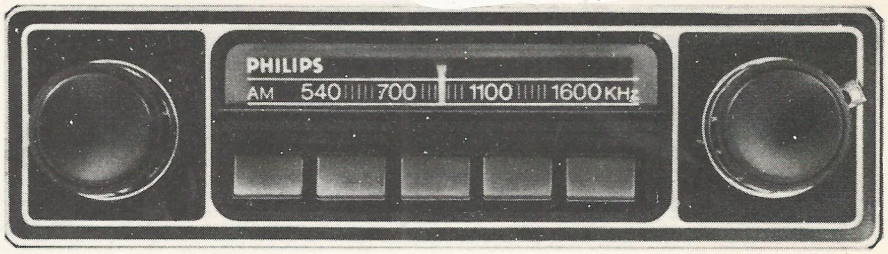
Service
Service
Service

FILE : LP40



12 V

Service Manual

CONTENTS :

ALIGNMENT PROCEDURE

CONCISE DATA

CIRCUIT DIAGRAM

PARTS LOCATION ON P.C.BOARD

CHECK POINTS ON P.C.BOARD

WIRING ON P.C.BOARD

SERVICE SPARES CODE NUMBERS

SPECIAL APPLICATION :

LP40A-CW111A-GEMINI

LP40B-CW112A-CENTURA

LP40C-CW114A-GALANT

LP40D-CW117A-HJ-HOLDEN

LP40D-CW118A-HJ-HOLDEN

LP40E-CW116A-LX-TORANA

LP40E-CW119A-HATCHBACK

LP41A-CW120A-AIRCHIEF

LP41B-CW121A-MONARCH

RN259A-

WARNING:
CONNECT POWER LEAD OF RECEIVER TO POSITIVE BATTERY TERMINAL ONLY. RECEIVER WILL BE DAMAGED IF CONNECTED TO INCORRECT POLARITY.

NOTE:
ADJUST ANTENNA TRIMMER ON CONCLUSION OF INSTALLATION.

Subject to modification
3102 305 31831
Printed in Australia

PHILIPS

ALIGNMENT PROCEDURE

EQUIPMENT

Signal Generator : modulated at 400 Hz. 30%.
Output Meter : 4 ohm impedance
Generator Series Capacitor : 100 nF (for i.f. alignment).
Dummy Antenna : 100 pF.
Aerial trimmer tool

CONDITIONS

Receiver : top lid removed.
Volume control : fully clockwise.
Tone control : fully clockwise.
Output Meter : connected to receiver output (speaker disconnected.)
Output Level : 50 mW Audio.
Supply Voltage : maintained at 13.2V DC.
Polarity : Negative to receiver chassis.
Positive to receiver power lead.
Signal Generator Output : kept to minimum necessary.

IF. ALIGNMENT

Note that, due to the inclusion of a ceramic IF. filter in this receiver, proper peaking of the IF. coils require a dynamic alignment procedure.
This can be achieved by the use of a wobbulator, or by simultaneously varying the signal generator frequency around 455 kHz whilst peaking the IF. coils, until maximum output is obtained.

BROADCAST ALIGNMENT

Connect dummy antenna to antenna input socket.

Set output meter to 50 mW range, 4 ohm impedance, and connect to receiver speaker connection. (speaker disconnected).

ALIGNMENT

Tracking alignment

STEP	PURPOSE	ADJUST	PROCEDURE
1	Tuning frequency range	T1	510 kHz must be received at left end of dial.
2	Tuning frequency range	C11	1630 kHz must be received at right end of dial.
3	Repeat STEPS 1 to 2.		
4	Tracking	C1, C4	Peak at 1400 kHz.

Remarks :- Always readjust antenna trimmer (C1) with radio installed in car.

IF Frequency : 455 kHz.

CHECKING SERVICEABILITY OF I.C.

Integrated circuits are inherently reliable devices and can be expected to give long life in normal service. DO NOT, therefore, assume that the IC is responsible for a reported malfunction until you have carried out the following check :-

CAUTION :- Great care must be taken to ensure that the pins of the I.C. are not shorted together or to frame during this check.

- Check current drawn by receiver. With serviceable lamps, reading should be typically 150 mA (with no signal input).
- Turn VOLUME control fully up. When wiper of VOLUME control is touched, corresponding crackles should be heard from speaker.
- Measure d.c. voltage on Pin 1 of I.C. This should be approximately 6 - 7 volts (or half the supply voltage).

