246	256	volts
Load Res. (P-P)	5520	5810	5420	ohms
Total Harm Dist.	5	5	5	%
Max. Sig. Pwr. Output ⁺⁺	11.2	12.7	13.2	watts

[▲] Grid volts measured from mid-point of a-c operated filament

[○] Horizontal operation permitted if plane of filament is vertical.

[■] A grid return circuit having low d-c resistance is desirable. With self-bias the d-c resistance should not exceed 1.0 megohm; with fixed bias it should not exceed 0.1 megohm.

⁺⁺ For both valves.

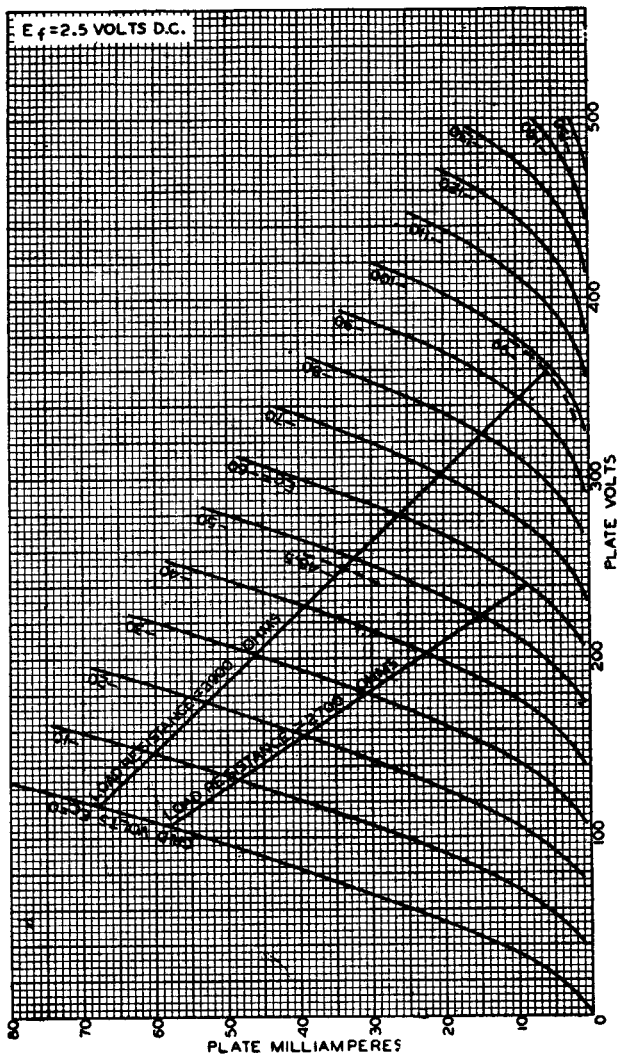
[■] A suitable driver would be type 6J7-G, 6C6 or 57 (triode connected), plate voltage 250 volts, grid voltage -8.0 volts with a transformer having a ratio of 1.15:1 primary to half-secondary, primary resistance 1350 ohms, half secondary resistance 925 ohms and core loss not greater than 10%. Cathode loading of the driver is desirable.

[▲] A suitable driver stage would consist of two type 6J7-G, 6C6 or 57 (triode connected) in push-pull, plate voltage 250 volts, grid voltage -8.0 volts, with a transformer having a ratio of 2.04:1 total primary to half secondary, total primary resistance 2480 ohms, half secondary resistance 820 ohms and core loss not greater than 10%. Cathode loading of the driver is desirable.

RADIOTRON

45

AVERAGE PLATE CHARACTERISTICS



AMALGAMATED WIRELESS VALVE CO., LTD.

SYDNEY, AUSTRALIA

TYPE 6AE8

TRIODE-HEXODE FREQUENCY CONVERTER

MECHANICAL DATA

Style	miniature
Cathode	coated, unipotential
Bulb	T6 $\frac{1}{2}$
Base	Small button Noval 9 pin
Maximum overall length	2 $\frac{1}{2}$ "
Maximum diameter	7/8"
Basing	8DU

Pin Connections:

Pin 1	.. screen grid
Pin 2	.. control grid
Pin 3	.. cathode
Pin 4	.. heater
Pin 5	.. heater
Pin 6	.. hexode plate
Pin 7	.. triode grid and injection grid
Pin 8	.. triode plate
Pin 9	.. internal connection. Do not use.

ELECTRICAL DATA

RATINGS -- Design Center Values

Plate Voltage	250 volts max.
Screen Voltage	100 volts max.
Oscillator Plate Voltage	100 volts max.
Cathode Current	20 mA max.

TYPICAL OPERATION

Heater Voltage	6.3 Volts
Heater Current	0.3 approx. amp.
Hexode Plate Voltage	250 Volts
Triode Plate Voltage	100 Volts
Screen Grid Voltage	75 Volts
Control Grid Voltage	0 Volts
Oscillator Grid Voltage	10 peak Volts
Oscillator Grid Resistor	50,000 ohms
Hexode Plate Current	4.5 mA

Screen Grid Current		3.4 mA
Triode Plate Current		4.5 mA
Conversion Conductance:		
At $V_{g1} = 0$		780 umhos
At $V_{g1} = 21$		7.8 umhos
Plate Resistance		0.7 Megohm

6AM5

POWER AMPLIFIER PENTODE

MINIATURE TYPE

GENERAL DATA

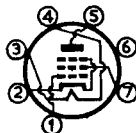
Electrical:

Heater, for Unipotential Cathode:		
Voltage	6.3	a.c. or d.c. volts
Current	0.2	amp.
Direct Interelectrode Capacitance (Approx.):		
Grid to Plate	0.5 max.	μpF
Input	4.2	μpF
Output	3.2	μpF

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-1/8"
Maximum Seated Height	1-15/16"
Maximum Diameter	3/4"
Bulb	T-5-1/2
Base	Miniature Button 7-Pin

- Pin 1 - Grid No. 1
- Pin 2 - Cathode and
Grid No. 3
- Pin 3 - Heater
- Pin 4 - Heater



- Pin 5 - Plate
- Pin 6 - No
Connection
- Do not use
- Pin 7 - Grid No. 2

BOTTOM VIEW

AMPLIFIER -- Class A₁

Pentode Connection

Maximum Ratings:

Plate Voltage	250 max. volts
Grid No. 2 (Screen) Voltage	250 max. volts
Plate Dissipation	4 max. watts
Grid No. 2 (Screen) Dissipation	0.6 max. watt
Plate Current	25 max. mA
Peak Heater-Cathode Voltage	50 max. volts

Typical Operation and Characteristics:

Single Valve Amplifier - Class A₁

Plate Voltage	200	250 volts
Grid No. 2 (Screen) Voltage	200	250 volts
Grid No. 1 (Control) Voltage	-7.5	-13.5 volts
Cathode Bias Resistance	330	750 ohms
Peak A.F. Grid No. 1 Voltage	-	7.5 volts
Plate Current	20	16 mA
Grid No. 2 Current	3	2.4 mA
Plate Resistance	-	0.15 megohm

6AM5

POWER AMPLIFIER PENTODE

Mutual Conductance	-	2,600	μ hos
Amplification Factor	-	390	
Load Resistance	10,000	16,000	ohms
Total Harmonic Distortion	7	10	%
Max.-Sig. Power Output	1.25	1.4	watts

Push Pull Amplifier - Class AB₁

Values are for two valves

	<u>Cathode Bias</u>	<u>Fixed Bias</u>	
Plate Voltage	250	250	volts
Grid No. 2 (Screen) Voltage	250	250	volts
Grid No. 1 (Control) Voltage	-	-19	volts
Cathode Bias Resistance	600	-	ohms
Peak A.F. Grid No. 1 Voltage	34	37	volts
Zero-Sig. Plate Current	22	10	mA
Max.-Sig. Plate Current	25.6	32	mA
Zero-Sig. Grid No. 2 Current	3.2	1.3	mA
Max.-Sig. Grid No. 2 Current	8.2	9	mA
Load Resistance	24,000	20,000	ohms
Total Harmonic Distortion	3.2	3.3	%
Max.-Sig. Power Output	4	4.8	watts

Amplifier - Class A₁

Triode Connection #

Maximum Ratings:

Plate Voltage	250 max.	volts
Plate Dissipation	4.6 max.	watts
Plate Resistance †	3,850	ohms
Mutual Conductance †	3,000	μ hos
Amplification Factor †	11.5	

Screen tied to plate at socket

† Measured at Ebb = 250V $E_{c1} = -13V$.

.6AR7-GT

DUO-DIODE PENTODE

REMOTE CUT-OFF TYPE

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:		a.c. or d.c. volts
Voltage	6.3	
Current	0.3	amp.

