Service
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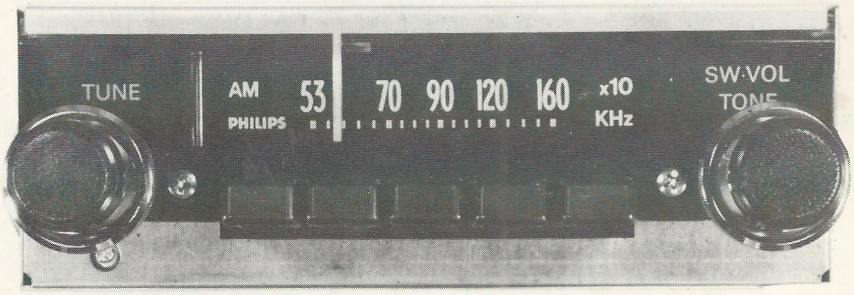


Service Manual

12 V

SPECIFICATIONS

Tuning Range	-	525 to 1605-kHz
Intermediate Frequency	-	455-kHz
Power Output	-	3.5-watts min. RMS (at T.H.D. = 10%)
Speaker Impedance	-	4-ohms
IC's	-	2 IC's and 3 diodes
Voltage	-	13.2-VDC negative to earth
Current	-	Max. .7-amp

WARNING

Connect power lead of receiver to positive battery terminal only.
Receiver will be damaged if connected to incorrect polarity.

