

- METRIX -

- ANNECY -

- FRANCE -

SERVICE GENERATOR

MODEL 920 C

INSTRUCTION MANUAL

IM 389

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IC 3, 1789
EB/co

- C O N T E N T S -

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SERVICE GENERATOR MODEL 920 C

I - GENERAL.

The GENERATOR 920 C provides R.F. signals in the frequency range most used in radio and is destined principally for radio service and repair shops.

R.F. output level is adjustable from 1 μ V to 0.1 volt by an attenuator system.

Signals are C.W., internally modulated or externally modulated.

A.F. may be supplied by the internal modulation oscillator, the output passing through the attenuator.

II - DESCRIPTION.

All controls and connections are situated on the front panel.

The OUTPUT SWITCH determines the nature of the signal produced by the instrument, i.e. R.F. modulated 30 % at 400 Hz C.W., R.F. externally modulated, or A.F. 400 Hz.

The RANGE SWITCH selects one of the six ranges from 50 KHz to 50MHz or the spread I.F. range, 420 to 500 KHz.

The MAIN DIAL fitted with a 5 : 1 slow motion drive sets the frequency. Two scales are engraved round the periphery, each one with its own perspex index.

The left hand index is used for ranges :

- 5 MHz to 15 MHz.....Direct reading
- 500 KHz to 1500 KHz.....Multiply by 100
- 50 KHz to 150 KHz.....Multiply reading by 10

The spread I.F. range 420 to 500 KHz, whose scale is engraved on the inner edge of the main dial, is also read under this index.

The right hand index is used for ranges :

- 15 MHz to 50 MHz.....Direct reading
- 1.5 MHz to 5 MHz.....Divide reading by 10
- 150 KHz to 500 KHz.....Multiply reading by 10.

The DECIMAL ATTENUATOR changes the output voltage in steps of ten between any two consecutive positions.

The PROGRESSIVE ATTENUATOR gives a continuous variation of output proportional to the graduations 1 to 10 on its dial.

NOTE : The chassis of AC/DC receivers may be directly connected to one side of the power supply and it is recommended to use a 0.1 μ F condenser in the output lead when connecting to the aerial in order to avoid damaging the attenuator.

The ON/OFF SWITCH is in the power input line, when ON the red pilot lamp illuminates.

The COAXIAL OUTPUT JACK is used for both R.F. and A.F. output.

An EXTERNAL MODULATION source may be connected to the two binding posts so marked. The right hand one is grounded.

The MAINS VOLTAGE SELECTOR adapts the instrument to different power supply voltages as indicated by its engraving.

The FUSE protects the instrument as a whole and spares are provided with the instrument.

III - SWITCHING ON.

Set the screw slotted MAINS VOLTAGE SELECTOR to the correct position for the power supply in use and switch ON. The red pilot lamp should light immediately and the 920 C is ready for use after a few minutes heating.

IV - USE AS A.F. GENERATOR.

Set the OUTPUT SWITCH to the position A.F. 400 Hz. The output level is given by multiplying ten times the decimal attenuator setting by the progressive attenuator setting.

Example : decimal attenuator at 100 μ V
progressive attenuator at 4.6
Output = 100 μ V \times 10 \times 4.6 = 4.6 mV.

V - USE AS R.F. GENERATOR.

C.W. OUTPUT : Set the output switch to C.W. and the range switch to the required range. Set the exact frequency on the main dial. The output level is given by multiplying the decimal attenuator setting by the progressive attenuator setting.

Example : Decimal attenuator at 10 mV
progressive attenuator at 2.5
Output = 10 mV \times 2.5 = 25 mV.

MODULATED R.F. OUTPUT : Set the output switch to R.F. Mod. 400 Hz. Set the frequency and the output level as indicated in the paragraph "C.W. OUTPUT". The R.F. is modulated 30 % at 400 Hz.

EXTERNALLY MODULATED R.F. : Set the output switch to R.F. Ext. Mod. Connect a source of A.F. to the binding posts External Modulation. For 30 % modulation the source should be capable of supplying 2.2. volts into 1000 Ω . Set the output frequency and output level as indicated under the heading "C.W. OUTPUT".

VI - OUTPUT CONNECTIONS.

In general the coaxial cable is used as delivered with the instrument but for overall sensitivity measurements an artificial aerial should be inserted between the terminating banana plug and the receiver aerial connection.