Direct Interelectrode Capacitances: ϕ

Grid No.1 to Plate	0.003	max.	μF
Input	5.0		μF
Output	9.0		μF
Diode No.1 to Diode No.2	0.3	max.	μF
Diode No.1 to Grid No.1	0.00045	max.	μF
Diode No.2 to Grid No.1	0.00045	max.	μF

Mechanical:

Mounting Position	Any
Maximum Overall Length	3-3/8"
Maximum Seated Height	3-1/16"
Maximum Diameter	1-5/16"
Bulb	T9
Cap	Skirted miniature- Style C
Base	Intermediate Shell Octal 8-Pin

- Pin 1 - Heater
- Pin 2 - Base shield
and metal
shell.
- Pin 3 - Plate
- Pin 4 - Grid No.2
(Screen)
- Pin 5 - Diode No.2



BOTTOM
VIEW

- Pin 6 - Diode No.1
- Pin 7 - Cathode,
Grid No.3 &
internal
shields.
- Pin 8 - Heater
- Cap - Grid No.1

PENTODE UNIT

Maximum Ratings; Design-Centre Values:

Plate Voltage	300 max. volts
Grid No.2 (Screen) Voltage	125 max. volts
Grid No.2 Supply Voltage	300 max. volts
Plate Dissipation	2.25 max. watts
Screen Dissipation	0.35 max. watts
Grid No.1 (Control-Grid) Voltage:	
Negative Bias Value	0 min. volts
Peak Heater-Cathode Voltage:	
Heater negative with respect to cathode	90 max. volts
Heater positive with respect to cathode	90 max. volts

6AR7-GT

DUO-DIODE PENTODE

AMPLIFIER - Class A₁

Typical Operation and Characteristics:

Plate Voltage	250	volts
Grid No.2 Voltage	100	volts
Grid No.1 Voltage	-2	volts
Mutual Conductance	2,500	μ mhos
Grid No.1 Voltage (approx.) for Mutual Conductance = 20 μ mhos	-25	volts
Plate Current	7.0	mA
Grid No.2 Current	1.8	mA
Plate Resistance	1.0	megohm

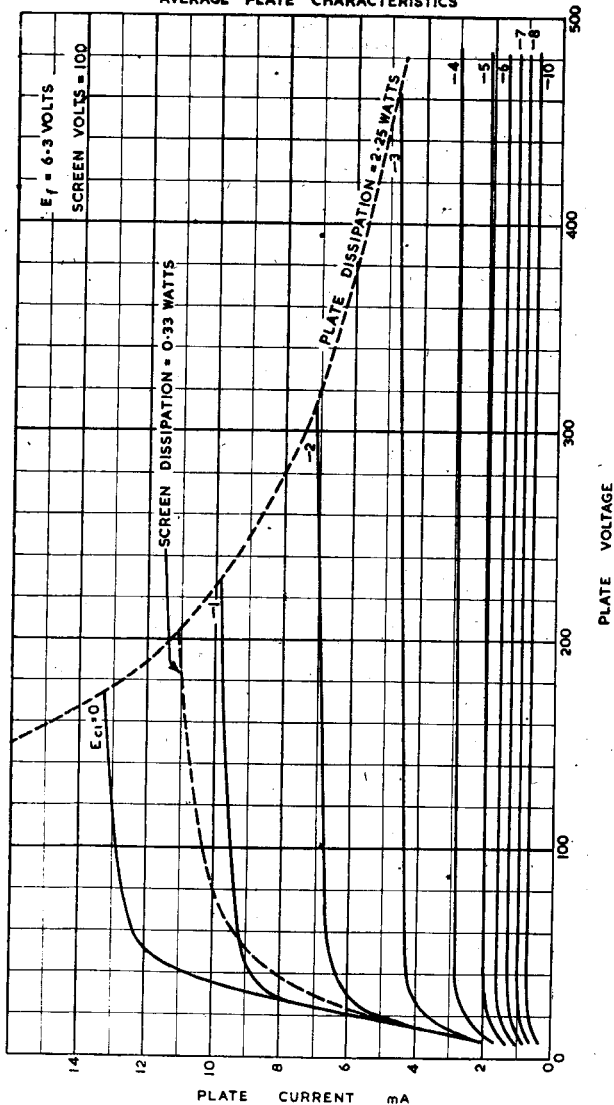
DIODE UNIT

The two diode plates are placed around a cathode, the sleeve of which is common to the pentode unit. Each diode plate has its own base pin. The minimum diode current per plate with an applied d.c. voltage of 10 volts is 0.8 mA.

- With base shield and metal shell earthed.

