

October 1937



Note No. 21

LIGHT GUN FACTORY, ERITH, KENT

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# SERVICE NOTES

**Model C.N. 276**

**UNIVERSAL**

**ALL WAVE SUPERHETERODYNE RECEIVER**

**(For use on either A.C. mains 200-250 volts 50-100 cycles or D.C. mains 200-250 volts)**

Wavebands :—13·5-51, 50-180, 175-580, 750-2,100 metres.

To examine the underside of the chassis remove the detachable bottom of the Cabinet.

Instructions for removing the chassis from the cabinet are given on the label affixed to the inside of the cabinet.

## **ALIGNMENT INSTRUCTIONS.**

### **Apparatus Required.**

1. Signal generator covering the waverange from 13.5 to 2,000 metres.
2. Suitable output meter.
3. Insulated trimming tool (not metal tipped).
4. Special grid cap with a .25 megohm resistance shunting it.

### **Conditions of test.**

1. Turn the volume control to maximum position.
2. Make sure that when the gang condenser vanes are fully meshed, the tuning pointer coincides with the end of the wavelength scale.

### **I.F. Alignment.**

1. Remove the normal grid cap from the T.H.2320 and connect the signal generator to this by means of the special grid cap. The low potential end of the .25 megohm resistance should be connected to the chassis.
2. Short circuit the oscillator section of the gang condenser.
3. Set the signal generator to 473 K.C. (634.2 metres).
4. Trim the secondary circuit of No. 2 I.F. transformer, following up with the primary circuit, and then the No. 1 I.F. transformer secondary and primary.

Repeat this operation until the output meter, which is connected across the output of the receiver, shows a maximum output.

Only a low input from the signal generator should be used. As the circuits come into resonance, the input can be reduced. Finally, the input from the signal generator should be varied on either side of 473 K.C. noting at the same time the variation of output on the output meter. The maximum output should occur exactly at 473 K.C. input, and if this is not found to be the case, then the circuits are not correctly aligned.

5. Remove the lead shorting the oscillator section of the gang condenser, and replace the normal grid cap.

### **Grid and Oscillator Circuit Alignment.**

1. Connect the signal generator to the A and E sockets of the receiver.
2. Each waveband should be aligned in turn, commencing with band 4, and following up with bands 3, 2 and 1 in that order. For each waveband the procedure is as follows :—

The pointer is set to the lower "trimming" wavelength and the oscillator trimmer adjusted, until the signal from the signal generator is tuned in. The grid trimmer is then adjusted for maximum output on the output meter.

Then the higher "Padding" wavelength is injected from the signal generator, and the signal tuned in on the main tuning control. The padding condenser is then adjusted while rocking the gang slightly each side of the received signal to obtain the optimum output on the output meter.

If necessary a compromise should be arrived at between accuracy of calibration and sensitivity.