The artificial aerial may be simplified as follows :

From 50 KHz to 5 MHz an aerial is predominantly capacitive and may be simulated by a 200 pF condenser in series with the cable. The side connection on the cable termination being connected to ground.

From 5 MHz upwards the aerial may be simulated by a 400 ohms non inductive resistor. Wirewound resistors must not be used.

For all measurements other than those concerning the aerial circuit, the cable is connected without an artificial aerial.

VII - SPECIFICATIONS.

Frequency coverage : 50 KHz to 50 MHz in 6 ranges
I.F. range 420 to 500 KHz

Frequency accuracy : $\pm 1\%$ to 15 MHz
 $\pm 2\%$ above 15 MHz

Frequency stability : $\pm 0.05\%$ for $\pm 10\%$ power supply variation.

AF Modulation frequency : 400 Hz

AF accuracy : $\pm 5\%$

Modulation level : 0 or 30 %

RF Output : variable from 1 μ V to 0.1 V.

RF Output accuracy : $\pm 30\%$

AF Output : variable from 10 μ V to 1 V.

AF Output accuracy : $\pm 10\%$

Output impedance : positions 1 μ V - 100 μ V : 20 Ω
100 μ V - 1 mV : 40 Ω
1 mV - 100 mV : 300 Ω .

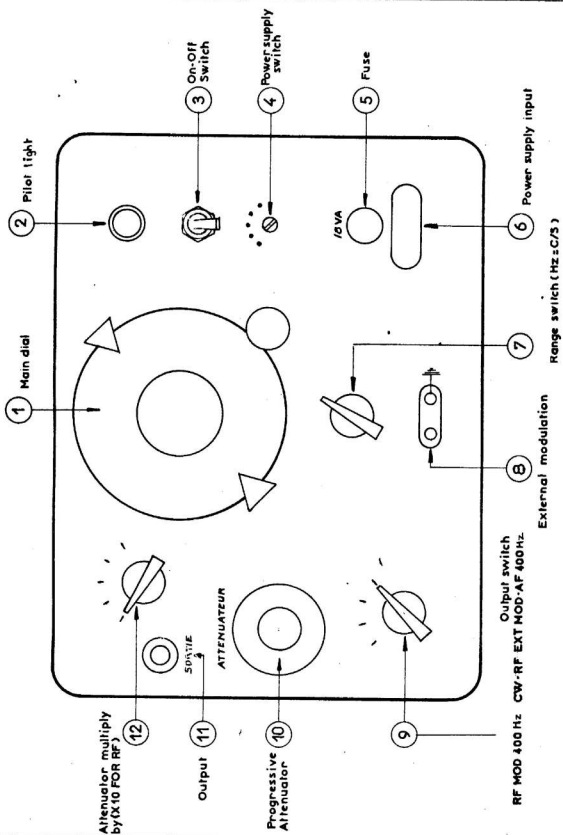
Power supply : 115 - 127 - 150 - 220 - 250 V. 50 Hz.

