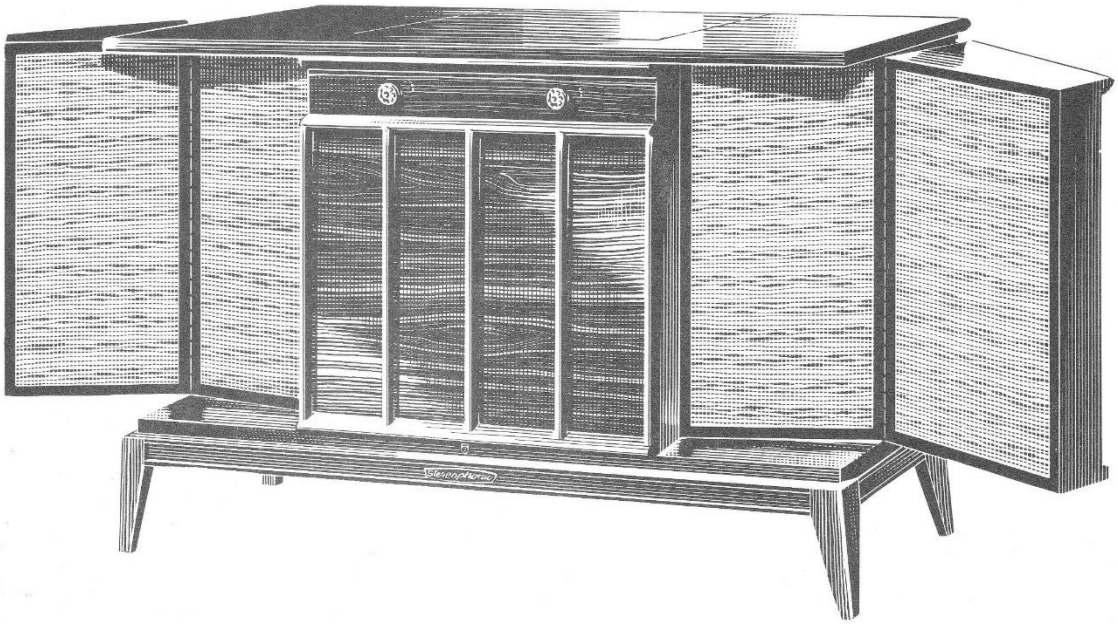
SERVICE DATA

STEREOPHONIC

HIGH FIDELITY RADIO PHONOGRAPH

MODELS F7C13A RG 8066A



PHILIPS ROGERS MAJESTIC

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SERVICE DATA

F7C13A/RG8066A

DESCRIPTION

Models F7C13A/RG8066A are High Fidelity Stereophonic Radio Phonographs for operation from a 117 volt 60 c/s supply.

AUDIO OUTPUT	3.2 Watts each channel (E.I.A. Standard) NOTE: When checking the amplifier both channels must be terminated.
RECORD CHANGER	AG1024/47M. See separate Service Manual for data.
A.M. TUNER	Frequency range 540-1600 Kc/s. I.F. 455 Kc/s.
F.M. TUNER	Frequency range 88-108 Mc/s. I.F. 10.7 Mc/s.

TO REMOVE CHASSIS

Remove the knobs, back cover, all plugs and the retaining screw in the bottom cover of the chassis. It may then be slid out from the channels. The dial glass may be removed separately. The clearance in the flywheel bearing is set by a screw in the bottom cover and can be adjusted to give close free running fit if necessary.

AUDIO TESTING

Use circuit as shown on Schematic Diagram. For 3.2W output the indicated voltage should be 36.0 V rms.

A.M. ALIGNMENT

Refer to the diagram for tube location and alignment points. Do not exceed 30V at the audio output during alignment. (or 100 mV at the take-off point on the panel).

I.F. ALIGNMENT

Turn the tuning knob until the gang is fully open. Connect a modulated R.F. generator to the antenna section of the gang (C1) from the direct output via a .05 μF capacitor. Adjust L11, L10, L7 and L6 in that order for maximum output.

R.F. ALIGNMENT

Connect the direct output of the R.F. generator via a .05 μF capacitor to the AM antenna terminal. Set its frequency to 600 Kc/s. Tune until the gang is fully closed when pointer should be at START line on alignment scale. Tune to 600 on the scale and adjust the oscillator coil L3 for maximum output. Set generator at 1500 Kc/s, tune to 1500 mark and adjust C4 for maximum output. Repeat these two steps until correct adjustment of both frequencies is established. At 1500 Kc/s tune for maximum output and adjust antenna trimmer C3 for maximum output.