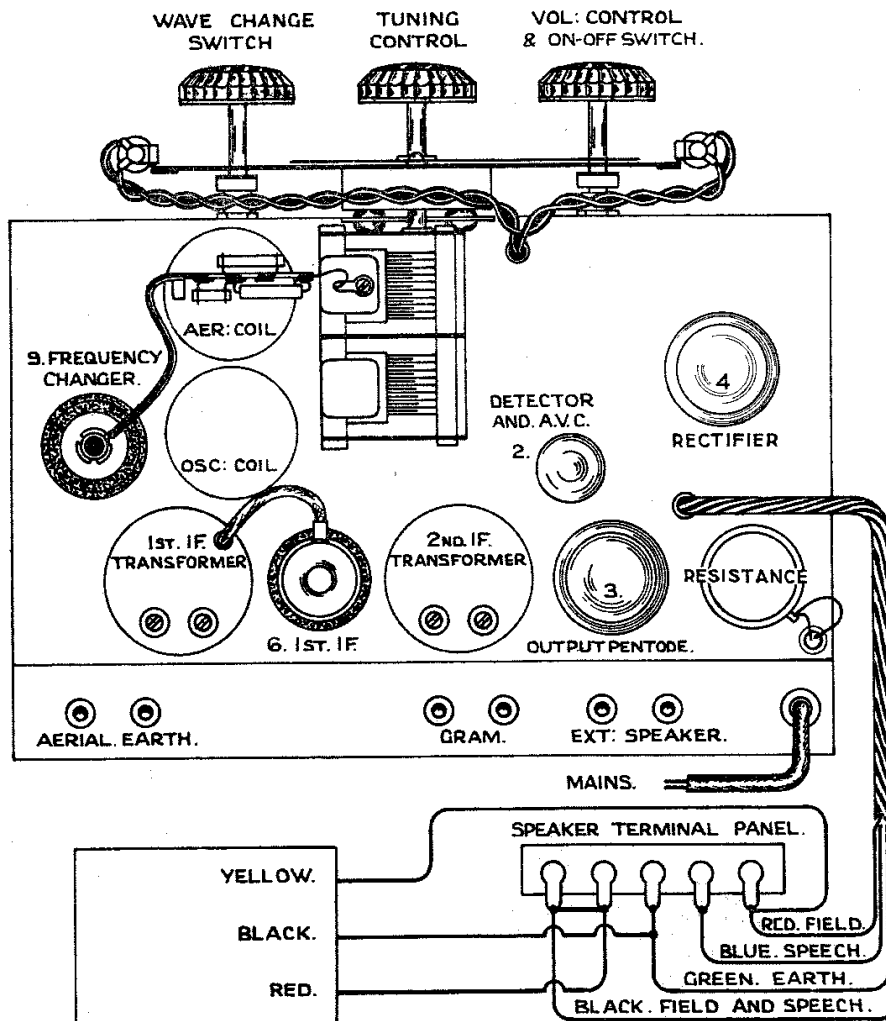
Return to the lower end of the waveband and re-trim and re-pad again, repeating the process until trimming has little effect on the padding and vice-versa.

A fixed padder is used on band 1, and therefore only the grid and oscillator trimmers need be adjusted. On this band, trimming is exceedingly critical and great care should be taken to see that the pressure of the trimming tool is not affecting the process.

The following are the points at which the trimming and padding on each waveband should be carried out.