Tubes used : 2 \times 6 J 6
1 \times 6 X 4

X - REPLACEABLE PARTS LIST -

Symbol	Value	Description	METRIX stock n°
<u>RESISTANCES</u>			
R1	10 K Ω	1 W 10 %	
R2	10 K Ω	2 W 10 %	
R3	200 Ω	$\frac{1}{2}$ W 10 %	
R4	33 K Ω	1 W 10 %	
R5	300 Ω	$\frac{1}{2}$ W 10 %	
R6	85 Ω	$\frac{1}{4}$ W 2 %	
R7	200 K Ω	$\frac{1}{4}$ W 10 %	
R8	200 K Ω	$\frac{1}{4}$ W 10 %	
R9	2,5 K Ω	$\frac{1}{4}$ W 2 %	
R10	51 K Ω	$\frac{1}{4}$ W 5 %	
R11	390 Ω	$\frac{1}{4}$ W 10 %	
R12	20 K Ω	$\frac{1}{4}$ W 10 %	
R13	1,800 Ω	$\frac{1}{8}$ W 1 %	
R14	400 Ω	$\frac{1}{8}$ W 1 %	
R15	180 Ω	$\frac{1}{8}$ W 1 %	
R16	180 Ω	$\frac{1}{8}$ W 1 %	
R17	364 Ω	$\frac{1}{8}$ W 1 %	
R18	57.2 Ω	$\frac{1}{8}$ W 1 %	
R19	22.2 Ω	$\frac{1}{8}$ W 1 %	
R20	20 Ω	$\frac{1}{8}$ W 1 %	
R21	100 Ω	$\frac{1}{4}$ W 10 %	
R22	100 Ω	$\frac{1}{4}$ W 10 %	
R 23	1 K Ω	$\frac{1}{2}$ W 10 %	
<u>POTENTIOMETERS.</u>			
P1	1000 Ω	ALIER LOTO	
P2	210 Ω		UA 21
<u>CONDENSERS.</u>			
C1	8 μ F	Electrolytic 500/550 V	
C2	8 μ F	Electrolytic 500/550 V	
C3 to C9		Trimmer Philips	
C10	1000 pF	Mica Alter BM 10 %	
C11 - C12	10000 pF	Paper power supply filter	
C13	10000 pF	CAPAMYL 10 % 400 V	CAPA
C14	20000 pF	Mica Alter BM 5 %	
C15	(47000 pF)	Paper 10 % 400 V	CAPA
	(22000 pF)	CAPAMYL 10 % 400 V	CAPA
C16	10000 pF	CAPAMYL 10 % 400 V	CAPA
C17	1000 pF	Mica Alter BM 10 %	
C18	1000 pF	Mica Alter BM 10 %	
C19	0.1 μ F	CAPAMYL 10 % 400 V	CAPA
C20	1000 pF	Mica Alter BM 10 %	
C21	25 μ F	Electrolytic 25/30 V	
C22	15 - 460 pF	Variable condenser ARUNA 494	CL 18

