BRIMAR

RECEIVING VALVE

6BE6

APPLICATION REPORT VAD/515.1

Standard Telephones and Cables Limited

FOOTSCRAY, KENT, ENGLAND

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INTRODUCTION: The Brimar 6BE6 is a miniature indirectly-heated pentagrid frequency changer intended for use in all wave receivers. The features are a high conversion gain together with high anode impedance and a low frequency drift.

The heater is intended for operation in parallel with other valves in AC operated equipment. This report contains characteristics of the valve and details of its use as a frequency changer in superheterodyne receivers.

DESCRIPTION: The valve is a pentagrid having a single electron stream but with an oscillator or injector grid and a control or signal grid. The valve may be used with a separate oscillator or in a self-oscillator circuit up to frequencies of the order of 100 Mc/s. The structure is mounted in a standard T5½ bulb and is based with a BVA standard base type B7G.

CHARACTERISTICS:	Indirectly-heated oxide-coated cathode.	
	Heater Voltage	6·3 volts
	Heater Current	0·3 amperes
	Max. DC Heater-Cathode potential	250 volts
	Max. Total Cathode Current	14 mA
DIMENSIONS:	Max. Overall Length	2-1/8 ins.
	Max. Diameter	3/4 ins.
	Max. Seated Height (excluding tip)	1-19/32 ins.
BASE:	Type B7G	
BASE CONNECTIONS:	Pin 1 Oscillator Grid (grid 1)	
	Pin 2 Cathode and Suppressor (grid 5)	
	Pin 3 Heater	
	Pin 4 Heater	
	Pin 5 Anode	
	Pin 6 Screen Grids (grids 2 and 4)	
	Pin 7 Control Grid (grid 3)	
MAXIMUM RATINGS:	Max. Anode Voltage	300 volts
	Max. Screen Voltage	100 volts
	Max. Screen Supply Voltage	300 volts
	Max. Anode Dissipation	1·0 watts
	Max. Screen Dissipation	1·0 watts
CAPACITIES (approx.):	Measured with no external shield.	
	RF Input	7·2 pF
	IF Output	8·5 pF
	Oscillator Input (Grid 1-All)	5·5 pF
	Oscillator Grid-Cathode	2·8 pF
	Cathode to all less Grid 1	15 pF
	Oscillator Grid-Anode	0·05 pF (max.)
	Control Grid-Anode	0·3 pF (max.)
	Control Grid-Oscillator Grid	0·15 pF (max.)

CHARACTERISTIC CURVES: To this report are attached curves showing:

a. Conversion conductance (g_c) and conversion impedance (r_c) plotted against control grid voltage for various screen voltages under conditions of a separate oscillator (Curve No. 315·4) or a self-excited oscillator (Curve No. 315·5).

b. Conversion conductance (g_c), conversion impedance (r_c) and total cathode current (I_k) plotted against oscillator grid current for various screen voltages when used with a separate oscillator (Curve No. 315·6).

c. Conversion conductance (g_c) plotted against oscillator grid current for various positions of the cathode tap when used as a self-excited oscillator (Curve No. 315·7).

TYPICAL OPERATING CONDITIONS

Operation as a Frequency Changer with Separate Oscillator:

Heater Voltage	6·3	6·3	volts
Anode Voltage	100	250	volts
Screen Voltage	100	100	volts
Control Grid Voltage	—1·5	—1·5	volts
Oscillator Grid Resistor	20,000	20,000	ohms
Oscillator Grid Current	0·5	0·5	mA
Anode Current	2·8	3·0	mA
Screen Current	7·3	7·1	mA
Cathode Current	10·6	10·6	mA
Conversion Conductance	0·455	0·475	mA/V
Conversion Impedance	0·5	1·0	megohms
Control Grid Voltage when conversion conductance = 1/100 its value at control grid voltage of —1·5 volts	—30	—30	volts
Equivalent Noise Resistance	200,000	190,000	ohms
Input Impedance at 18 Mc/s	——	100,000	ohms

Operation as a Frequency Changer with Self-Excited Oscillator:

The operating conditions are the same as given above except that the control grid voltage is zero. When the valve is employed as an electron coupled oscillator the characteristics measured from the oscillator grid to anode and screen are as below:

Anode and Screen Voltage	100	volts
Control Grid, Oscillator Grid and Cathode Voltage	0	volts
Cathode Current	25	mA
Amplification Factor	20	
Mutual Conductance	7·5	mA/V

GENERAL RECOMMENDATIONS

1. HETERODYNE VOLTAGE:

a. Separate External Oscillator: Reference to Curve No. 315·6 shows that an oscillator grid (grid 1) current of 0·5 mA in the recommended value of the grid resistor of 20,000 ohms gives approximately optimum performance. A greater grid drive will provide slightly more conversion conductance but increases the total cathode current. The grid current should not be allowed to fall below about 0·2 mA on any waveband or under conditions of low mains voltage.

A minimum bias of —2 volts should be maintained on the control grid (grid 3), as this gives the maximum gain. On the higher frequencies a small neutralising condenser between the control grid and the oscillator grid may be found advantageous in a similar way to that found with other frequency changers of the heptode type.

Any suitable low μ triode such as the type 6C4 will provide adequate heterodyne voltage; a typical circuit (Ref. 315·53) shows the essential details.

b. Self-excited Oscillator: As the valve does not employ a separate oscillator anode, and since the screen (grid 2) is employed to reduce reaction between the control grid (grid 3) and oscillator grid (grid 1) thereby minimising frequency "pulling" with A.V.C. and re-radiation, it is essential that the screen be maintained at earth potential to signal and oscillator frequency voltages. The oscillation must be produced between the oscillator grid (grid 1) and cathode.

This does not involve difficulty due to the application of A.V.C. to the control grid (grid 3) because the total cathode current is little affected by bias on grid 3, since the electrons repelled towards the cathode by the negative field are intercepted by the side rods and metal "collectors" comprising grid 2, so that a decrease in current to the plate and grid 4 is compensated by an increase in current to grid 2. Further, due to the screening effect of grid 2 there is little feedback at signal and intermediate frequencies due to the cathode impedance.

A typical circuit (Ref. 315·7) shows the recommended arrangement. It will be seen that the cathode is tapped up the oscillator grid coil to provide regeneration in a conventional manner. Because a portion of the coil exists between cathode and earth it is essential that the voltage across this portion bears some relationship to that applied to the control grid, which will receive an equal and opposite voltage. As the voltage on grid 3 must be kept small, the cathode tap should be as low down the coil as possible consistent with satisfactory oscillation. The dotted curves (Ref. 315·7) show the relation between conversion conductance and the tap position, defined in terms of the percentage voltage between the tap and earth to that between the top end connected to grid 1 and earth.

It will be seen that an increase in this percentage decreases the conversion conductance in a marked manner, hence improper positioning of the cathode tap will result in poor performance. The design of a coil (in which there is considerable leakage inductance between ends of the coil) which effectively changes the position of the tap will result in poor performance particularly at the extremes of a waveband.

The percentage feedback can be measured most conveniently by means of a conventional valve voltmeter. The full line curves (Ref. 315·7) also show the relationship between the conversion conductance and oscillator grid current for various values of cathode-earth voltage. The full line curves assume that grid 1 is driven by a variable RF voltage to give various values of grid current, whilst the voltage between the cathode and earth is maintained constant by variation of the impedance between cathode and earth. In a similar manner the dotted curves assume a constant tap position but a variable total voltage corresponding to a variation in "Q" of the circuit.

No external bias need be used for the control grid when the valve is self-excited, although some small value will be provided by the A.V.C. circuit, if used. The measure of control of the anode current by either grid 1 or grid 3 is approximately the same; hence if during the negative voltage swing of grid 1 and the cathode, the cathode voltage exceeds that on grid 3 with respect to earth, grid current will flow in grid 3, damping the input circuit, unless the cathode current is cut-off by grid 1. The DC bias between grid 1 and cathode therefore should not be less than that required to cut-off the anode current.

In order to produce sufficient positive excursion of grid 1 and thereby furnish this DC bias, the oscillator grid resistor should be kept low in value; a nominal value (as shown in the circuits) of 22,000 ohms is recommended. The actual value used must be a compromise between that necessary to produce a large bias and the damping of the oscillator circuit.

The larger the positive swing on grid 1 the greater will be the peak anode current; the greater the peak anode current the higher will be the conversion conductance. Because, as mentioned earlier, the voltage between cathode and ground is applied in opposite phase to the signal grid, a large positive swing on grid 1 can only be advantageous if the cathode tap is very low down the coil. Care must be exercised that the position of this tap is not so low down the coil (in an effort to achieve high conversion) that there is danger of oscillation ceasing with low mains voltage, normal component variations or decreasing oscillator slope during the normal life of the valve. The peak voltage between cathode and earth should not in general be less than 1·5 volts or oscillation may be unreliable.

c. Long and Medium Waves: On wavebands up to about 6 Mc/s no difficulties should be experienced. With an oscillator grid current of 0·5 mA in 22,000 ohms at V_a 250 and V_{g2} 100 volts, the cathode tap should be adjusted to give about 2 volts peak between cathode and earth. This will result in a peak voltage between grid 1 and earth of 14 volts and such operation will result in optimum performance.

d. Short Waves: On short waves above about 6 Mc/s, due to the poor LC ratio with a normal gang condenser, it may be found difficult to obtain an oscillator grid current in 22,000 ohms of 0·5 mA, particularly at the low frequency end of the band. It is therefore best to adjust the cathode tap for optimum performance at the low frequency and allow some over-excitation at the high frequency end. This may result in lower conversion gain but will be partly made up by improved gain of the preceding signal frequency circuits. If a current of 0·5 mA cannot be achieved, good performance will result from a current of between 0·2 and 0·25 mA in 22,000 ohms with a tap position to give not less than 1·5 volts peak between cathode and earth although this may involve a slight control grid current. If parasitic oscillation occurs at the high frequency end of the waveband a resistor of 5 to 10 ohms in the grid 1 lead should be used.

e. VHF Bands: The valve may be employed quite successfully at frequencies of the order of 100 Mc/s as a self-excited oscillator and the circuit (Ref. 315·54) shows a typical arrangement to cover the international FM band.

The value of oscillator grid current will depend upon the efficiency of the oscillator circuit, and this current preferably should not be less than 0·2 mA and in no case less than 0·16 mA if operation is to be reliable with low mains voltages. The oscillator circuit wiring should be as direct as possible; in particular the lead from the cathode tap to the valve holder should be short as the inductance of this lead can cause considerable degeneration of the signal.