If the above checks are satisfactory, I.C. is likely to be serviceable.
If there is still doubt, check sensitivity by injecting 5.0 mV audio signal at wiper of VOLUME control.
Power output in 4 ohm load should be approximately 50 milliwatts.

CHANGING FAULTY I.C.

- Apply a soldering iron to each pin of the I.C. in turn, removing as much solder as possible. Carefully note connections and orientation of I.C.
- Withdraw the I.C.
- Fit new I.C., ensuring orientation is correct.
  Solder connection as before, applying heat for minimum time necessary to obtain well-soldered joints.

NOTE :-

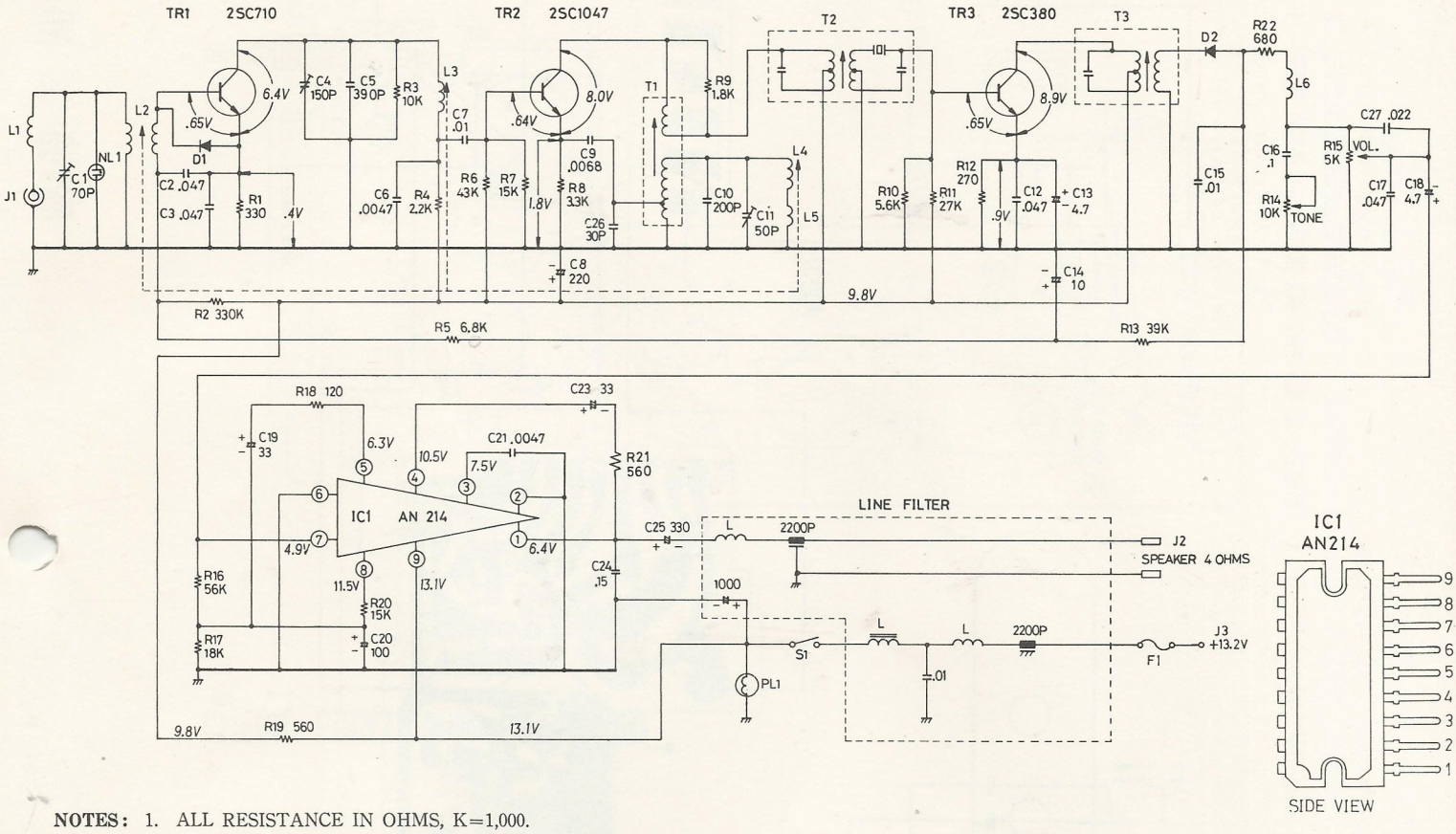
The battery lead of this receiver must be connected only to the POSITIVE terminal of a battery.
Connection to incorrect polarity will damage the receiver.
Connect receiver output socket only to 4 ohm load.