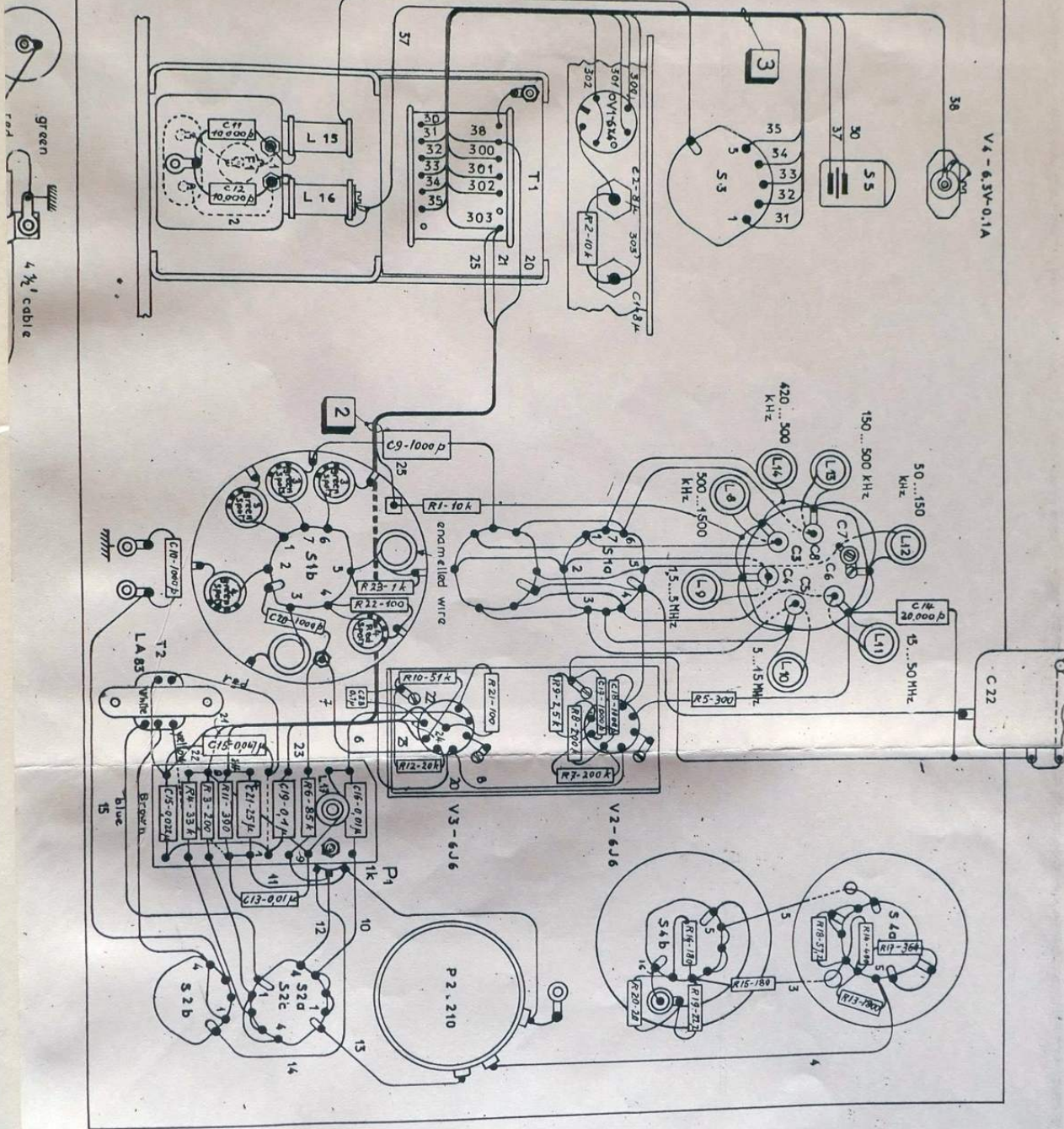
Symbol	Value	Description	METRIX stock n°
<u>TRANSFORMERS</u>			
T1		Power supply	LA 227
T2		Low Frequency	LA 83
<u>FILTERS</u>			
L15) L16) L17)		Power supply	LB 26
		Choke	LC 57
<u>SWITCHES</u>			
S1 ab		Range	KE 323
S2 abc		Output	KE 90
S3		Mains	KE 45 b
S4 ab		attenuator	KE 322
S5		ON. OFF.	AA 17
<u>R.F. COILS</u>			
L1	500/1500 KHz	Coupling coil	LC 65/b
L2	1.5/5 MHz	" "	LC 65/c
L3	5/15 MHz	" "	LC 65/d
L4	15/50 MHz	" "	LC 54/H
L5	50/150 KHz	" "	LC 65/a
L6	150/500 KHz	" "	LC 65/b
L7	420/500 KHz	" "	LC 65/b
L8	500/1500 KHz	Oscillator coil	LC 61
L9	1.5/5 MHz	" "	LC 62
L10	5/15 MHz	" "	LC 63
L11	15/50 MHz	" "	LC 64
L12	50/150 KHz	" "	LC 58
L13	150/500 KHz	" "	LC 59
L14	420/500 KHz	" "	LC 60
<u>TUBES</u>			
V1	6 BX 4	Rectifier	
V2	6 J 6	R.F. Oscillator	
V3	6 J 6	A.F. Oscillator/modulator	
V4	pilot	7 V. - 0.1 A.	
<u>FUSES</u>			
F1	0.16 A	slow acting	AA 411



