Maximum Dimensions :
Overall length (including pins) 130 m/m.
Diameter of bulb 45 m/m.

Osram Valves

Made in England.

TYPE X21

HEPTODE FREQUENCY CHANGER

(For use with a 2-volt Accumulator).

The OSRAM X21 is a Variable Mu Heptode for use as an electron coupled Frequency Changer in 2-volt battery superheterodyne circuits.

Its advantage is that the oscillator detector coupling is made by the electron stream within the valve itself, no external cathode coupling being required.

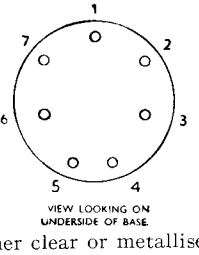
It is designed to give a satisfactory conversion conductance, together with a low H.T. current.

Due to the small interaction between the oscillator and mixer sections the OSRAM X21 valve can be used for short wave operation, down to 16 or even 13 metres with suitable precautions.

CHARACTERISTICS.

Filament Volts			2.0 max.
Filament Current			0.1 amp.
	Max.		
Anode Volts	150	100–150	
Screen Volts	70	40–50	
Oscillator Anode Volts	90	40–50	
Oscillator Grid Peak Volts	10	10	
Control Grid Volts		0	–9
Total Cathode Current average (medium & long waves)		1.9 m.a.	1.5 m.a.
Conversion Conductance average		240 micromhos	2.0 micromhos
Conversion Impedance		2.0 megohms	
Interelectrode Capacities :			
Control Grid—Anode		0.55 micro-microfarad approx.	
Anode—other electrodes		19.2 ,, ,, ,,	
Control Grid—other electrodes		11.8 ,, ,, ,,	
Oscillator Grid—Control Grid		0.153 ,, ,, ,,	
Oscillator Grid—Oscillator Anode		1.8 ,, ,, ,,	
Oscillator Grid—other electrodes		7.36 ,, ,, ,,	
Oscillator Anode—other electrodes		6.85 ,, ,, ,,	

For prices see pages 126-129.



BASE, 7-PIN.

1 : Oscillator Anode G2
2 : Oscillator Grid G1
3 : Screen Grids G3 G5
4 : Filament
5 : Filament
6 : Metallising
7 : Anode
Top Cap : Control Grid G4

Type X21 is supplied with either clear or metallised bulb, according to requirements.

OPERATING CONDITIONS.

For the most satisfactory operation it is recommended that the oscillator anode (G_2) is maintained at a potential of 15 or 20 volts higher than screen grids (G_3 G_5). The screen voltage should be obtained by means of a tapping on the H.T. battery and normally need not exceed 50 volts.

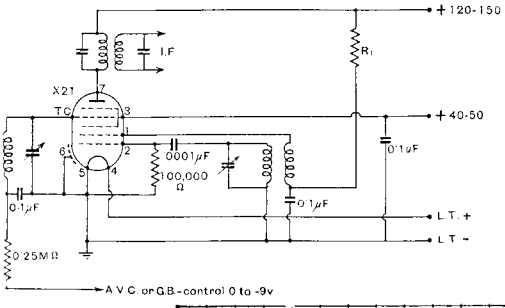
The anode coil should be tightly coupled to the grid coil, and this coupling adjusted until, with a suitable series resistance R_1 (see diagram), a meter in series with the grid leak shows a current between 60 and 100 microamps.

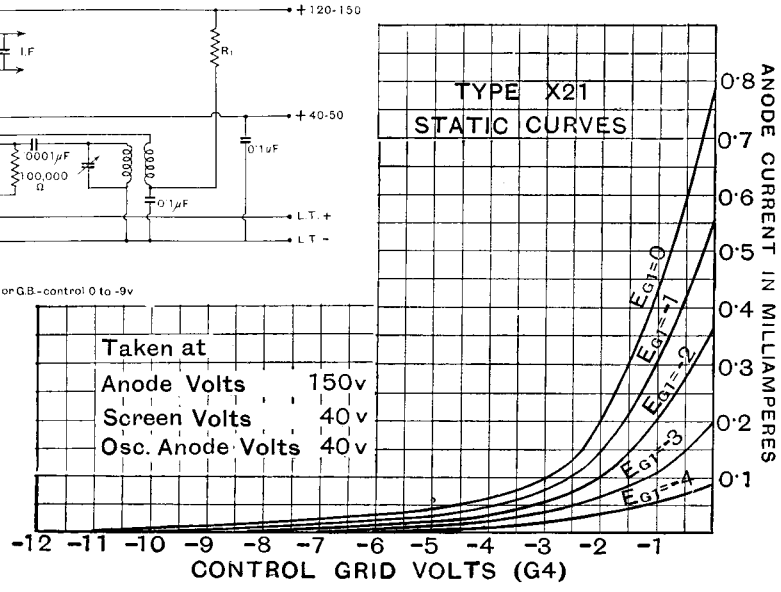
In short wave operation a screen voltage of 40 is recommended and an oscillator anode voltage of 80 to 90 volts.

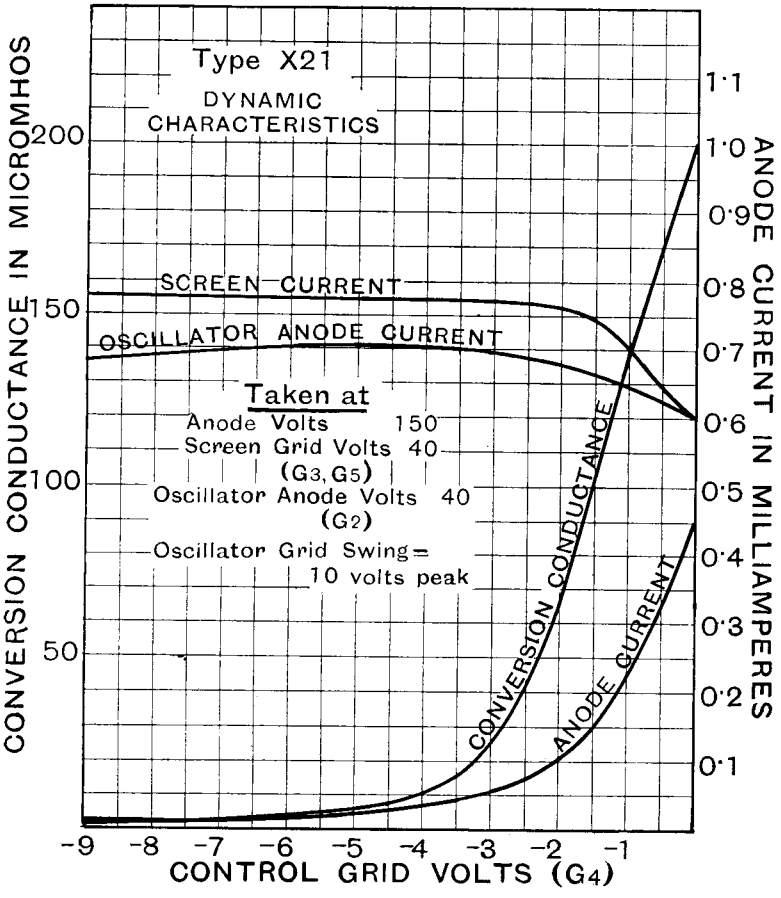
The oscillator anode current will rise as the wave length is reduced, but in no case should the total cathode current exceed 7.5 m.a.

It is essential for successful short wave operation to reduce to a minimum any coupling between the oscillator and input circuits.

TYPE X21







CHARACTERISTIC CURVES OF AVERAGE VALVE.