Adjust antenna trimmer (C1) positioned on tuning control shaft, (refer wiring diagram) at conclusion of installation before knobs are fitted.
Peak trimmer C1 at 1400 kHz.

CONCISE DATA

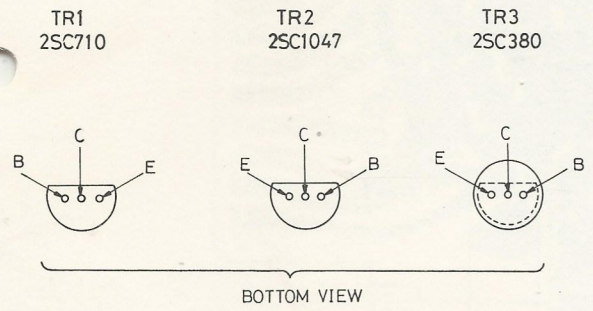
Minimum tuning range : 525 kHz - 1615 kHz.
Intermediate frequency : 455 kHz.
RF. sensitivity : -94 dB or better (50mW audio output).
Power output (10% T.H.D.) : better than 3 watt R.M.S.
Supply voltage : 13.2V DC.
Polarity : Negative-to-chassis (not reversible).
Transistor complement : 3 transistors, 1 IC., 2 diodes.
Current consumption : Typically 60mA, (no signal), Excluding dial lamps.

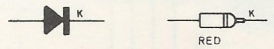
CIRCUIT DIAGRAM



NOTES: 1. ALL RESISTANCE IN OHMS, K=1,000.
2. ALL CAPACITANCE IN μF, P=$\mu\mu$F.
3. DC VOLTAGES MEASURED WITH 25,000 OHM PER VOLT METER, POWER SUPPLY SET AT +13.2 VDC, NO SIGNAL INPUT.

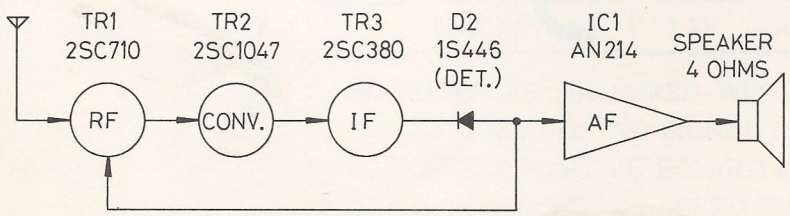
TRANSISTOR BASE CONNECTIONS





DIODES D1-SR1K2 D2-1S446

BLOCK DIAGRAM



DESCRIPTION	VALUE	VOLTS	SYMBOL	SERVICE SPARES CODE NUMBER
CAPACITOR, CERAMIC	.047uF	25V	C2, C3, C12, C17	4802 122 47054
" "	390pF	500V	C5	4802 122 47095
" "	.0047uF	50V	C6, C21	4822 122 30128
" "	.01uF	40V	C7, C15	4822 122 30043
" "	.0068uF	50V	C9	4802 122 47096
" "	200pF	500V	C10	4802 122 47047
" "	.1uF	12V	C16	4802 122 47055
" "	30pF	500V	C26	4802 122 47048
" "	.022uF	50V	C27	4802 122 47097
" RF. TRIMMER	150pF		C4	4802 125 57007
" OSC. TRIMMER	50pF		C11	4802 125 57007
" ELECTROLYTIC	220uF	10V	C8	4802 124 47006
" "	4.7uF	25V	C13, C18	4802 124 47034
" "	10uF	16V	C14	4802 124 47044
" "	33uF	10V	C19, C23	4802 124 47013
" "	100uF	10V	C20	4802 124 47002
" "	330uF	16V	C25	4802 124 47022
" MYLAR	.15uF	50V	C24	4802 121 47173
VOLUME AND TONE CONTROL W. SWITCH 5K + 10K			R14, R15, S1	4802 102 27056

NOTE: RESISTORS ARE 1/8 WATT, 5%, TYPE 'C'.