PARTS LOCATION

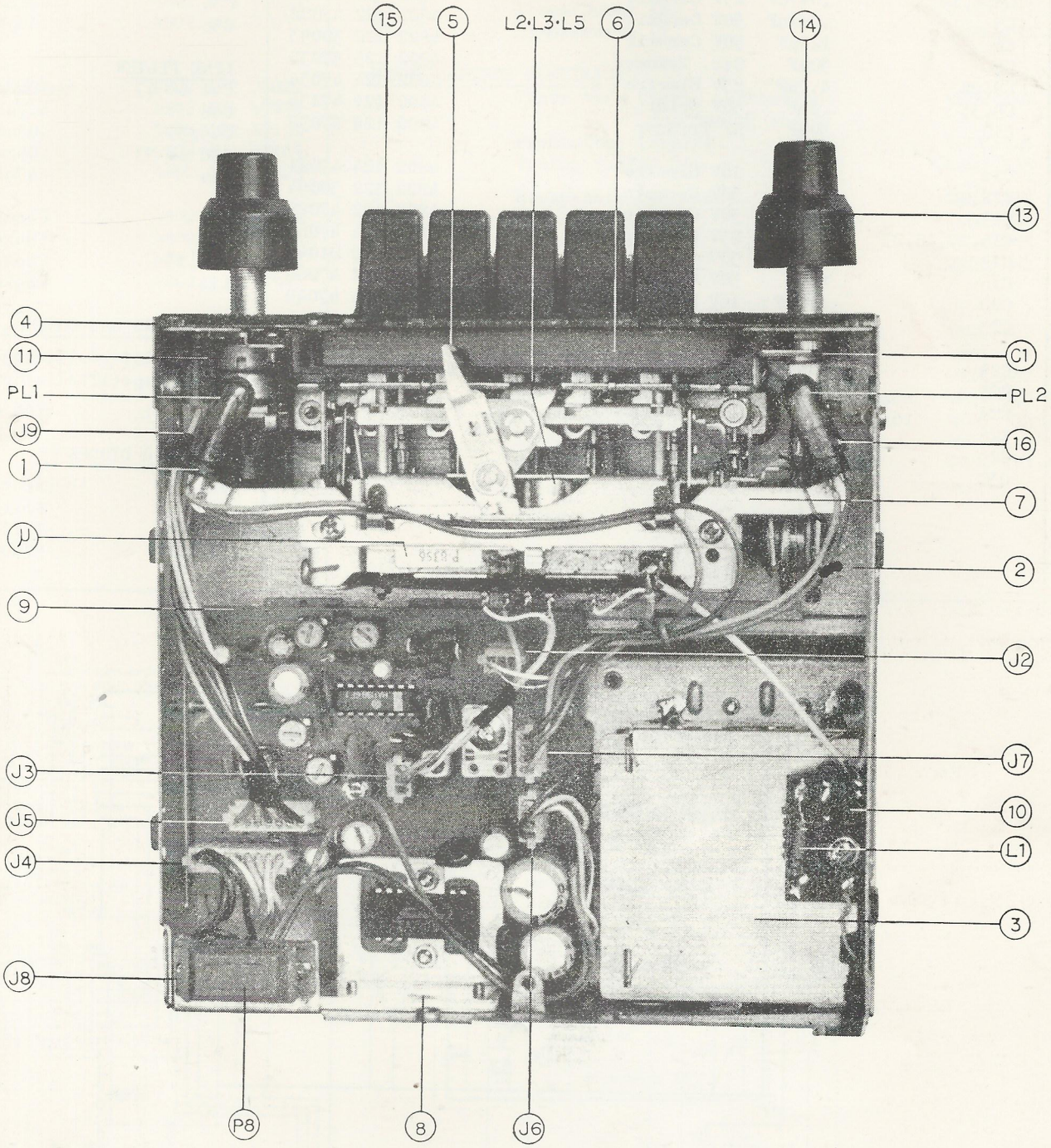


Fig. 1

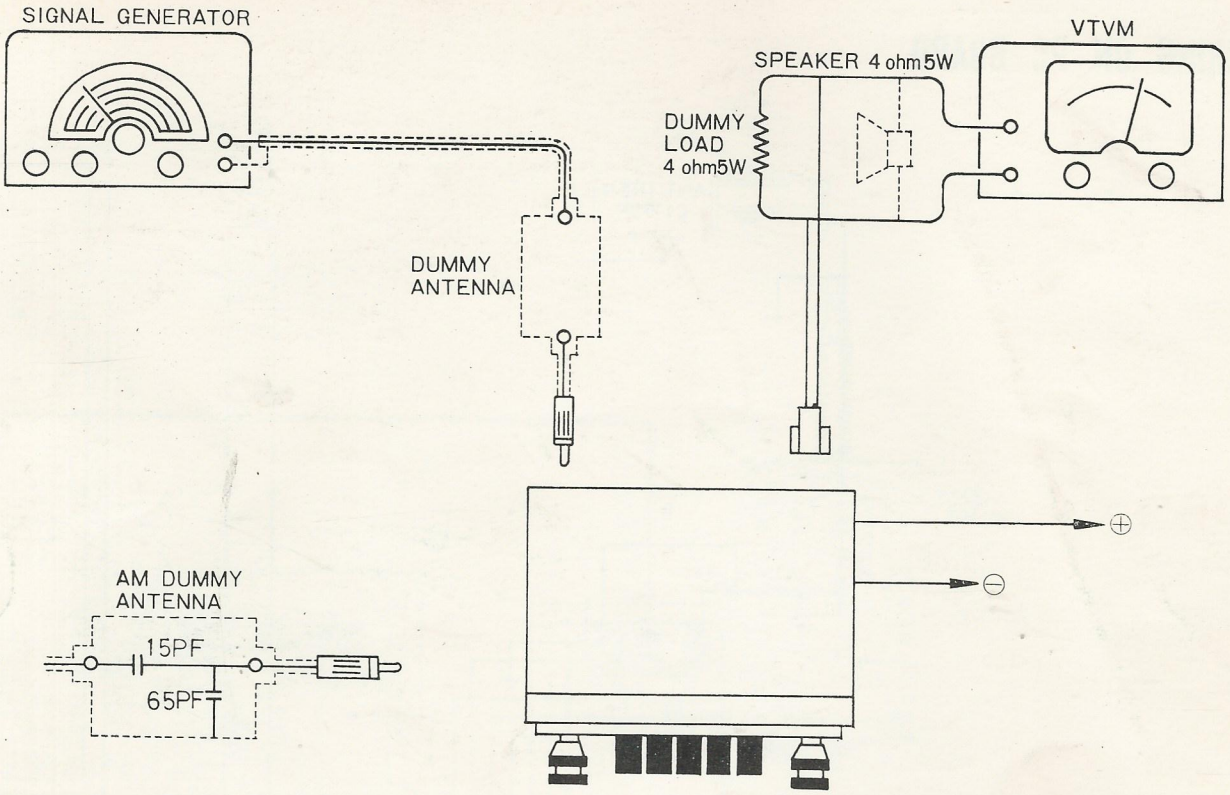

SIGNAL GENERATOR
VTVM
SPEAKER 4 ohm 5W
DUMMY
LOAD
4 ohm5W
DUMMY
ANTENNA
AM DUMMY
ANTENNA
15PF
65PF

Fig. 5

