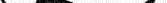
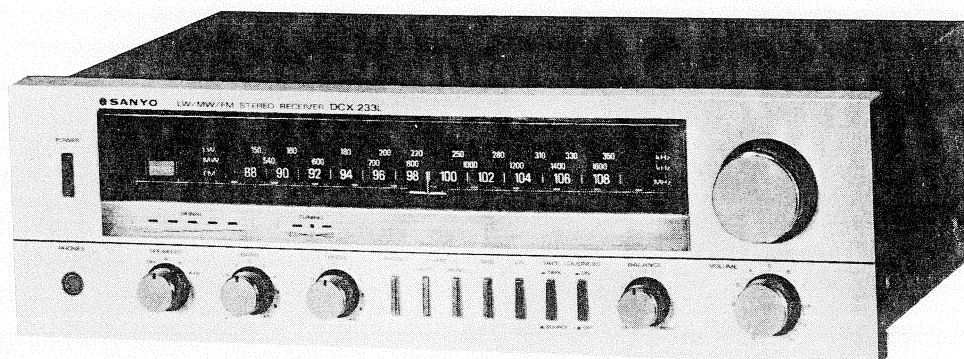


SERVICE MANUAL



LW/MW/FM STEREO RECEIVER

DCX 233L (EUROPE)



SPECIFICATIONS

POWER AMPLIFIER SECTION

Power Output 20 watts per channel RMS minimum continuous power into 8 ohms load, with maximum total harmonic distortion of 0.1 % at 40 Hz – 20 kHz.

PRE-AMPLIFIER SECTION

Tone Controls	Bass (100 Hz): ± 10 dB
	Treble (10 kHz): ± 10 dB
Loudness Control	+8 dB (at 100 Hz)
	+4 dB (at 10 kHz)
Input Sensitivity/Impedance	Phono: 2.5 mV/50 kohms
	Tape: 150 mV/30 kohms
Tape Rec Output Level	150 mV
Frequency Response	
Phono (30 Hz — 15 kHz)	± 0.5 dB
Tape (20 Hz — 20 kHz)	± 0.5 dB

FM SECTION

Tuning Frequency Range	88 MHz to 108 MHz
Usable Sensitivity (DIN) Mono	1.5 μ V
(IHF) Mono	3.0 μ V
IF Rejection	80 dB
Image Rejection	50 dB
AM Suppression	60 dB
Capture Ratio	1.0 dB
Selectivity (DIN)	70 dB

FM SECTION

Signal to Noise Ratio	Mono	65 dB
	Stereo	60 dB
Harmonic Distortion	Mono	0.2 %
	Stereo	0.5 %
Stereo Separation (at 1 kHz)		40 dB

AM (MW/LW) SECTION

	MW	LW
Tuning Frequency Range	535 kHz to 1605 kHz	150 kHz to 350 kHz
Usable Sensitivity	300 $\mu\text{V/m}$	700 $\mu\text{V/m}$
IF Rejection	40 dB	40 dB
Image Rejection	40 dB	40 dB
Selectivity	40 dB	40 dB
Signal to Noise Ratio	55 dB	55 dB

GENERAL SECTION

Power Source	AC: 110/220 V 50 Hz
Power Consumption	120 W
Dimensions (W) x (D) x (H)	420 x 300 x 125 mm
Weight	6.6 kg (approx.)

*Specifications are subject to change without notice.

CONTENTS

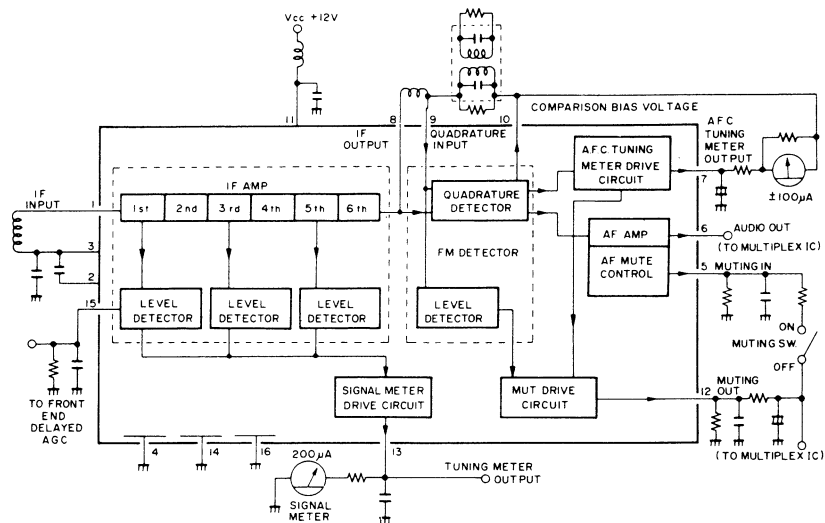
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PRODUCT SAFETY NOTICE

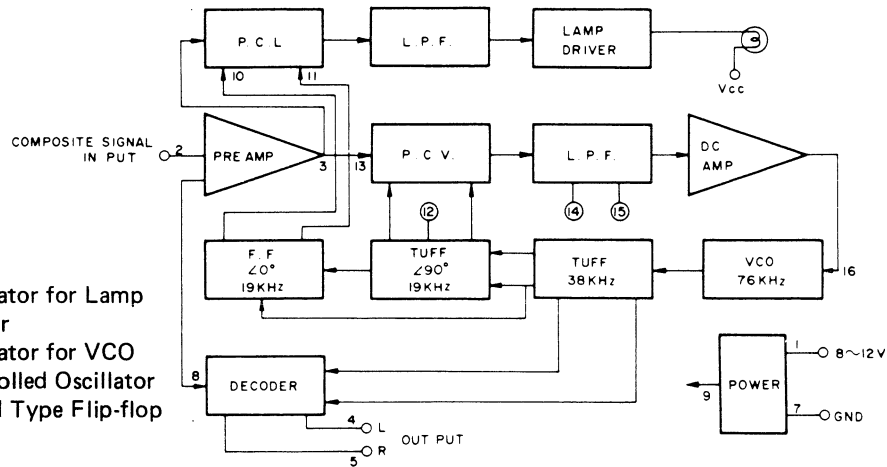
Product safety should be considered when a component replacement is made in any area of a receiver. Components indicated by mark ⚠ in the parts list and the circuit diagram designate components in which safety can be of special significance. It is particularly recommended that only parts designated on the parts list in this manual be used for component replacement designated by mark ⚠. No deviations from resistance wattage or voltage ratings may be made for replacement items designated by mark ⚠.

IC EQUIVALENT CIRCUIT & BLOCK DIAGRAM

FM IF IC LA1231

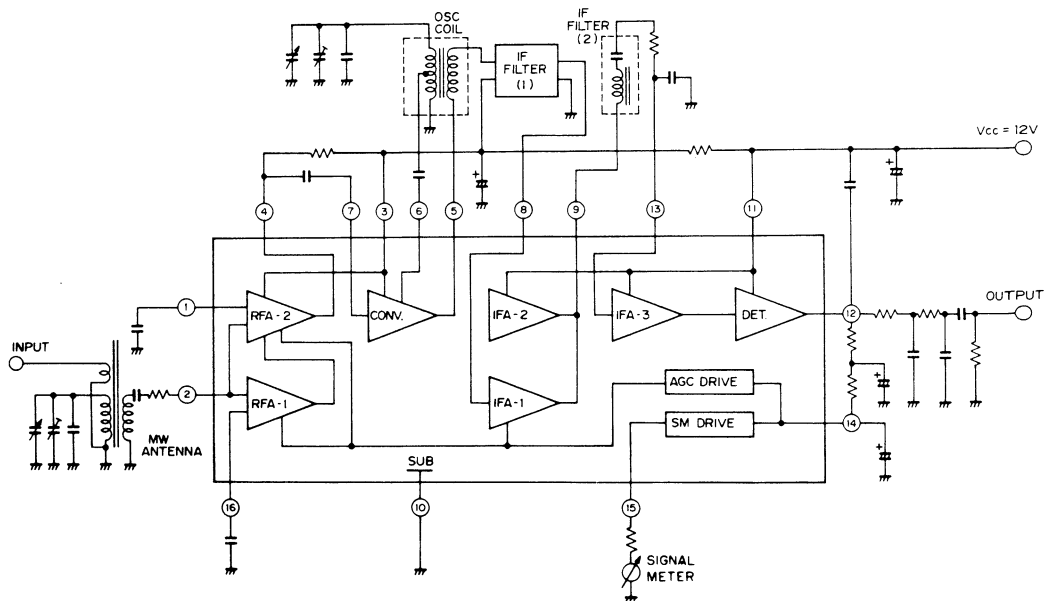


FM MPX IC LA3350



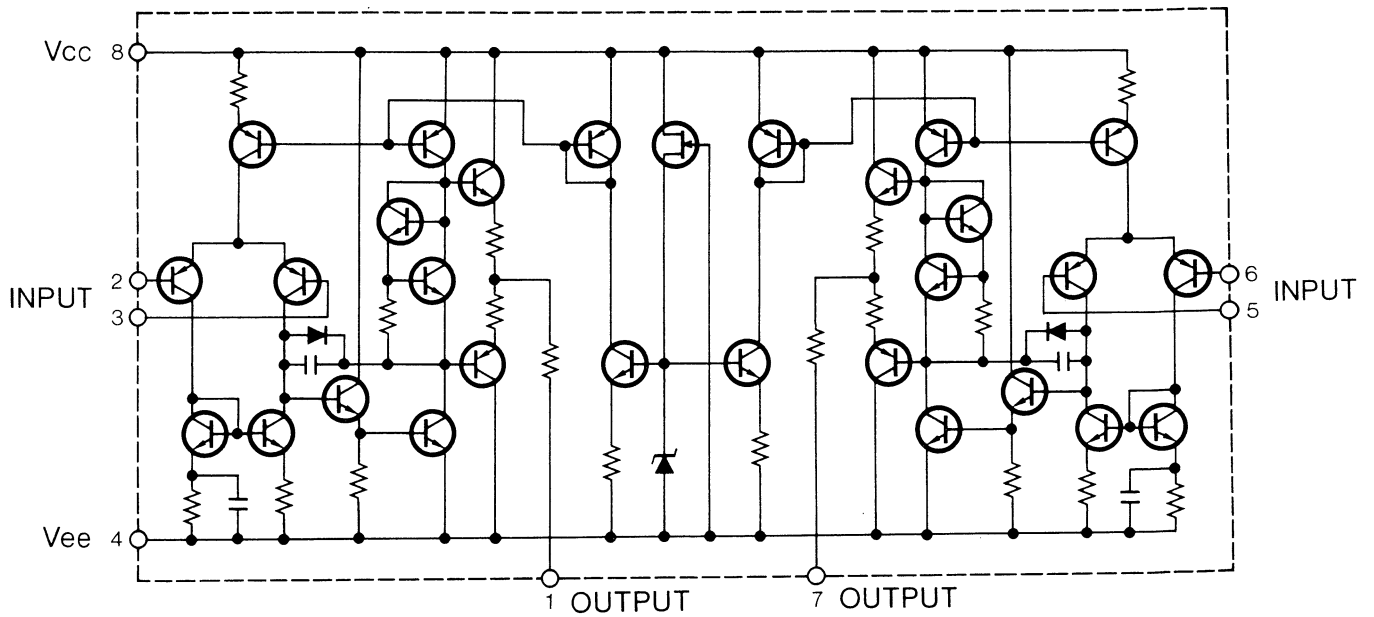
P. C. L. : Phase Comparator for Lamp
 L. P. F. : Low Pass Filter
 P. C. V. : Phase Comparator for VCO
 V C O : Voltage Controlled Oscillator
 TUFF : Direct coupled Type Flip-flop