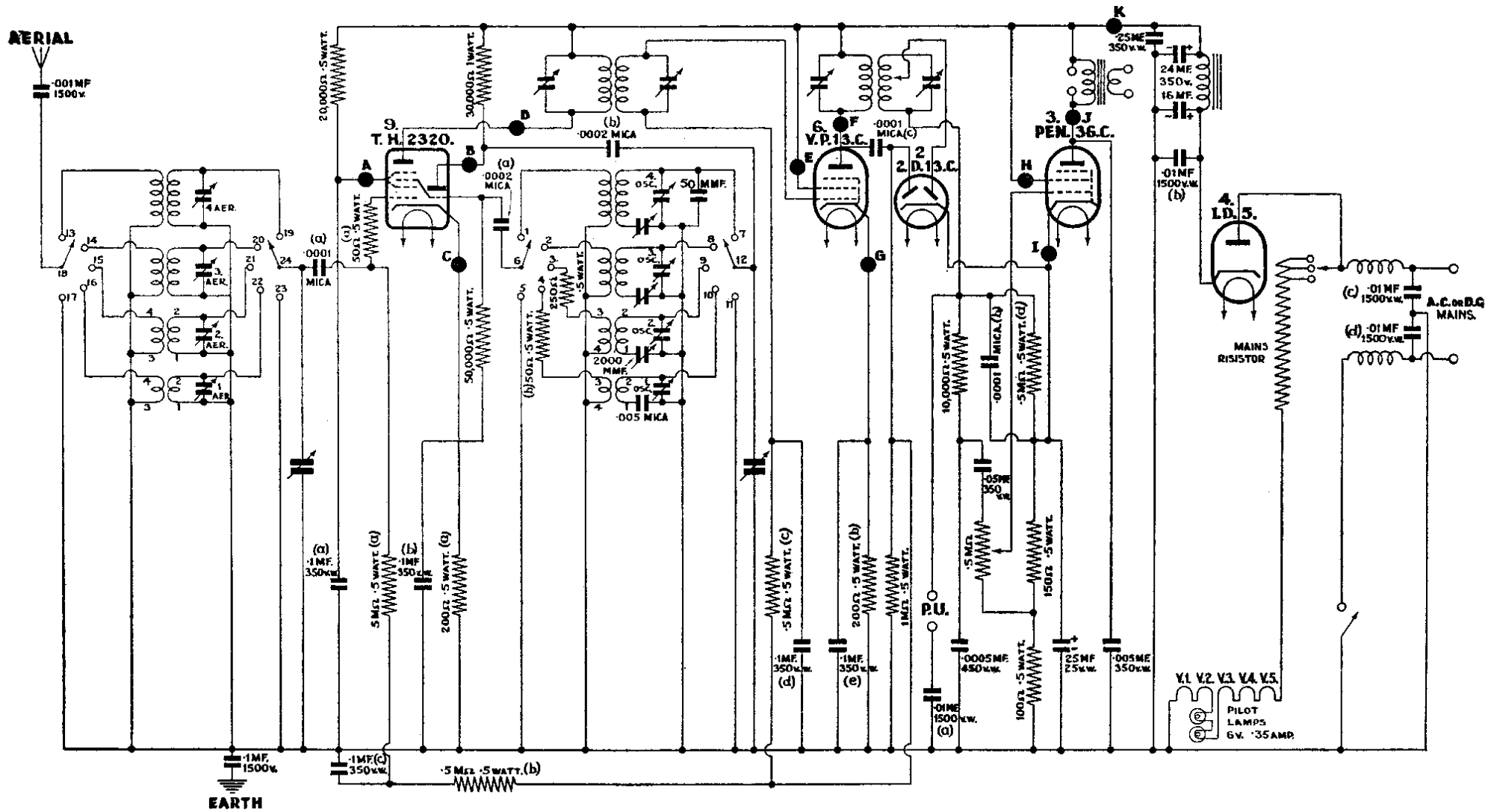
Band	Trim	Pad	Band	Trim	Pad
1	13.5 metres	—	3	200 metres	550 metres
2	50 metres	170 metres	4	750 „	2,000 „

On band 1, a 30 to 40 micro-micro-farad fixed condenser is preferable in place of the normal type of dummy aerial on the signal generator.

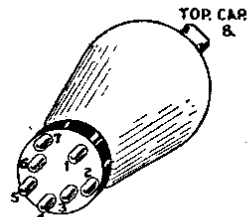
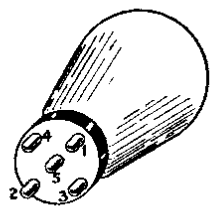