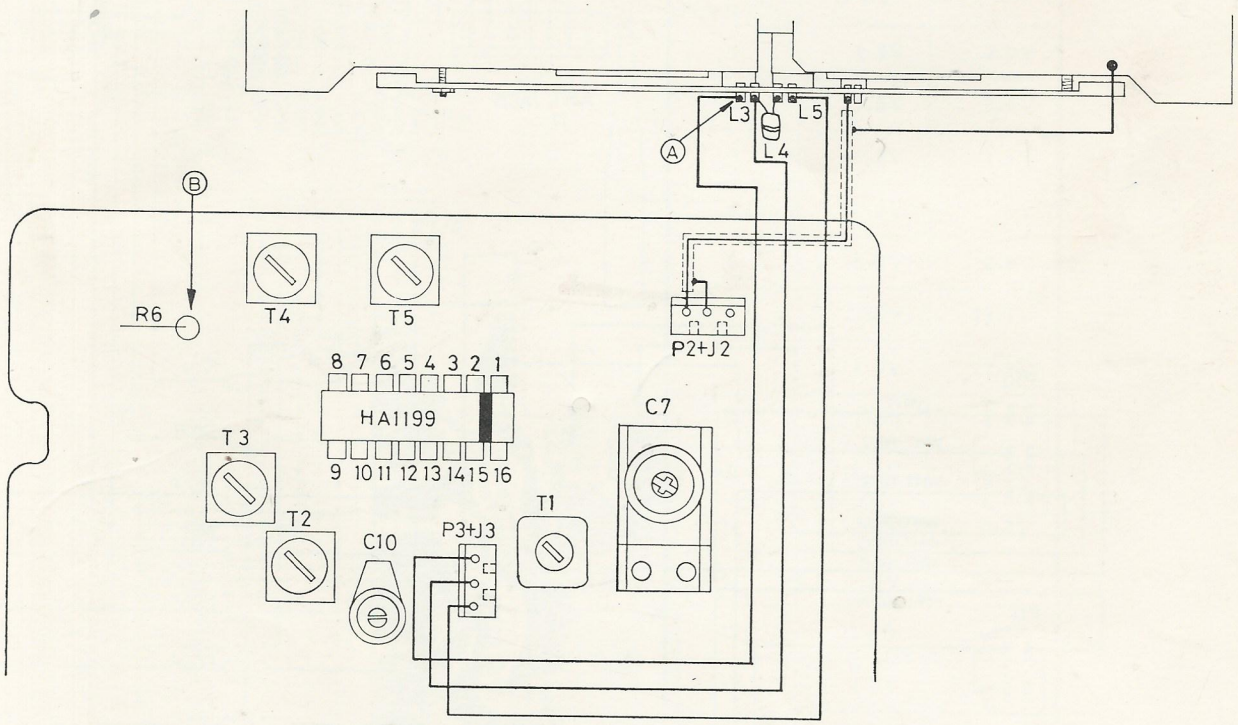

L3
L5
L4
A
B
R6
T4
T5
P2+J2
8 7 6 5 4 3 2 1
HA1199
9 10 11 12 13 14 15 16
C7
T3
T2
C10
P3+J3
T1

Fig. 6

AM ALIGNMENT

IF Alignment

Preparations

(1) Connection: See Fig. 4.