AM RF IF IC LA1240

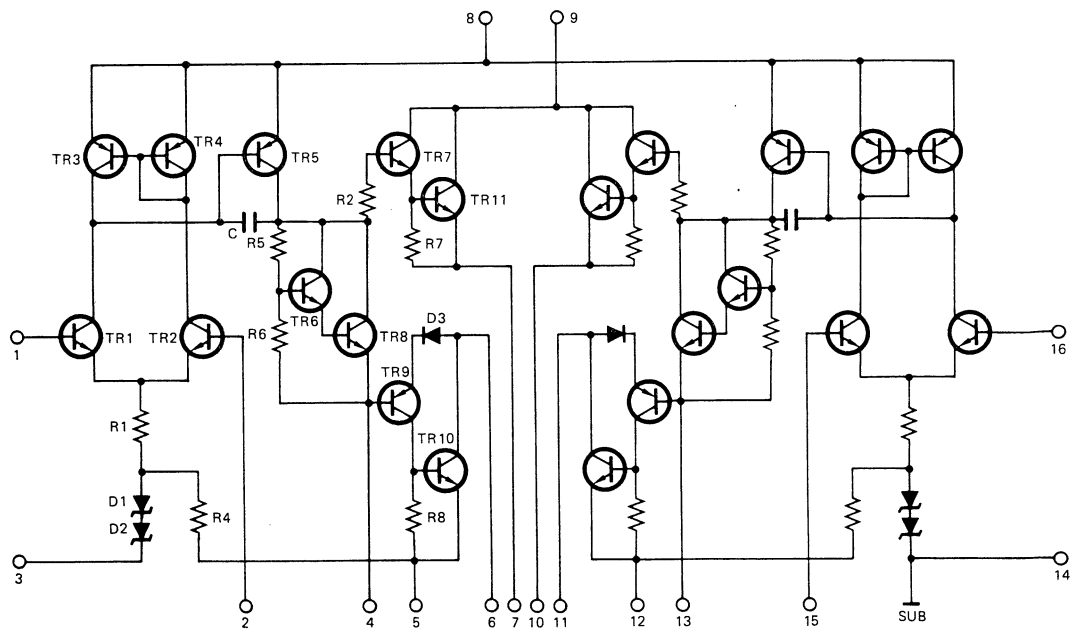


IC EQUIVALENT CIRCUIT & BLOCK DIAGRAM (Continued)

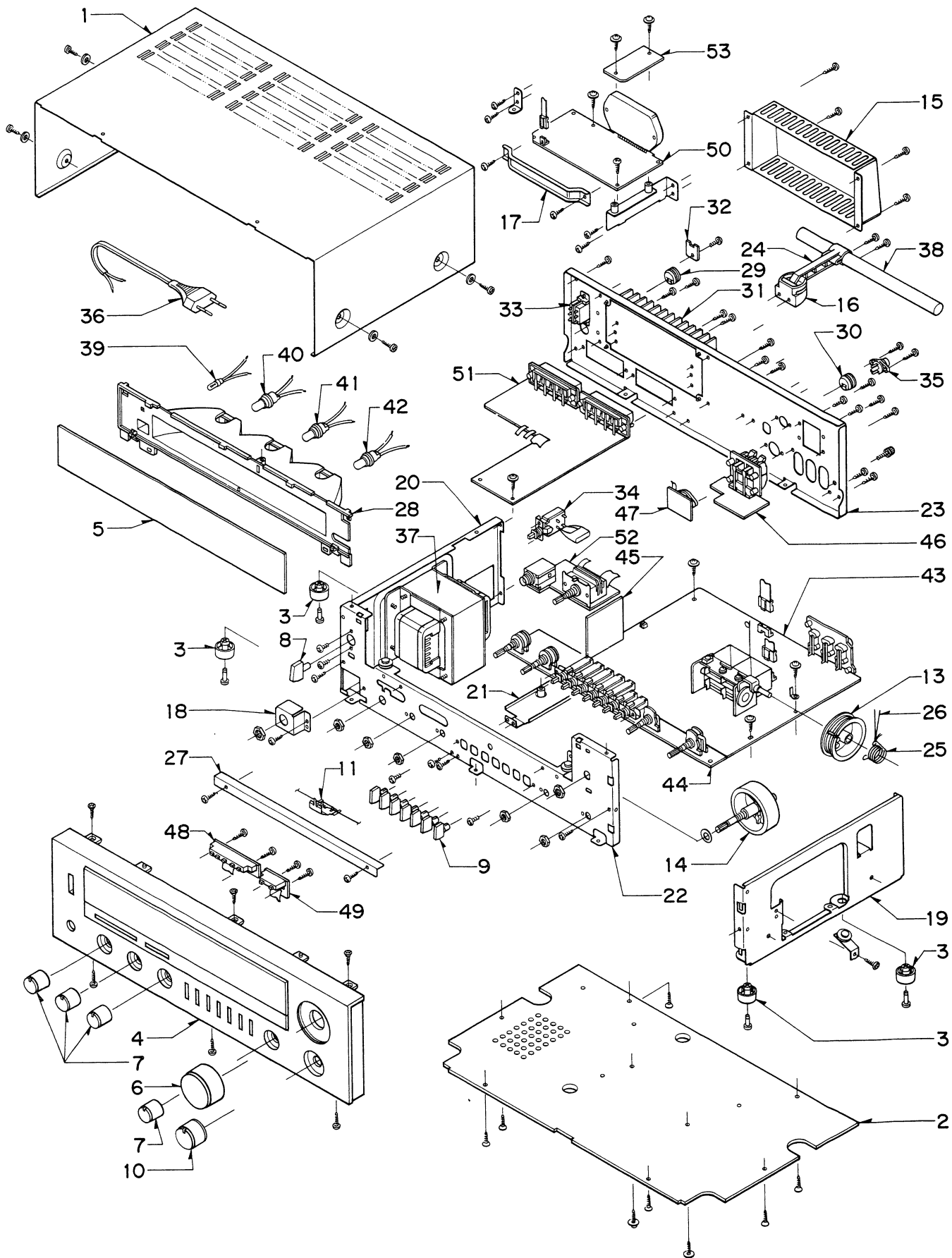
AF AMP IC NJM4558



POWER AMP IC STK-461



EXPLODED VIEW OF CABINET AND CHASSIS



PARTS LIST

PACKING PARTS LIST

Ref. No.	Parts Number	Description
	131 6 1139 86800	Box Corrugate-EXP
	131 6 2119 02091	Bag Polyethylene-EXP
	131 6 3009 31520	Pad

ACCESSORIES PARTS LIST

Ref. No.	Parts Number	Description
	4 2442 00030	Antenna FM
	131 6 2719 10600	Bag Fan
	131 6 4119 85500	Explanatory Booklet

CABINET PARTS LIST

Ref. No.	Parts Number	Description
1	131 2 1410 24900	Cover
2	131 2 1105 26600	Plate Bottom
3	131 2 1801 14600	Leg

APPEARANCE PARTS LIST

Ref. No.	Parts Number	Description
4	131 0 1016 37100	Panel Decorate Assy
5	131 2 1201 35203	Plate Dial
6	131 2 1601 63000	Knob (Tuning)
7	131 2 1601 63200	Knob (Volume)
8	131 2 1601 63300	Knob (Push)
9	131 2 1601 63400	Knob (Push)
10	131 2 1601 66900	Knob (Volume)
11	131 2 4101 22101	Pointer

CHASSIS PARTS LIST

Ref. No.	Parts Number	Description
13	131 0 3002 11300	Drum Assy
14	131 0 3003 20000	Shaft Dial Assy
15	131 2 1410 25400	Cover
16	131 2 2207 10500	Support Arm (Antenna)
17	* 131 2 3101 71300	Metal Mount (IC)
18	* 131 2 3101 72700	Metal Mount (Phone)
19	* 131 2 3101 74400	Metal Mount (Right Side Panel)
20	* 131 2 3101 74500	Metal Mount (Left Side Panel)

CHASSIS PARTS LIST

Ref. No.	Parts Number	Description
21	* 131 2 3101 74600	Metal Mount
22	* 131 2 3305 30200	Panel Front
23	* 131 2 3306 32700	Panel Rear
24	131 2 3602 12101	Holder Antenna
25	131 2 4111 00400	Spring Rope
26	131 2 4112 10400	Rope 0.5
27	131 2 4120 12900	Slide Rail Pointer
28	131 2 6110 29300	Shelter Light
29	131 2 6111 14200	Bushing (AC Cord)
30	131 2 6111 14801	Bushing (Ant. Lead)
31	131 2 6201 29200	Plate Heat Sink
32	131 2 7104 00500	Plate Pad Switch

ELECTRICAL PARTS LIST

Ref. No.	Parts Number	Description
33	△ 4 2312 01020	Switch Slide
34	△ 4 2312 04520	Switch Push Power
35	4 2352 00110	Socket 1P
36	△ 4 2432 00140	Power Cord
37	△ 4 2512 14920	Power Transformer
38	4 2579 25110	Bar Antenna AM
39	4 6122 00440	Pilot Lamp (6 V, 30 mA)
40	4 6129 20771	Pilot Lamp (8 V, 300 mA)
41	4 6129 20776	Pilot Lamp (8 V, 300 mA)
42	4 6129 20777	Pilot Lamp (8 V, 300 mA)
43	* 131 0 4001 06080	RF IF MPX P.C.B. Assy
44	* 131 0 4001 06090	Volume P.C.B. Assy
45	* 131 0 4001 06100	Muting P.C.B. Assy
46	* 131 0 4001 06120	Antenna P.C.B. Assy
47	* 131 0 4001 06130	DIN P.C.B. Assy
48	* 131 0 4001 06140	L.E.D. Signal P.C.B. Assy
49	* 131 0 4001 06150	L.E.D. Tuning P.C.B. Assy
50	* 131 0 4001 06160	Power Amp P.C.B. Assy
51	* 131 0 4001 06170	Power Supply P.C.B. Assy
52	* 131 0 4001 06180	Speaker Selector P.C.B. Assy
53	* 131 0 4001 06190	Fuse P.C.B. Assy
C01	△ 4 2232 00550	Oil Con. 0.01 μF 450V

*—Not a service part.