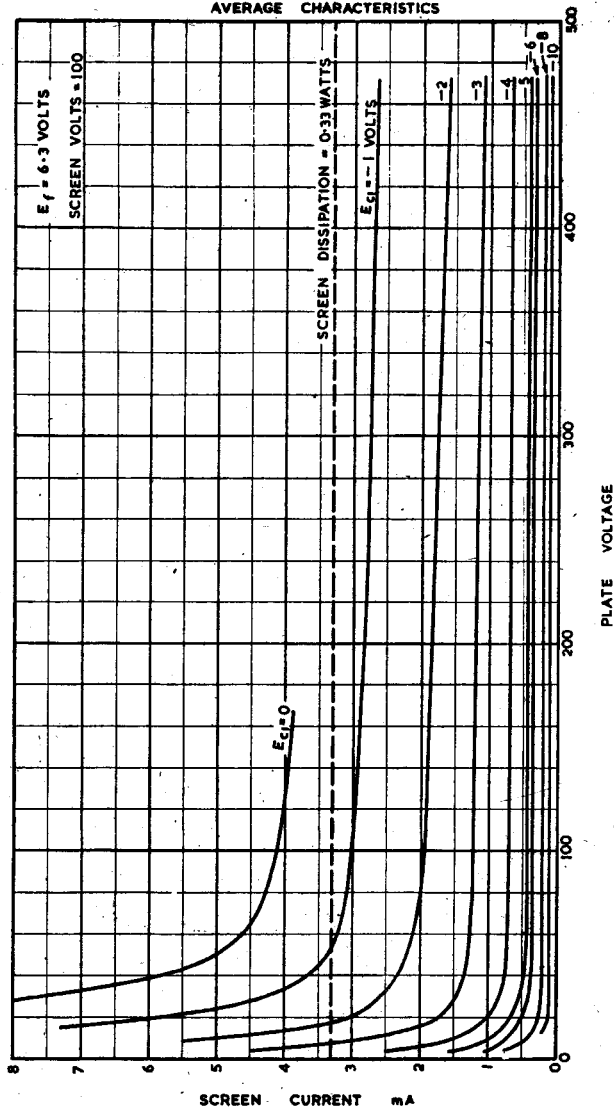
6AR7-GT

AVERAGE PLATE CHARACTERISTICS



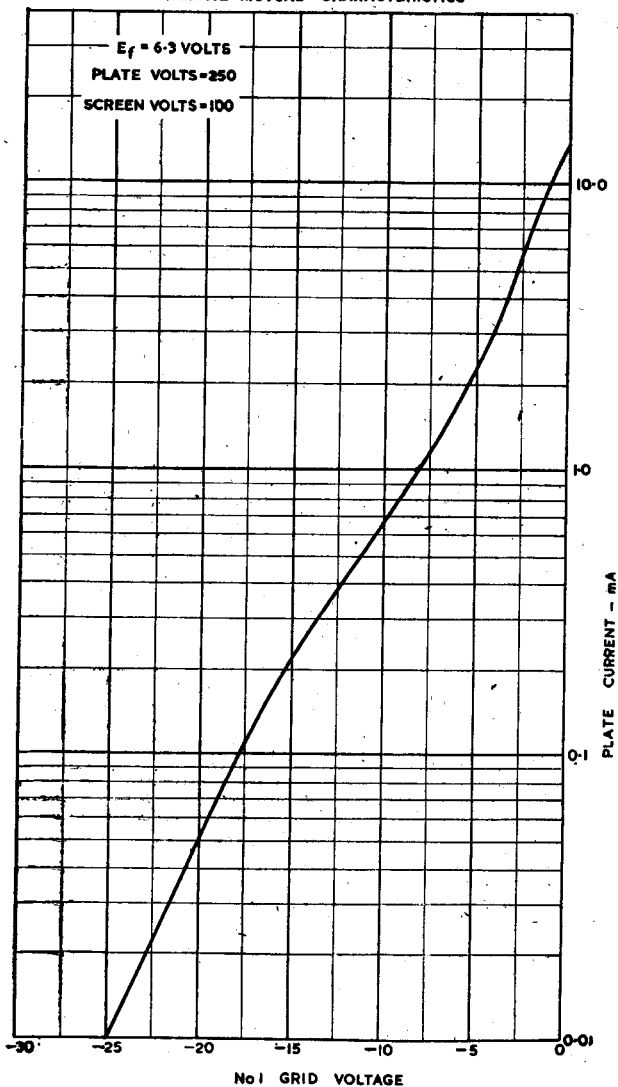
6AR7-GT

AVERAGE CHARACTERISTICS



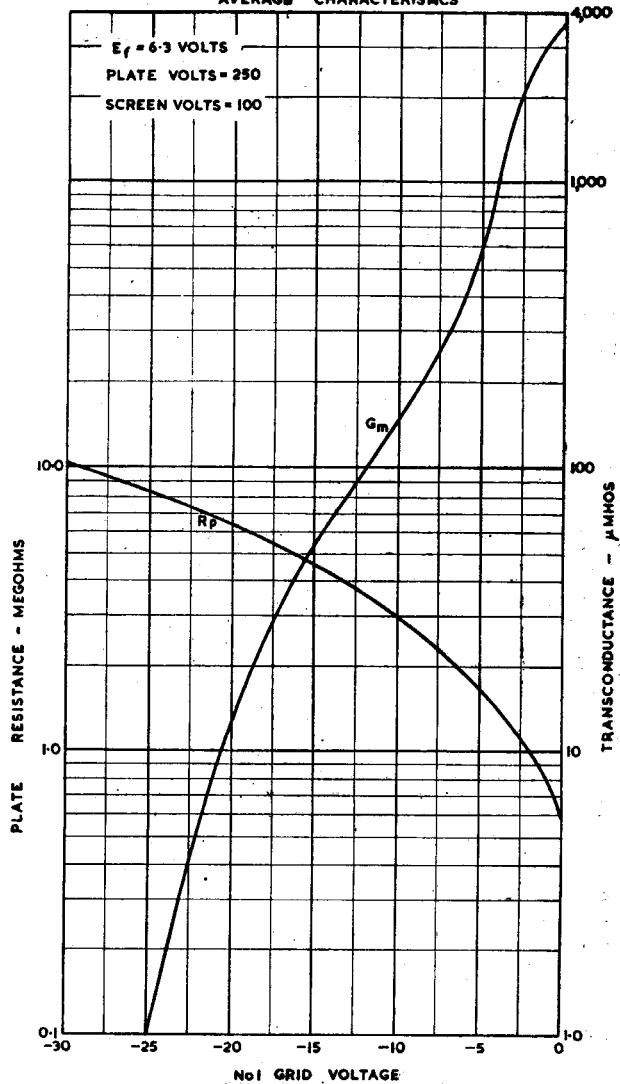
6AR7-GT

AVERAGE MUTUAL CHARACTERISTICS



6AR7-GT

AVERAGE CHARACTERISTICS



AMALGAMATED WIRELESS VALVE CO., LTD

SYDNEY, AUSTRALIA

TYPE 6BJ5

POWER PENTODE

MECHANICAL DATA

Style	miniature
Cathode	coated, unipotential
Bulb	T5½
Base	miniature button 7 pin
Maximum overall length	2-3/4"
Maximum diameter	3/4"
Basing	6CH
Pin Connections:	
Pin 1	control grid
Pin 2	cathode and suppressor
Pin 3	heater
Pin 4	heater
Pin 5	plate
Pin 6	internal connection
Pin 7	screen grid

ELECTRICAL DATA

RATINGS -- Design Center Values

Plate Voltage	350 max. Volts
Screen Voltage	275 max. Volts
Plate Dissipation	9 max. Watts
Screen Dissipation	3.0 max. Watts

TYPICAL OPERATION -- Single Tube Class A

Heater Voltage	6.3 Volts
Heater Current	0.64 amp
Plate Voltage	250 Volts
Screen Voltage	250 Volts
Grid Voltage	-5.0 Volts
Plate Current	35 mA
Screen Current	5.5 mA
Mutual Conductance	10,500 umhos
Amplification Factor	420
Plate Resistance	40,000 ohms
Plate Load Resistance	7,000 ohms
Power Output	4 watts
Distortion	9.2 %

6BK8

MINIATURE A.F. PENTODE

A low noise pentode for use in the early stages of high gain audio amplifiers.

RATINGS

Filament voltage	:	6.3 V	
Filament current	:	0.2 A	
Peak-heater-cathode voltage	:	150 Max V	
Anode voltage	:	300 Max V	
Grid No. 2 voltage	:	200 Max V	
Cathode current	:	6 Max mA	
Plate resistance at (plate volts = 250 V)			= 2 megohms
		(screen volts = 140 V)	
Transconductance: (plate current = 3 mA)			= 1850 umhos

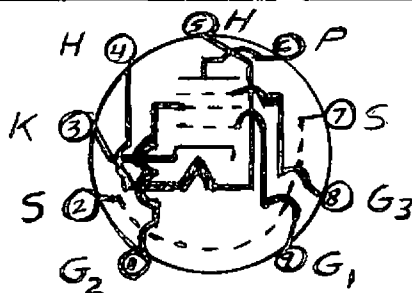
CAPACITANCES: (Of Cold Externally Unscreened Valve)

Grid No. 1 to plate	=	.025 uuf
Grid No. 1 to heater	=	.0025 uuf
Input	=	4.0 uuf
Output	=	5.5 uuf

TYPICAL OPERATION

Anode volts	175	175	volts
Voltage gain	180	110	
Cathode current	0.6	1.2	mA
Cathode resistor	2.2	1	K ohms
Grid resistor	1	0.47	megohms
Plate resistor	0.220	0.1	megohms

BASE CONNECTIONS AND TUBE DIMENSIONS



Base Connections - 9BJ

Pin 1	- #2 Grid
Pin 2	- Internal Screen
Pin 3	- Cathode
Pin 4	- Heater
Pin 5	- Heater
Pin 6	- Plate
Pin 7	- Internal Screen
Pin 8	- #3 Grid
Pin 9	- #1 Grid

Base:	E9-1
Bulb:	T6 $\frac{1}{2}$
Maximum Overall Length:	2 $\frac{3}{16}$ "
Maximum Seated Height:	1 $\frac{15}{16}$ "
Maximum Diameter:	$\frac{7}{8}$ "

HUM - When used under the above conditions with the control grid returned to earth via a 470K resistor, the total hum voltage referred to the grid will not exceed 1.5uV. If A.C. heating is used the heater winding should be provided with a center-tap. A variable hum balancing resistor is not required.

MOUNTING - Any position.

RETAINING - The use of a retaining device is recommended.

SCREENING - The tube is internally screened. A separate screening canister may be used when the application demands.

MICROPHONY - The standard of microphony permits the use of the tube in the first stage of a high gain amplifier following a low level microphone or tape reproducer.

AMALGAMATED WIRELESS VALVE CO., LTD.

SYDNEY, AUSTRALIA

TYPE 6BV7

DOUBLE DIODE POWER OUTPUT PENTODE

MECHANICAL DATA

Style		miniature
Cathode		coated, unipotential
Bulb		T6 $\frac{1}{2}$
Base		Small button Noval 9 pin
Mounting Position		Any
Maximum Overall Length		2-5/8"
Maximum Seated Length		2-3/8"
Length from Base Seat to Bulb		
Top (excluding tip)		2" $\pm$ 3/32"
Maximum Diameter		7/8"
Basing		9BU
Pin Connections:		
Pin 1	. . Diode Plate	
Pin 2	. . Pentode Plate	
Pin 3	. . Pentode Screen Grid	
Pin 4	. . Heater	
Pin 5	. . Heater	
Pin 6	. . Diode Plate	
Pin 7	. . Cathode and Pentode Suppressor Grid	
Pin 8	. . Pentode Control Grid	
Pin 9	. . Cathode and Pentode Suppressor Grid	

GENERAL CHARACTERISTICS

ELECTRICAL

Heater, for Unipotential Cathode:		
Voltage (A.C. or D.C.)		6.3 volts
Current		0.8 amp.

Direct Interelectrode Capacitances:*

Pentode Unit:		
Grid to Plate		0.5 uuf. max.
Input		11.5 uuf.
Output		9.5 uuf.
Diode Unit:		
Diode (pin 1) - Diode (pin 6)		.01 uuf. max.
Diode (pin 6) - Pentode Plate		0.3 uuf. max.
Diode (pin 1) - Pentode Plate		0.7 uuf. max.
Diode (pin 6) - Pentode Grid No. 1		0.1 uuf. max.
Diode (pin 1) - Pentode Grid No. 1		0.1 uuf. max.

*unshielded

ELECTRICAL DATAPentode UnitA.F. Power Amplifier - Class A1

Maximum Ratings, Design Center Values:

Plate Voltage	250 max. volts
Grid No. 2 (Screen) Voltage	250 max. volts
Plate Dissipation	10 max. watts
Grid No. 2 (Screen) Dissipation	2 max. watts
Peak Heater - Cathode Voltage	
Heater Negative with respect	
to Cathode	90 max. volts
Heater Positive with respect	
to Cathode	90 max. volts

Typical Operation:

Plate Voltage	180 . . .	250 volts
Grid No. 2 (Screen) Voltage	180 . . .	250 volts
Grid No. 1 (Control grid) Voltage	-4 . . .	-5 volts
Peak A-F Grid No. 1 Voltage	3.7 . . .	4.3 volts
Zero-Sig. Plate Current	20 . . .	38 ma
Zero-Sig. Grid No. 2 Current	3.5 . . .	6.0 ma
Plate Resistance (approx)	130,000 . . .	100,000 ohms
Transconductance	8,000 . . .	10,000 umhos
Load Resistance	8,000 . . .	8,000 ohms
Max.-Signal Power Output	2.0 . . .	4.0 watts
Max.-Signal Total Harmonic Distortion	10 . . .	10% approx

DIODE UNITS

Maximum Ratings, Design Center Values:

Plate Current (for each diode)	1.0 max. ma.
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Typical Operation:

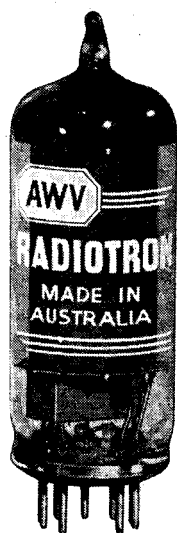
Minimum diode current per plate with an applied d.c. voltage of 10 volts is 0.8 ma.

RADIOTRON 6BV7

MINIATURE DUO-DIODE POWER AMPLIFIER PENTODE *

APPLICATION

The Radiotron type 6BV7 is a nine-pin miniature duo-diode output pentode with a transconductance of 10,000 micromhos and a power output of 4 watts for 10% total harmonic distortion under recommended 250 volt operating conditions. The valve was designed primarily for use in low cost four valve receivers in which good performance is required with reduced plate and screen voltages and low cathode current. In this application with plate, screen and control grid voltages of 180, 180 and -4 volts respectively, Radiotron 6BV7 will deliver 2 watts output for 10% distortion with a plate current of only 20 mA.



