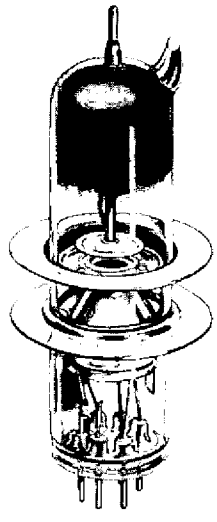
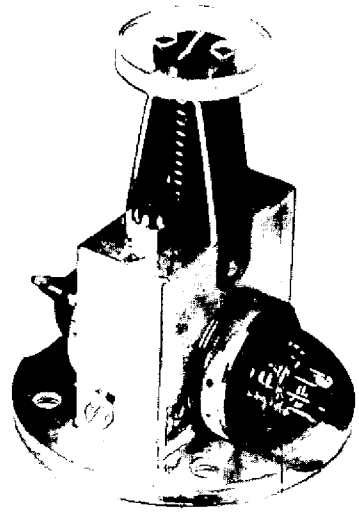
REFLEX KLYSTRON
VELOCITY VARIATION OSCILLATOR

6812

The type 6812 is a microwave oscillator of the single cavity reflex type, designed with an external cavity for CW operation within the frequency range 2500 - 5000 Mc/s. The output power is about 0.1 watt. The tube is designed for use as a local oscillator. It is built up on a 7-pin miniature base and needs no special aircooling arrangements. Special attention has been given to longlife performance.





ELECTRICAL CHARACTERISTICS

Frequency range with suitable cavities		2500-5000	Mc/s
Frequency change with temperature		0.6	Mc/°C
Frequency change from start of cold tube until cont. working conditions are reached		Below 20	Mc/s
Frequency change with resonator voltage		0.1	Mc/volt

HEATER RATINGS

Heater Voltage		6.3 ± 5%	volts
Heater Current		0.6	amps

MAXIMUM RATINGS

Resonator Voltage		375	volts
Resonator Current		30	milliamps
Reflector Voltage	Max.	- 700	volts
	Min.	- 10	volts
Heater - Cathode Voltage		90	volts
Bulb Temperature		90	°C

TYPICAL OPERATION. FREQUENCY 4000 Mc/s.

Resonator Voltage		350	volts
Resonator Current		22	milliamps
Focus Cylinder		0	volt
Reflector Transit Mode		3 3/4	
Reflector Voltage		- 100	volts
Power Output		0.09	watt
Electronic Tuning (to half power points)		20	Mc/s
Modulation Sensitivity	Min.	0.5	Mc/volt

from JETEC release #1635, April 23, 1956

MECHANICAL CHARACTERISTICS

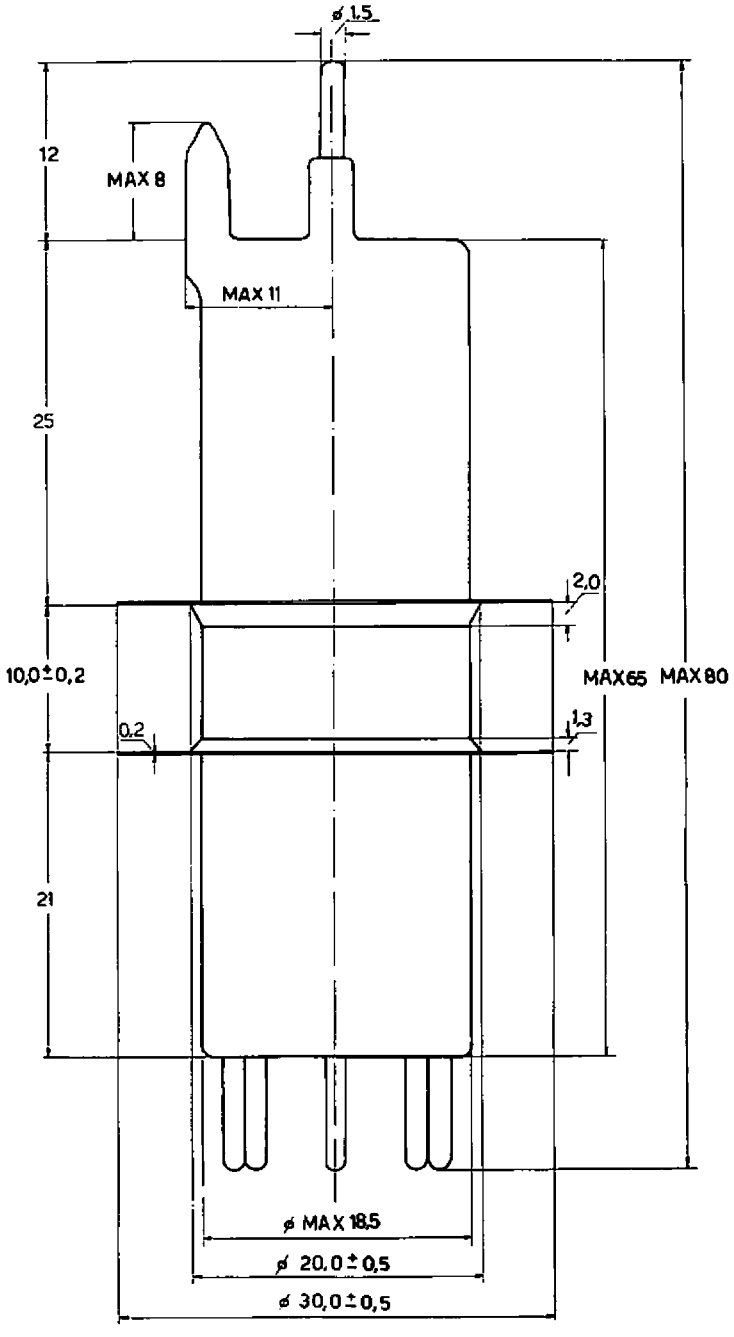
Base: Small Glass Button Miniature 7-pin