PRODUCT SAFETY NOTICE

PRODUCT SAFETY SHOULD BE CONSIDERED WHEN A COMPONENT REPLACEMENT IS MADE IN ANY AREA OF AN UNIT. COMPONENTS INDICATED BY A MARK △ IN THIS PARTS LIST AND THE SCHEMATIC DIAGRAM SHOW COMPONENTS WHOSE VALUE HAS SPECIAL SIGNIFICANCE TO PRODUCT SAFETY. IT IS PARTICULARLY RECOMMENDED THAT ONLY PARTS SPECIFIED ON THE FOLLOWING PARTS LIST BE USED FOR COMPONENT REPLACEMENT POINTED OUT BY THE MARK.

AM-FM MULTIPLEX ALIGNMENT

AM ALIGNMENT

For alignment: Maintain generator output as low as possible for suitable indication.

V.T.V.M. Oscilloscope						
Step	Adjusting circuit	Connection		Position of Tuning dial	Adjustment	V.T.V.M. Oscilloscope
		Input	Output			
1	IF	Connect 455 kHz sweep generator to VC4.	Connect Oscilloscope to Test Point TP7.	Near max. capacity of VC at position of no interference	AM IFT 2-00040	
2	MW (RF)	Connect AM generator to EXT AM antenna and GND terminals. Set to 600 kHz. Modulate with 30 %, 400 Hz.	Connect Oscilloscope and AC. V.T.V.M. to REC Output.	600 kHz	AM BAR ANT 9-25240 MW OSC 9-20851	Max.
3		Change frequency to 1400 kHz.		1400 kHz	TC 01,03	
4	LW (RF)	Change frequency to 160 kHz.		160 kHz	LW OSC 9-20860	Max.
5		Change frequency to 350 kHz.		350 kHz	TC 02, 04	
6	Repeat adjustments.					

1. Variable capacitor completely closed
2. Set the dial pointer to very left line dial scale.
3. Connect sweep generator, SG, V.T.V.M. and oscilloscope.
4. Function switch to "MW" or "LW"
5. Use a screwdriver with plastic grip for all adjustments.

FM ALIGNMENT

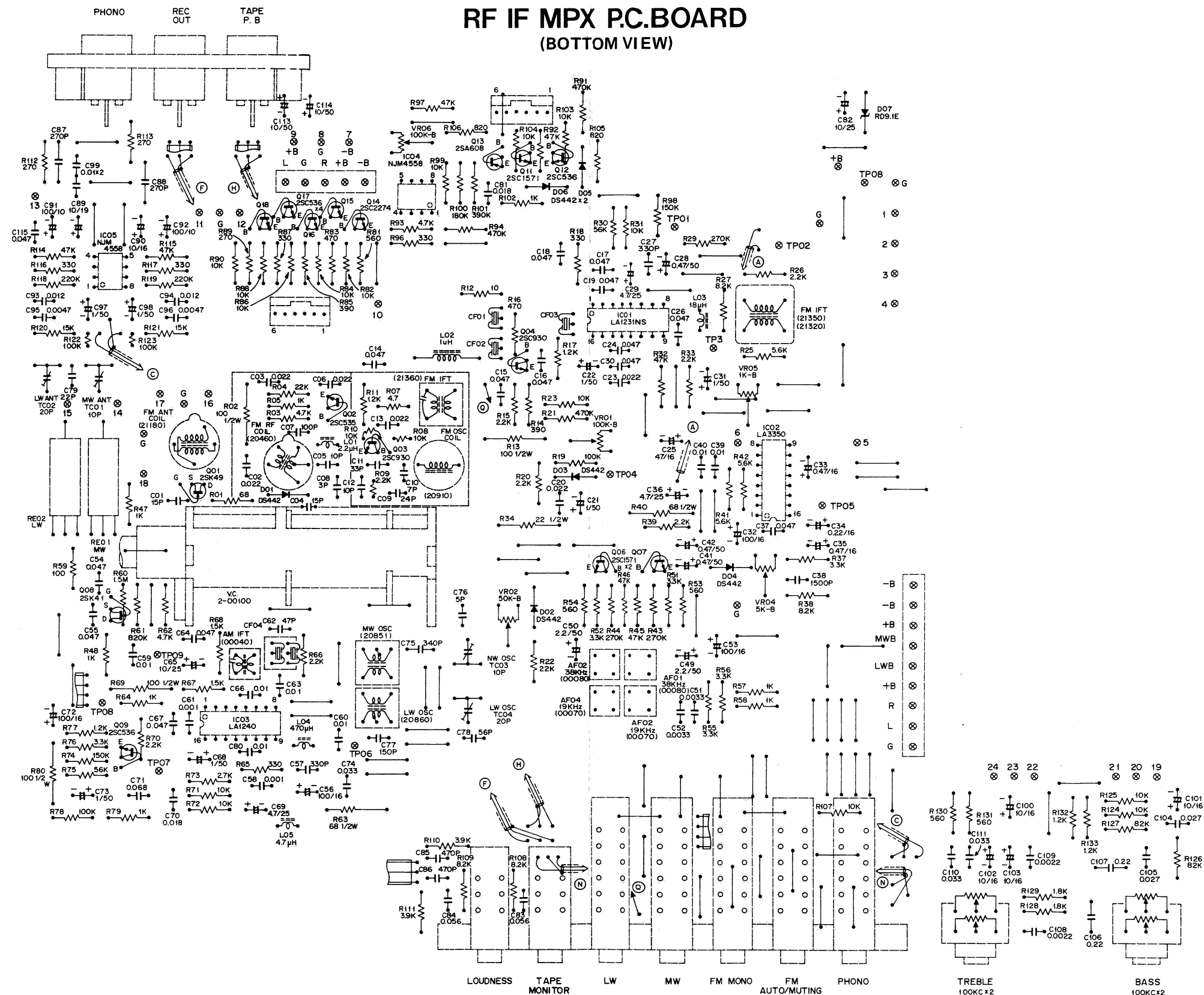
Step	Adjusting circuit	Connection		Position of Tuning dial	Adjustment	V.T.V.M. Oscilloscope
		Input	Output			
1	IF	Connect sweep 10.7 MHz generator to test point VC2.	Connect Oscilloscope to Test Point TP4.	Near max. capacity of VC. at position of no interference	FM IFT 9-21360	
2	Quadrature Detector		Connect Oscilloscope to Test Point TP2.		FM QUADRATURE COIL 9-21320	
3	RF	Connect FM RF generator through two 120-ohm resistors to FM antenna screw terminals. Set generator to 90 MHz, modulate with 400 Hz to provide ±75 kHz deviation. Set generator output attenuator as low as possible.	Connect V.T.V.M. to REC Output.	90 MHz	FM ANT COIL 9-21180 FM RF COIL 9-20460 FM OSC COIL 9-20910	Max.
4		Change generator setting to 106 MHz.		106 MHz	TCA,TCR,TCO	Max.
5	Repeat adjustments.					

1. Variable capacitor completely closed
2. Set the dial pointer to very left line of dial scale.
3. Connect sweep generator, FM SG, V.T.V.M. and oscilloscope. FM ANT input impedance is 75 ohm.
4. Function switch to "FM"
5. Use a screwdriver with plastic grip for all adjustments.

FM MPX ALIGNMENT

Step	Adjusting circuit	Connection		Position of Tuning dial	Adjustment	
		Input	Output			
1	PLL IC FO (19 kHz) Adjustmnet	None	Connect Frequency counter or synchroscope to TP5	Near max. capacity of VC. at position of no interference	Adjust VR04 (5k-B) so that frequency counter or synchroscope indicates 19 kHz.	
2	FM STEREO Signal Separation	As above Steps 3,4 except modulation. Modulate LEFT channel ± 67.5 kHz – 400 Hz audio and ± 7.5 kHz – 19 kHz pilot carrier. As above except modulate RIGHT Channel.	Connect V.T.V.M. to REC output terminal (R Channel).		VR05 (1k-B)	V.T.V.M. Min.
			Connect V.T.V.M. to REC output terminal (L Channel).			
3	Repeat steps 1,2. Set at position with max. channel separation.					

1. Variable capacitor completely closed
2. Connect FM stereo SG and V.T.V.M.
3. Function switch to "FM"
4. Use a screwdriver with plastic grip for all adjustments.



1. VR01 Muting Level Adjustment

Adjust VR01 at the antenna input of FM 75 ohm and the sensitivity of $8 \mu V$ (Muting Switch: ON) until the wave form amplitude of the REC output becomes half.