F.M. I.F. ALIGNMENT

GENERAL

The AM section must be in correct alignment before attempting F.M. alignment. For optimum alignment a 10.7 Mc/s sweep frequency oscillator is needed with an oscillographic display of the of the response. Failing this a DC alignment is given.

SWEEP ALIGNMENT

The sweep generator must be capable of covering 10.7 Mc/s. and have an output impedance of 100 ohms or less. There must be a resistive termination at the probe.

1. Ratio detector - Connect the sweep generator terminated at the probe to test point number one. (TP1). Connect 'scope to the FM take-off lead at the switch. Switch in FM position. Adjust the ratio detector coils (L12, L14) for max. symmetrical, linear response centred on 10.7 Mc/s.

2. Second IF - Move sweep to TP2 and 'scope to AM take-off lead. Switch in FM-MX position. Adjust the second IF transformer (L8, L9) for maximum "flat-topped" symmetrical response centred on 10.7 Mc/s.

3. First IF - Move sweep to TP3, do not move 'scope. Screw the core of the coupling coil on the panel (L2) until approx. 1/8th. inch protrudes from the top. Adjust the first IF transformer (L4, L5) for maximum output with adjacent 100 Kc/s markers at approx. equal levels. Readjust the secondary of the second I-F (L9) if necessary to obtain a symmetrical response.

4. Overall IF - Move sweep to shield can of tuner tube lifted off ground, and adjacent ground lug. Screw core of coupling coil (L2) in to obtain max. display and adjust it and the output coil (L23, L24) on the tuner to obtain a symmetrical response centred on 10.7 Mc/s. with the adjacent 100 Kc/s. markers at equal levels approx. half way between the peak and the zero line.

5. Overall detection - Move the 'scope back to the FM take-off lead and switch back to FM position. Observe the overall detection characteristic and retune the secondary of the ratio detector transformer as necessary to achieve a symmetrical and resonably linear response at low levels. The primary may also be adjusted if required. Noise rejection as seen on the 'scope, should also be centred around 10.7 Mc.

DC ALIGNMENT

Connect an unmodulated 10.7 Mc/s RF signal to the points indicated via a 1500 pf. capacitor and a D.C. VTVM across the ratio detector load (10K, R20) except in 1. (b) below. Do not exceed 3V at VTVM.

1. (a) Inject the signal at TP1 and adjust L12 for maximum reading at VTVM.

   (b) Connect two 220K resistors in series across R20. Connect the meter between the junction of the two resistors and the FM audio take-off point. Adjust L14 for zero reading.

2. Signal to TP2, adjust L8, L9 for max. reading.

3. Signal to TP3, unscrew the core of the coupling coil on the panel (L2) until about 1/8th. inch protrudes from the top. Adjust L4, L5 for max. reading.

4. Signal to tube shield of the tuner (V5) lifted off ground, screw in L2 and adjust it and the tuner output coil (L23, L24) for max. reading.

FM TUNER ALIGNMENT

If a balanced 300 ohm signal source is available connect it to the FM dipole terminals. Otherwise an unbalanced input may be connected between either of the FM dipole terminals and ground.

1. Neutralizing - Connect a VTVM capable of operating at 100 Mc/s. to pin 1 of V5 by partly removing it from its socket. Adjust C57 for minimum reading with no signal applied.