In order to avoid modulation hum and microphonics the heater should be operated at cathode potential either by means of RF chokes or the lead inter-wound with the coil.

As the screening of grid 2 is imperfect at very high frequencies, considerable oscillator voltage will appear on the control grid, resulting in appreciable grid current so that the use of A.V.C. is not advised on frequencies in the region of 100 Mc/s.

2. AUTOMATIC VOLUME CONTROL: A.V.C. may be applied to the control grid and the relationship between this voltage and the conversion conductance and anode impedance is shown in the characteristic curves (Ref. 315·4 and 315·5). The DC resistance between control grid and chassis should be kept as low as is practicable and preferably should not exceed a value of 1 megohm. When the valve is employed as a self-excited oscillator the recommendations as regards heterodyne voltage should be observed carefully otherwise control grid current will flow, resulting in low gain of this valve and possibly low gain from other valves connected to the A.V.C. line, due to the negative voltage on the A.V.C. line generated by the grid current. When the valve is employed at high frequencies of the order of 30 Mc/s and above, the use of A.V.C. is not advised.

3. SCREEN VOLTAGE: The screen voltage employed on the valve is not very critical but, in general, best results are obtained with a voltage between 70 and 100 volts. The characteristic curves (Ref. 315·4, 315·5 and 315·6) show the variation in conversion conductance and anode impedance with several values of screen voltage. Because various sample valves may show a fairly wide variation in screen current it is preferable to supply this voltage from a potentiometer rather than a series resistor. This is more particularly so when other RF and IF amplifier valves derive their screen voltage from the same point, as a change in the frequency changer valve may well alter the operating screen voltage of other valves hence give a wider spread in gain than would otherwise be the case. A potentiometer to supply this valve and the IF amplifier should employ such values that the lower limb consumes a fixed drain of approximately 5 to 10 mA.

HIGH FREQUENCY PERFORMANCE

The valves may be operated either with a separate or self-excited oscillator up to a frequency of the order of 100 Mc/s.

1. INPUT IMPEDANCE and INPUT CAPACITY: The change in input impedance and input capacity resulting from changes in control grid voltage are shown in curves attached to this report. Curve No. 315·8 shows the operation at a frequency of 18 Mc/s. At VHF the input impedance varies considerably with the circuit constants and layout; no value can be quoted reliably but the capacity change is of the same order as that at 18 Mc/s. As normally employed, the input resistance is negative, and in consequence a stopper resistance in the control grid is frequently essential to avoid instability.

2. FREQUENCY DRIFT OF THE OSCILLATOR:

a. Drift with A.V.C.: A curve is attached to this report (Ref. 315·10) which shows the relationship between the oscillator frequency and the voltage applied to the control grid, the other electrode voltages remaining constant. If the regulation of these other voltages is poor the frequency drift may be increased.

b. Drift with Line Voltage Variations: A curve is attached (Ref. 315·11) which shows the relationship between the oscillator frequency and the line voltage applied. This variation includes that due to all electrode voltages including the heater.

c. Drift due to Warming-up of the Valve: A curve is attached (Ref. 315·12) which shows the frequency drift of the oscillator plotted against time. This curve shows the drift of the valve alone, and assumes that the receiver is already hot and no drift occurs in the values of the components or in the line voltage.

TYPICAL CIRCUIT CONSIDERATIONS

When the valve is used under self-excited oscillator conditions as mentioned above, the oscillator coil design is somewhat critical. The circuit (Ref. 315·55) attached is typical of long, medium and short wave practice. Typical coil design is shown on data (Ref. 315·56) and that for the VHF band on the circuit drawing (Ref. 315·54) together with the necessary coil winding data.

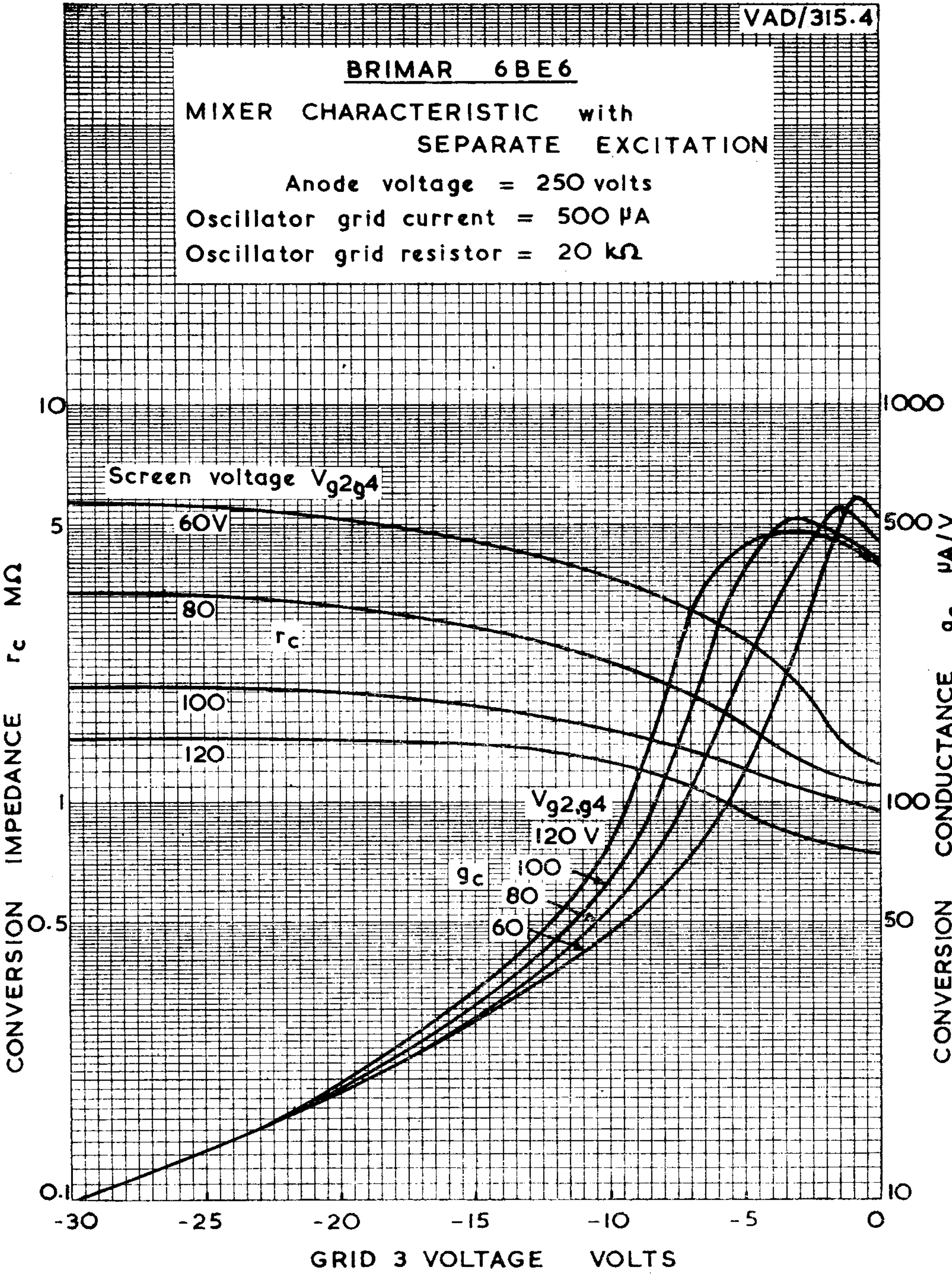
Curves showing the conversion gain and oscillator grid current using the specified coils over the various wavebands are covered on Curves Nos. 315·15, 315·16 and 315·17.

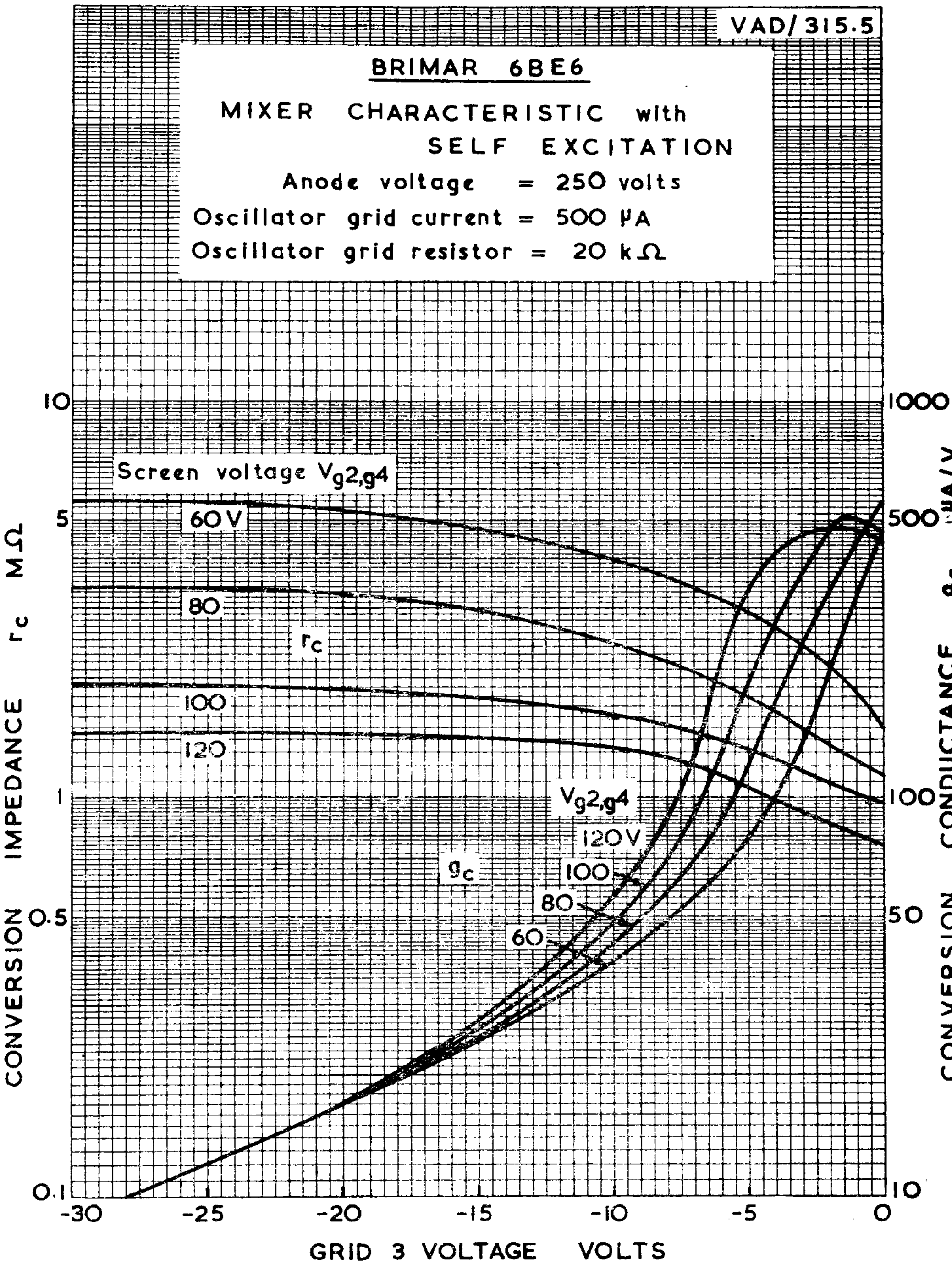
OPERATION AS AN AF MIXER OR IN VOLUME EXPANSION OR CONTRACTION CIRCUITS

As the valve has two grids capable of being used to control the anode current it is quite suitable for use as an AF mixer or one or other of the grids can be controlled by a DC bias.