2. VR02 Signal Indicator Adjustment

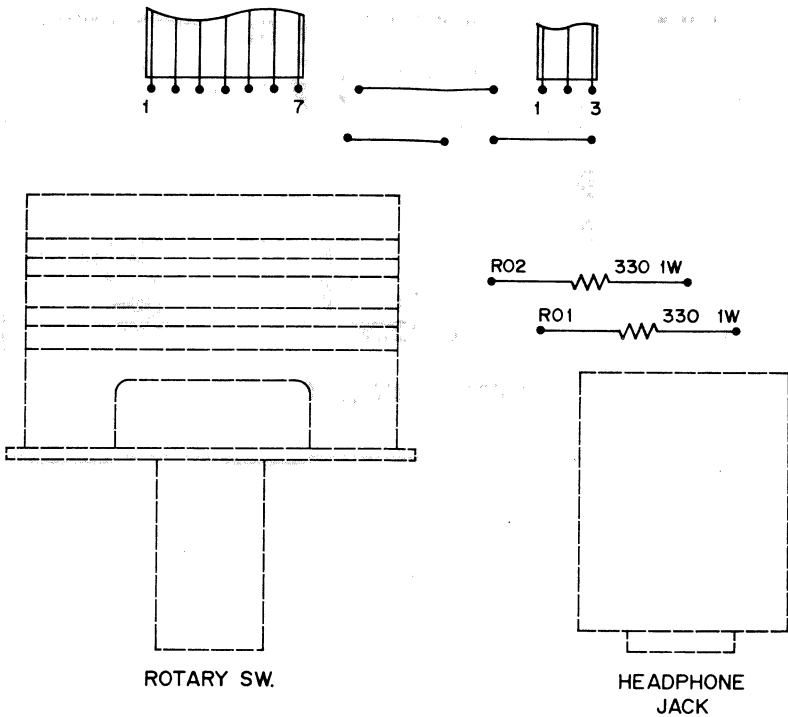
Adjust the attenuator of FM SSG to 60 dB and VR02 until the final L.E.D. of the Signal Indicator slightly lights up.

3. VR06 Tuning Indicator Adjustment

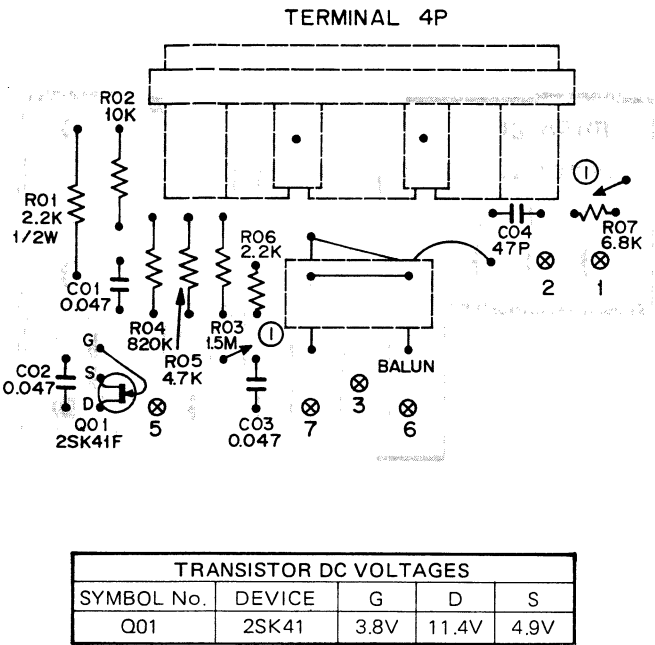
Connect the DC Voltmeter to Test Point No. 8 and adjust VR06 until the voltage becomes 0 ± 50 mV.

		IC PIN NUMBERS VOLTAGES															
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC01	LA1231	2.8V	2.8V	2.8V	0V	2.3V	5.7V	5.6V	5.7V	5.7V	5.7V	13.1V	4.3V	0.3V	0V	5.0V	0V
IC02	LA3350	12.5V	0V	5.6V	7.7V	7.7V	15.9V	0V	0.4V	—	2.1V	2.1V	2.2V	2.1V	2.1V	2.1V	2.9V
IC03	LA1240	4.6V	1.6V	12.0V	9.7V	12.0V	3.3V	1.3V	2.7V	8.9V	0V	12.2V	1.5V	0.6V	1.4V	0V	1.1V
IC05	NJM4558	0V	0V	0V	-15V	0V	0V	0V	15V	—	—	—	—	—	—	—	—

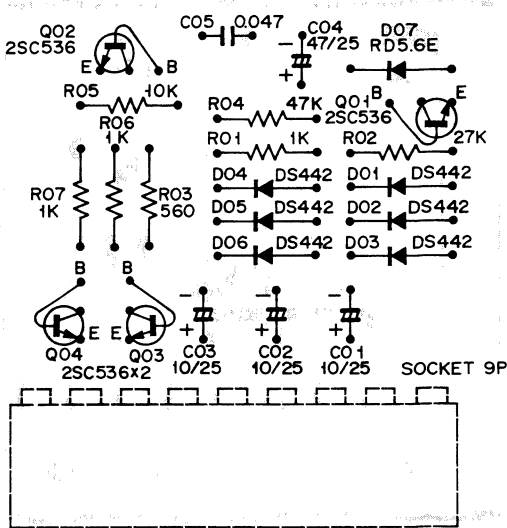
SPEAKER SELECTOR P.C.BOARD (BOTTOM VIEW)



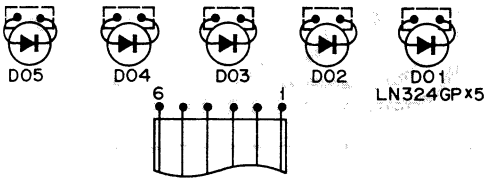
ANTENNA P.C.BOARD (BOTTOM VIEW)



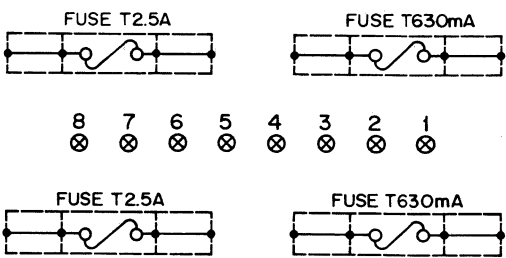
MUTING P.C.BOARD (BOTTOM VIEW)



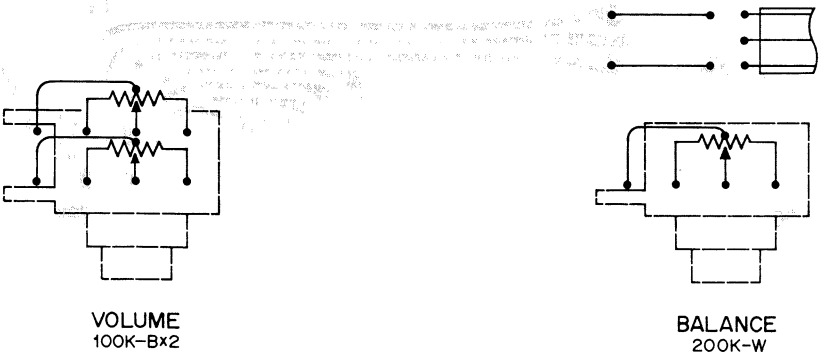
L.E.D SIGNAL P.C.BOARD (BOTTOM VIEW)



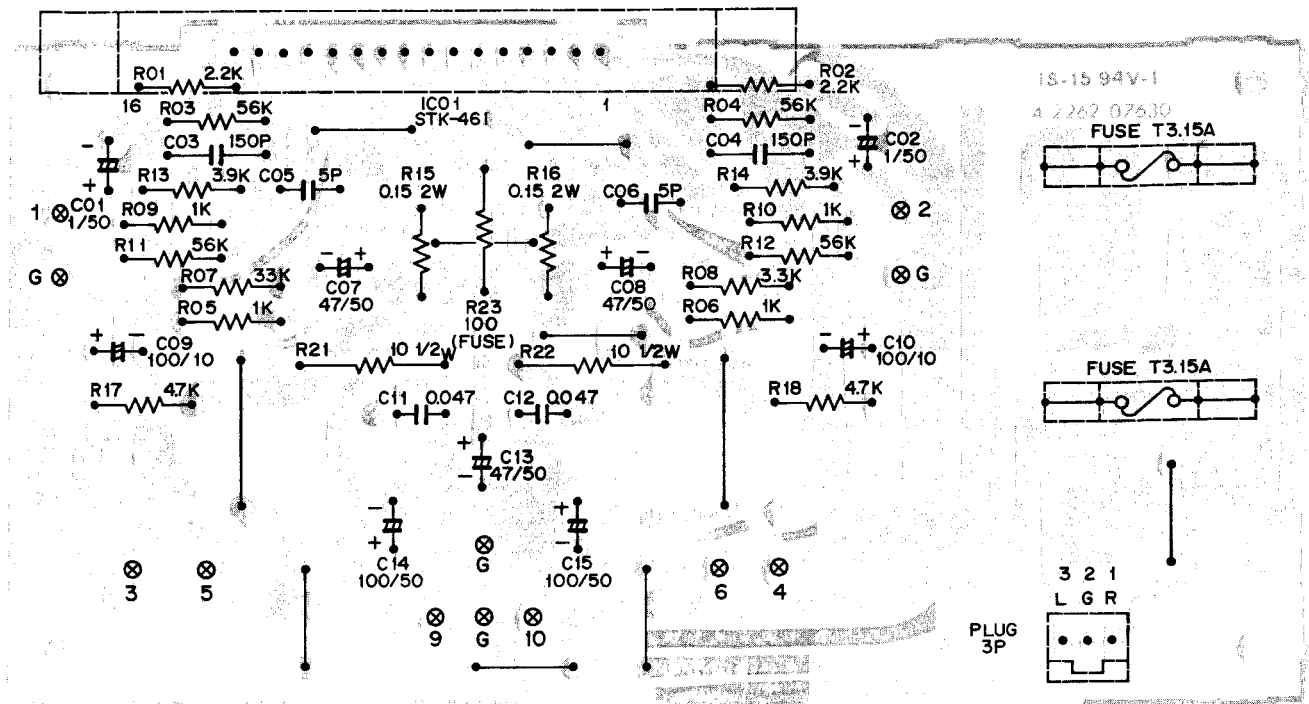
FUSE P.C.BOARD (BOTTOM VIEW)



VOLUME P.C.BOARD (BOTTOM VIEW)



