

# Carcinotron

## CO 210



### CO 210 / F 4005 1,600 to 3,200 MCs

### WIDE ELECTRONIC TUNING BAND OSCILLATOR

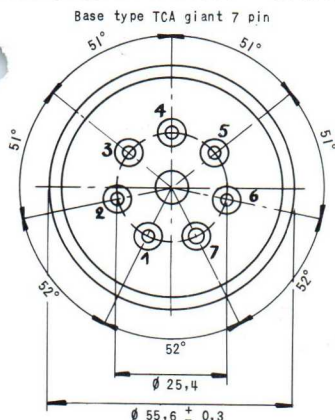
The "Carcinotron" CO 210 tube with integral magnet gives a power of about 100 to 600 mW between 1,600 and 3,200 Mc/s.

The frequency varies in a continuous manner as a function of anode 2 (line and collector) voltage without hysteresis or lack of oscillations.

The tetrode structure of the gun allows an amplitude modulation or a pulse operation by acting on wehnelt grid voltage or on anode voltage.

**TENTATIVE  
DATA**

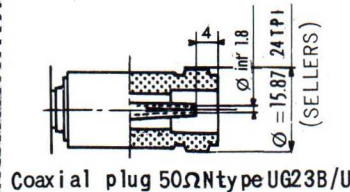
#### PIN ARRANGEMENT



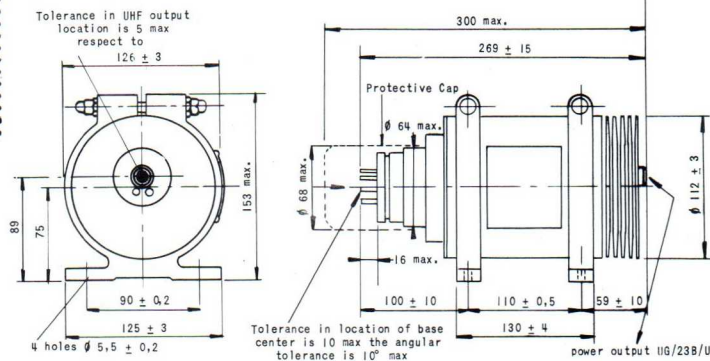
- 1.- Filament
- 2.- Cathode
- 3.- Anode 1
- 4.- Grid 1
- 5 } Anode 2
- 6 }
- 7.- Filament

Net Weight : 6,750 kg.

#### RF OUTPUT



#### LAYOUT



Dimensions in mm

**Compagnie générale**

Société Anonyme au Capital de 3.998.750.000 F.  
Siège Social : 79, Boul. Haussmann — PARIS (8<sup>e</sup>)



**de télégraphie Sans Fil**

DIVISION TUBES ÉLECTRONIQUES  
Direction Commerciale : 79, Bd Haussmann, PARIS-8<sup>e</sup> - ANJ. 84-60

5904 D6 - 1/4 A



## GENERAL CHARACTERISTICS

Oxide coated cathode indirectly heated	
Filament voltage (V) . . . . .	6.3 $\pm$ 5%
Filament current (A) . . . . .	3.1
Capacitances :	
Wehnelt grid 1 to all electrodes (pF) . . . . .	12.5
Anode 1 to all electrodes (pF) . . . . .	12.5
Anode 2 to all electrodes (pF) . . . . .	6
Cathode to filament (pF) . . . . .	19
Blowed air cooling :	
Flow (cu. dm/sec.) . . . . .	10
Pressure (g/sq. cm) . . . . .	2.5

## MAXIMUM RATINGS

Anode 1 voltage (V) . . . . .	300
Anode 2 voltage (V) . . . . .	1500
Anode 2 current (mA) . . . . .	70
Wehnelt grid 1 bias (V) . . . . .	0 to -125
Anode 2 dissipation (W) . . . . .	70

## TYPICAL OPERATION

Wehnelt grid 1 voltage (V) . . . . .	0
Anode 2 voltage (V) . . . . .	170 to 1400
Anode 2 current (mA) . . . . .	30 to 60
Anode 1 voltage (V) . . . . .	50 to 200
Anode 1 current (mA) . . . . .	0 to 20
Output power (mW) :	
at 1,700 Mc/s . . . . .	100
at 2,000 Mc/s . . . . .	200
at 2,500 Mc/s . . . . .	400
at 3,000 Mc/s . . . . .	600

## MOUNTING AND HANDLING NOTES

The valve may be permanently damaged if precautions are not observed to ensure that the field of its associated focusing magnet is preserved.

Chances of accidental damage will be minimized by complying with the following directions :

- 1- Keep the valve in its packing until it is to be used.
- 2- Before unpacking read carefully the notes written on the inner face of the case cover.