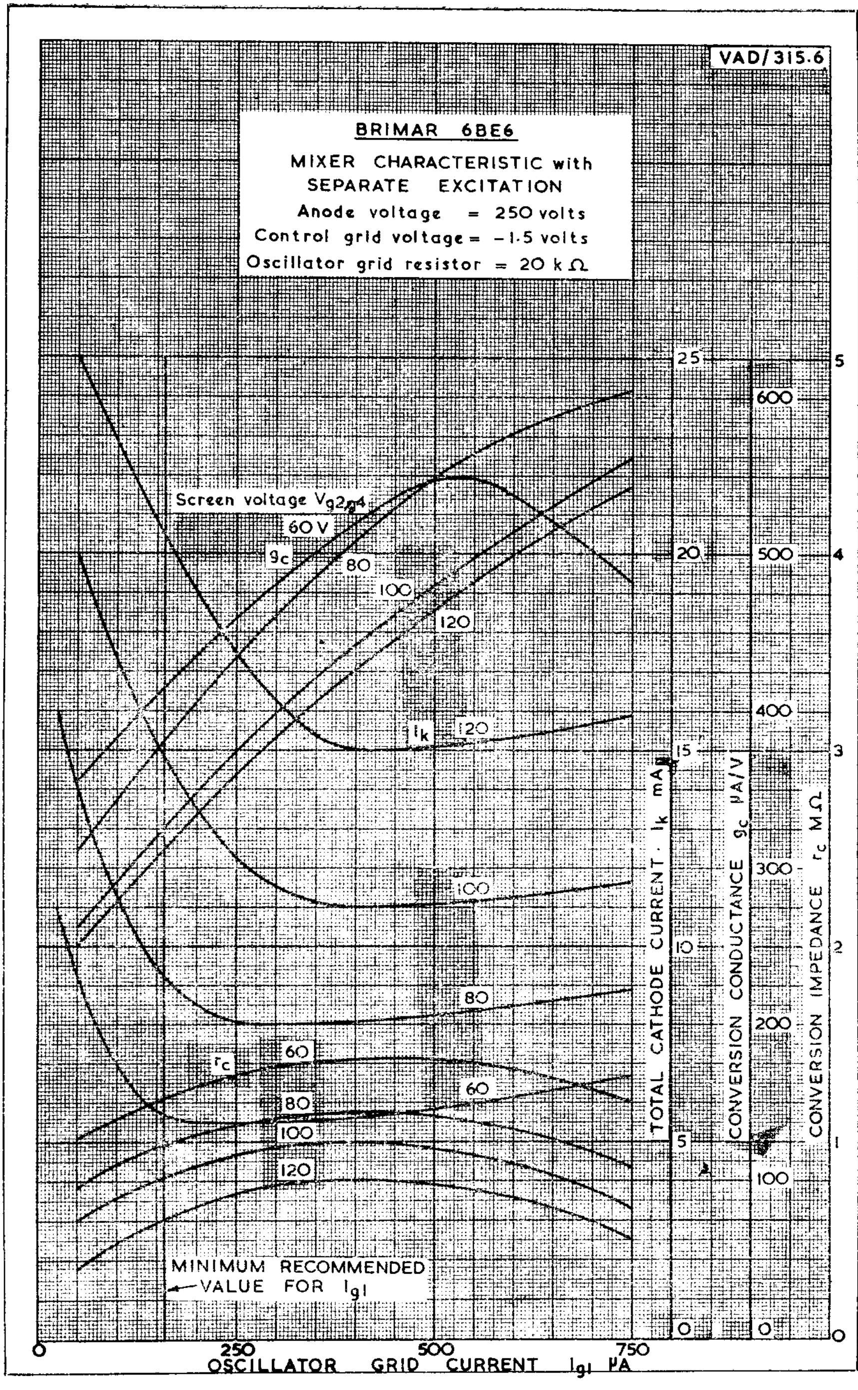
Curves Nos. 315·13 and 315·14 are attached which show the relationship between anode current and screen current with negative bias on either grid 1 or grid 3.

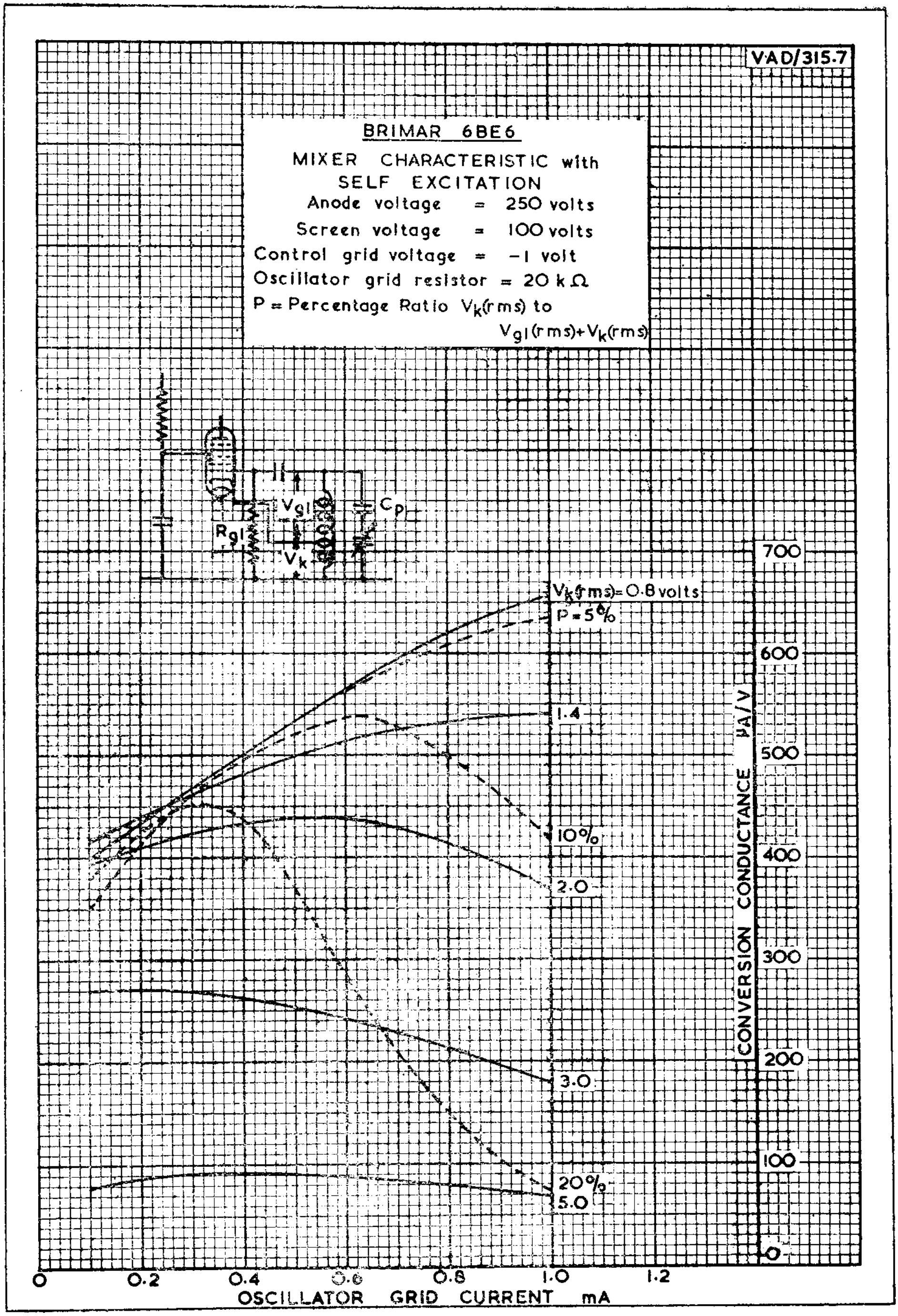
Data Ref. 315·57 show a circuit for use as an AF mixer with typical values and the stage gain from either grid and the RMS output voltage. When the valve is used in volume expander applications grid 3 should be used for control purposes.