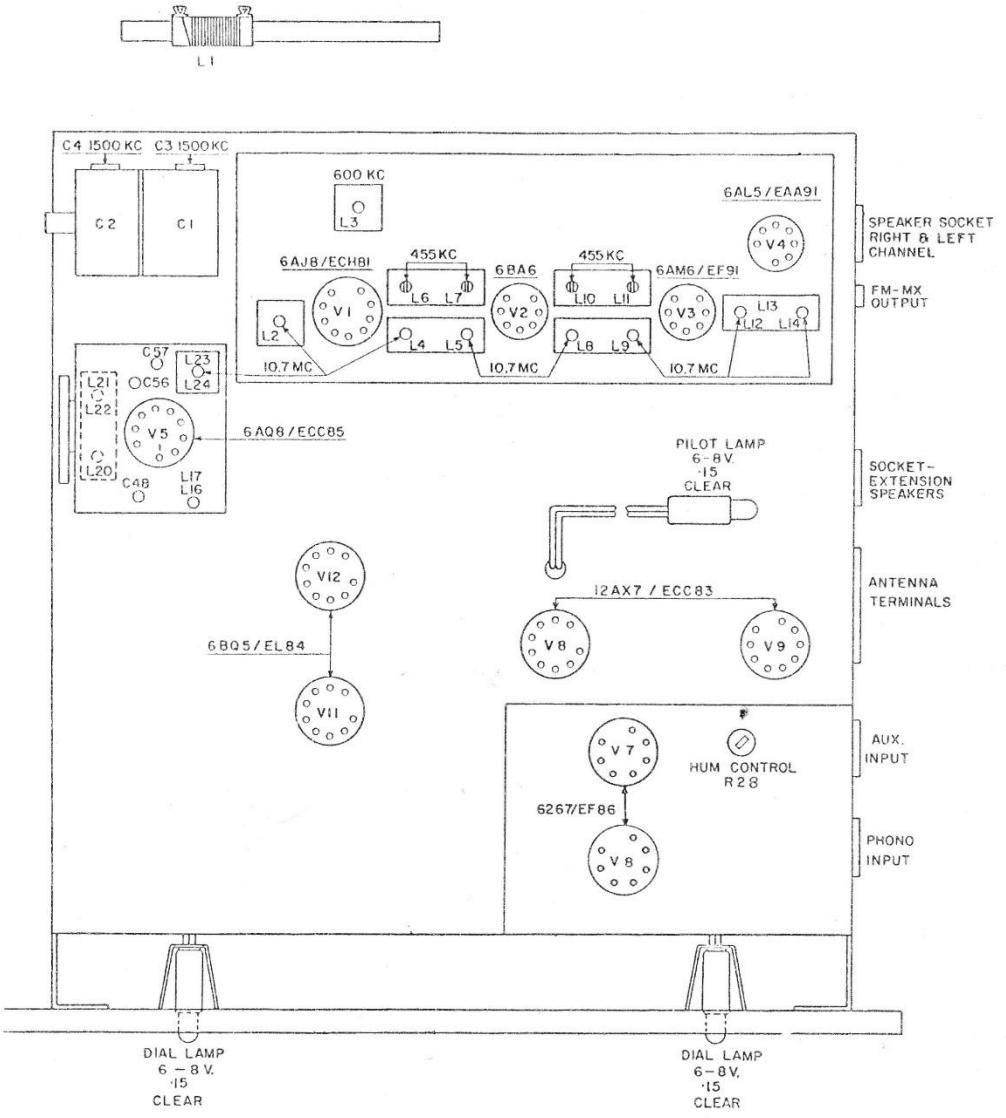
2. Replace V5. Set pointer to 100 Mc/s., inject 100 Mc/s. and adjust C56 for max. DC VTVM reading across R20.

3. Pointer and signal at 108 Mc/s., adjust C48 for max. reading across R20.

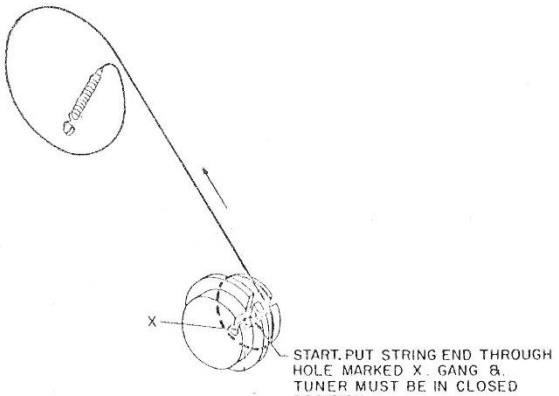
4. Pointer and signal at 88 Mc/s., adjust L16, L17 for max. reading across R20.