(2) Controls: Volume for minimum, Tone for high

(3) Dial pointer: Place the pointer near to 1,000 kHz where no signal exists.

(4) Power supply: 13.2 VDC

Alignments (See Fig. 6)

STEP	ADJUST POINTS	ADJUST
1	$T_{2, 3, 4, 5}$	Get waveform maximum and best symmetry.
2	Same as above	Repeat above adjustment two or three times.

TUNING RANGE & TRACKING

Preparations

(1) Connection: See Fig. 5.

(2) Controls: Volume for maximum, Tone for high

(3) Power supply: 13.2 VDC

Alignments (See Fig. 6)

STEP	PROCEDURE	SSG FREQUENCY	DIAL POINTER	ADJUST
1	Tuning range	510 kHz	Low-end stop	Adjust T_1 to get output maximum.
2		1630 kHz	High-end stop	Adjust C_{10} to get output maximum.
3	Repeat STEP 1 to 2 three or four times.			
4	Tracking	1400 kHz	Tune in SSG frequency accurately	Adjust C_7 to get output maximum.
5				Adjust C_1 to get output maximum.

NOTE: Always re-adjust antenna trimmer C_1 to get maximum volume tuning in a weak signal near 1,400 kHz, when you install the radio in car or replace an antenna.

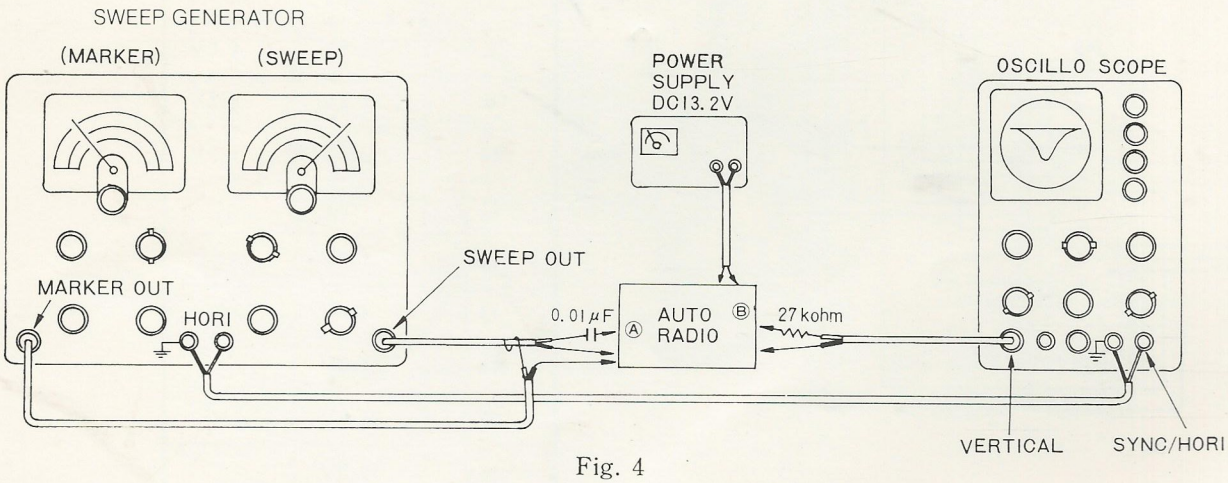


Fig. 4

REPLACEMENT PARTS LIST

Ref. No.	Description	Service Code
CAPACITORS		
C1	50pF Ant. Trimmer	
C2,27	.0022uF 50V Ceramic	4822 122 30114
C3,4,19	.047uF 25V Ceramic	4802 122 47054
C5	.001uF 50V Ceramic	4802 122 47022
C6	120pF 50V Ceramic	4822 122 30093
C7	50pF Osc. Trimmer	4802 125 57033
C8,22	4.7uF 25V Electro	4802 124 47034
C9,35	.1uF 50V Mylar	4802 121 47134
C10	50pF RF Trimmer	4802 125 57038
C11	22uF 16V Electro	4802 124 47021
C12	200pF 50V Ceramic	4822 122 30094
C13	680pF 50V Ceramic	4802 122 47082
C14,17,18,27	.01uF 25V Ceramic	4802 124 47061
C15	2pF 50V Ceramic	4802 120 21048
C16	8pF 50V Ceramic	4802 122 47066
C20	100uF 16V Electro	4802 124 47049
C23	10uF 16V Electro	4802 124 47044
C24	.1uF 12V Ceramic	4802 122 47055
C25	47uF 6.3V Electro	4802 124 47061