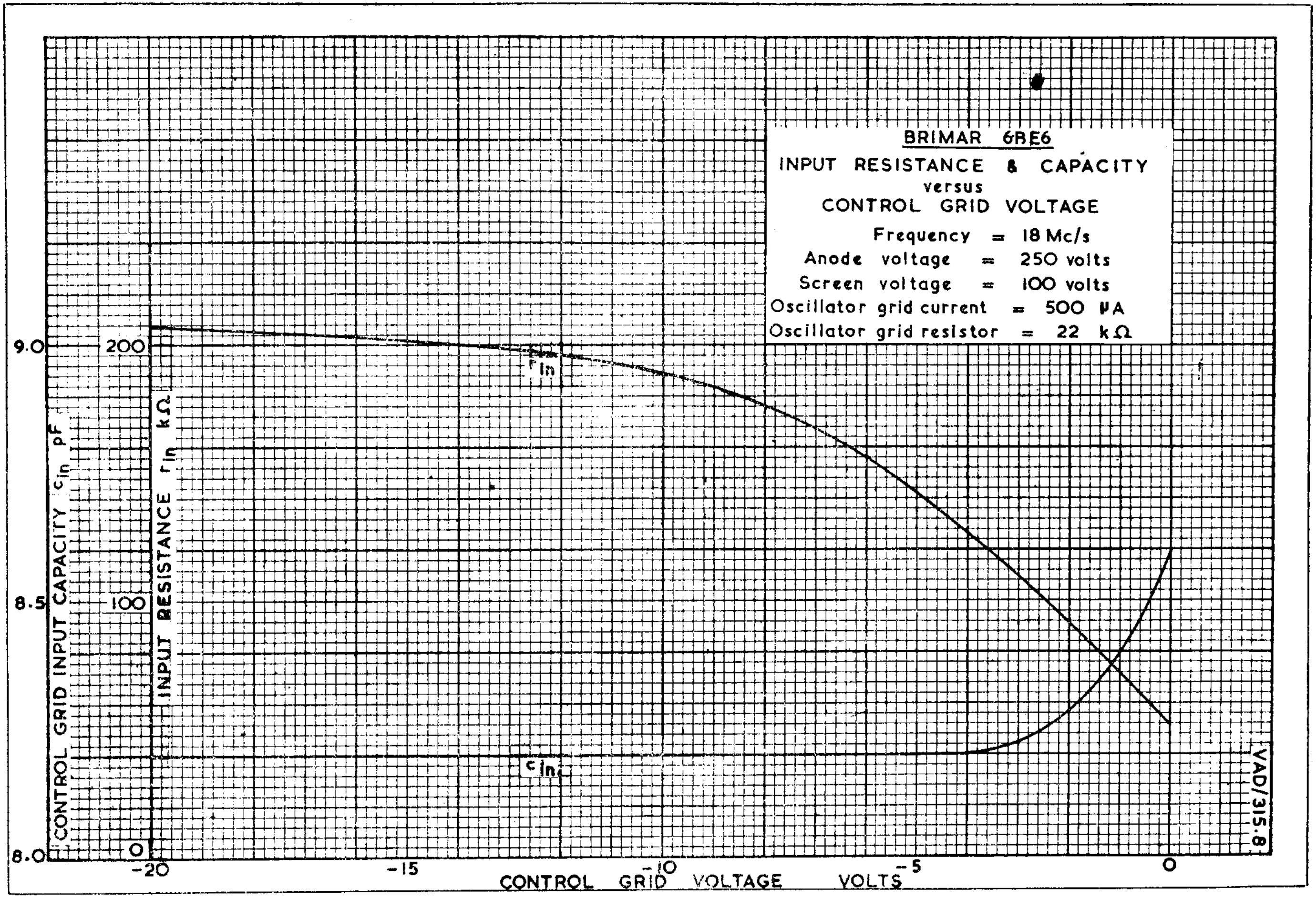

VAD/315.4
BRIMAR 6BE6
MIXER CHARACTERISTIC with SEPARATE EXCITATION
Anode voltage = 250 volts
Oscillator grid current = 500 μA
Oscillator grid resistor = 20 kΩ
Screen voltage Vg2g4
60V
80
100
120
rc
Vg2,g4
120 V
100
80
60
gc
CONVERSION IMPEDANCE rc MΩ
CONVERSION CONDUCTANCE gc μA/V
GRID 3 VOLTAGE VOLTS
10
5
1
0.5
0.1
1000
500
100
50
10
-30
-25
-20
-15
-10
-5
0



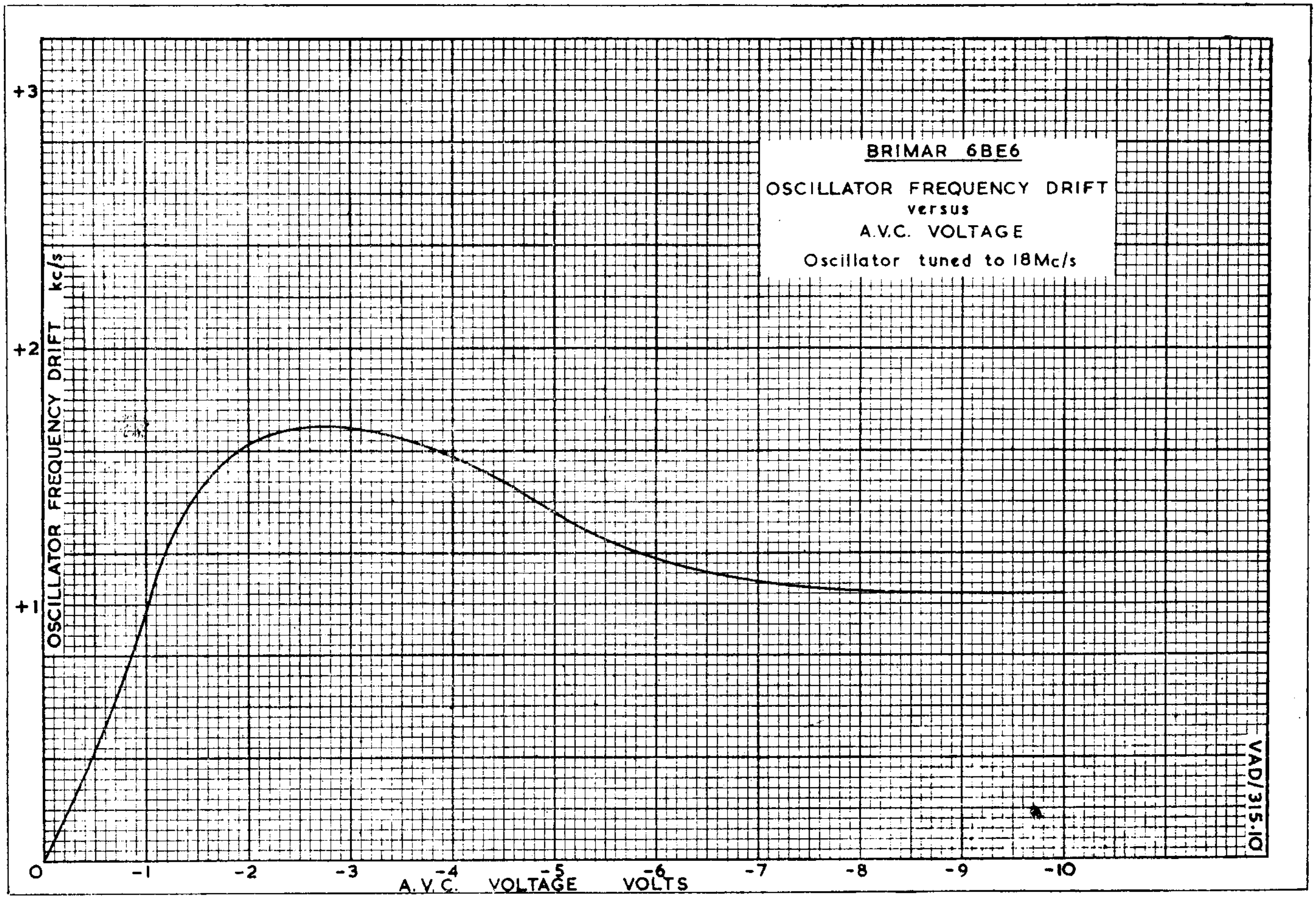
VAD/315.5
BRIMAR 6BE6
MIXER CHARACTERISTIC with SELF EXCITATION
Anode voltage = 250 volts
Oscillator grid current = 500 μA
Oscillator grid resistor = 20 kΩ
Screen voltage Vg2,g4
60V
80
100
120
rc
Vg2,g4
120V
100
80
60
gc
10
5
1
0.5
0.1
1000
500
100
50
10
CONVERSION IMPEDANCE rc MΩ
CONVERSION CONDUCTANCE gc μA/V
-30
-25
-20
-15
-10
-5
0
GRID 3 VOLTAGE VOLTS

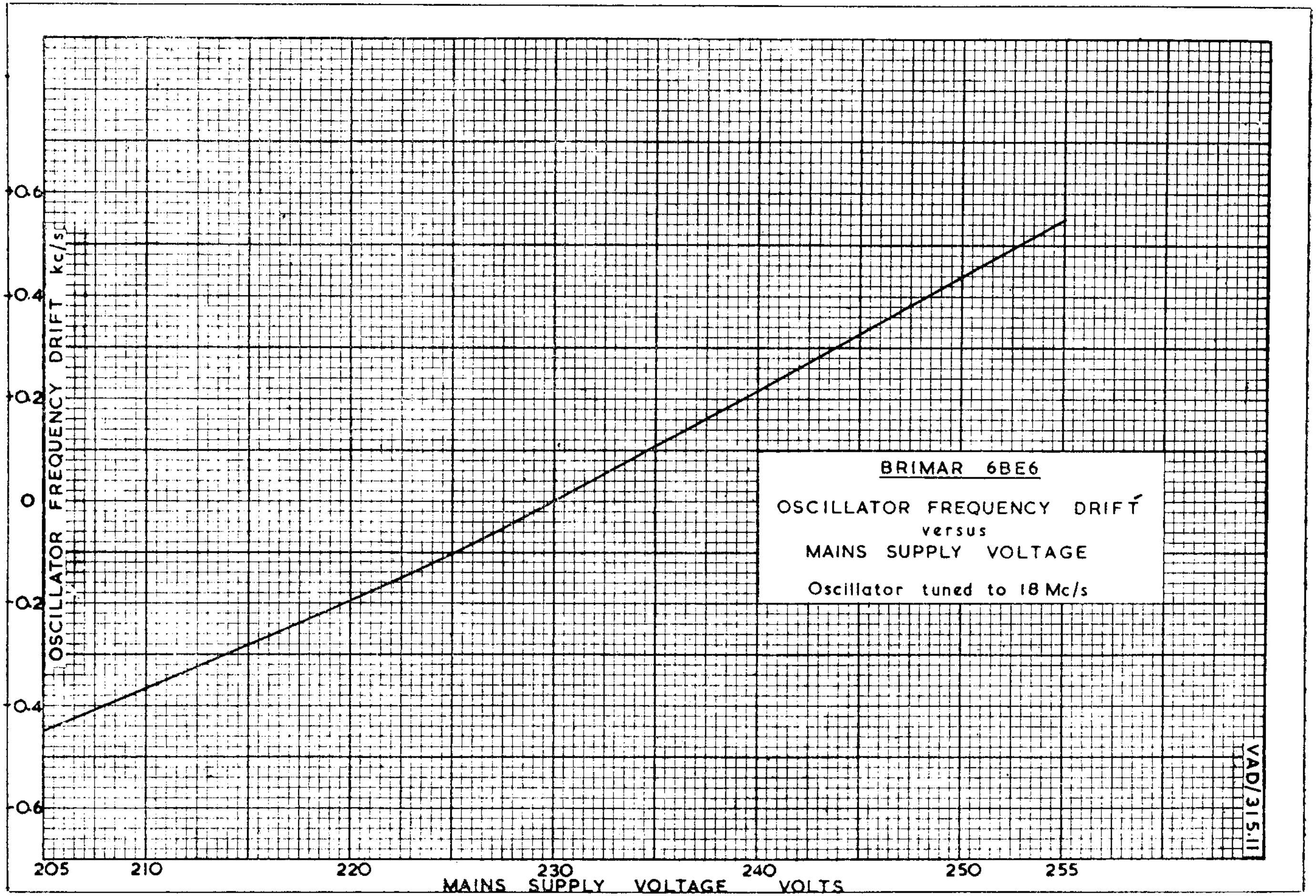

VAD/315.6
BRIMAR 6BE6
MIXER CHARACTERISTIC with
SEPARATE EXCITATION
Anode voltage = 250 volts
Control grid voltage = −1.5 volts
Oscillator grid resistor = 20 kΩ
Screen voltage Vg2,g4
60 V
gc
80
100
120
Ik
120
100
80
60
rc
60
80
100
120
MINIMUM RECOMMENDED
VALUE FOR Ig1
TOTAL CATHODE CURRENT · Ik mA
CONVERSION CONDUCTANCE gc µA/V
CONVERSION IMPEDANCE rc MΩ
OSCILLATOR GRID CURRENT Ig1 µA
0
250
500
750
25
20
15
10
5
600
500
400
300
200
100
5
4
3
2
1