PARTS LIST

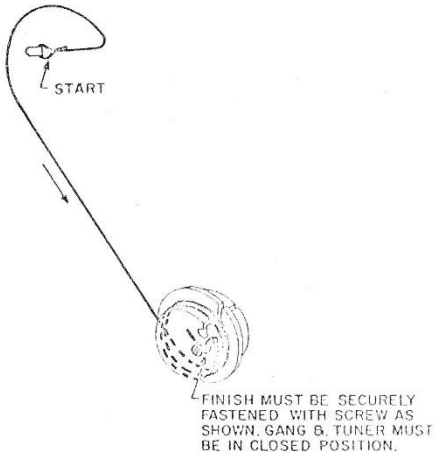
REFERENCE NO.	DESCRIPTION	PART NUMBER
R28	Resistor hum control	505-148
L101, 102, 201, 202	Output transformer	05042600
L25, 26, 27, 28	Power transformer	05040600
LS1, 3	Speaker 8" polarized	041-192
LS2, 4	Speaker 6" polarized	04127200
	Tuner FM (complete)	130-292
C1, 2, 3, 4	Capacitor, variable	510-079
S1	Switch, function	08022800
R107, 207	Control, loudness dual	506-096
R117, 217	Control, balance dual	506-097
R113, 213, 116, 216	Control, tone dual	506-084
L1	Antenna, coil and rod assy.	06039201
L15	RF choke	07041100
L29	RF choke	07042200
L30	RF choke	070-394
L31	RF choke	070-360
	Beads Ferroxcube	609-034
C62, 64	Elco 50 + 50 μF/350V	516-614
C38	Elco 3.2 μF/70V	516-065
C105, 205	Elco 100 μF/3V	516-092
C104, 106, 204, 206	Elco 8 μF/350V	516-600
C108, 208	Elco 100 μF/3V	516-093
C121, 221	Elco 100 μF/25V	516-097
C123, 223	Elco 16 μF/350V	516-098
L2	Coil coupling FM	07040900
L3	Coil oscillator AM	07040800
L6, 7, 10, 11	Transformer IF-AM	06039100
L4, 5, 8, 9	Transformer IF-FM	06039500
L12, 13, 14	Transformer Ratio Detector	06039700
	Grille cloth F7C13A	627-257
	Grille cloth RG8066A	627-258
	Knob, single with index line F7C13A	57255502
	Knob, single with index line RG8066A	57255503
	Knob, balance F7C13A	57260400
	Knob, balance RG8066A	57260401