C26	1uF 50V Electro	4802 124 47037
C28	220uF 10V Electro	4802 124 47006
C29	39pF 50V Ceramic	4802 122 37037
C30	.068uF 50V Mylar	4802 121 47169

Ref. No.	Description	Service Code
CAPACITORS (Cont'd)		
C32	100uF 10V Electro	4802 124 47002
C33	200pF 50V Ceramic	4802 122 47077
C34	470uF 16V Electro	4802 124 47024
C36	39pF 50V Ceramic	4802 122 37037
LINE FILTER		
C41 to 47	1000pF Feed through Condenser	4822 122 70022
C48	4.7uF 25V Electro	4802 124 47034
C49,55	.01uF 50V Mylar	4802 121 47158
C50 to 53	.068uF 50V Mylar	4802 121 47169
C54	47uF 16V Electro	4802 124 47025
P8	Connector (20P short)	4802 263 67004
L11	Choke (filter)	4802 158 17076
L12,13	Choke (filter)	4802 158 17042
L14	Choke (filter)	4802 158 17983
RESISTORS and CONTROL		
Note:	All resistances are standard values and tolerances unless specified otherwise.	
VR1,2,S1	10k + 10k + Switch	4802 102 27072
IC's and DIODES		
IC1	RF Conv., IF and Det. (HA1199)	4802 209 87122
IC2	Driver and Power Output	4802 209 87059
D1,2	ITT73N (IN914)	5322 130 30009
D3	MZ207-1	4822 130 30339

Ref. No.	Description	Service Code
COILS and TRANSFORMERS		
L1	Choke RF	4802 157 57046
L2	Choke Filter	4802 158 17103
T1	Transformer Oscillator	4802 156 27084
T2, 3	Transformer IF	4802 153 17165
T4, 5	Transformer IF	4802 153 17166
MISCELLANEOUS ELECTRICAL		
	Tuner Assy (incl. pushbuttons and tuning shaft)	4802 210 17083
	Pushbutton (tuner)	4802 410 27098
	Tuning Shaft	4802 535 77082
J1	Receptacle (antenna)	4802 320 17027
PL1, 2	Lamp	4802 134 47058
	Socket (lamp)	4802 255 27008
	Filter (PL1 and 2)	4802 480 37017
MISCELLANEOUS MECHANICAL		
4	Dial Printed (incl. escutcheon)	4802 331 27046
5	Pointer	4802 450 87093
	Screw 3-mm dia. x 6-mm	4822 502 10657
	Nut 9-mm dia. (vol. and tuning shaft)	4802 502 17016
	Washer 9-mm dia. (vol. and tuning shaft)	4802 532 17014
	Knob (tone)	4802 413 47145
	Knob (vol.)	4802 413 47146