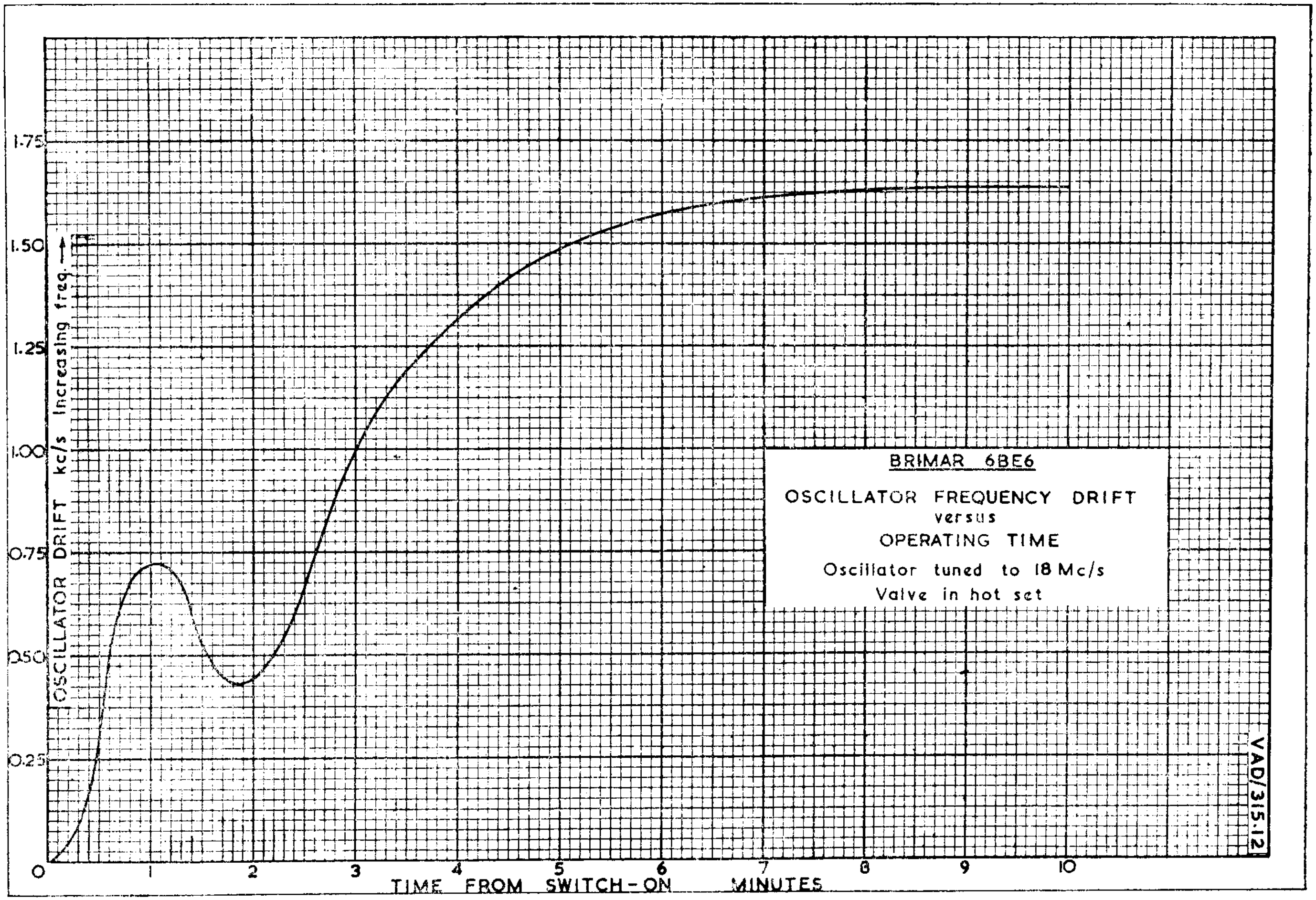

VAD/315.7
BRIMAR 6BE6
MIXER CHARACTERISTIC with SELF EXCITATION
Anode voltage = 250 volts
Screen voltage = 100 volts
Control grid voltage = -1 volt
Oscillator grid resistor = 20 kΩ
P = Percentage Ratio Vk(rms) to Vg1(rms)+Vk(rms)
Cp
Rg1
Vg1
Vk
Vk(rms)=0.8 volts
P=5%
1.4
10%
2.0
3.0
20%
5.0
CONVERSION CONDUCTANCE µA/V
700
600
500
400
300
200
100
0
0.2
0.4
0.6
0.8
1.0
1.2
OSCILLATOR GRID CURRENT mA

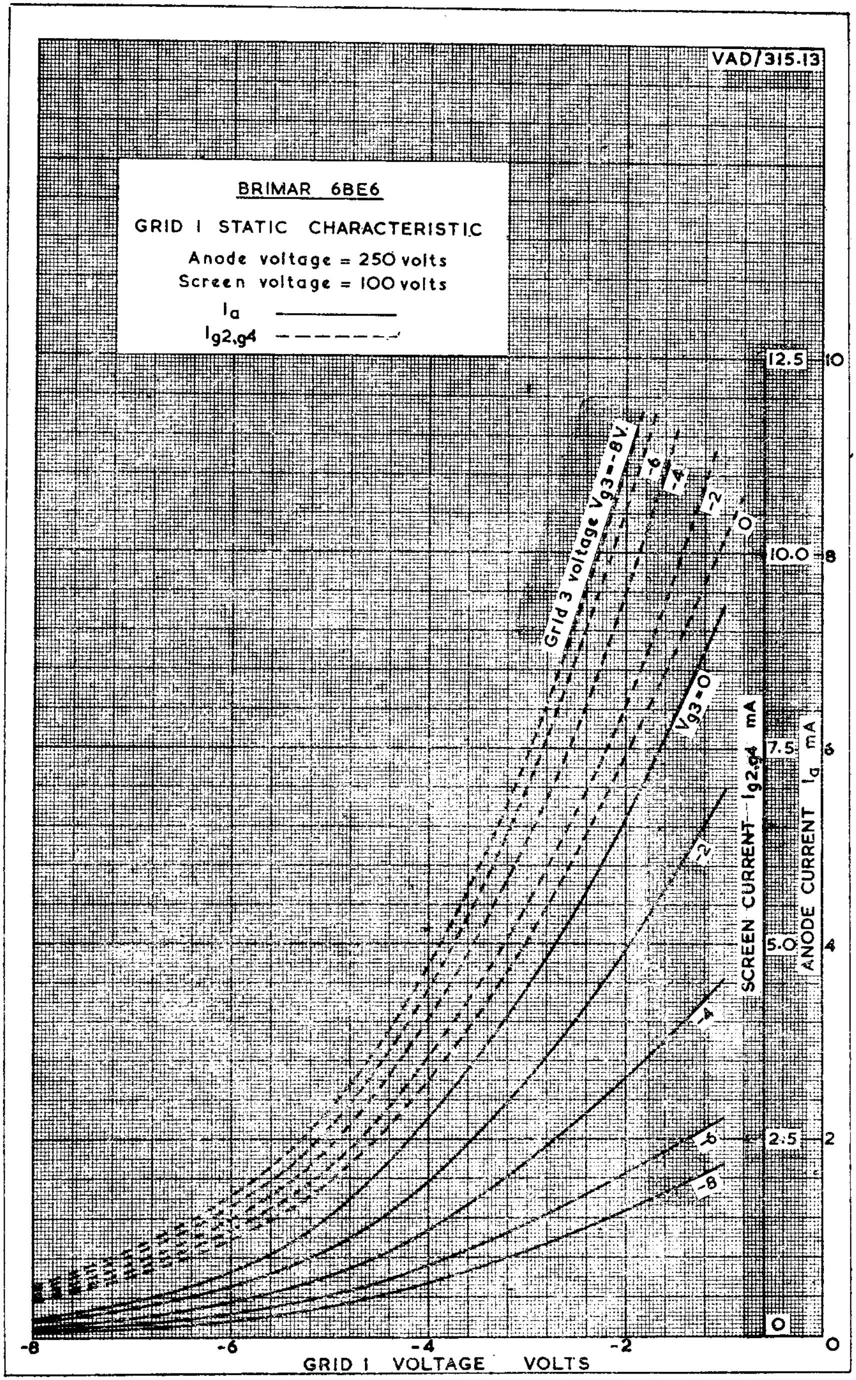


BRIMAR 6BE6
INPUT RESISTANCE & CAPACITY
versus
CONTROL GRID VOLTAGE
Frequency = 18 Mc/s
Anode voltage = 250 volts
Screen voltage = 100 volts
Oscillator grid current = 500 μA
Oscillator grid resistor = 22 kΩ
CONTROL GRID INPUT CAPACITY c_{in} pF
INPUT RESISTANCE r_{in} kΩ
9.0
8.5
8.0
200
100
0
r_{in}
c_{in}
-20
-15
-10
-5
0
CONTROL GRID VOLTAGE VOLTS
VAD/315.8