Diodes

The location of the diodes in the output valve allows a very convenient layout of the conventional 4 valve straight or reflexed receiver and enables higher i-f gain to be obtained without excessive regeneration, or without neutralizing, than is possible when the diodes are located in the i-f amplifier valve.

In receivers with an a-f amplifier between the detector diode and the grid of the pentode section it is recommended that the diode connected to pin 6 be used for detection as this diode has the lower capacitance to pentode plate. In other types of receivers either diode may be used for detection.

Pentode

Grid resistor. The maximum permissible value of grid resistor for Radiotron 6BV7 under maximum dissipation conditions is 0.5 megohm for cathode bias operation and 0.1 megohm for fixed-bias operation. In conventional back-biased receivers in which the pentode is operated at maximum ratings the grid resistor should be reduced from 0.5 megohm in the ratio that the cathode current of the 6BV7 bears to the total current drawn by the receiver.

Larger values of grid leak may be used when the dissipation of the valve is reduced. For example, under the 180 volt conditions quoted above in a back-biased receiver in which at least half of the total B supply current is drawn by the output valve, the maximum permissible value of grid resistor is 1 megohm.

Grid stopper. The high transconductance of Radiotron 6BV7 provides good power sensitivity, and under 250 volt operating conditions an input of 0.25 volt r.m.s. gives 50 mW. output. Under 180 volt conditions an input of only 2.6 volts r.m.s. gives full rated output. In addition to its usefulness from the point of view of pure sensitivity, the high transconductance of Radiotron 6BV7 makes possible the use of a larger degree of negative feedback than would otherwise be possible. Even in the case of a four valve straight receiver a worthwhile degree of negative feedback can be applied to the output stage while still maintaining good overall sensitivity.

Because of the high transconductance of Radiotron 6BV7 a grid stopper should always be used, and a value of 5,000 ohms is recommended.

In four-valve straight receivers a large audio voltage appears on the diode, and with the volume control turned to minimum the amount of playthrough is proportional to the impedance between control grid and ground. For this reason, the grid stopper should not be too large — 5,000 ohms is as effective as 50,000 ohms in suppressing parasitic oscillation — nor should the grid coupling capacitor be too small. Under these conditions playthrough will be very low.

Use with low-level pick-ups.

When Radiotron 6BV7 is used as part of a high-gain pick-up amplifier, such as is required with some low-level pick-ups, it is desirable to arrange the radio-gramophone switching to remove the detection diode from the circuit in the high-gain pick-up position in order to remove the possibility of feedback through the diode circuit. As such switching is incorporated in most receivers to prevent interference with recorded items from radio programmes, this arrangement does not normally involve additional cost.

Ventilation.

The envelope of Radiotron 6BV7 becomes very hot in operation, and free circulation of air around the valve is necessary.

*Tentative data

RADIOTRON TYPE 6BV7 DUO-DIODE POWER AMPLIFIER PENTODE

GENERAL DATA

Heater, for Unipotential Cathode:

Voltage (a.c. or d.c.) 6.3 volts

Current 0.8 amps.

Direct Interelectrode Capacitances:°

Pentode Unit: Grid to Plate 0.5 $\mu\mu\text{F}$ max.

Input 11.5 $\mu\mu\text{F}$

Output 9.5 $\mu\mu\text{F}$

Diode Units: Diode (pin 1) — Diode (pin 6) 0.01 $\mu\mu\text{F}$ max.

Diode (pin 1) — Pentode Plate 0.7 $\mu\mu\text{F}$ max.

Diode (pin 6) — Pentode Plate 0.3 $\mu\mu\text{F}$ max.

Diode (pin 1) — Pentode Grid 0.1 $\mu\mu\text{F}$ max.

Diode (pin 6) — Pentode Grid 0.1 $\mu\mu\text{F}$ max.

° With no external shield.

Mechanical:

Mounting Position Any

Maximum Overall Length $2\frac{7}{8}"$

Maximum Seated Length $2\frac{3}{8}"$

Length, Base Seat to Bulb Top (excluding tip) $2" \pm \frac{3}{32}"$

Maximum Diameter $\frac{7}{8}"$

Bulb T-6- $\frac{1}{2}$

Base Small-Button Noval 9-Pin

Base Connections for Bottom View:

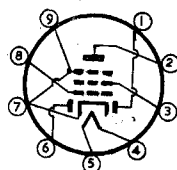
Pin 1 — Diode Plate

Pin 2 — Pentode Plate

Pin 3 — Pentode Grid No. 2

Pin 4 — Heater

Pin 5 — Heater



Pin 6 — Diode Plate

Pin 7 — Cathode and Pentode Grid No. 3

Pin 8 — Pentode Grid No. 1

Pin 9 — Cathode and Pentode Grid No. 3

PENTODE UNIT

A-F POWER AMPLIFIER—CLASS A₁

Maximum ratings, design-centre values:

Plate Voltage 250 max. volts

Grid No. 2 Voltage 250 max. volts

Plate Dissipation 10 max. watts

Grid No. 2 Dissipation 2 max. watts

Peak Heater-Cathode Voltage

Heater negative with respect to cathode 90 max. volts

Heater positive with respect to cathode 90 max. volts

Typical operation and characteristics:

Plate Voltage 180 250 volts

Grid No. 2 (Screen) Voltage 180 250 volts

Grid No. 1 (Control-Grid) Voltage -4 -5 volts

Peak A-F Grid No. 1 Voltage 4 5 volts

Zero-Sig. Plate Current 20 38 mA

Zero-Sig. Grid No. 2 Current 3.5 6.0 mA

Plate Resistance (Approx.) 130000 100000 ohms

Transconductance 8000 10000 umhos

Load Resistance 7000 7000 ohms

Max.-Sig. Total Harmonic Distortion 10 10 %

Max.-Sig. Power Output 2 4 watts

Maximum circuit values (for maximum rated conditions):

Grid No. 1 — Circuit Resistance:

For fixed bias 0.1 megohm

For cathode bias 0.5 megohm

For back bias See under Application

DIODE UNITS.

Maximum ratings, design-centre values:

Plate Current (for each diode) 1.0 max. mA.

Diode considerations:

The two diode units are placed on opposite sides of, and parallel to the cathode, the sleeve of which is common also to the pentode unit.

The minimum diode current per plate with an applied d.c. voltage of 10 volts is 0.8 mA.

RADIOTRON**6J7-G****TRIPLE-GRID DETECTOR AMPLIFIER**

Types 57, 6J7-G & 1603 are similar electrically apart from the heater rating

6J7-G
SHEET 1

Heater— Coated Unipotential Cathode
Voltage 6.3 a-c or d-c volts
Current 0.5 amp.

Direct Interelectrode Capacitances :Pentode Connection ○Triode Connection ●

Grid to Plate 0.007 max.

Grid to Plate 1.8 μpF Input 4.6 μpF Grid to Cathode 2.6 μpF Output 12.0 μpF Plate to Cathode 17.0 μpF

Maximum Overall Length 4-15/32"

Maximum Seated Height 5-29/32"

Maximum Diameter 1-9/16"

Bulb ST-12

Cap Skirted Miniature

Base Small Shell Octal 7-Pin

Pin 1 - Internal shield

Pin 5 - Suppressor

Pin 2 - Heater

Pin 7 - Heater

Pin 3 - Plate

Pin 8 - Cathode

Pin 4 - Screen

Cap - Grid

Mounting Position Any

**BOTTOM VIEW (G-7R)**Maximum Ratings are Design-Centre Values.R-F AMPLIFIER - CLASS A1.

Plate Voltage	300 max. volts
Screen Voltage	250 max. volts
Screen Supply Voltage	300 max. volts
Grid Voltage	0 min. volts
Plate Dissipation	1.4 max. watts
Screen Dissipation	0.35 max. watt
Typical Operation:	
Plate Voltage	100 250 volts
Screen Voltage	100 100 volts
Grid Voltage &	-5 -5 volts
Suppressor	Connected to cathode at socket
Plate Resistance	1.0 + megohm
Transconductance	1185 1225 μmhos
Grid Bias (approx.) Δ	-7 -7 volts
Plate Current	2.0 2.0 mA.
Screen Current	0.5 0.5 mA.

PENTODE POWER AMPLIFIER

Plate Voltage	300 max. volts
Screen Voltage	250 max. volts
Screen Supply Voltage	300 max. volts
Grid Voltage	0 min. volts
Plate Dissipation	1.4 max. watts
Screen Dissipation	.35 max. watt
Typical Operation:	
Plate Voltage	250 250 volts
Screen Voltage	100 175 volts
Grid Voltage &	-2.5 -4 volts
Suppressor	Connected to cathode at socket
Cathode Bias Resist. $\bullet\bullet$	600 440 ohms
Peak A-F Grid Volts	2.5 4 volts
Zero-Sig. Plate Current	2.8 7.5 mA.
Max.-Sig. Plate Current	5.5 - mA.
Zero-Sig. Screen Current	0.7 1.5 mA.
Max.-Sig. Screen Current	0.9 - mA.
Plate Resistance	+ - ohms
Transconductance	1570 (approx.) - μmhos
Load Resistance	55000 25000 ohms
Max.-Signal Power Output	0.55 0.55 watt

○ With close fitting shield connected to cathode.

● Screen and suppressor connected to plate at the socket; without shield-can.

For other footnotes see back of sheet.