SERVICE GENERATOR TYPE 920C - FRONT VIEW

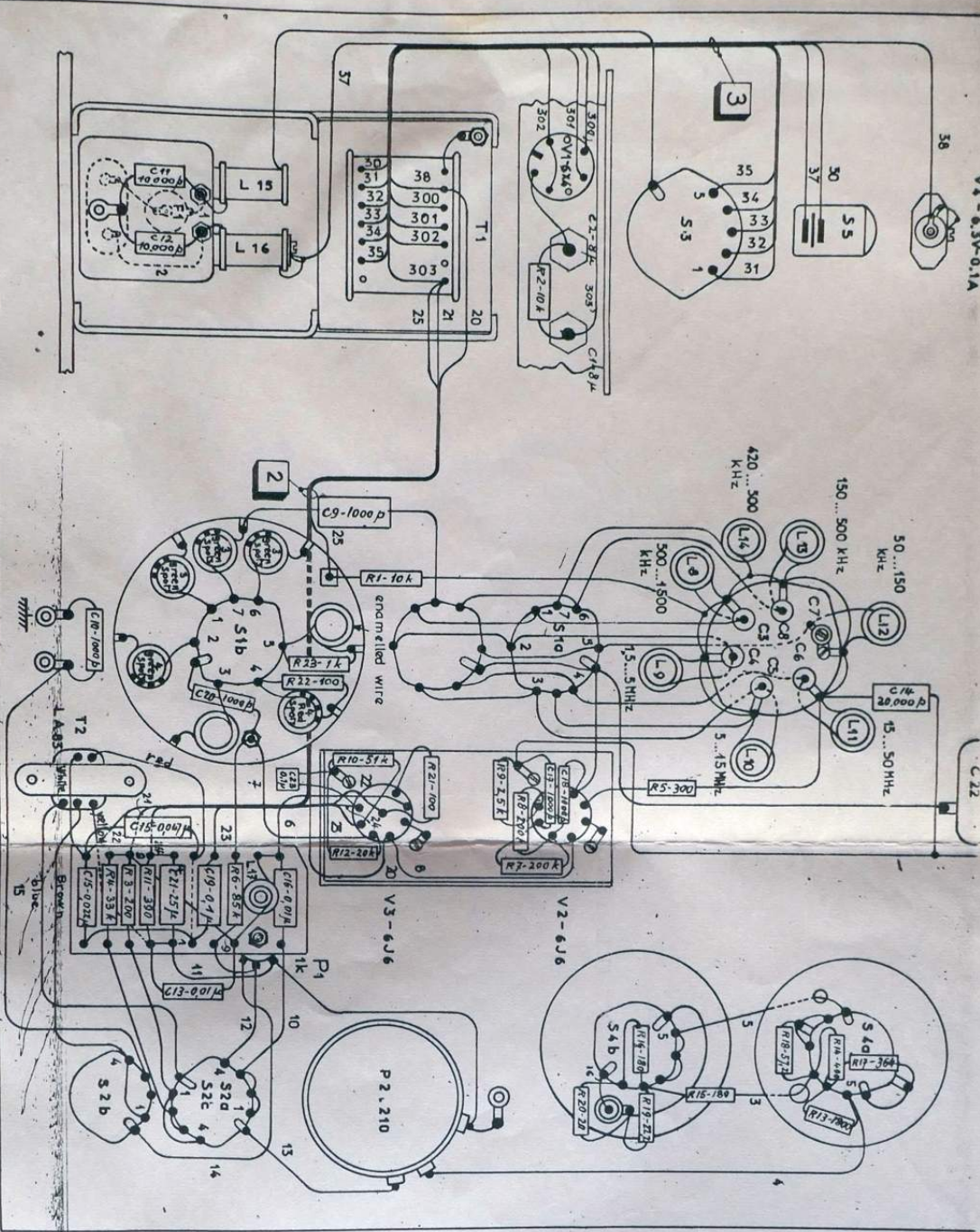
FIG 3

V4 - 6.3V-0.1A



HARNES		REF. OF WIRE
CONNECTION	COLOUR	
1	RED	132/O1A
2	RED	105 T
3	RED	100 T
4	GREEN	"
5	GREEN	"
6	WHITE	"
7	GREEN	"
8	GREY	"
9	RED	"
10	WHITE	"
11	BLACK	"
12	BROWN	"
13	WHITE	"
14	BLUE	"
15	BROWN	"
16	RED	225 T
20	GREY	106 T
21	RED	"
22	YELLOW	"
23	BLUE	"
24	BROWN	"
25	RED	"
30	WHITE	105 T
31	BLUE	100 T
32	RED	"
33	BROWN	"
34	YELLOW	"
35	GREEN	"
37	BLACK	"
38	GREEN	"
50	YELLOW	"
501	YELLOW	"
502	GREY	"
503	RED	"

green
red
4 1/2' cable



HARNESS CONNECTION	COLOUR	REF. OF WIRE
1	RED	227 T
2	RED	12 X 0.3
3	RED	106 T
4	GREEN	1 X 0.4
5	GREEN	"
6	WHITE	"
7	GREEN	"
8	GREY	"
9	RED	"
10	WHITE	"
11	BLACK	"
12	BROWN	"
13	WHITE	"
14	BLUE	"
15	BROWN	"
16	RED	225 T
20	GREY	106 T
21	RED	"
22	YELLOW	"
23	BLUE	"
24	BROWN	"
25	RED	"
30	WHITE	106 T
31	BLUE	1 X 0.6
32	RED	"
33	BROWN	"
34	YELLOW	"
35	GREEN	"
37	BLACK	"
58	GREEN	"
50	YELLOW	"
501	YELLOW	"
502	GREY	"
503	RED	"

SERVICE GENERATOR TYPE 920C WIRING DIAGRAM