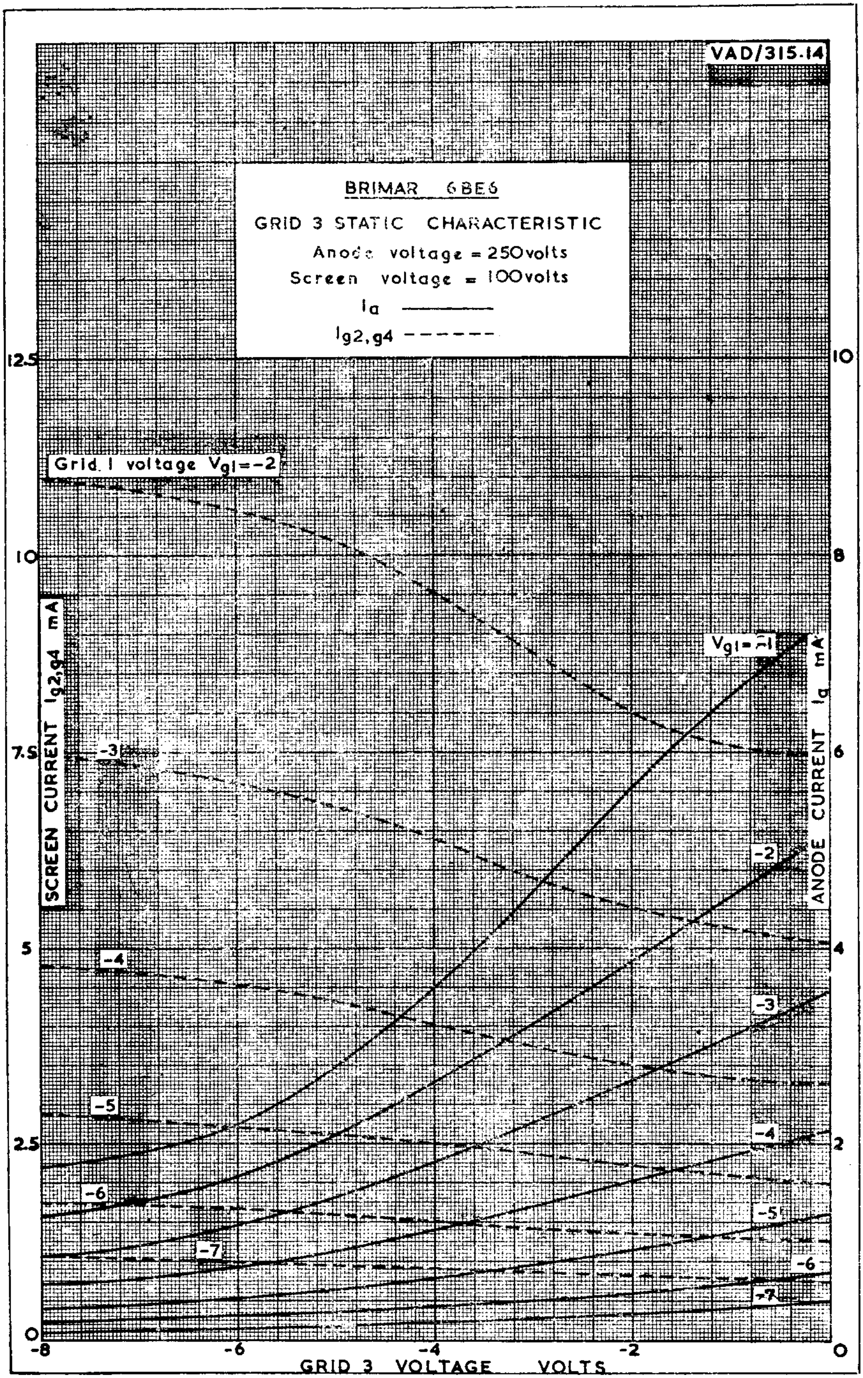

BRIMAR 6BE6
OSCILLATOR FREQUENCY DRIFT
versus
A.V.C. VOLTAGE
Oscillator tuned to 18Mc/s
OSCILLATOR FREQUENCY DRIFT kc/s
+3
+2
+1
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
-10
A.V.C. VOLTAGE VOLTS
VAD/315.10


BRIMAR 6BE6
OSCILLATOR FREQUENCY DRIFT
versus
MAINS SUPPLY VOLTAGE
Oscillator tuned to 18 Mc/s
OSCILLATOR FREQUENCY DRIFT kc/s
+0.6
+0.4
+0.2
0
-0.2
-0.4
-0.6
205
210
220
230
240
250
255
MAINS SUPPLY VOLTAGE VOLTS
VAD/315.11

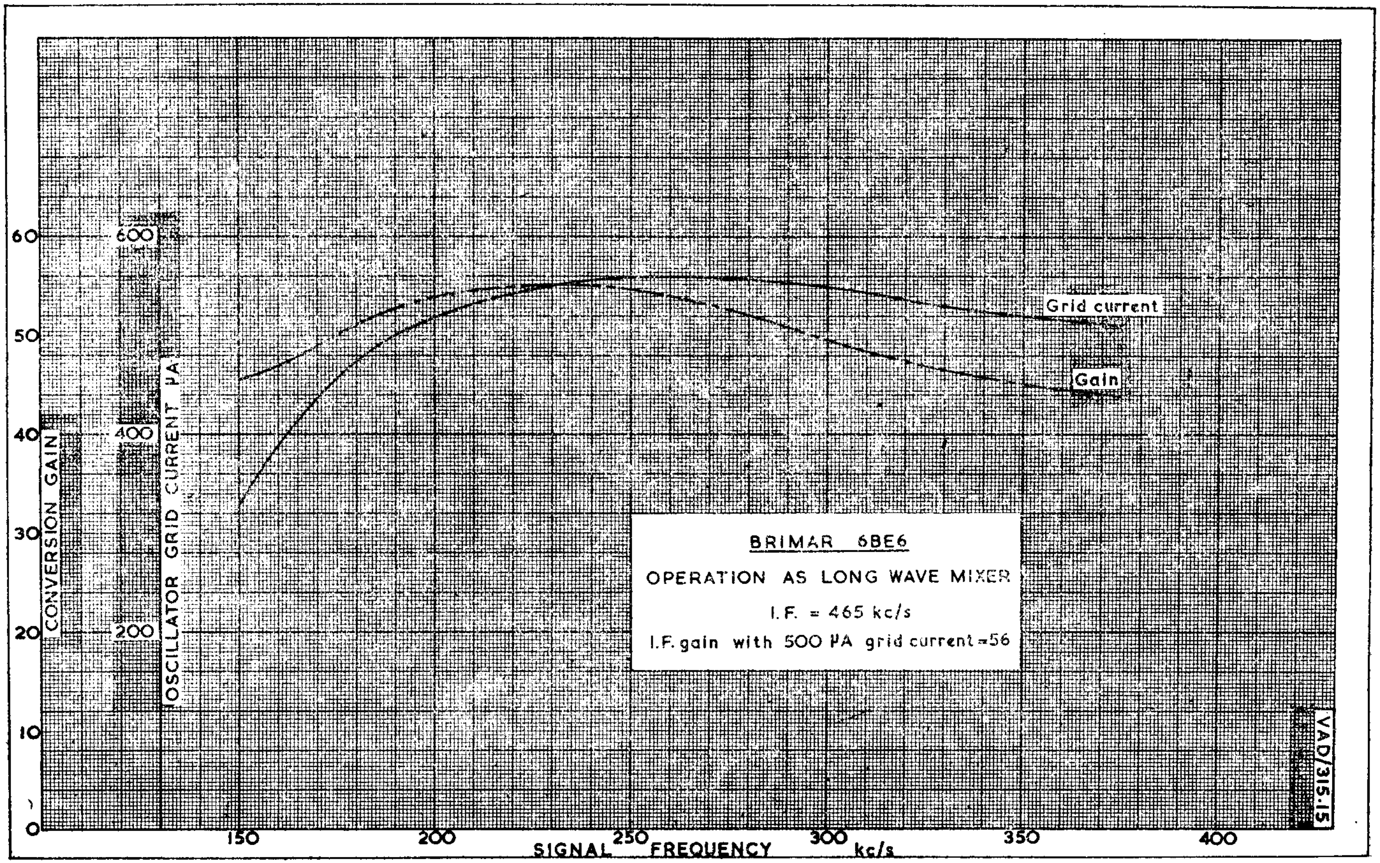

BRIMAR 6BE6
OSCILLATOR FREQUENCY DRIFT
versus
OPERATING TIME
Oscillator tuned to 18 Mc/s
Valve in hot set
OSCILLATOR DRIFT kc/s Increasing freq. →
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0
1
2
3
4
5
6
7
8
9
10
TIME FROM SWITCH-ON MINUTES
VAD/315.12