6J7-G

RADIOTRON

6J7-G

TRIPLE-GRID DETECTOR AMPLIFIER

TRIODE POWER AMPLIFIER*

Plate Voltage		250 max. volts
Grid Voltage		0 min. volts
Plate & Screen Dissipation (total)		1.75 max. watts
Typical Operation:		
Plate Voltage	180	250 volts
Grid Voltage ^Δ	-5.5	-8.0 volts
Cathode Bias Resistor ^{ΔΔ}	1000	1230 ohms
Zero-Signal Plate Current	5.5	6.5 mA.
Amplification Factor	80	80
Plate Resistance	11000	10500 ohms
Transconductance	1800	1900 μmhos
Load Resistance	25000	22000 ohms
Second Harmonic Distortion	5	5 %
Power Output	0.113	0.275 watt

DETECTOR

Typical Operating Conditions as Biased Detector:

Plate Supply Voltage *	100	100	250	250	volts
Screen Voltage	12	30	50	100	volts
Grid Voltage ^Δ	-1.2	-1.5	-2.0	-4.5	volts
Cathode Bias Resistor	18000	10000	3000	10000	ohms
Suppressor	Connected to Cathode at socket				
Zero-Sig. Cathode Cur.	0.063	0.183	0.55	0.43	mA.
Plate Load Resistor	1.0	0.25	0.25	0.5	megohm
Coupling Condenser	0.01	0.01	0.03	0.03	μF
Grid Resistor ^{ΔΔ}	1.0	0.5	0.25	0.25	megohm
R-F Signal (RMS) ^{ΔΔ}	1.05	1.6	1.18	1.37	volts

* In circuits where the cathode is not directly connected to the heater the potential difference between heater and cathode should be kept as low as possible.

^Δ The grid circuit resistance should not exceed 1 megohm as a pentode or triode power amplifier or 3 megohms as a conventional r-f or i-f amplifier. Where the circuit constants are such that the plate current cannot exceed 1mA, the grid circuit resistance may be as high as 10 megohms; for higher values of grid circuit resistance it is essential to operate with reduced heater voltage.

[†] Greater than 1 megohm.

^Δ For cathode current cut-off.

* The voltage at the plate will be the "Plate Supply Voltage" minus the voltage drop across the plate load resistor caused by the plate current.

^{ΔΔ} For the following valve.

^{ΔΔ} For these signal values modulated 20% the voltage output under each set of conditions is 17 peak volts at the grid of the following amplifier. This value is sufficient to ensure full audio output from a type 6PC-6 (class A pentode service) with 250 volts on the plate.

• Screen and suppressor connected to plate.

^{ΔΔ} The requisite negative bias may be obtained from an external source or, alternatively, may be derived from a cathode bias resistor of the stated value. For this particular service the type of bias has negligible effect on the operation.

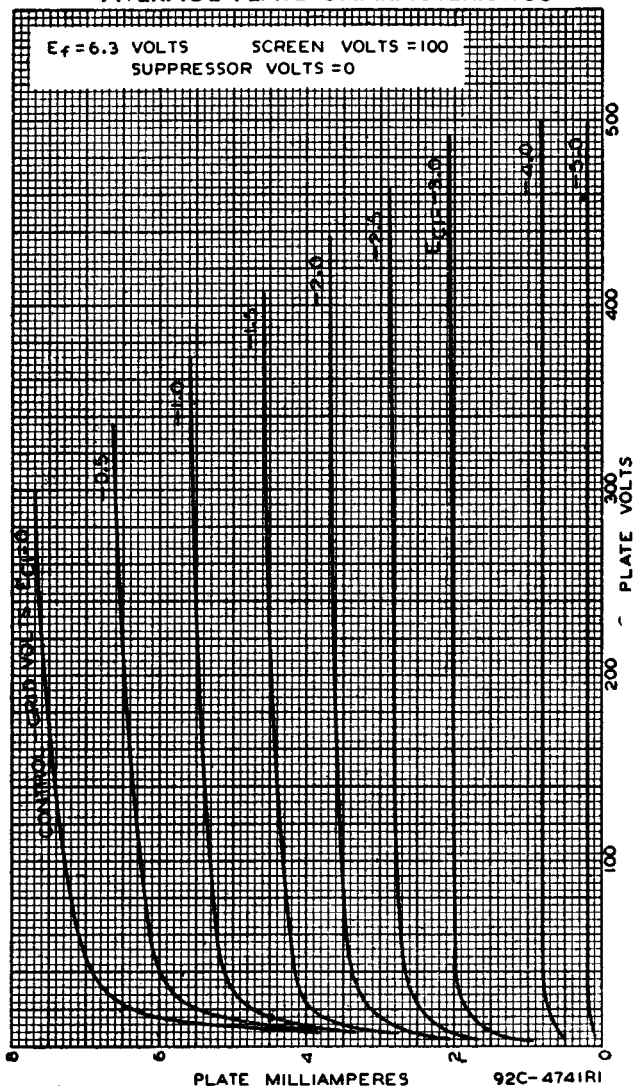
For recommended operating conditions as a resistance-coupled a-f voltage amplifier refer to sheet headed "Resistance-Coupled Pentodes."

← Indicates a change.