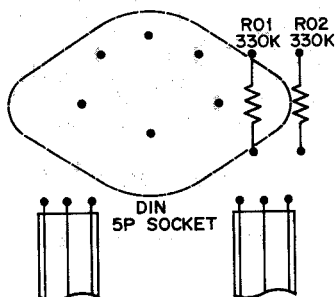
POWER AMP P.C.BOARD (BOTTOM VIEW)



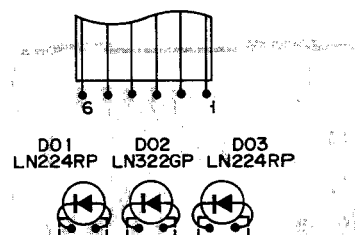
IC PIN NUMBERS VOLTAGES

SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC01	STK461	0V	0V	0V	1.3V	-32.3V	0V	0V	30.3V	32.0V	0V	0V	-32.3V	-1.3V	0V	0V	0V

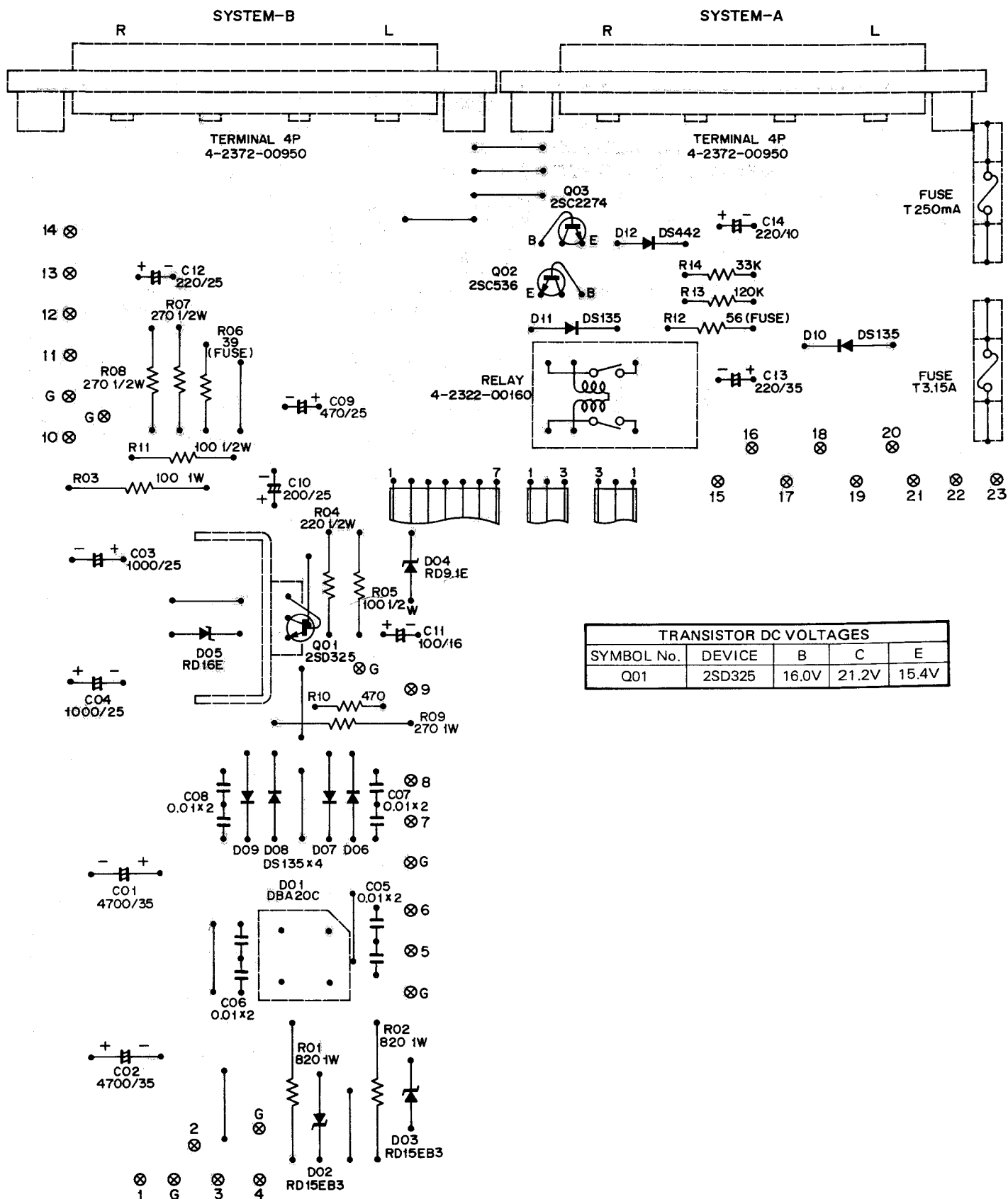
DIN P.C.BOARD (BOTTOM VIEW)



L.E.D. TUNING P.C.BOARD (BOTTOM VIEW)



POWER SUPPLY P.C.BOARD (BOTTOM VIEW)



PARTS LIST

RF IF MPX P.C.B. Assy
131 0 4001 06080

Ref. No.	Parts Number	Description
	4 2242 00100	Variable Capacitor
	4 2312 04870	Switch Push 7 key
	4 2329 20210	Relay Leed
	4 2359 23220	RCA 6P Jack
	4 2362 00370	Plug 6P
	4 2362 00530	Plug 9P
	4 2522 00070	AF Filter
	4 2522 00080	AF Filter
	4 2562 00040	IF Transformer AM
	4 2569 21320	IF Transformer FM
	4 2569 21360	IF Transformer FM
	4 2579 21180	Antenna Coil FM
	4 2589 20851	OSC Coil AM
	4 2589 20860	OSC Coil
	4 2589 20910	OSC Coil FM
	4 2599 20460	RF Coil FM
131	2 6103 16400	Cover Shield
CF01,02	4 2272 00020	Ceramic Filter
03		
CF04	4 2272 00030	Ceramic Filter
L01	4 2539 20420	Choke Coil 2.2 μ H
L02	4 2539 20120	IF Trap
L03	4 2532 00030	Choke Coil 18 μ H
L04	4 2539 20410	Choke Coil 470 μ H
L05	4 2552 00140	AF Coil
TC01	4 2249 20310	Variable Capacitor (10P)
TC02	4 2249 20440	Trimmer Capacitor (20P)
TC03	4 2249 20310	Variable Capacitor (10P)
TC04	4 2249 20440	Trimmer Capacitor (20P)
VR01	4 2222 00960	VR 100k-B
VR02	4 2222 01010	VR 50k-B
VR04	4 2222 01000	VR 5k-B
VR05	4 2222 00990	VR 1k-B
VR06	4 2222 00960	VR 100k-B
VR07,08	4 2222 01650	VR 100k-Cx2 (Bass, Treble)

CAPACITORS

C01	C1HCYK150APA	Ceramic	15 pF	50V	$\pm 10\%$
C02,03	C1HYYZ223APA	Ceramic	0.022 μ F	50V	+80,—20%
C04	C1HCDJ150SL	Ceramic	15 pF	50V	$\pm 5\%$
C05	C1HCYD100APA	Ceramic	10 pF	50V	$\pm 0.5\%$
C06	C1HYYZ223APA	Ceramic	0.022 μ F	50V	+80,—20%
C07	C1HCYK101APA	Ceramic	100 pF	50V	$\pm 10\%$
C08	C1HCYC030APA	Ceramic	3 pF	50V	$\pm 0.25\%$
C09	C1HCDK240PH	Ceramic	24 pF	50V	$\pm 10\%$
C10	C1HCDD070CH	Ceramic	7 pF	50V	$\pm 0.5\%$
C11	C1HCDK330CH	Ceramic	33 pF	50V	$\pm 10\%$
C12	C1HCDD100CH	Ceramic	10 pF	50V	$\pm 0.5\%$
C13	C1HYYZ223APA	Ceramic	0.022 μ F	50V	+80,—20%
C14,15	C1HYYZ473APA	Ceramic	0.047 μ F	50V	+80,—20%
16,17,18,19					
C20	C1HYYZ223APA	Ceramic	0.022 μ F	50V	+80,—20%
C21,22	C1HRY-105APA	Electrolytic	1 μ F	50V	
C23	C1HYYZ223APA	Ceramic	0.022 μ F	50V	+80,—20%
C24	C1HYYZ473APA	Ceramic	0.047 μ F	50V	+80,—20%
C25	C1CRY-476APA	Electrolytic	47 μ F	16V	
C26	C1HYYZ473APA	Ceramic	0.047 μ F	50V	+80,—20%
C27	C1HCDK331SL	Ceramic	330 pF	50V	$\pm 10\%$
C28	C1HRY-474APA	Electrolytic	0.47 μ F	50V	
C29	C1ERY-475APA	Electrolytic	4.7 μ F	25V	