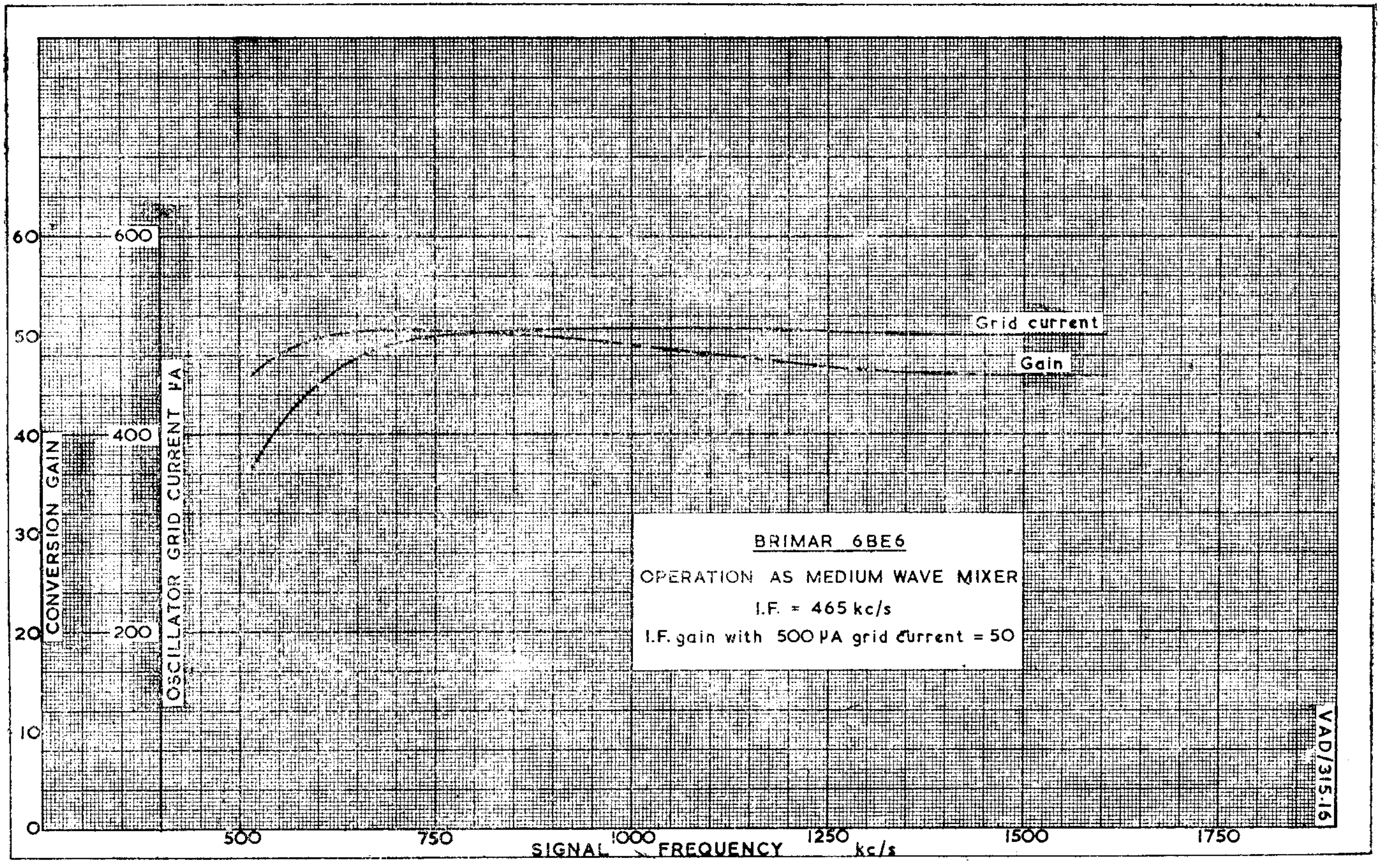
VAD/315.13
BRIMAR 6BE6
GRID I STATIC CHARACTERISTIC
Anode voltage = 250 volts
Screen voltage = 100 volts
Ia
Ig2,g4
Grid 3 voltage Vg3 = -8V.
-6
-4
-2
0
Vg3 = 0
-2
-4
-6
-8
SCREEN CURRENT — Ig2,g4 mA
ANODE CURRENT Ia mA
12.5
10.0
7.5
5.0
2.5
0
10
8
6
4
2
0
-8
-6
-4
-2
GRID I VOLTAGE VOLTS



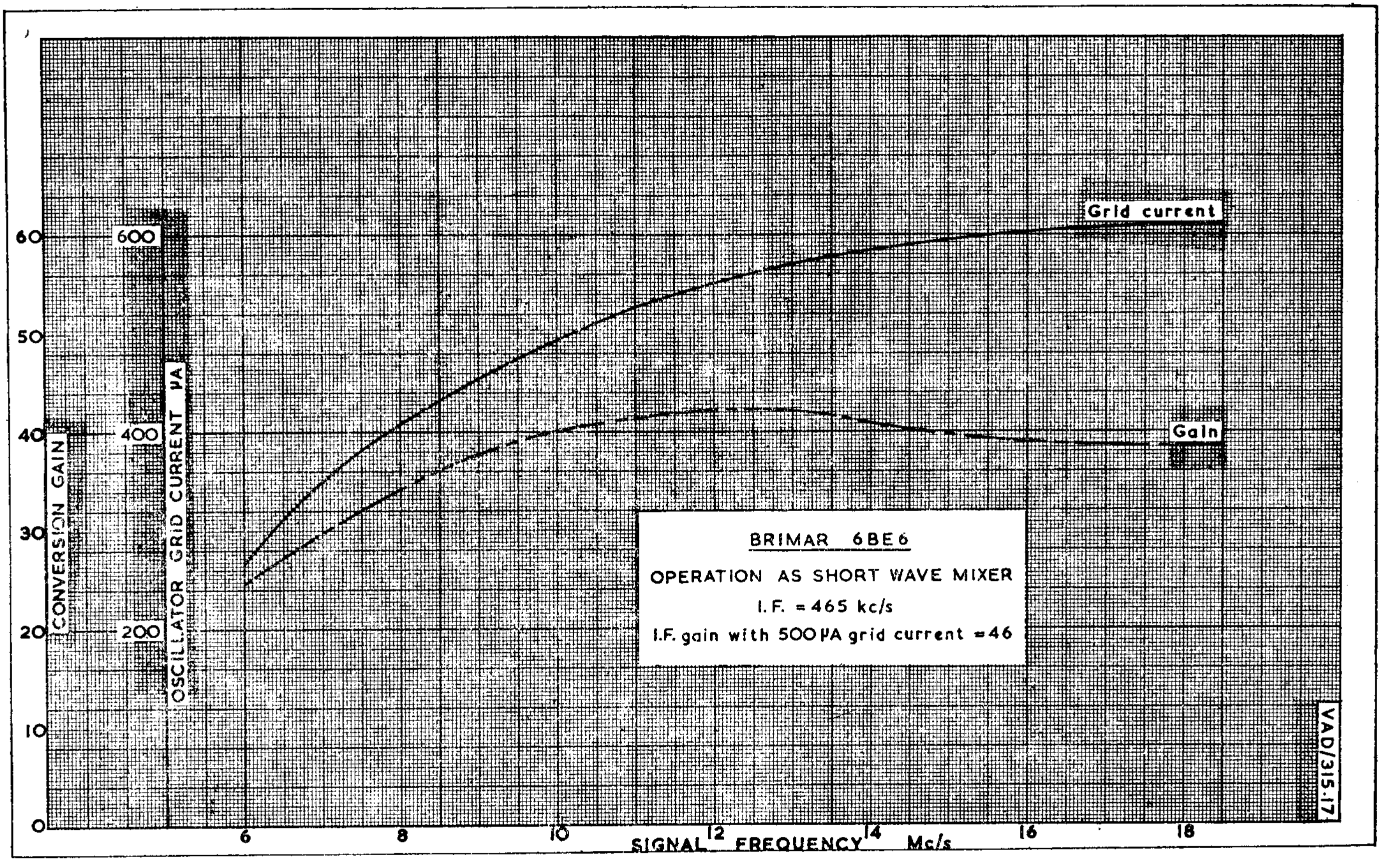
VAD/315.14
BRIMAR 6BE6
GRID 3 STATIC CHARACTERISTIC
Anode voltage = 250 volts
Screen voltage = 100 volts
Ia
Ig2,g4
Grid 1 voltage Vg1=-2
Vg1=-1
-2
-3
-4
-5
-6
-7
SCREEN CURRENT Ig2,g4 mA
ANODE CURRENT Ia mA
GRID 3 VOLTAGE VOLTS
12.5
10
7.5
5
2.5
0
8
6
4
2
-8
-6
-4
-2



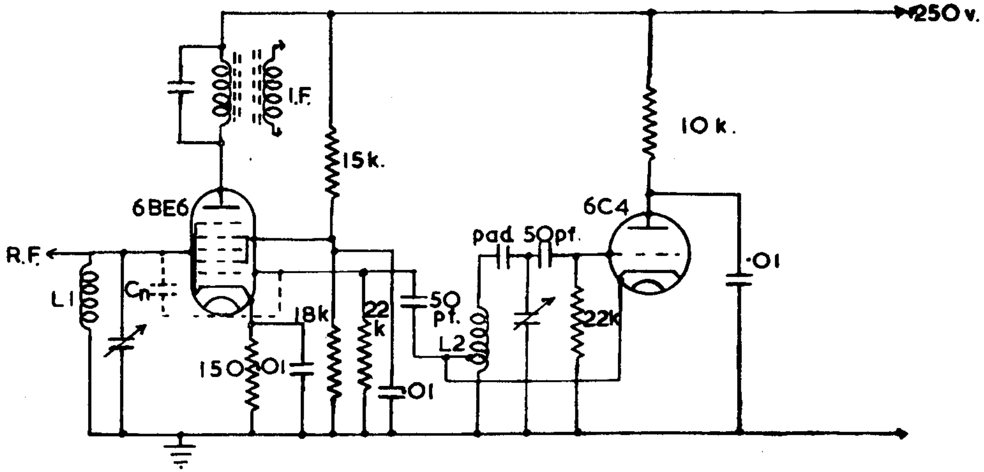
BRIMAR 6BE6
OPERATION AS LONG WAVE MIXER
I.F. = 465 kc/s
I.F. gain with 500 μA grid current = 56
Grid current
Gain
CONVERSION GAIN
OSCILLATOR GRID CURRENT μA
SIGNAL FREQUENCY kc/s
0
10
20
30
40
50
60
200
400
600
150
200
250
300
350
400
VAD/315.15



VAD/315.16
Grid current
Gain
BRIMAR 6BE6
OPERATION AS MEDIUM WAVE MIXER
I.F. = 465 kc/s
I.F. gain with 500 μA grid current = 50
CONVERSION GAIN
OSCILLATOR GRID CURRENT μA
SIGNAL FREQUENCY kc/s
0
10
20
30
40
50
60
200
400
600
500
750
1000
1250
1500
1750


BRIMAR 6BE6
OPERATION AS SHORT WAVE MIXER
I. F. = 465 kc/s
I.F. gain with 500 µA grid current = 46
Grid current
Gain
CONVERSION GAIN
OSCILLATOR GRID CURRENT µA
SIGNAL FREQUENCY Mc/s
VAD/315.17

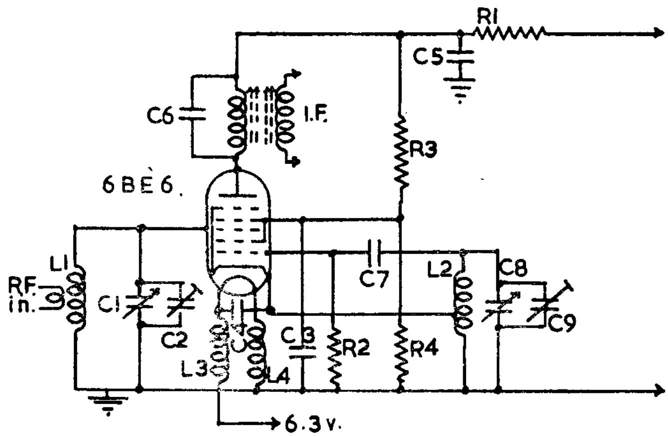
BRIMAR 6BE6 CONVERTER, SEPARATELY EXCITED BY 6C4 OSCILLATOR



Position of tap on L2 adjusted for required 6BE6 g1 current.