**Compagnie générale**

Société Anonyme au Capital de 3.998.750.000 F.  
Siège Social : 79, Boul. Haussmann — PARIS (8<sup>e</sup>)  
5904 D6 - 2/4A



**de télégraphique Sans Fil**

DIVISION TUBES ÉLECTRONIQUES  
Direction Commerciale : 79, Bd Haussmann, PARIS-8<sup>e</sup> - ANJ. 84-60

3- The valve may be operated in any position, but maintain minimum clearance 15 cm (6 inches) between the magnet and magnetic material; this clearance should be 20 cm (8 inches) as concerns field generating devices (carcinotrons, transformers, choke etc ...).

Avoid using magnetic tools for fastening operations (screwdrivers, spanners ...)

4- Never modify the position of the valve with respect to its focusing device.

## OPERATING NOTES

### **STARTING**

First start the valve air cooling (the air flow must be directed on the radiating fins associated with anode 2).

Apply in succession :

- heater voltage and wait for 90 seconds,
- grid 1 voltage,
- anode 2 voltage,
- anode 1 voltage.

Follow inverted order to stop the tube.

For initial setting up, apply moderate voltages for instance :

Vg1 . . . . .	0 volt
Va2 . . . . .	400 volts
Val . . . . .	voltage shown on the serial

number plate or in the test label minus 20 volts and check that the operation is correct before applying normal voltages.

### **CATHODE HEATER**

It is advisable to use a power supply with sufficient inner resistance (or external) in order to limit the filament starting current to 2.5 its normal value. The filament cold resistance is about one seventh of its resistance under running conditions.

It is advisable to feed the filament with direct current (filtered rectified alternating current or battery) in order to avoid hum or spurious modulation.

### **INSULATION**

By structure anode 2 (delay line and collector) is connected to the valve outer casing and to pins 5 and 6 of the base. The casing being usually earthed the cathode and heater are at a negative voltage which may reach 1500 volts.

### **LOAD**

Oscillating frequency is not quite independent of the load. Therefore, to benefit of all carcinotron's advantages it is suitable to comply with some load conditions :

- S. W. R. lower than 2 in the whole operating range,
- connecting line between valve and load as short as possible or decoupling near the UHF output.

**Compagnie générale**

Société Anonyme au Capital de 3.998.750.000 F.  
Siège Social : 79, Boul. Haussmann — PARIS (8<sup>e</sup>)