RADIOTRON

6J7-G

AVERAGE PLATE CHARACTERISTICS

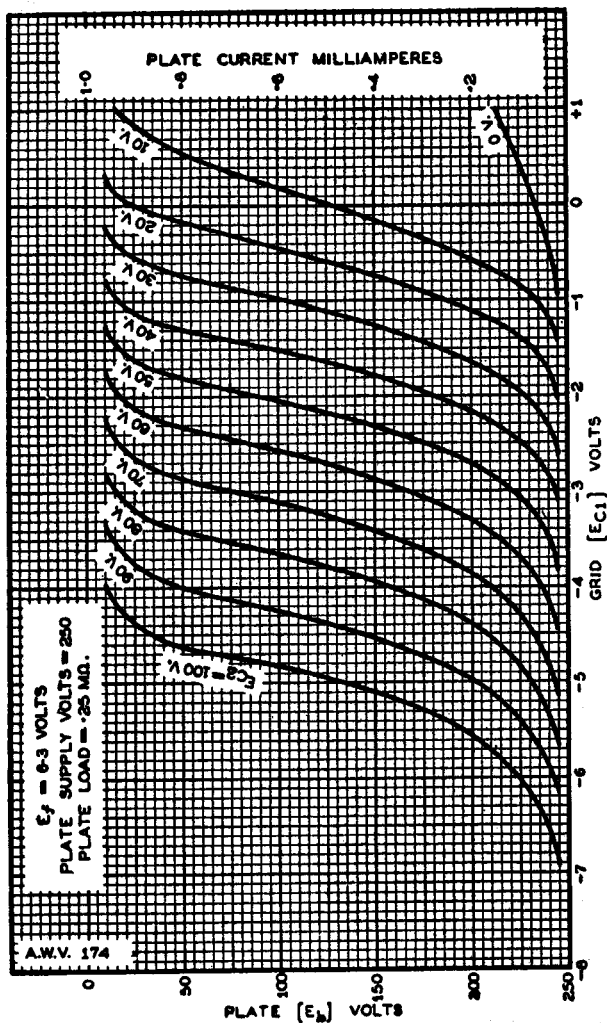


6J7-G

RADIOTRON

6J7-G

AVERAGE DYNAMIC CHARACTERISTICS

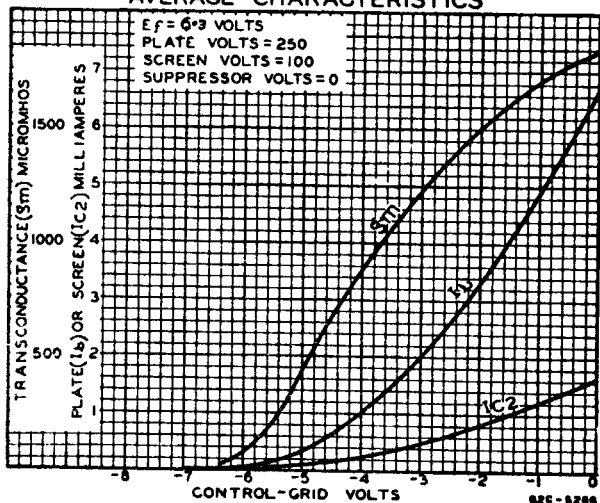


RADIOTRON

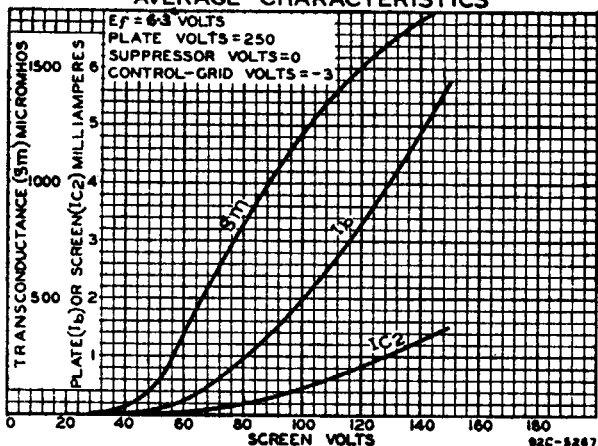
6J7-G

6J7-G
SHEET 3

AVERAGE CHARACTERISTICS



AVERAGE CHARACTERISTICS

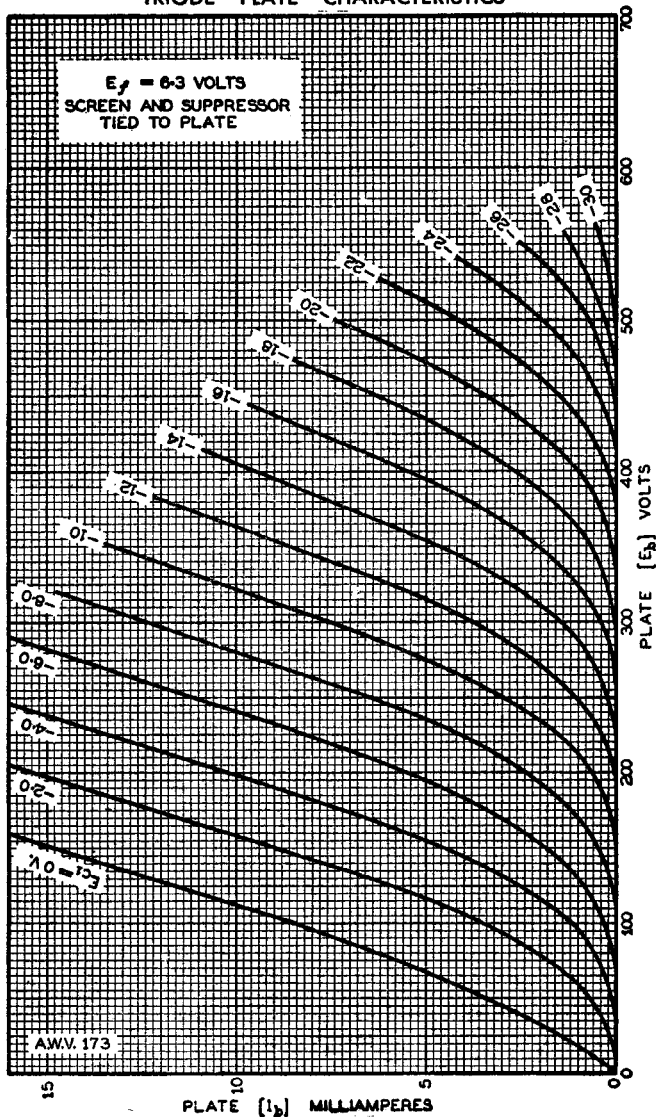


6J7-G

RADIOTRON

6J7-G

TRIODE PLATE CHARACTERISTICS



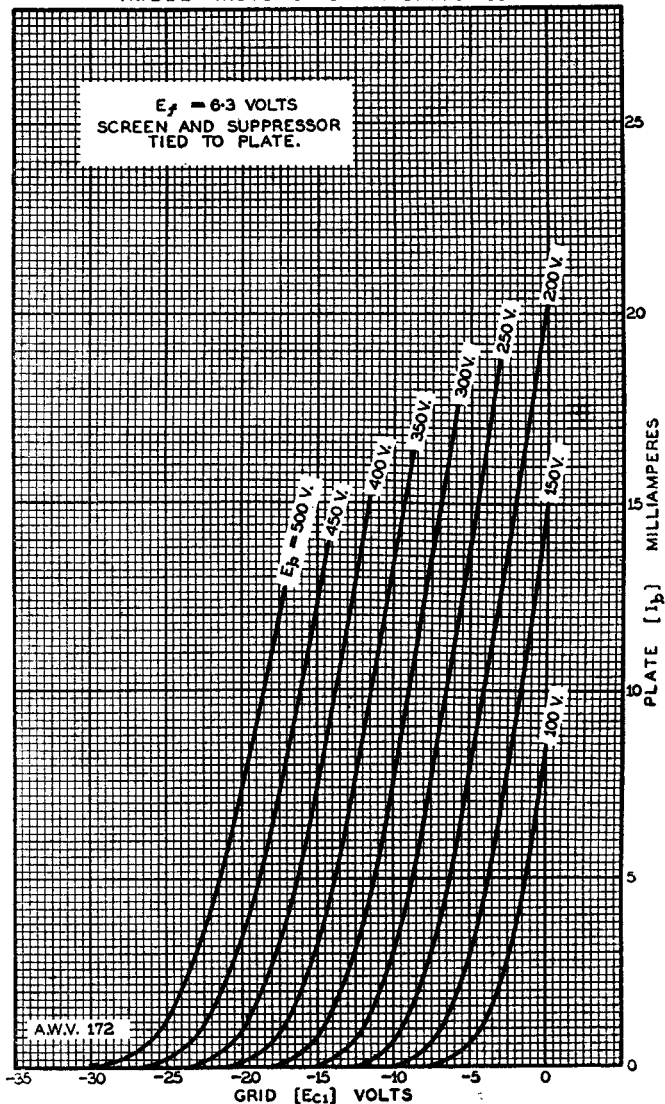
RADIOTRON

6J7-G

TRIODE MUTUAL CHARACTERISTICS

6J7-G
SHEET 4

$E_f = 6.3$ VOLTS
SCREEN AND SUPPRESSOR
TIED TO PLATE.



A.W.V. 172

AMALGAMATED WIRELESS VALVE CO. PTY. LTD.

MAY, 1945

SYDNEY, AUSTRALIA

Tube type 6P6

from RMA release #65, March 25, 1936

sponsored by Amalgamated Wireless Valve Co., Ltd.

TENTATIVE DATA ON
TUBE TYPE 6P6
R.F. POWER PENTODE

Suitable For Suppressor Grid Modulators

HEATER RATING

Uni-Potential Heated Cathode

Heater Voltage (ac or dc)

6.3 volts

Heater Current

0.7 amp.

INTERELECTRODE CAPACITANCES

Grid to Plate

0.7 μ mf

Grid to

8.0 μ mf

Output

12.0 μ mf

OPERATING CONDITIONS (As Pentode Frequency Doubler)

DC Plate Voltage

450

volts

DC Screen Voltage

200

volts

DC Grid Voltage

-120 approx. volts

DC Plate Current

40

ma

DC Screen Current

18

ma

DC Grid Current

2 approx. ma

Power Output (2nd Harmonic)

7 approx. watts

BULB

ST-14

Cap

Small Metal

Base

Medium 6 pin

BASING (Bottom View)

Pin #1-Heater

Pin #4-Control Grid

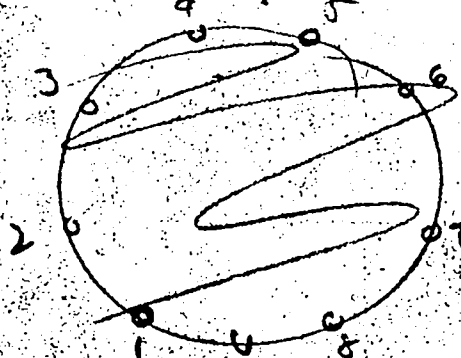
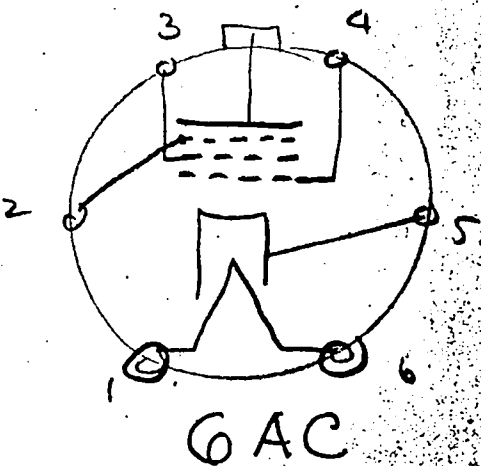
Pin #2-Suppressor

Pin #5-Cathode

Pin #3-Screen

Pin #6-Heater

Top Cap-Plate





**RADIO MANUFACTURERS ASSOCIATION
ENGINEERING DEPARTMENT**

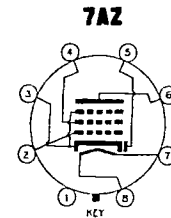
Release No. 490

sponsor:
Amalgamated Wireless Valve Co.

April 25, 1946

RMA TYPE 6SF7GT

Diode-super-control Amplifier
Pentode, Single-ended type.



Heater	Coated Unipotential Cathode		
Voltage		6.3	a-c or d-c volts
Current		0.3	ampere
Direct Interelectrode Capacitances: ^o			
Pentode Unit			
Grid to Plate		0.005 max.	μμf
Input		5.5	μμf
Output		6.0	μμf
Pentode Grid to Diode Plate		0.004 max.	μμf
Pentode Plate to Diode Plate		0.3	μμf
Maximum Overall Length		3-5/16"	
Maximum Seated Height		2-3/4"	
Maximum Diameter		1-5/16"	
Bulb		T9	
Base		Small Wafer Octal 8-Pin,	Sleeve
Mounting Position			Any

o With shield No. 308 connected to cathode.

Pentode Unit - Amplifier

Plate Voltage	300 max.	volts
Screen Voltage	100 max.	volts
Screen Supply Voltage	300 max.	volts
Grid Voltage	0 min.	volts
Plate Dissipation	3.5 max.	watts
Screen Dissipation	0.5 max.	watt

Typical Operation and Characteristics-Class A₁ Amplifier:

Plate Voltage	100	250	volts
Screen Voltage	100	100	volts
Grid Voltage	-1	-1	volt
Plate Resistance (Approx.)	0.2	0.7	megohm
Transconductance	1975	2050	micromhos
Grid Voltage (Approx.) for Trans-			
conductance = 10 micromhos	-35	-35	volts
Plate Current	12	12.4	ma.
Screen Current	3.4	3.3	ma.

DIODE UNIT.

The diode plate is placed around the cathode, the sleeve of which is common to the pentode unit. Diode curves shown under type 6B7 apply to the 6SF7-GT.

PIN CONNECTIONS.