VAD/315.53

BRIMAR 6BE6 SELF EXCITED CONVERTER CIRCUIT FOR V.H.F. BAND 88 TO 108 MC/S



L1, L2. 1 3/4 turns, 16 S.W.G. tinned copper. Dia. 3/4", spacing between turns 3/8". Position of cathode tap on L2 is dependent on circuit layout.

C1, C8. 2 gang 7.5 to 18 pf. variable condenser.

C2, C9. Trimmers 15 pf. maximum.

L3, L4. 26 turns of 18 S.W.G. close wound on a 3/8" dia. former.

C3, 4, 5. 1000 pf.

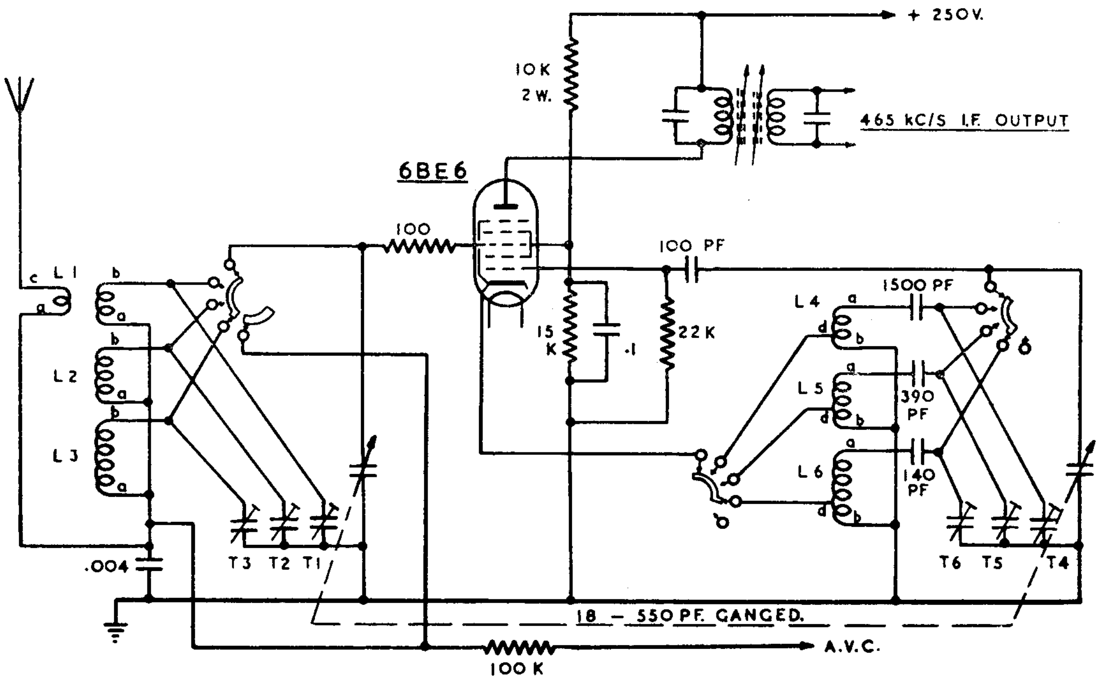
C7. 25 pf.

R1. 1000 Ω.

R2. 22 kΩ.

R3. 15 kΩ. R4. 18 kΩ.

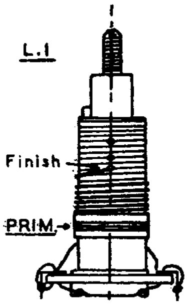
BRIMAR 6BE6 LONG, MEDIUM & SHORT WAVE CONVERTER CIRCUIT

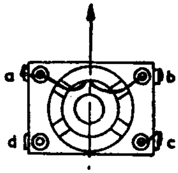


VAD/315.55

BRIMAR 6BE6

SHORT-WAVE COIL DATA





L = 1·42 μH
Q at 10 Mc/s = 82

S.W. AERIAL

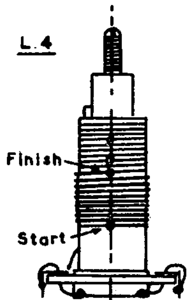
Former: 1/2″ outside diameter moulded bakelite, threaded 10 turns per cm.

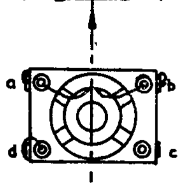
Iron Dust Core: Neosid Z.11.B.

Secondary: 9 turns of 22 SWG En. Cu. wound in grooving, clockwise from start in direction of arrow.
Start taken through hole in former to tag "a".
Finish taken through hole in former to tag "b".

Primary: 4 turns of 38 SWG D.S.C.Cu. close wound on two layers of Bitumenised paper, 3/16″ wide, placed over the earthy end of the coil, clockwise from start in direction of arrow.
Start taken to tag "c".
Finish taken to tag "a".

Trimmer: T.1. 4—40 pF.





L = 1·57 μH
Q at 10 Mc/s = 120

S.W. OSCILLATOR

Former: As for L.1.

Iron Dust Core: As for L.1.

Winding: 10 turns of 22 SWG En. Cu. wound in grooving, clockwise from start in direction of arrow.

Start taken through hole in former to tag "b".

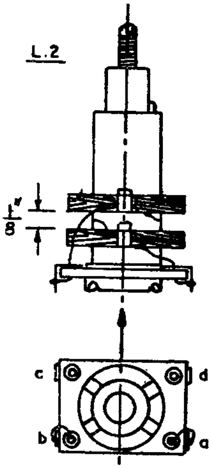
Finish taken through hole in former to tag "a".

Tap at 1-5/8 turns from start taken to tag "d".

Trimmer: T.4. 4—40 pF.

BRIMAR 6BE6

MEDIUM-WAVE COIL DATA



L = 193·5 μH

Q at 1 Mc/s = 160

M.W. AERIAL

Former: 1/2″ outside diameter, moulded bakelite.

Iron Dust Core: Neosid Z.11.B.

Winding: 57 + 57 turns of 30/48 Litz, in two sections 1/8″ wide, spaced 1/8″ as shown in diagram.

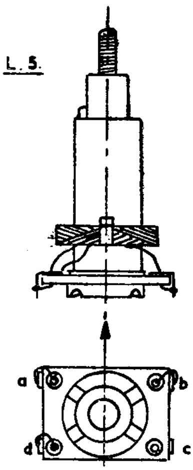
Single-Wave wound.

Start taken to tag "a".

Finish taken to tag "b".

Gears (Douglas): 50—32—34—50/60-60.

Trimmer: T.2. 4—40 pF.



L = 120·5 μH

Q at 1 Mc/s = 44

M.W. OSCILLATOR

Former: As for L.2.

Iron Dust Core: As for L.2.

Winding: 70 turns of 38 D.S.C. Cu. tapped at 6 turns.

Double-Wave wound, 1/8″ wide.

Start taken to tag "b".

Finish taken to tag "a".

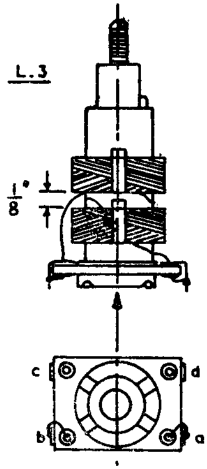
Tap taken to tag "d".

Gears (Douglas): 50-41-42-50/40-80.

Trimmer: T.5. 4—40 pF.

BRIMAR 6BE6

LONG-WAVE COIL DATA



L = 2·19 mH

Q at 200 kc/s = 66

L.W. AERIAL

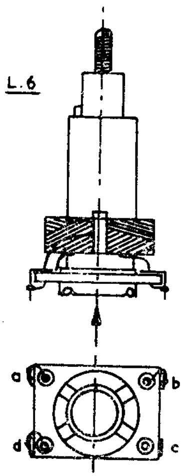
Former: 1/2" outside diameter, moulded bakelite.

Iron Dust Core: Neosid Z.11.B.

Winding: 220 + 220 turns of 38 SWG D.S.C. in two sections.
Single-Wave wound, 1/4" wide, spaced 1/8" as shown in diagram.
Start taken to tag "a".
Finish taken to tag "b".

Gears (Douglas): 50-41-42-50/60-60.

Trimmer: T.3. 40—80 pF.



L = 0·62 mH

Q at 500 kc/s = 62

L.W. OSCILLATOR

Former: As for L.3.

Iron Dust Core: Diameter 10 mm. Length 17 mm. with 4BA brass screw insert 1" long.

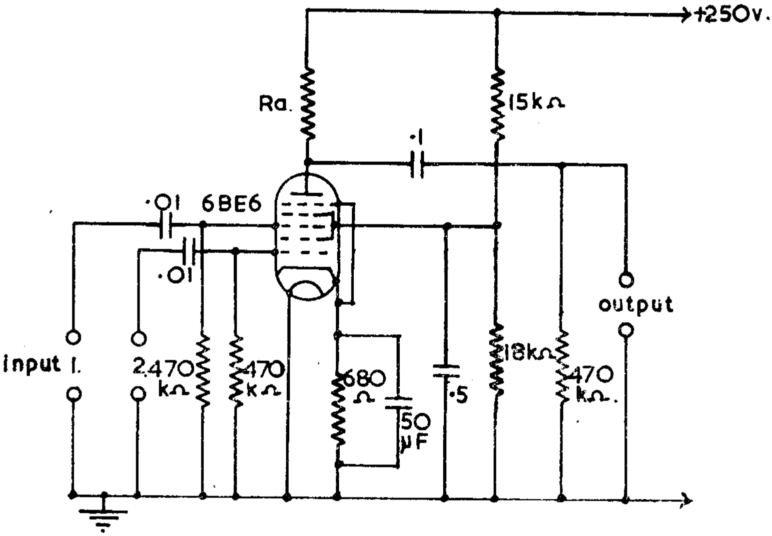
Winding: 150 turns of 38 SWG D.S.C. Cu. tapped at 8 turns.
Single-Wave wound, 1/4" wide.
Start taken to tag "b".
Finish taken to tag "a".
Tap taken to tag "d".

Gears (Douglas): 50-41-42-50/60-60.

Trimmer: T.6. 40—80 pF.

VAD/315.57

BRIMAR 6BE6 A.F. MIXER CIRCUIT



	gain for 5v.R.M.S. output.		maximum output.	
	input 1.	input 2.	input 1.	input 2.
Ra 47kΩ	7.5	25	45	40
Ra 100kΩ	11	36	70	60