TRANSISTORS & DIODES

RF. AMP. SILICON.	2SC 710		TRI	4822 130 44195
CONVERTER, SILICON.	2SC 1047		TR2	4802 130 47109
IF. AMP. SILICON.	2SC 380		TR3	4822 130 44154
IC. DRIVER & POWER OUTPUT	AN 214		IC.1	4802 209 87019
BIAS OF TR1, SILICON.	SR1K2	(0A636-1000)	D1	4822 130 30189
AGC. & DETECTOR, GERMANIUM.	IS446	(0A91)	D2	4822 130 30281

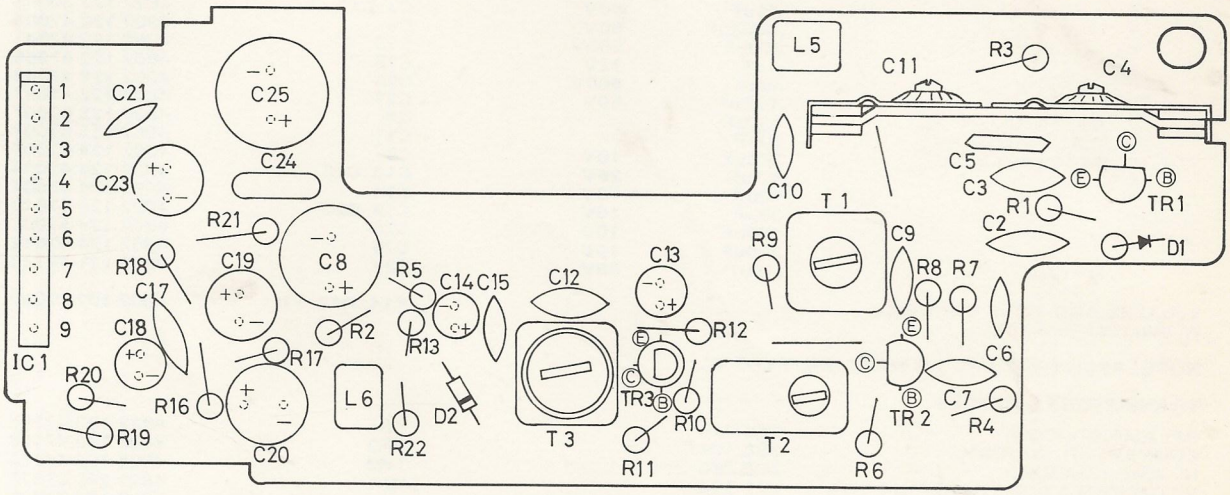
COILS & TRANSFORMERS

PUSHBUTTON TUNER ASY. (INCLUDING ANT. TRIMMER C1.)		L2, L3, L4	4802 210 17061
COIL, OSCILLATOR, SERIES	6.2uH	L5	4802 153 17106
CHOKE	1mH	L6	4802 158 17041
TRANSFORMER, OSCILLATOR		T1	4802 142 67009
CERAMIC FILTER	455kHz	T2	4802 242 77002
TRANSFORMER IF.	455kHz	T3	4802 153 27014