Ref. No.	Parts Number	Description
	CAPACITORS	
C30	C1HYYZ473APA	Ceramic 0.047 μ F 50V +80,—20%
C31	C1HRY-105APA	Electrolytic 1 μ F 50V
C32	C1CRY-107APA	Electrolytic 100 μ F 16V
C33	C1CUEX474A	Sint. Alu. 0.47 μ F 16V +40,—20%
C34	C1CUEX224A	Sint. Alu. 0.22 μ F 16V +40,—20%
C35	C1CUEX474A	Sint. Alu. 0.47 μ F 16V +40,—20%
C36	C1ERY-475APA	Electrolytic 4.7 μ F 25V
C37	C1HFKYK473APA	Mylar 0.047 μ F 50V $\pm 10\%$
C38	C1HSEJ152A	Styrol 1500 pF 50V $\pm 5\%$
C39,40	C1HFKYK103APA	Mylar 0.01 μ F 50V $\pm 10\%$
C41,42	C1HRY-474APA	Electrolytic 0.47 μ F 50V
C49,50	C1HRY-225LPA	Electrolytic 2.2 μ F 50V
C51,52	C1HFKYK332APA	Mylar 0.0033 μ F 50V $\pm 10\%$
C53	C1CRY-107APA	Electrolytic 100 μ F 16V
C54,55	C1HYYZ473APA	Ceramic 0.047 μ F 50V +80,—20%
C56	C1CRY-107APA	Electrolytic 100 μ F 16V
C57	C1HCYK331APA	Ceramic 330 pF 50V $\pm 10\%$
C58	C1HYYZ102APA	Ceramic 0.001 μ F 50V +80,—20%
C59,60	C1HFKYK103APA	Mylar 0.01 μ F 50V $\pm 10\%$
C61	C1HYYZ102APA	Ceramic 0.001 μ F 50V +80,—20%
C62	C1HCYK470APA	Ceramic 47 pF 50V $\pm 10\%$
C63	C1HFKYK103APA	Mylar 0.01 μ F 50V $\pm 10\%$
C64	C1HYYZ473APA	Ceramic 0.047 μ F 50V +80,—20%
C65	C1ERY-106APA	Electrolytic 10 μ F 25V
C66	C1HFKYK103APA	Mylar 0.01 μ F 50V $\pm 10\%$
C67	C1HYYZ473APA	Ceramic 0.047 μ F 50V +80,—20%
C68	C1HRY-105APA	Electrolytic 1 μ F 50V
C69	C1ERY-475APA	Electrolytic 4.7 μ F 25V
C70	C1HFKYK183APA	Mylar 0.018 μ F 50V $\pm 10\%$
C71	C1HFKYK683APA	Mylar 0.068 μ F 50V $\pm 10\%$
C72	C1CRY-107APA	Electrolytic 100 μ F 16V
C73	C1HRY-105APA	Electrolytic 1 μ F 50V
C74	C1HFKYK333APA	Mylar 0.033 μ F 50V $\pm 10\%$
C75	C1HSEJ341A	Styrol 340 pF 50V $\pm 5\%$
C76	C1HCYC050APA	Ceramic 5 pF 50V $\pm 0.25\%$
C77	C1HSEJ151A	Styrol 150 pF 50V $\pm 5\%$
C78	C1HCYK560APA	Ceramic 56 pF 50V $\pm 10\%$
C79	C1HCYK220APA	Ceramic 22 pF 50V $\pm 10\%$
C80	C1HFKYK103APA	Mylar 0.01 μ F 50V $\pm 10\%$
C81	C1HFKYK183APA	Mylar 0.018 μ F 50V $\pm 10\%$
C82	C1ERY-106APA	Electrolytic 10 μ F 25V
C83,84	C1HFRK563A	Mylar 0.056 μ F 50V $\pm 10\%$
C85,86	C1HCYK471APA	Ceramic 470 pF 50V $\pm 10\%$
C87,88	C1HCZK271BPA	Ceramic 270 pF 50V $\pm 10\%$
C89,90	C1CRY-106LPA	Electrolytic 10 μ F 16V
C91,92	C1ARY-107APA	Electrolytic 100 μ F 10V
C93,94	C1HFKYK123APA	Mylar 0.012 μ F 50V $\pm 10\%$
C95,96	C1HFKYK472APA	Mylar 0.0047 μ F 50V $\pm 10\%$
C97,98	C1HRY-105APA	Electrolytic 1 μ F 50V
C99	4 2232 00430	Ceramic 0.01 μ F x 2 250V
C100,101	C1CRY-106APA	Electrolytic 10 μ F 16V
102,103		
C104,105	C1HFKYK273APA	Mylar 0.027 μ F 50V $\pm 10\%$
C106,107	C1HFRJ224ML	Mylar 0.22 μ F 50V $\pm 5\%$
C108,109	C1HFKYK222APA	Mylar 0.0022 μ F 50V $\pm 10\%$
C110,111	C1HFKYK333APA	Mylar 0.033 μ F 50V $\pm 10\%$
C113,114	C1HRY-106APA	Electrolytic 10 μ F 50V
C115	C1HYYZ473APA	Ceramic 0.047 μ F 50V +80,—20%

PARTS LIST (Continued)

Ref. No. Parts Number Description

SEMICONDUCTORS

D01,02 205 5 9040 44210 Diode, DS-442
03,04
05,06
D07 DNN-RD9R1EB Diode, RD9.1EB
IC01 206 5 0161 23151 IC, LA1231NS
IC02 206 5 0743 35012 IC, LA3350B
IC03 206 5 0171 24010 IC, LA1240
IC04,05 1JJ-NJM4558DX IC, NJM4558D
Q01 TNN-2SK49--F2 TR 2SK49 F2, H
Q02 TTK-2SC535--B TR 2SC535 B, C
Q03,04 203 5 5500 93040 TR 2SC930 D, E
Q06,07 203 5 5251 57160 TR 2SC1571 F, G
Q08 203 5 6510 04160 TR 2SK41 F
Q09 203 5 5000 53660 TR 2SC536 F, G
Q11 203 5 5251 57180 TR 2SC1571 H
Q12 203 5 5000 53660 TR 2SC536 F, G
Q13 203 5 7230 60860 TR 2SA608 F, G
Q14 203 5 7252 27460 TR 2SC2274 F, G
Q15,16 203 5 5000 53660 TR 2SC536 F, G
17,18

RESISTORS

R01 R2EDZJ680APA Carbon 68 1/4W ±5%
R02 R2HXB101A Oxide Metal Film 100 1/2W ±5%
R03 R2EDZJ472APA Carbon 4.7k 1/4W ±5%
R04 R2EDZJ223APA Carbon 22k 1/4W ±5%
R05 R2EDZJ102APA Carbon 1k 1/4W ±5%
R07 R2EDUJ4R7A Carbon 4.7 1/4W ±5%
R08 R2EDUJ103A Carbon 10k 1/4W ±5%
R09 R2EDUJ222A Carbon 2.2k 1/4W ±5%
R10 R2EDUJ103A Carbon 10k 1/4W ±5%
R11 R2EDZJ122APA Carbon 1.2k 1/4W ±5%
R12 R2EDZJ100APA Carbon 10 1/4W ±5%
R13 R2HXB101A Oxide Metal Film 100 1/2W ±5%
R14 R2EDZJ391APA Carbon 390 1/4W ±5%
R15 R2EDZJ222APA Carbon 2.2k 1/4W ±5%
R16 R2EDZJ471APA Carbon 470 1/4W ±5%
R17 R2EDZJ122APA Carbon 1.2k 1/4W ±5%
R18 R2EDZJ331APA Carbon 330 1/4W ±5%
R19 R2EDZJ104APA Carbon 100k 1/4W ±5%
R20 R2EDZJ222APA Carbon 2.2k 1/4W ±5%
R21 R2EDZJ474APA Carbon 470k 1/4W ±5%
R22 R2EDZJ223APA Carbon 22k 1/4W ±5%
R23 R2EDZJ103APA Carbon 10k 1/4W ±5%
R25 R2EDZJ562APA Carbon 5.6k 1/4W ±5%
R26 R2EDZJ222APA Carbon 2.2k 1/4W ±5%
R27 R2EDZJ822APA Carbon 8.2k 1/4W ±5%
R29 R2EDZJ274APA Carbon 270k 1/4W ±5%
R30 R2EDZJ563APA Carbon 56k 1/4W ±5%
R31 R2EDZJ103APA Carbon 10k 1/4W ±5%
R32 R2EDZJ473APA Carbon 47k 1/4W ±5%
R33 R2EDZJ222APA Carbon 2.2k 1/4W ±5%
R34 R2HXB1220A Oxide Metal Film 22 1/2W ±5%
R37 R2EDZJ332APA Carbon 3.3k 1/4W ±5%
R38 R2EDZJ822APA Carbon 8.2k 1/4W ±5%
R39 R2EDZJ222APA Carbon 2.2k 1/4W ±5%
R40 R2HXB1680A Oxide Metal Film 68 1/2W ±5%
R41,42 R2EDZJ562APA Carbon 5.6k 1/4W ±5%
R43,44 R2EDZJ274APA Carbon 270k 1/4W ±5%

Ref. No. Parts Number Description

RESISTORS

R45,46 R2EDZJ473APA Carbon 47k 1/4W ±5%
R47,48 R2EDZJ102APA Carbon 1k 1/4W ±5%
R51,52 R2EDZJ332APA Carbon 3.3k 1/4W ±5%
R53,54 R2EDZJ561APA Carbon 560 1/4W ±5%
R55,56 R2EDZJ332APA Carbon 3.3k 1/4W ±5%
R57,58 R2EDZJ102APA Carbon 1k 1/4W ±5%
R59 R2EDZJ101APA Carbon 100 1/4W ±5%
R60 R2EDZJ155APA Carbon 1.5M 1/4W ±5%
R61 R2EDZJ824APA Carbon 820k 1/4W ±5%
R62 R2EDZJ472APA Carbon 4.7k 1/4W ±5%
R63 R2HXB1680A Oxide Metal Film 68 1/2W ±5%
R64 R2EDZJ102APA Carbon 1k 1/4W ±5%
R65 R2EDZJ331APA Carbon 330 1/4W ±5%
R66 R2EDZJ222APA Carbon 2.2k 1/4W ±5%
R67 R2EDZJ152APA Carbon 1.5k 1/4W ±5%
R68 R2EDZJ153APA Carbon 15k 1/4W ±5%
R69 R2HXB101A Oxide Metal Film 100 1/2W ±5%
R70 R2EDZJ222APA Carbon 2.2k 1/4W ±5%
R71,72 R2EDZJ103APA Carbon 10k 1/4W ±5%
R73 R2EDZJ272APA Carbon 2.7k 1/4W ±5%
R74 R2EDZJ154APA Carbon 150k 1/4W ±5%
R75 R2EDZJ563APA Carbon 56k 1/4W ±5%
R76 R2EDZJ332APA Carbon 3.3k 1/4W ±5%
R77 R2EDZJ122APA Carbon 1.2k 1/4W ±5%
R78 R2EDZJ104APA Carbon 100k 1/4W ±5%
R79 R2EDZJ102APA Carbon 1k 1/4W ±5%
R80 R2HXB101A Oxide Metal Film 100 1/2W ±5%
R81 R2EDZJ561APA Carbon 560 1/4W ±5%
R82 R2EDZJ103APA Carbon 10k 1/4W ±5%
R83 R2EDZJ471APA Carbon 470 1/4W ±5%
R84 R2EDZJ103APA Carbon 10k 1/4W ±5%
R85 R2EDZJ391APA Carbon 390 1/4W ±5%
R86 R2EDZJ103APA Carbon 10k 1/4W ±5%
R87 R2EDZJ331APA Carbon 330 1/4W ±5%
R88 R2EDZJ103APA Carbon 10k 1/4W ±5%
R89 R2EDZJ271APA Carbon 270 1/4W ±5%
R90 R2EDZJ103APA Carbon 10k 1/4W ±5%
R91 R2EDZJ474APA Carbon 470k 1/4W ±5%
R92 R2EDZJ473APA Carbon 47k 1/4W ±5%
R93 R2EDZJ472APA Carbon 4.7k 1/4W ±5%
R94 R2EDZJ474APA Carbon 470k 1/4W ±5%
R95,96 R2EDZJ331APA Carbon 330 1/4W ±5%
R97 R2EDZJ473APA Carbon 47k 1/4W ±5%
R98 R2EDZJ154APA Carbon 150k 1/4W ±5%
R99 R2EDZJ103APA Carbon 10k 1/4W ±5%
R100 R2EDZJ184APA Carbon 180k 1/4W ±5%
R101 R2EDZJ394APA Carbon 390k 1/4W ±5%
R102 R2EDZJ102APA Carbon 1k 1/4W ±5%
R103,104 R2EDZJ103APA Carbon 10k 1/4W ±5%
R105,106 R2EDZJ821APA Carbon 820 1/4W ±5%
R107 R2EDZJ103APA Carbon 10k 1/4W ±5%
R108,109 R2EDZJ822APA Carbon 8.2k 1/4W ±5%
R110,111 R2EDZJ392APA Carbon 3.9k 1/4W ±5%
R112,113 R2EDZJ271APA Carbon 270 1/4W ±5%
R114,115 R2EDZJ473APA Carbon 47k 1/4W ±5%
R116,117 R2EDZJ331APA Carbon 330 1/4W ±5%
R118,119 R2EDZJ224APA Carbon 220k 1/4W ±5%
R120,121 R2EDZJ153APA Carbon 15k 1/4W ±5%