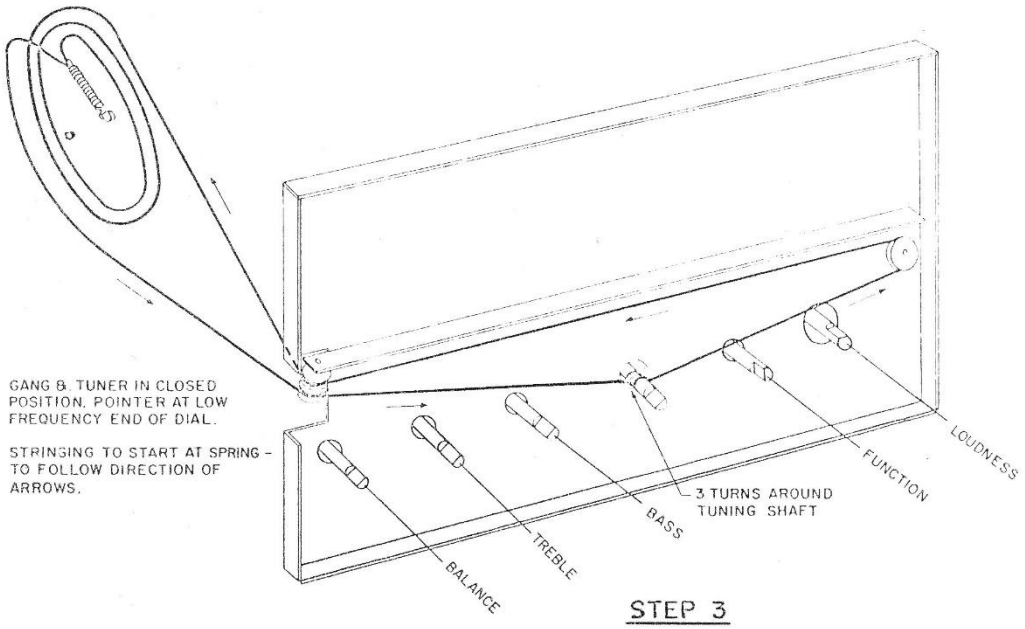
TUBE LOCATION AND ALIGNMENT



STEP 1



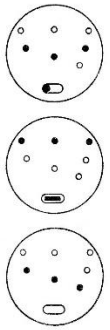
STEP 2



STEP 3

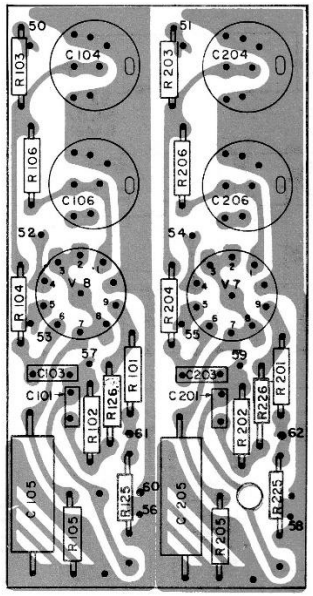
DIAL CORD STRINGING

HOLE GROUPINGS USED FOR ALTERNATE TYPES OF ELECTROLYTIC CAPACITORS



JUMPER CONNECTION

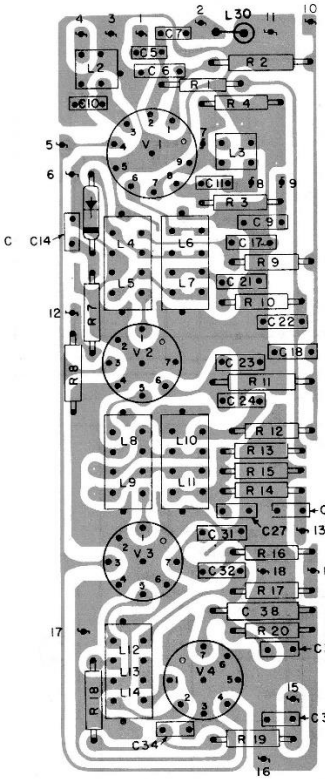
LEFT CHANNEL RIGHT CHANNEL



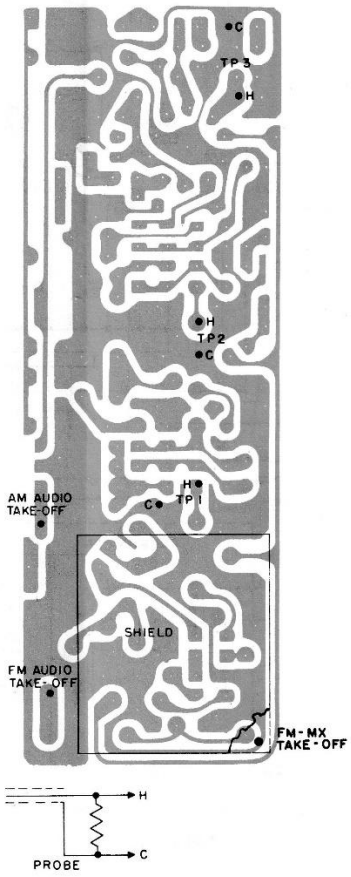
STEREO PRE-AMPLIFIER PANEL

STEREO PRE-AMPLIFIER PANEL LEFT AND RIGHT CHANNELS		
TERM.	WIRE COLOUR	DESTINATION
50	ORANGE	51
51	ORANGE	B + +
52	BROWN	54
53	BROWN	55
54	BROWN	6·3VOLT HUM CONTROL
55	BROWN	6·3VOLT HUM CONTROL
56	SHIELD	CHASSIS
57	SHIELDED	FUNCTION SWITCH
58	SHIELD	CHASSIS
59	SHIELDED	FUNCTION SWITCH
60	BLACK	PHONO SOCKET PIN 2 & 3
61	BLUE	PHONO SOCKET PIN 4
62	GREEN	PHONO SOCKET PIN 1