Pin No	Connected to	Pin No	Connected to
1	Focus Cylinder	5	Heater
2	Cathode	6	No Connection
3	Heater	7	Cathode
4	Cathode	Reflector to be connected to pin on top of tube.	

Mounting Position:	Any
Resonator:	External with inductive tuning
Bulb:	Glass
Overall Dimensions:	See Outline Drawing
Cooling:	Freely Circulating Air

Note: Modulation Sensitivity is defined as the ratio between frequency change and change in reflector voltage when this is varied between half power points.

AB SVENSKA ELEKTRONRÖR - STOCKHOLM 20 - SWEDEN
A SUBSIDIARY OF TELEFONAKTIEBOLAGET L M ERICSSON



ALL DIMENSIONS ARE GIVEN IN MILLIMETERS

FIG. 1

AVERAGE CHARACTERISTICS

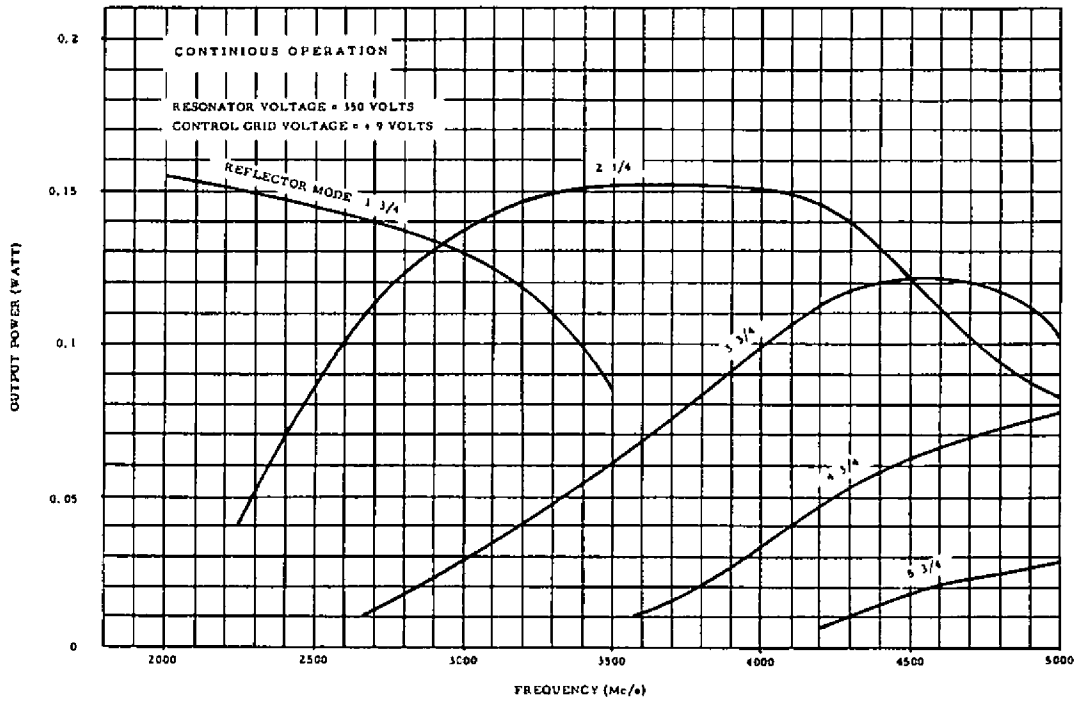


FIG. 2

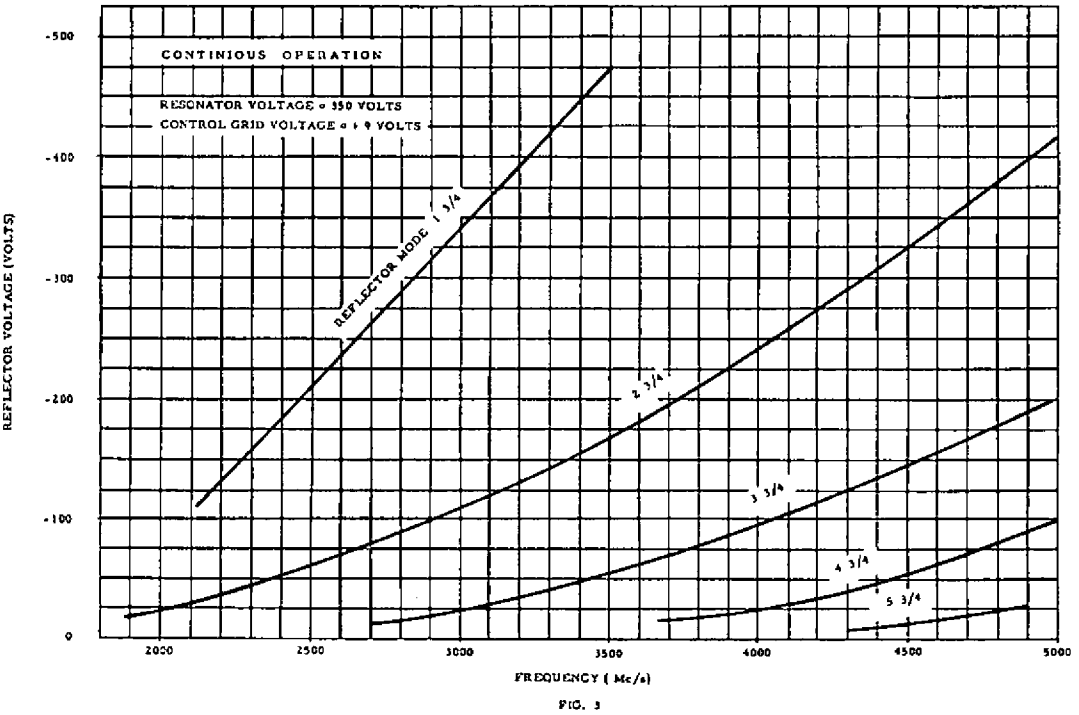


FIG. 3

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AVERAGE CHARACTERISTICS