PARTS LIST (Continued)

Ref. No. Parts Number Description

RESISTORS

R122,123	R2EDUJ104A	Carbon	100k	1/4W	±5%
R124,125	R2EDZJ103APA	Carbon	10k	1/4W	±5%
R126,127	R2EDZJ823APA	Carbon	82k	1/4W	±5%
R128,129	R2EDZJ182APA	Carbon	1.8k	1/4W	±5%
R130,131	R2EDZJ561APA	Carbon	560	1/4W	±5%
R132,133	R2EDZJ122APA	Carbon	1.2k	1/4W	±5%

VOLUME P.C.B. Assy 131 0 4001 06090

Ref. No. Parts Number Description

4	2222 01630	VR 100k-Bx2 (Volume)
4	2222 01670	VR 200k-Wx1 (Balance)

MUTING P.C.B. Assy 131 0 4001 06100

Ref. No. Parts Number Description

4	2352 00810	Socket 9P
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CAPACITORS

C01,02 03	C1ERY-106APA	Electrolytic	10 μ F	25V
C04	C1ERY-476APA	Electrolytic	47 μ F	25V
C05	C1HYYZ473APA	Ceramic	0.047 μ F	50V +80,-20%

SEMICONDUCTORS

D01,02 03,04 05,06	205 5 9040 44210	Diode, DS-442
D07	DNN-RD5R6EB	Diode, RD5.6EB
Q01,02 03,04	203 5 5000 53660	TR 2SC536F, G

RESISTORS

R01	R2EDZJ102APA	Carbon	1k	1/4W	±5%
R02	R2EDZJ273APA	Carbon	27k	1/4W	±5%
R03	R2EDZJ561APA	Carbon	560	1/4W	±5%
R04	R2EDZJ473APA	Carbon	47k	1/4W	±5%
R05	R2EDZJ103APA	Carbon	10k	1/4W	±5%
R06,07	R2EDZJ102APA	Carbon	1k	1/4W	±5%

ANTENNA P.C.B. Assy 131 0 4001 06120

Ref. No. Parts Number Description

4	2372 00770	SP Terminal 4P
4	2599 20300	Balun

CAPACITORS

C01,02 03	C1HYYZ473APA	Ceramic	0.047 μ F	50V +80,-20%
C04	C1HCYK470APA	Ceramic	47 pF	50V ±10%

Ref. No. Parts Number Description

SEMICONDUCTORS

Q01	203 5 6510 04160	TR 2SK41F
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RESISTORS

R01	R2HCPK222A	Solid	2.2k	1/2W	±10%
R02	R2EDZJ103APA	Carbon	10k	1/4W	±5%
R03	R2EDZJ155APA	Carbon	1.5M	1/4W	±5%
R04	R2EDZJ824APA	Carbon	820k	1/4W	±5%
R05	R2EDZJ472APA	Carbon	4.7k	1/4W	±5%
R06	R2EDUJ222A	Carbon	2.2k	1/4W	±5%
R07	R2EDUJ682A	Carbon	6.8k	1/4W	±5%

DIN P.C.B. Assy 131 0 4001 06130

Ref. No. Parts Number Description

4	2352 00370	DIN 5P
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RESISTORS

R01,02	R2EDZJ334APA	Carbon	330k	1/4W	±5%
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L.E.D. SIGNAL P.C.B. Assy 131 0 4001 06140

Ref. No. Parts Number Description

SEMICONDUCTORS

D01,02 03,04,05	DWW-LN324GP	Diode, LN324GP
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L.E.D. TUNING P.C.B. Assy 131 0 4001 06150

Ref. No. Parts Number Description

SEMICONDUCTORS

D01	DWW-LN224RP	Diode, LN224RP
D02	DWW-LN322GP	Diode, LN322GP
D03	DWW-LN224RP	Diode, LN224RP

POWER AMP P.C.B. Assy 131 0 4001 06160

Ref. No. Parts Number Description

4	2349 20580	Fuse 3.15 A
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CAPACITORS

C01,02	C1HRY-105APA	Electrolytic	1 μ F	50V
C03,04	C1HCZK151BPA	Ceramic	150 pF	50V ±10%
C05,06	C1HCDC050SL	Ceramic	5 pF	50V ±0.25%
C07,08	C1HRY-476APA	Electrolytic	47 μ F	50V
C09,10	C1ARY-107APA	Electrolytic	100 μ F	10V
C11,12	C1HFKYK473APA	Mylar	0.047 μ F	50V ±10%
C13	C1HRY-476APA	Electrolytic	47 μ F	50V
C14,15	C1HRE-107A	Electrolytic	100 μ F	50V

PARTS LIST (Continued)

Ref. No. Parts Number Description

SEMICONDUCTORS

IC01 206 5 7340 46170 IC, STK-461SA

RESISTORS

R01,02	R2EDZJ222APA	Carbon	2.2k	1/4W	±5%
R03,04	R2EDZJ563APA	Carbon	56k	1/4W	±5%
R05,06	R2EDZJ102APA	Carbon	1k	1/4W	±5%
R07,08	R2EDZJ332APA	Carbon	3.3k	1/4W	±5%
R09,10	R2EDZJ102APA	Carbon	1k	1/4W	±5%
R11,12	R2EDZJ563APA	Carbon	56k	1/4W	±5%
R13,14	R2EDZJ392APA	Carbon	3.9k	1/4W	±5%
R15,16	4 2212 00140	Metallized Paper	0.15	2W	
R17,18	R2EDZJ472APA	Carbon	4.7k	1/4W	±5%
R21,22	R2HXB100A	Oxide Metal Film	10	1/2W	±5%
R23	R2HZK101A	Fuse	100	1/2W	±10%

POWER SUPPLY P.C.B. Assy

131 0 4001 06170

Ref. No. Parts Number Description

4 2322 00160 Relay
4 2349 20580 Fuse 3.15 A
4 2349 21320 Fuse 250 mA
4 2372 00950 Terminal 4P

CAPACITORS

C01,02	4 2232 00480	Electrolytic	4700 μ F	35V
C03,04	C1ERE-108A	Electrolytic	1000 μ F	25V
C05,06	4 2232 00430	Ceramic	0.01 μ Fx2	250V
07,08				
C09	C1ERE-477A	Electrolytic	470 μ F	25V
C10	C1ERE-227A	Electrolytic	200 μ F	25V
C11	C1CRY-107APA	Electrolytic	100 μ F	16V
C12	C1ERE-227A	Electrolytic	220 μ F	25V
C13	C1VRE-227A	Electrolytic	220 μ F	35V
C14	C1ARY-227APA	Electrolytic	220 μ F	10V

SEMICONDUCTORS

D01	202 5 2570 02015	Diode, DBA	20C-K15
D02,03	DNN-RD15EB3	Diode, RD15EB3	
D04	DNN-RD9R1EB	Diode, RD9.1EB	
D05	DNN-RD16EB	Diode, RD16EB	
D06,07	202 5 2470 13540	Diode, DS135D	
08,09			
10,11			
D12	205 5 9040 44210	Diode, DS-442	
Q01	203 5 8620 32550	TR 2SD325 E, F	
Q02	203 5 5000 53660	TR 2SC536 F, G	
Q03	203 5 7252 27450	TR 2SC2274 E, F	

RESISTORS

R01,02	R3AXB1821A	Oxide Metal Film	820	1W	±5%
R03	R3AXB101A	Oxide Metal Film	100	1W	±5%
R04	R2HXB1221A	Oxide Metal Film	220	1/2W	±5%
R05	R2HXB101A	Oxide Metal Film	100	1/2W	±5%
R06	R2HZPK390A	Fuse	39	1/2W	±10%

DCX 233L

Ref. No. Parts Number Description

RESISTORS

R07,08	R2HXB1271A	Oxide Metal Film	270	1/2W	±5%
09					
R10	R2EDZJ471APA	Carbon	470	1/4W	±5%
R11	R2HXB101A	Oxide Metal Film	100	1/2W	±5%
R12	R2HZPK560A	Fuse	56	1/2W	±10%
R13	R2EDZJ124APA	Carbon	120k	1/4W	±5%
R14	R2EDZJ333APA	Carbon	33k	1/4W	±5%