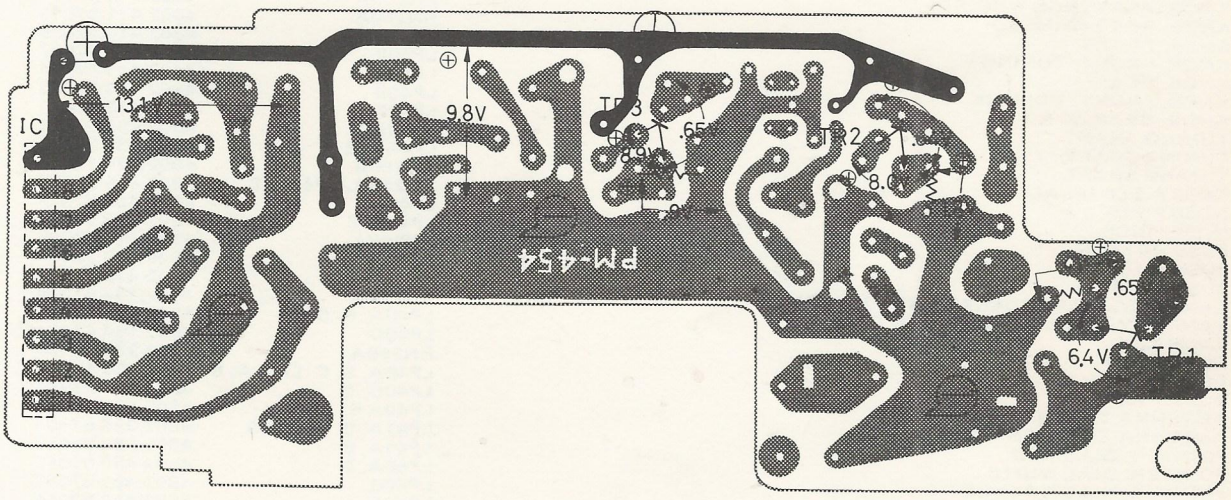
MISCELLANEOUS

	CAR RADIO MODEL	
KNOB, REAR, TONE (WINGED, CHROME)	LP41A, B	4802 411 57013
KNOB, TUNER, (NON WINGED, CHROME)	LP41A, B	4802 413 97111
KNOB, FRONT, BLACK	LP41A, B	4802 413 47098
KNOB, FRONT	LP40A, B, C	4802 413 37099
KNOB, REAR	LP40A, C	4802 413 97014
KNOB, FRONT	LP40B	4802 413 97122
KNOB, REAR (NON WINGED)	RN259A	4802 413 97111
KNOB, REAR (WINGED)	RN259A	4802 411 57013
KNOB, FRONT	RN259A	4802 413 47098
KNOB, FRONT, TUNING	LP40E	4802 413 47007
KNOB, REAR	LP40E	4802 413 57004
KNOB, FRONT, VOLUME	LP40E	4802 413 47008
KNOB, REAR, WING	LP40E	4802 413 57005
TUNING SHAFT	LP40A-E	4802 535 77061
TUNING SHAFT	LP41A, B	4802 535 77059
TUNING SHAFT	RN259A	4802 535 77059
NOSE PIECE (BLACK)	RN259A, LP41A, B	4802 459 57006
NOSE PIECE	LP40A	4802 459 57009
NOSE PIECE	LP40B, C	4802 459 57011
PUSH BUTTON	RN259A	4802 410 27008
PUSH BUTTON	LP40A-E	4802 410 27034
PUSH BUTTON	LP41A, B	4802 410 27035
LAMP ASY. (INCL. SOCKET AND FILTER)	RN259A	4802 134 47039
LAMP ASY. (INCL. SOCKET AND FILTER)	LP40A, B, D, E	4802 134 47049
LAMP ASY.	LP40D	4802 134 47051
FUSE 1 AMP.	RN259A	4802 253 47004
FUSE 1 AMP.	LP40A, B, C LP41A, B	4802 253 47004
FUSE 1 AMP.	LP40D, E	4802 253 27001
ANTENNA TRIMMER TOOL	LP40A-E	4802 395 57003
ANTENNA TRIMMER TOOL	LP41A, B, RN259A	4802 395 57003
POINTER, DIAL RED	LP41A, B	4802 450 87062
POINTER, DIAL WHITE	LP40A, D	4802 450 87052
POINTER, DIAL ORANGE	LP40B	4802 450 87063
POINTER, DIAL YELLOW	LP40E	4802 450 87064
POINTER, DIAL RED	LP40C	4802 450 87065
POINTER, DIAL RED	RN259A	4802 450 87051
DIAL	RN259A	4802 331 37016
DIAL	LP41A	4802 331 37017
DIAL	LP41B	4802 331 37018
DIAL	LP40A, D	4802 331 37019
DIAL	LP40B	4802 331 37021
DIAL	LP40C	4802 331 37022
DIAL	LP40E	4802 331 37023
RECEPTACLE ANTENNA J1		4802 320 17018
NEON LAMP NLT		4822 134 20016
RADIATOR, IC1		4802 255 47023
SUPPORTER, IC1		4802 404 27041
BRACKET PILOT LAMP ASY.		4802 404 27021
SCREW, 3 x 10mm, IC1		4822 502 10673
SCREW, 3 x 4mm		4822 502 11022
SCREW, 3 x 6mm		4822 502 10657
NUT, HEX. 9mm TONE & VOLUME		4802 505 17016