ABOVE CHASSIS VIEW

# CIRCUIT DIAGRAM OF MODEL CN 276

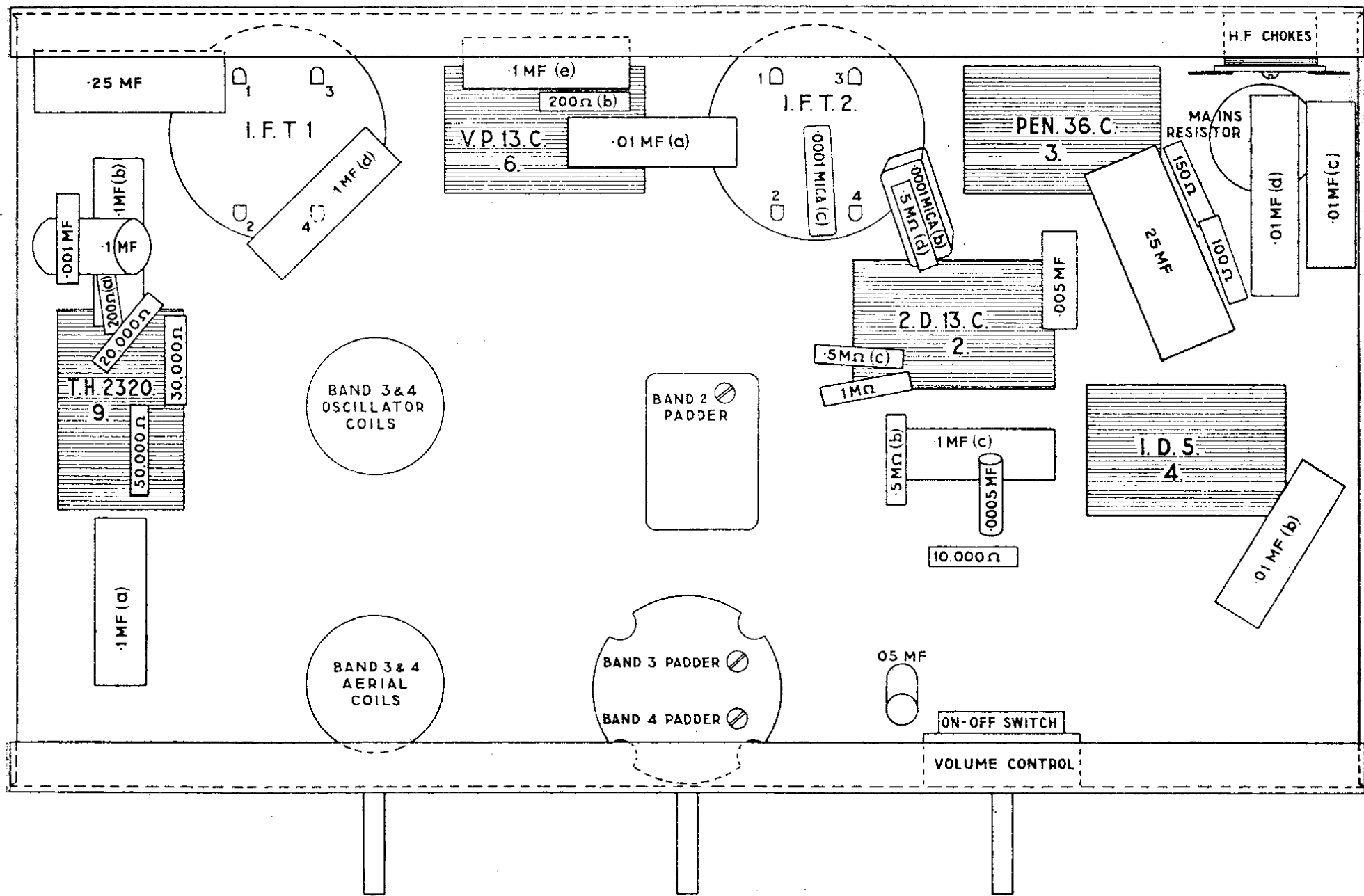


VALVE.	T.H.2320	V.P.13.C	Z.D.13.C	PEN.36.C	L.D.5.
REF No.	9	6	2	3	4
METALLISING	-	1	-	-	-
HEATER	4	4	3	4	3
HEATER	5	5	4	5	4
ANODE	7	2	-	7	1
SUPPRES <sup>n</sup> GRID.	-	3	-	-	-
SCREEN GRID.	3	7	-	3	-
CONTROL GRID.	8	-	-	2	-
DIODE ANODE	-	-	1 & 2	-	-
OSC. ANODE	1	-	-	-	-
OSC. GRID.	2	-	-	-	-
CATHODE	6	6	5	6	5