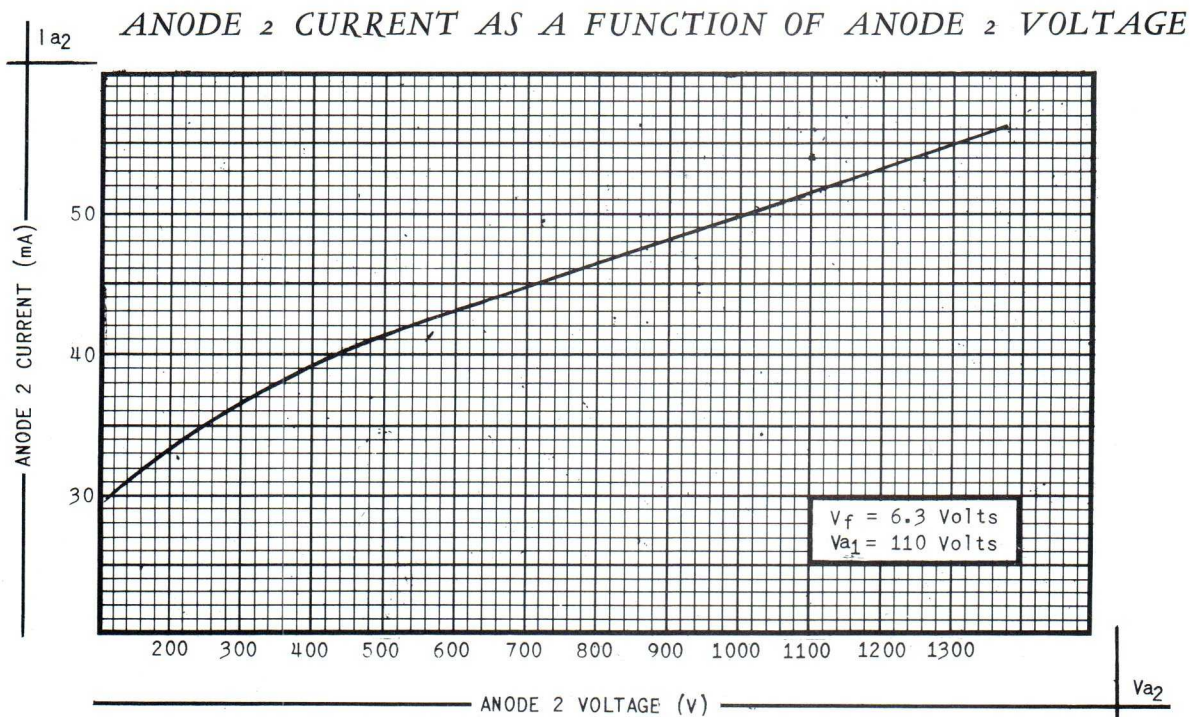
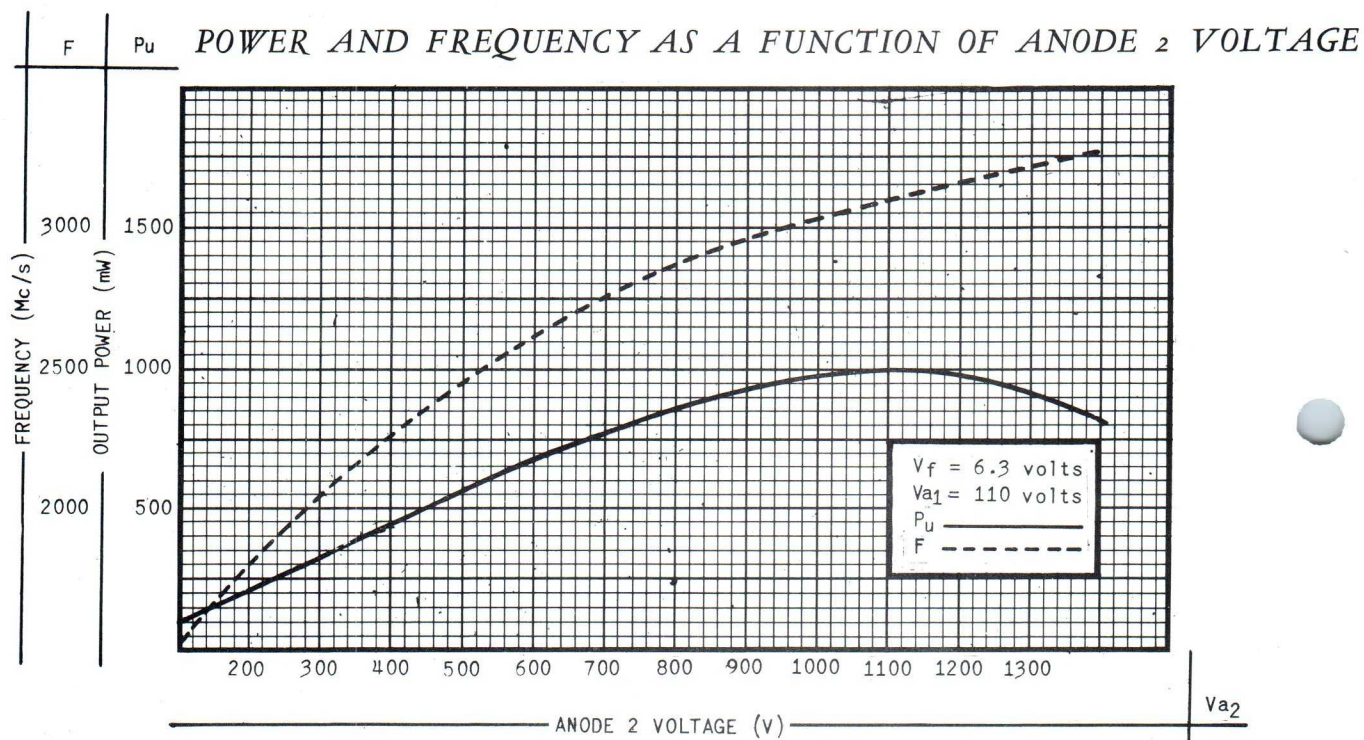
**de télégraphique Sans Fil**

DIVISION TUBES ÉLECTRONIQUES  
Direction Commerciale : 79, Bd Haussmann, PARIS-8<sup>e</sup> - ANJ. 84-60

5904 D6 - 3/4 A



# CHARACTERISTIC CURVES



**Compagnie générale**

Société Anonyme au Capital de 3.998.750.000 F.  
Siège Social : 79, Boul. Haussmann — PARIS (8<sup>e</sup>)  
5904 D6 — 4/4 A



**de télégraphie Sans Fil**

DIVISION TUBES ÉLECTRONIQUES  
Direction Commerciale : 79, Bd Haussmann, PARIS-8<sup>e</sup> - ANJ. 84-60