PARTS LOCATION ON PC BOARD



CHECK POINTS ON PC BOARD



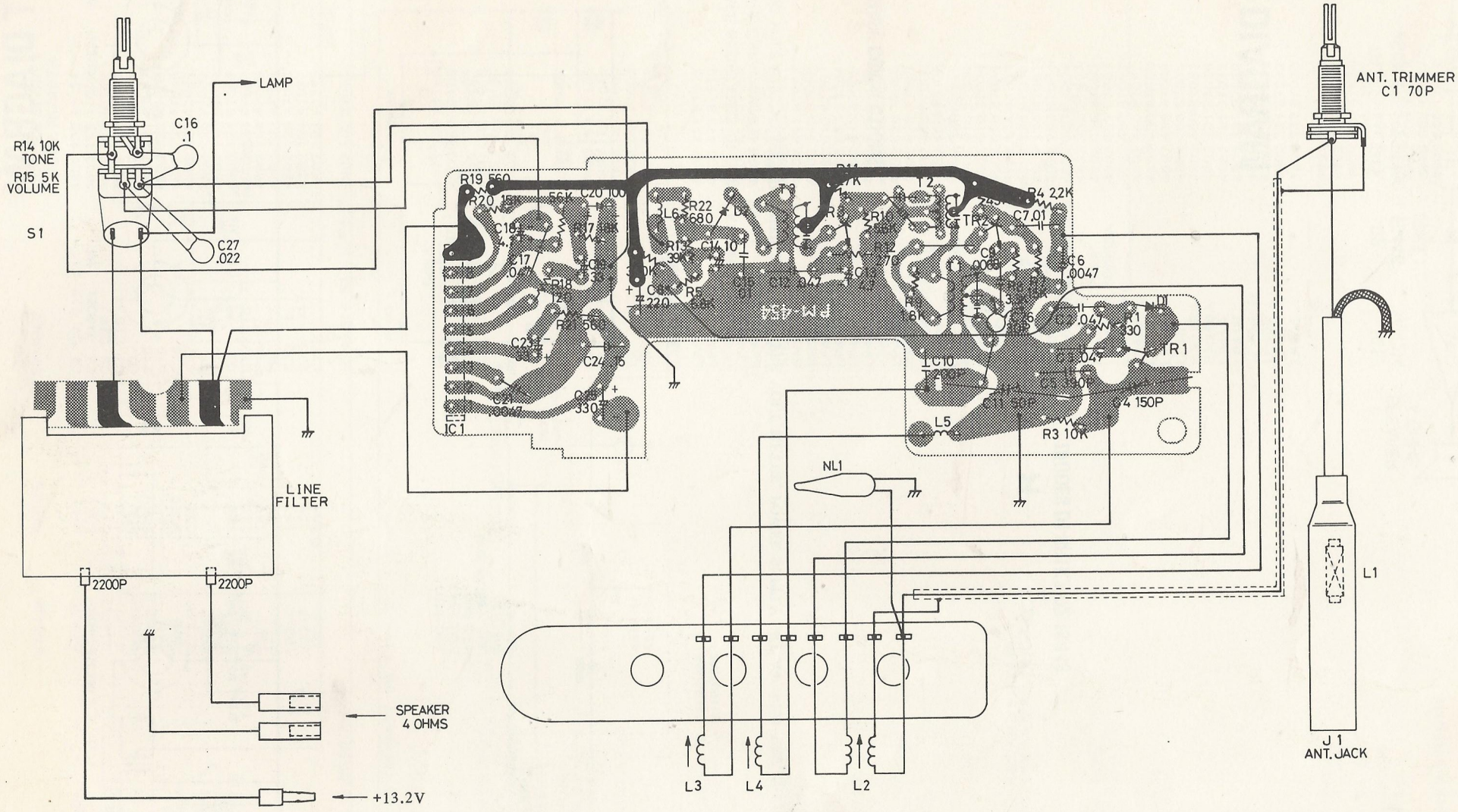
Pin. No. / IC	1	2	3	4	5	6	7	8	9
IC 1	6.4V	—	7.5V	10.5V	6.3V	—	4.9V	11.5V	13.1V

NOTES: 1. DC VOLTAGES MEASURED WITH 25,000 OHM PER VOLT METER, POWER SUPPLY SET AT +13.2 VDC, NO SIGNAL INPUT.

2. ⊕ DENOTES POSITIVE POLARITY OF THE METER.

3. IC PIN VOLTAGES MEASURED WITH RESPECT TO CHASSIS.

WIRING ON PC BOARD



NOTES: 1. ALL RESISTANCE IN OHMS, K=1,000.
2. ALL CAPACITANCE IN μF, P=$\mu\mu$F.