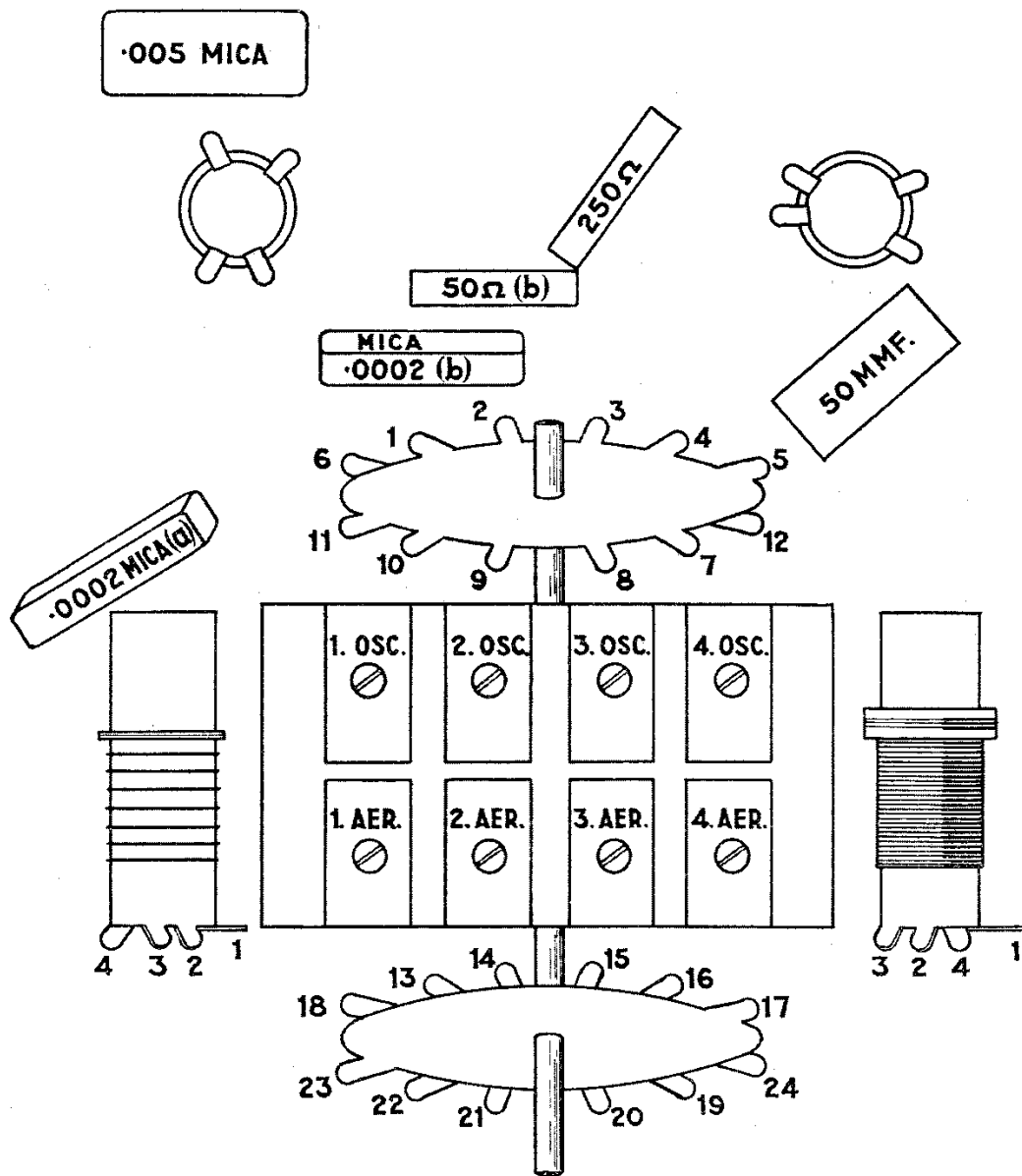


AVERAGE VOLTAGE FIGURES OBTAINED WITH UNIVERSAL AVOMETER BETWEEN POINTS INDICATED AND EARTH UNDER "NO SIGNAL" CONDITIONS.

POINTS	VOLTS.	CURRENT M/A.
A	90	4.3
B	70	3.1
C	-	9.7
D	178	2.3
E	180	2.1
F	178	7.3
G	-	9.4
H	180	6.0
I	-	41.0
J	160	35.0
K	180	160.1



UNDERSIDE VIEW OF CHASSIS.



TUNING UNIT.