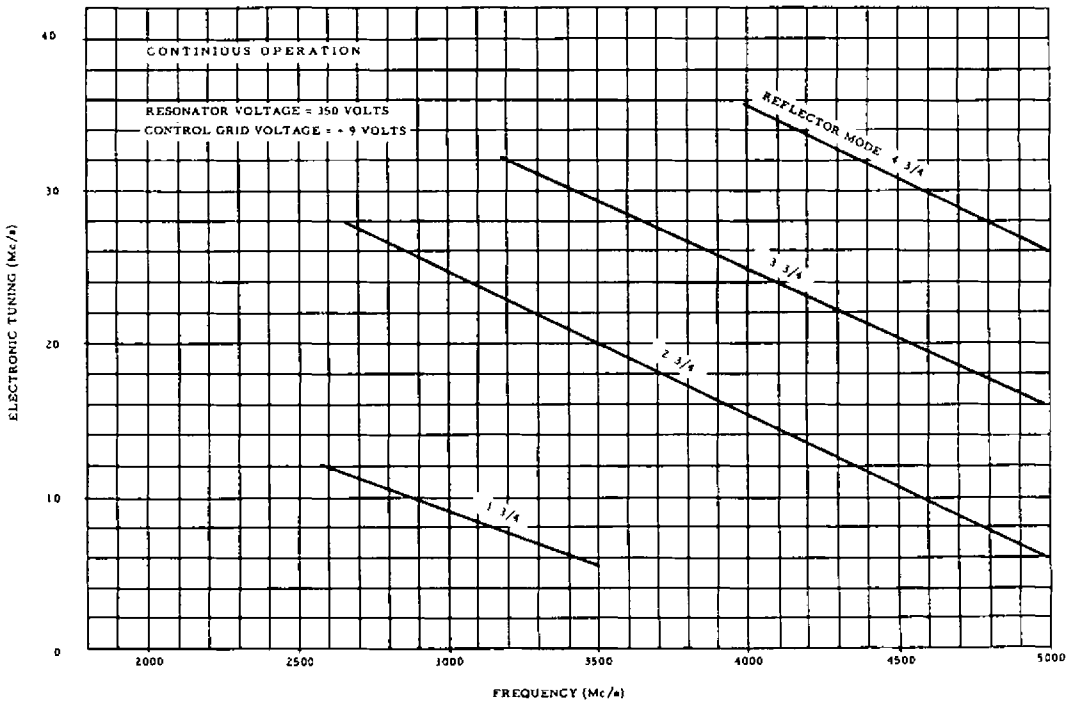

FIG. 4

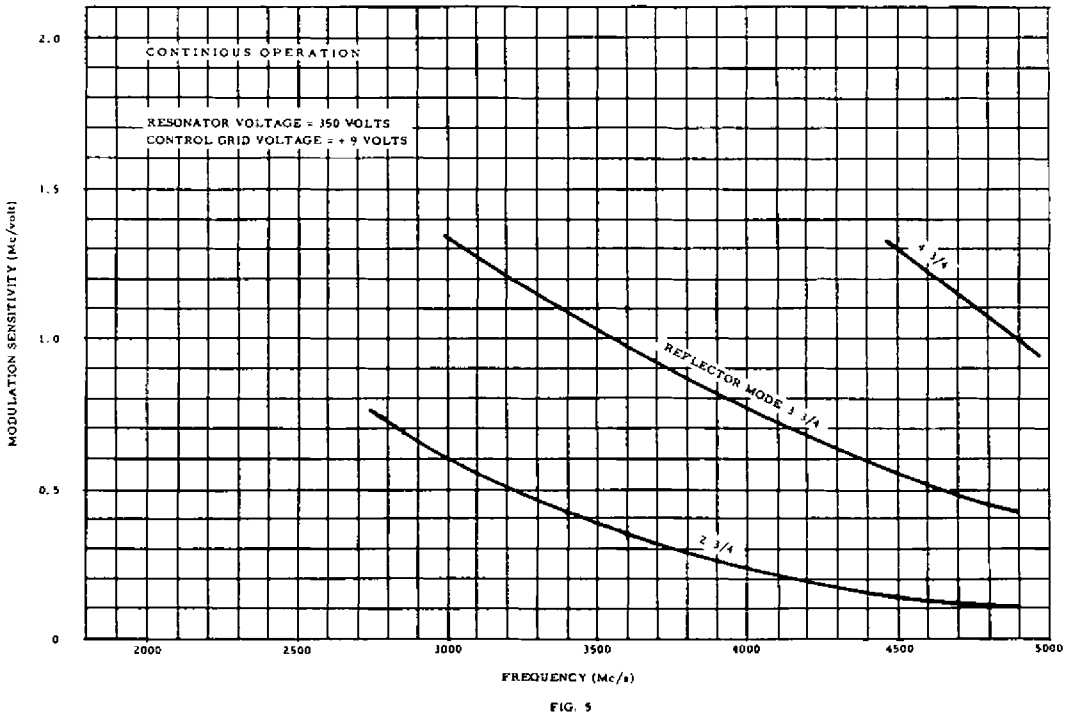

FIG. 5

AVERAGE CHARACTERISTICS

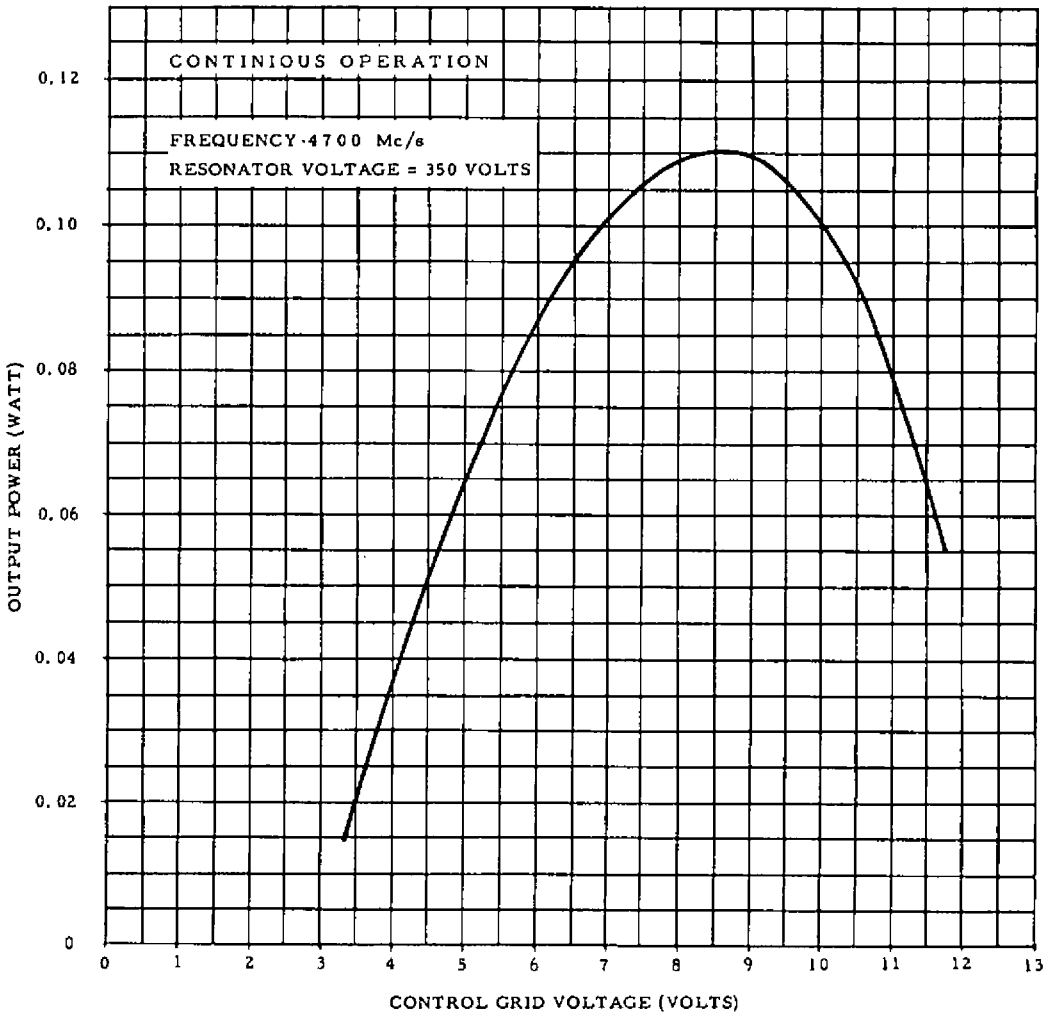

FIG. 6

AVERAGE CHARACTERISTICS

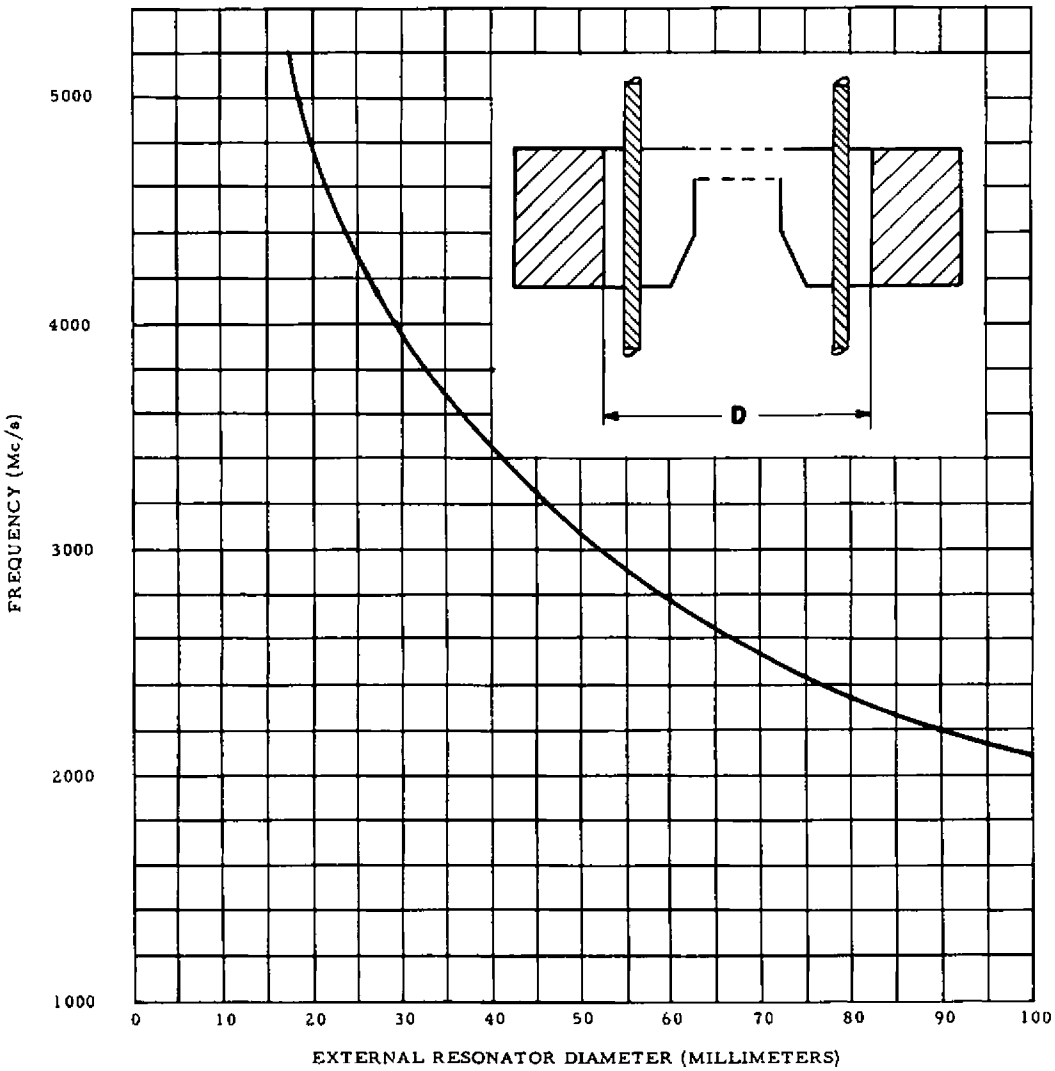

FIG. 7

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TECHNICAL INFORMATION

CATHODE

The resonator of the 6812 can be either operated at groundpotential with the cathode negative by the amount of the resonator potential or at resonator potential with the cathode grounded. Cathode lead and heater are brought out separately. The heatercathode voltage may not exceed 90 volts. The cathode can of course be externally connected to the heater. In all cases, where the resonator is at ground potential, the heater transformer must be insulated to withstand the maximum resonator