SPEAKER SELECTOR P.C.B. Assy

131 0 4001 06180

Ref. No. Parts Number Description

4 2312 03880 Switch Rotary
4 2352 00190 Microphone Jack 3P

RESISTORS

R01,02	R3AXB1331A	Oxide Metal Film	330	1W	±5%
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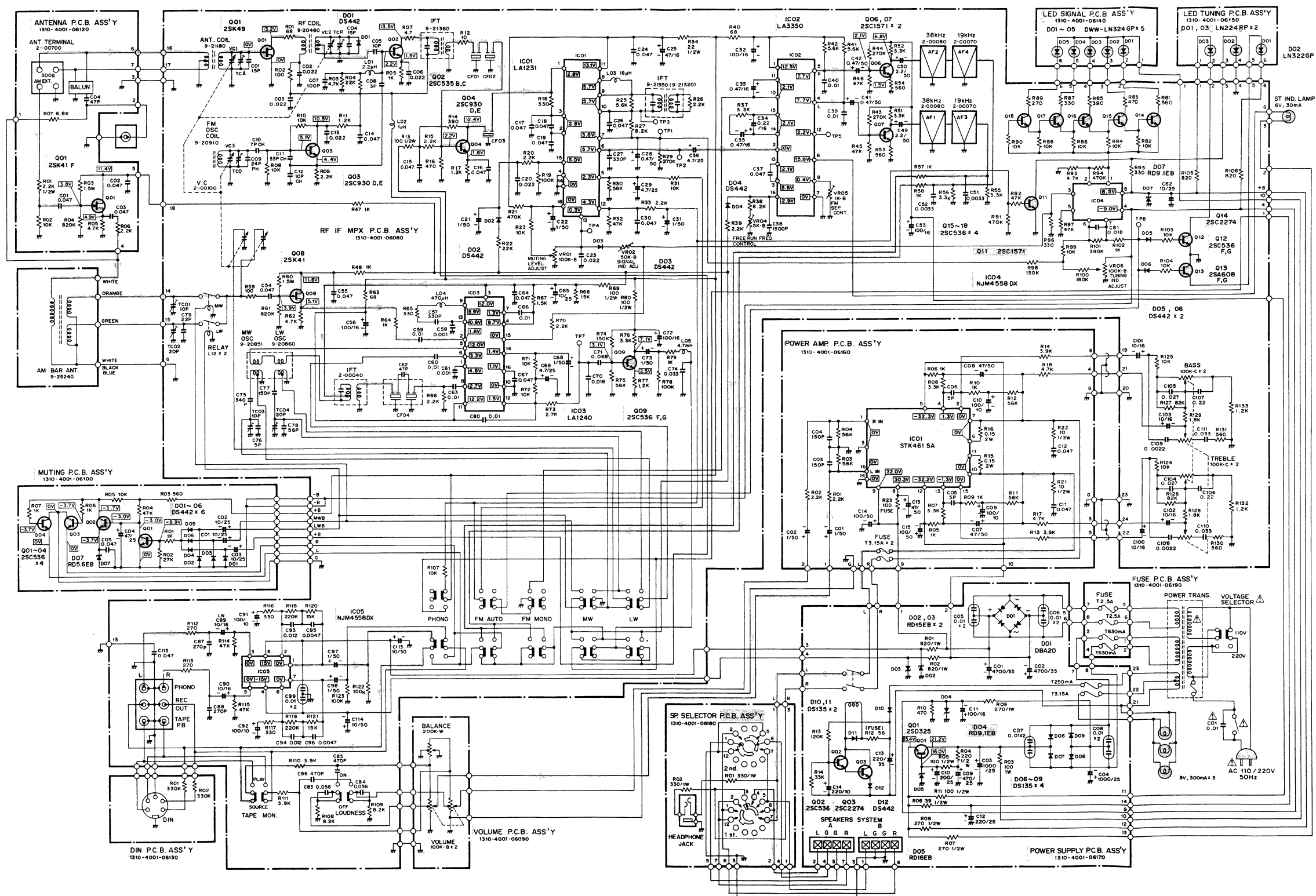
FUSE P.C.B. Assy

131 0 4001 06190

Ref. No. Parts Number Description

4 2349 20400 Fuse 630 mA
4 2349 20570 Fuse 2.5 AT

SCHEMATIC DIAGRAM



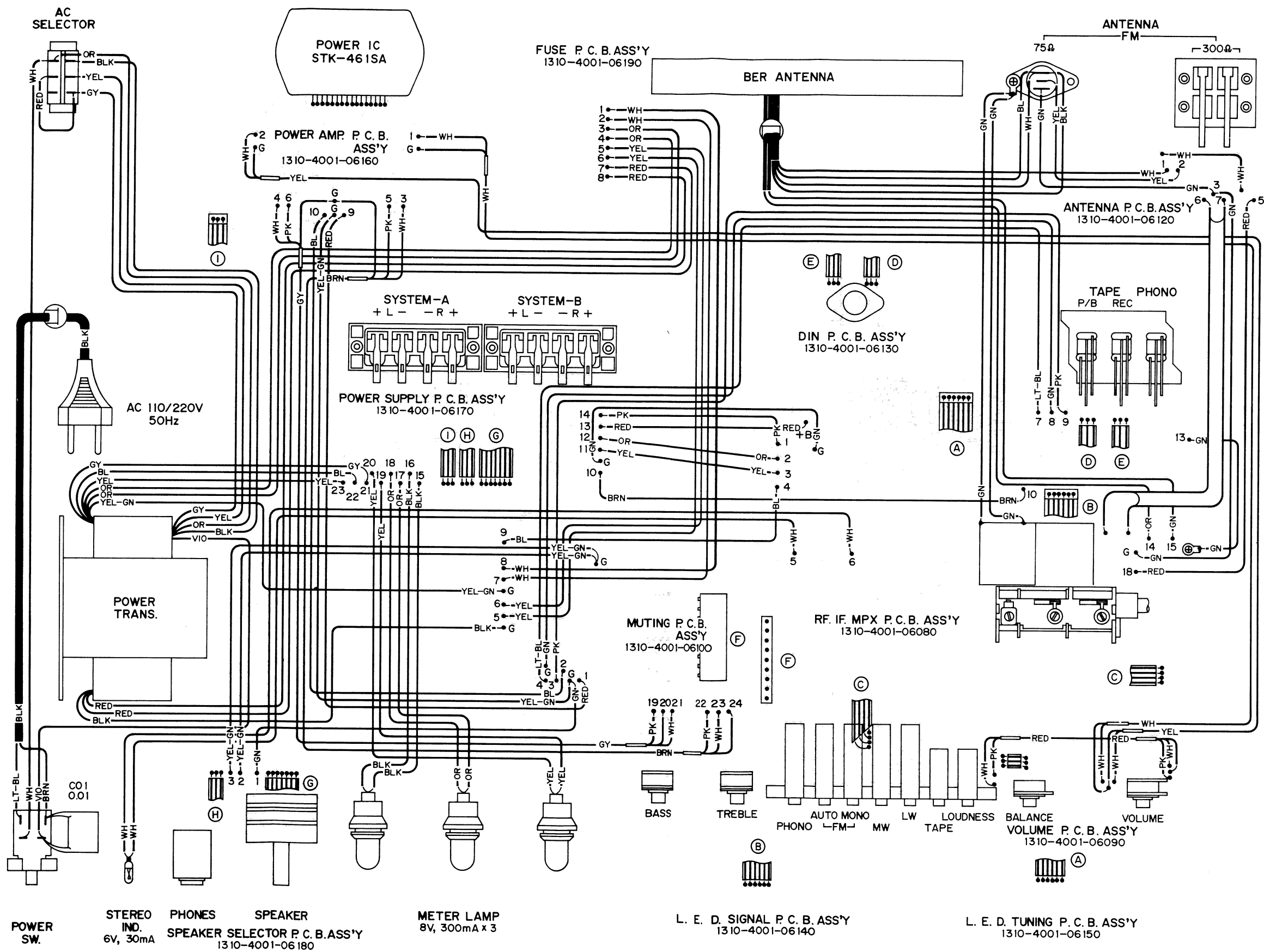
NOTES:

1. All resistors values are indicated in "ohm" ($K=10^3$, $M=10^6$).
2. All capacitors values are indicated in " μF " ($P=10^{-12}$).
3. All voltages indicated on the schematics are measured under the following conditions.
 - a. Use a V.T.V.M.
 - b. All voltages $\pm 10\%$ with respect chassis ground
 - c. No signals at input terminals
 - d. AC input at 220 volts 50 Hz
4. This is a fundamental schematics diagram. Some products may be modified without notice.

PRODUCT SAFETY NOTICE

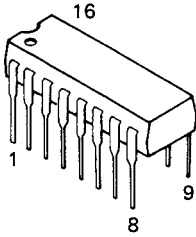
PRODUCT SAFETY SHOULD BE CONSIDERED WHEN A COMPONENT REPLACEMENT IS MADE IN ANY AREA OF AN UNIT. COMPONENTS INDICATED BY A MARK  IN THIS SCHEMATIC DIAGRAM SHOW COMPONENTS WHOSE VALUE HAS SPECIAL SIGNIFICANCE TO PRODUCT SAFETY. IT IS PARTICULARLY RECOMMENDED THAT ONLY PARTS SPECIFIED ON THE ATTACHED PARTS LIST BE USED FOR COMPONENT REPLACEMENT POINTED OUT BY THE MARK.

POINT TO POINT WIRING DIAGRAM

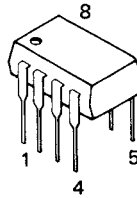


SEMICONDUCTOR LEAD IDENTIFICATION

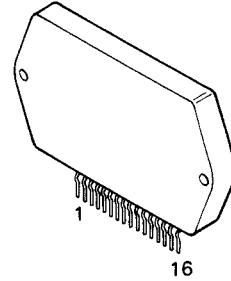
INTEGRATED CIRCUITS



- LA1231
- LA3350
- LA1240

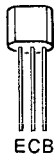


- NJM4558



- STK-461

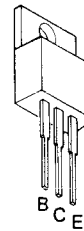
TRANSISTORS



- 2SA608
- 2SC535
- 2SC536
- 2SC930
- 2SC1571
- 2SC2274

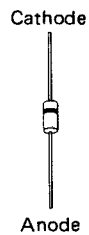


- 2SK41
- 2SK49

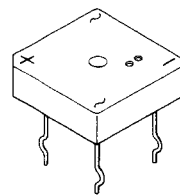


- 2SD325

DIODES



- DS135
- DS442
- RD5.6E
- RD9.1E
- RD15E
- RD16E



- DBA-20C