Pin 1-Base Sleeve and Internal Shield	Pin 4-Pentode Screen
Pin 2-Pentode Grid	Pin 5-Diode Plate
Pin 3-Cathode,	Pin 6-Pentode Plate
Suppressor	Pin 7-Heater
(Pin numbers are according to RMA)	Pin 8-Heater

RADIOTRON

6V6-GT**BEAM POWER AMPLIFIER****6V6-GT
SHEET 1**

Heater	Coated Unipotential Cathode		
Voltage	6.3	a-c or d-c volts	
Current	0.45	amp.	
Direct Interelectrode Capacitances (Approx.):			
Grid to Plate	0.7	$\mu\text{F.}$	
Input	9.5	$\mu\text{F.}$	
Output	7.5	$\mu\text{F.}$	
Maximum Overall Length	3-5/16"		
Maximum Seated Height	2-3/4"		
Maximum Diameter	1-5/16"		
Bulb	T-9		
Base	Intermediate Shell Octal 7-Pin.		
Pin 1-No Connection		Pin 5-Grid	
Pin 2-Heater		Pin 7-Heater	
Pin 3-Plate		Pin 8-Cathode	
Pin 4-Screen			
Mounting Position		Any	

**BOTTOM VIEW (G-7AC)**

Maximum Ratings are Design-Centre Values.

SINGLE VALVE AMPLIFIER-Class A₁

Plate Voltage				315 max. volts
Screen Voltage				285 max. volts
Plate Dissipation				12 max. watts
Screen Dissipation				2 max. watts
Typical Operation:				
Plate Voltage.	180	250	250	315 volts
Screen Voltage	180	100	250	225 volts
Grid Voltage	-8.5	-5	-12.5	-13 volts
Cath. Bias Res.	250	250	232	317 ohms
Peak A-F Grid Volts	8.5	5	12.5	13 volts
Zero-Sig. Plate Cur.	29	17.5	45	34 mA.
Max.-Sig. Plate Cur.	30	18.4	47	35 mA.
Zero-Sig. Scrn. Cur. *	3	0.7	4.5	2.2 mA.
Max.Sig. Scrn. Cur. *	4	1.3	7	6 mA.
Plate Resistance	.058	.094	.052	.077 meg.
Transconductance	3,700	3,440	4,100	3,750 $\mu\text{mhos.}$
Load Resistance	5,500	14,000	5,000	8,500 ohms
Total Harm. Dist.	8	5	8	12 %
Max.-Sig. Pwr. Output	2	1.5	4.5	5.5 watts

AMPLIFIER - Class A₁ (Triode Connection.)*

Plate Voltage				300 max. volts
Plate & Screen Dissipation (Total)				12.5 max. watts
Typical Operation:				
Plate Voltage	250		300	volts
Grid Voltage Δ o	-15		-20	volts
Cathode Bias Res?	400		513	ohms
Zero-Sig. Plate Cur.	37.5		39	mA.
Amplification Factor	9.6		9.6	
Plate Resistance	2,400		2,400	ohms
Transconductance	4,000		4,000	μmhos
Load Resistance	3,500		4,800	ohms
Second Harm. Dist.	5		5	%
Max.-Sig. Pwr. Output	1.0		1.65	watts

PUSH-PULL AMPLIFIER - Class AB₁

Plate Voltage				315 max. volts
Screen Voltage				285 max. volts
Plate Dissipation				12 max. watts
Screen Dissipation				2 max. watts
Typical Operation:				
Values are for two valves				
Plate Voltage	250	285	315	volts

6V6-GT

RADIOTRON

6V6-GT

BEAM POWER AMPLIFIER

Screen Voltage	250	285	250**	volts
Grid Voltage ▲	-15	-19	-15.6**	volts
Peak A-F Volts (G-G)	30	38	30	volts
Zero-Sig. Plate Cur.	70	70	76.5	mA.
Max.-Sig. Plate Cur.	79	92	70	mA.
Zero-Sig. Screen Cur. *	5	4	4.9	mA.
Max.-Sig. Screen Cur. *	13	13.5	10.5	mA.
Eff. Load Res. (P-P)	10,000	8,000	12,000	ohms
Total Harm. Distortion	5	3.5	-	%
Max.-Sig. Pwr. Output	10	14	13	watts

PUSH-PULL AMPLIFIER (Triode Connection.)

Plate Voltage	300 max.	volts
Plate & Screen Dissipation (Total)	12.5 max.	watts
Typical Operation:		

	<u>Class A₁</u>	<u>Class AB₁</u>	
Plate Voltage	300	300	volts
Grid Voltage ▲	-20	-25	volts
Cathode Bias Resistor	256	-	ohms
Peak A-F Volts (G-G)	40	50	volts
Zero-Sig. Plate Cur.	78	42	mA.
Eff. Load Res. (P-P)	9,600	6,000	ohms
Max.-Sig. Power Output	3.3	4.75	watts

■ The heater should be operated at 6.3 volts. Under maximum dissipation conditions, the heater voltage should never fluctuate so that it exceeds 7.0 volts. The potential difference between heater and cathode should be kept as low as possible.

▲ The type of input coupling used should not introduce too much resistance in the grid circuit. Transformer or impedance coupling devices are recommended. When the grid circuit has a resistance not higher than 0.1 megohm, fixed bias may be used; for higher values, cathode bias is required. With cathode bias, the grid circuit may have a resistance not to exceed 0.5 megohm, provided the heater voltage is not allowed to rise more than 10% above the rated value under any condition of operation.

○ The requisite negative bias may be obtained from an external source or, alternatively, may be derived from a cathode bias resistor of the stated value. For this particular service the type of bias has only a small effect on the operation.

● Screen connected to plate at the socket.

●● Conditions as used in Radiotron circuit 1504. The two screens are fed through a common 3,000 ohm resistor from the plate supply voltage; a bleed resistor of 15,000 ohms is connected between the screens and the cathodes, the common cathode bias resistor being 150 ohms. Both screens and cathodes must be suitably bypassed.

* Nominal value; subject to variations from valve to valve.

← Indicates a change.

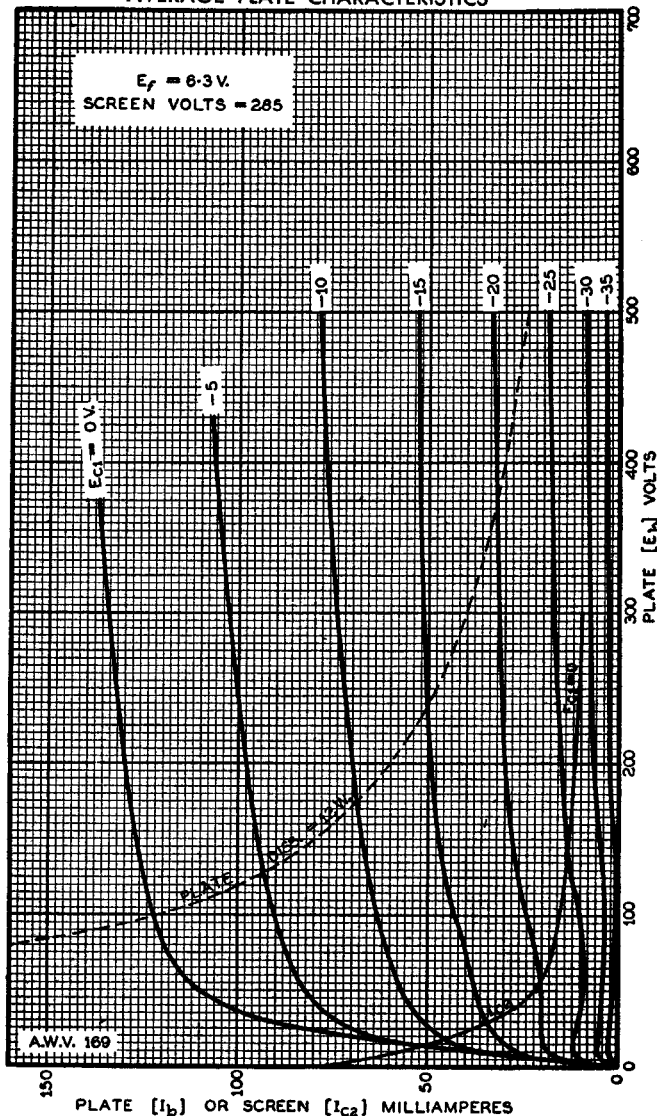
RADIOTRON

6V6-G (T)

AVERAGE PLATE CHARACTERISTICS

6V6-G (T)
SHEET 2

$E_f = 6.3V.$
SCREEN VOLTS = 285



A.W.V. 169

PLATE [I_b] OR SCREEN [I_{c2}] MILLIAMPERES

AMALGAMATED WIRELESS VALVE CO. PTY. LTD.