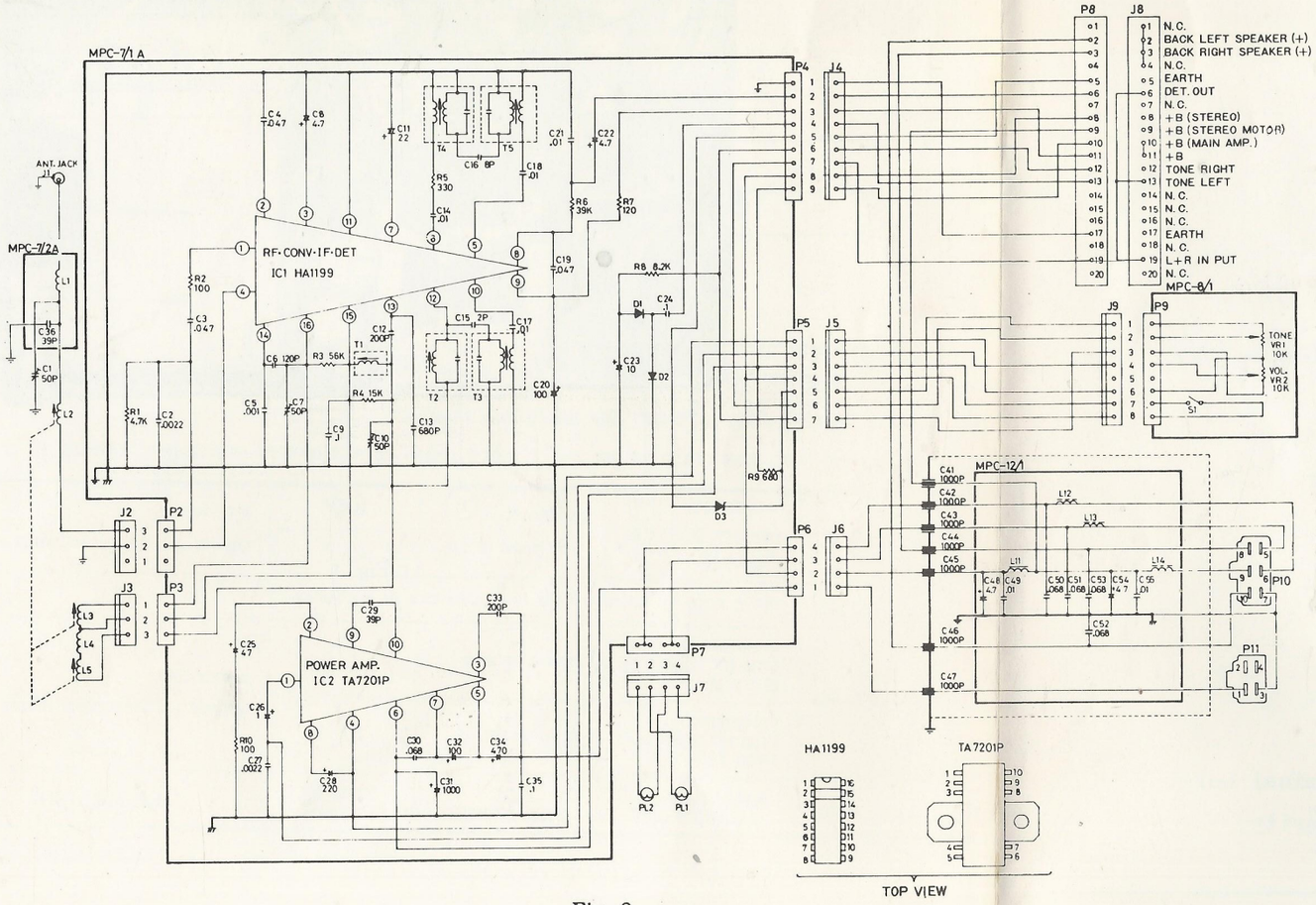


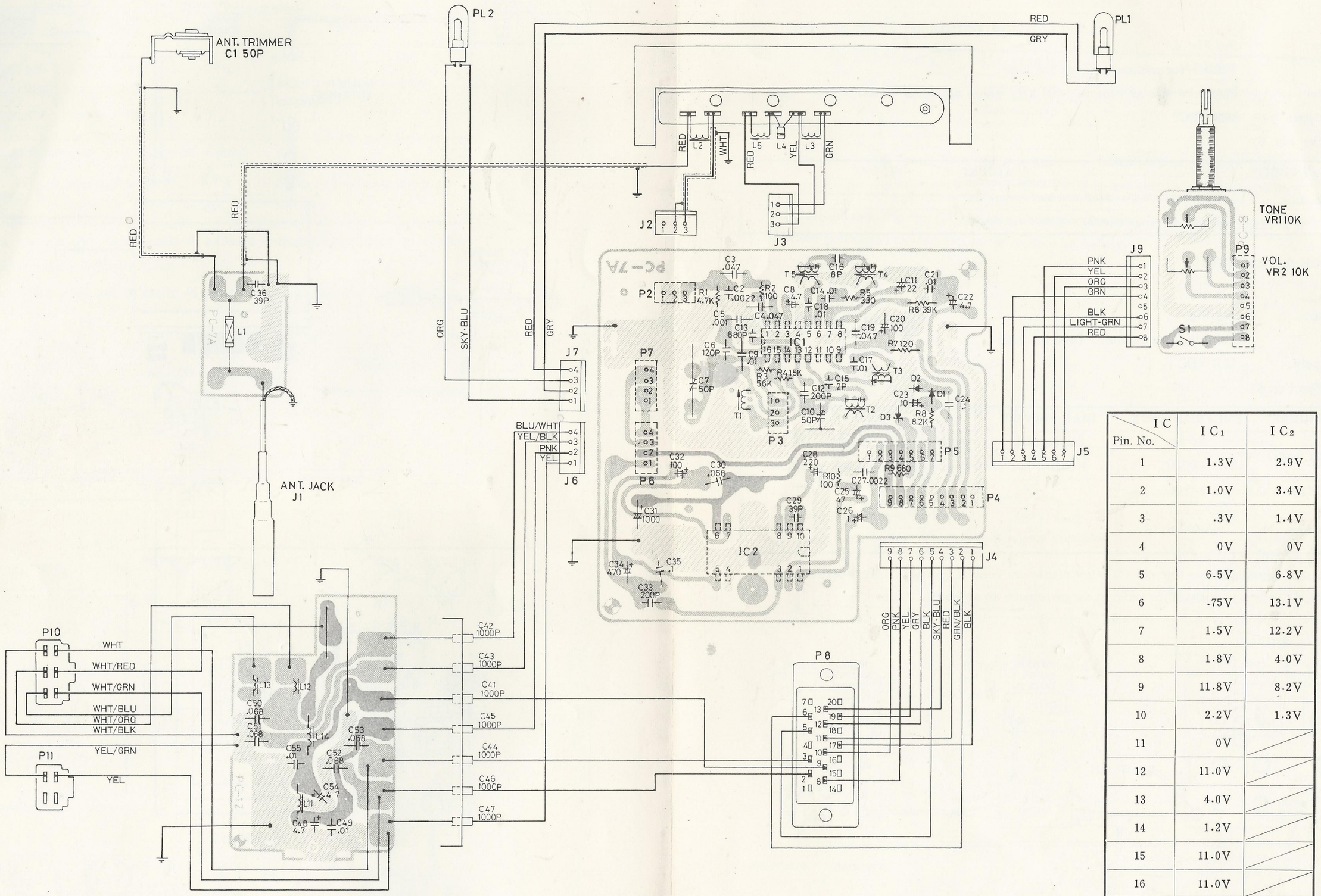
Fig. 2

4P 6P CONNECTOR	
PIN NO.	Connection
1	L-FRONT SP(+)
2	N. C.
3	L-FRONT SP(−)
4	N. C.
5	Illum. (+)
6	Illum. (−)
7	BACK SP(−)
8	R-BACK SP(+)
9	+B
10	L-BACK SP(+)

NOTE:

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
4 IC pin voltages measured with respect to chassis
5 Power connector P_{10}, & speaker connector P_{11} show view of leads

WIRING ON PC BOARD



IC / Pin. No.	IC1	IC2
1	1.3V	2.9V
2	1.0V	3.4V
3	.3V	1.4V
4	0V	0V
5	6.5V	6.8V
6	.75V	13.1V
7	1.5V	12.2V
8	1.8V	4.0V
9	11.8V	8.2V
10	2.2V	1.3V
11	0V	
12	11.0V	
13	4.0V	
14	1.2V	
15	11.0V	
16	11.0V	

Fig. 3

NOTE: 1 All resistance in ohms, K=1,000

2 All capacitance in μF, P=$\mu\mu$F