voltage. In applications, where the resonator has a positive potential with respect to ground it has to be insulated from the waveguide system and protections must be made against the resonator voltage. The focus cylinder (pin No 1) has to be connected outside the tube to the cathode (pin 2, 4 or 7).

CAVITY

The cavity of the 6812 is of the external type and the mechanical tuning has to be inductive. The dimensions of the 0.2 mms copperdisks are seen on the outline drawing. These disks have to be tightly pressed against the resonator ring. The output coupling can be made either through an iris or a loop. In a following curve the inside diameter of the resonator for a certain frequency is given.
The tube needs no special aircooling arrangements except under extraordinary conditions. An inductive tuning can be arranged in the resonator and the tube can easily be tuned over 500 Mc range with the same resonator. Suggestions concerning the construction of the resonator can be given by the manufacturer.

ELECTRONIC TUNING

The frequency may be tuned by varying the reflector voltage. The maximum power output for a fixed mechanical tuner position will be obtained at only one reflector value. The electronic tuning range is defined in the following way:
The mechanical tuning and the reflector voltage are mutually adjusted for a maximum power output at a given frequency. If then the reflector voltage is varied above and below the value for maximum power output so that the power output is reduced to one half - the frequency change between the half power values is defined as electronic tuning range. The amount of the electronic tuning and the linearity of its variation with reflector voltage is dependent upon the type of load used and the coupling to the load. The electronic tuning also depends on the reflector transit mode of operation.

MODES OF OPERATION

Oscillations may be obtained in a given tube for several combinations of resonator and reflector voltages at a particular frequency. The regions where oscillations occur within the reflector voltage range are referred to as reflector modes, e.g. 1 3/4, 2 3/4 and 3 3/4. The curves show characteristics of the output power and reflector voltages for different reflector modes. The electronic tuning range increases with the reflector mode number whereas the output power decreases.

LIFE

The reflex klystron 6812 has been designed for longlife performance and lifetests of the tube have exceeded 10,000 hours.