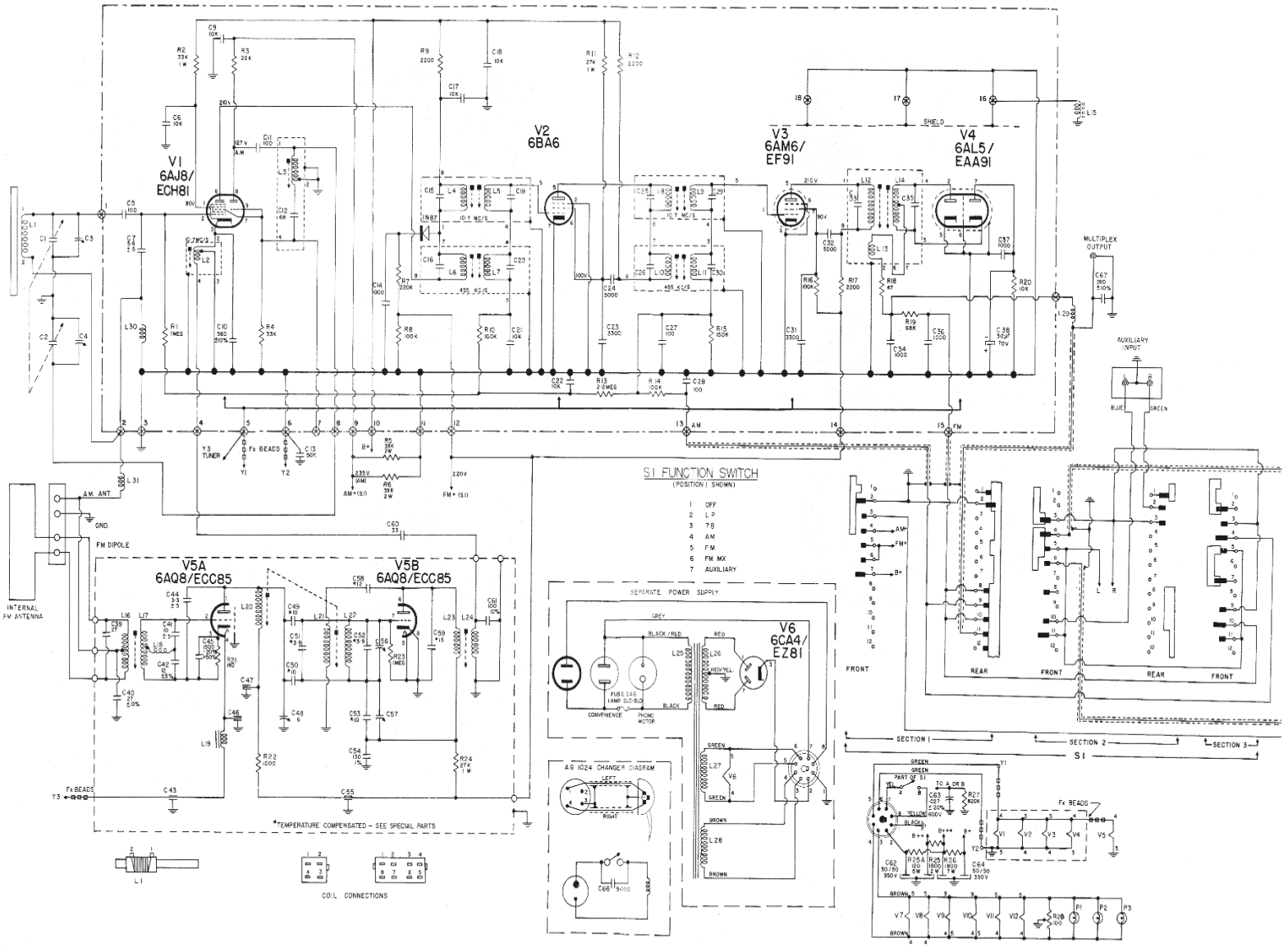
COMPONENT VIEW



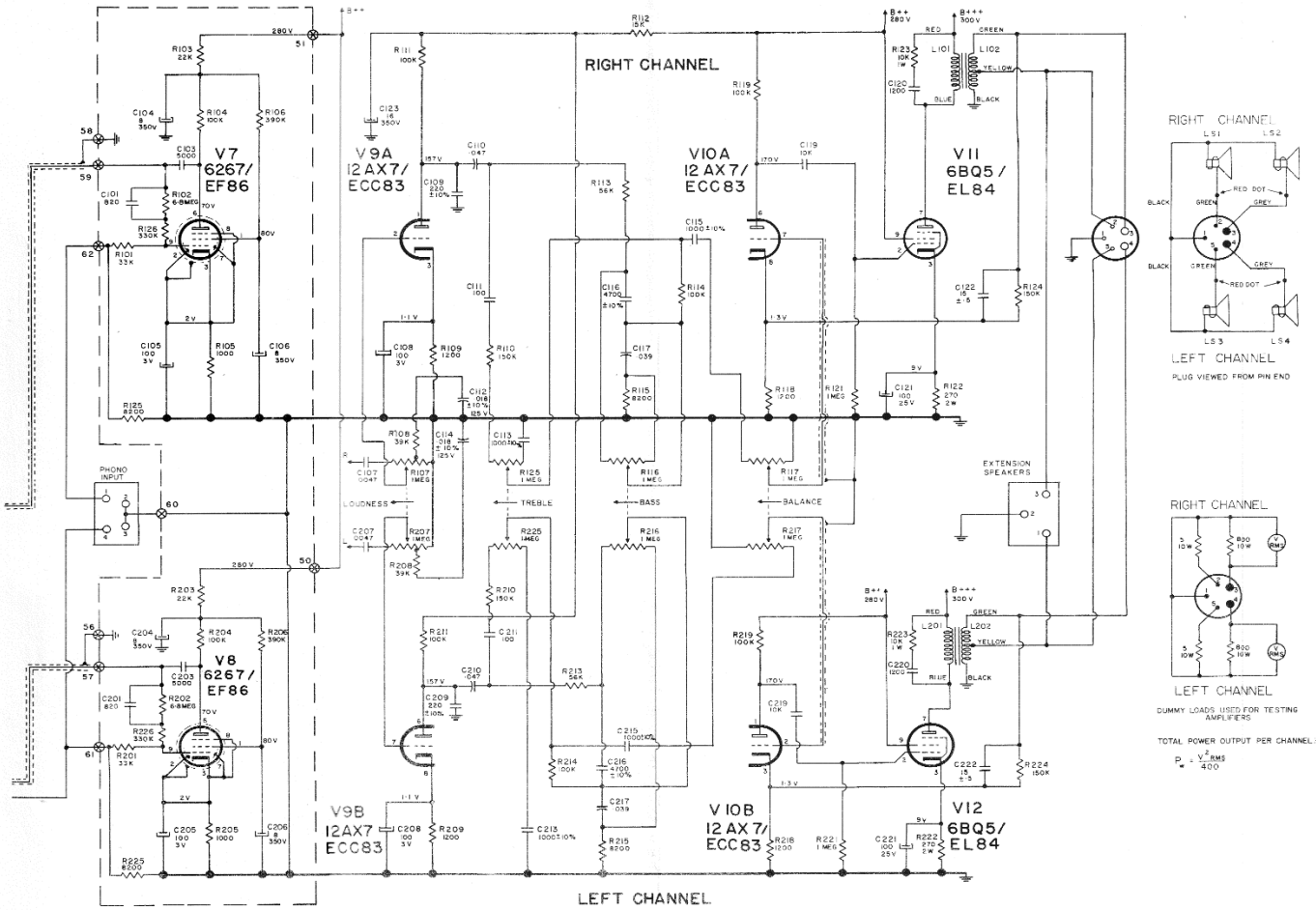
PRINTED WIRING VIEW



LAYOUT OF PRINTED WIRING AND COMPONENT CIRCUITS
F7C13A/RG8066A



WIRING DIAGRAM F7C13A/RG8066A



TOTAL POWER OUTPUT PER CHANNEL -

$$P_w = \frac{V^2_{RMS}}{400}$$

NOTES: SUFFIX 'K' = 1000, 'MEG' = 1,000,000

RESISTORS ARE ½W, ±10%, UNLESS OTHERWISE SHOWN

→ INDICATES CLOCKWISE ROTATION OF SHAFTS

⊣⊢ VALUES IN μμf ±20%, 500V, UNLESS OTHERWISE SHOWN

⊣⊢ VALUES IN μf ±10%, 400V, UNLESS OTHERWISE SHOWN

⊗ WIRE JUNCTION ON PRINTED CIRCUIT PANEL

DC VOLTAGES MEASURED TO CHASSIS WITH A 20,000 Ω/V METER, (FUNCTION SWITCH AT F.M UNLESS OTHERWISE SHOWN).

TUBE FUNCTIONS

V1	A.M. MIXER-OSCILLATOR / F.M. I.F. AMPLIFIER
V2	A.M./F.M. I.F. AMPLIFIER
V3	A.M. DETECTOR / F.M. LIMITER
V4	F.M. RATIO DETECTOR DIODES
V5	F.M. R.F. AMPLIFIER & MIXER-OSCILLATOR
V6	RECTIFIER
V7, V8	A.F. PREAMPLIFIER RIGHT & LEFT CHANNEL
V9	1ST A.F. AMPLIFIER RIGHT & LEFT CHANNEL
V10	2ND A.F. AMPLIFIER RIGHT & LEFT CHANNEL
V11, V12	A.F. OUTPUT AMPLIFIERS RIGHT & LEFT CHANNEL.

WIRING DIAGRAM