AUGUST 1941

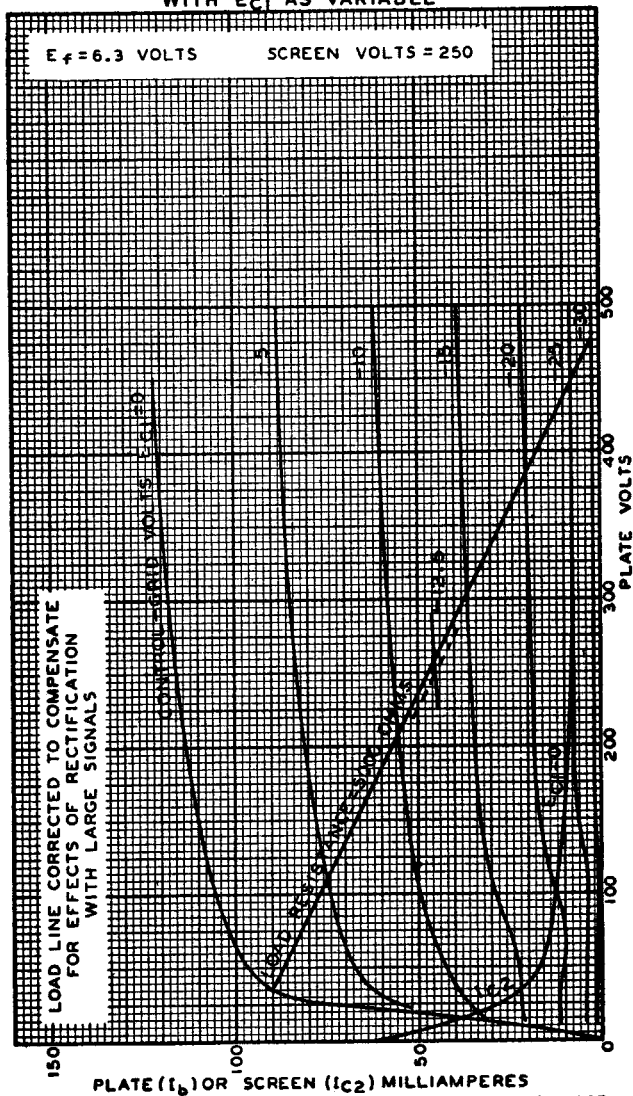
SYDNEY, AUSTRALIA

6V6-G (T)

RADIOTRON

6V6-G (T)

AVERAGE PLATE CHARACTERISTICS
WITH E_{C1} AS VARIABLE

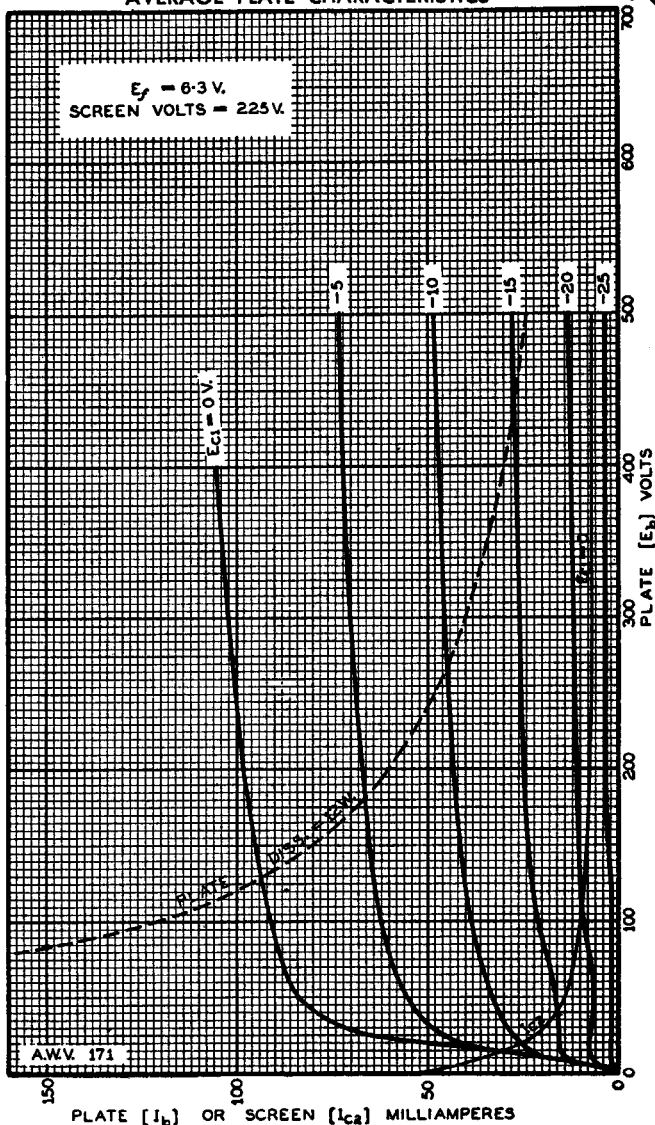


RADIOTRON

6V6-G(T)

AVERAGE PLATE CHARACTERISTICS

6V6-G(T)
SHEET 3



A.W.V. 171

PLATE $[I_b]$ OR SCREEN $[I_{c2}]$ MILLIAMPERES

AMALGAMATED WIRELESS VALVE CO. PTY. LTD.
AUGUST 1941 SYDNEY, AUSTRALIA

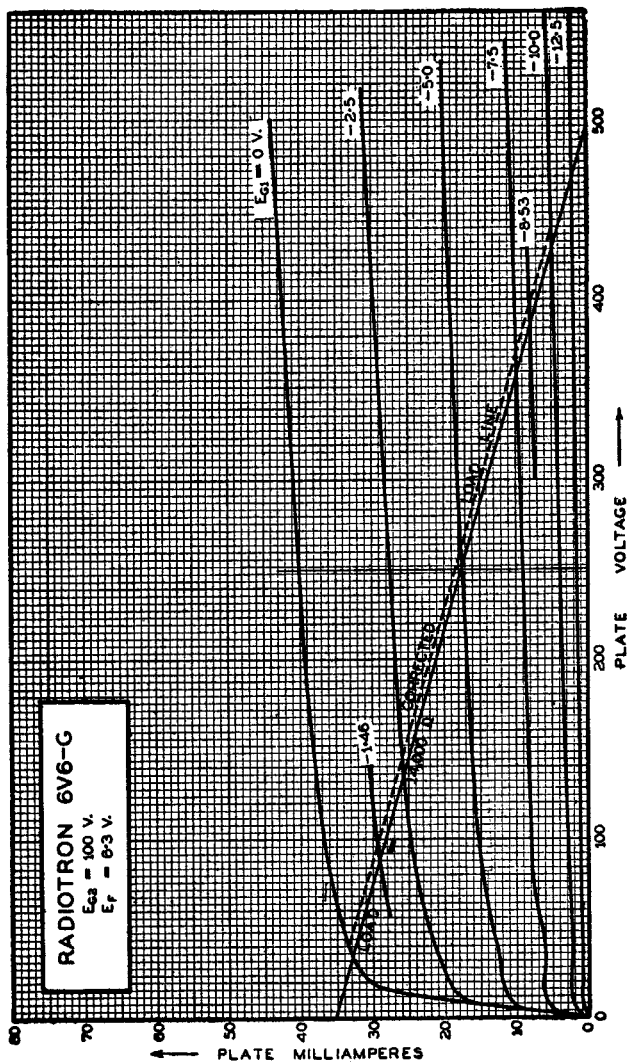
6V6-G(T)

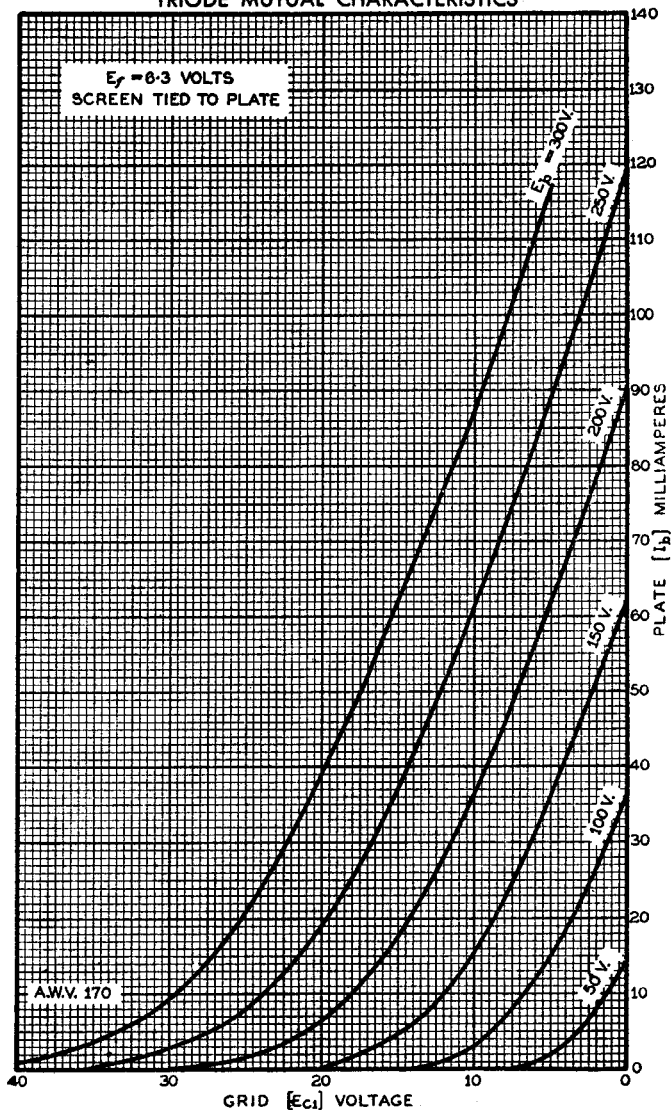
RADIOTRON

6V6-G(T)

AVERAGE PLATE CHARACTERISTICS

with E_{c1} as variable



RADIOTRON**6V6-G****TRIODE MUTUAL CHARACTERISTICS****6V6-G**
SHEET 4

6V6-G

RADIOTRON

6V6-G

AVERAGE PLATE CHARACTERISTICS
TRIODE CONNECTION

