

SERVICE MANUAL



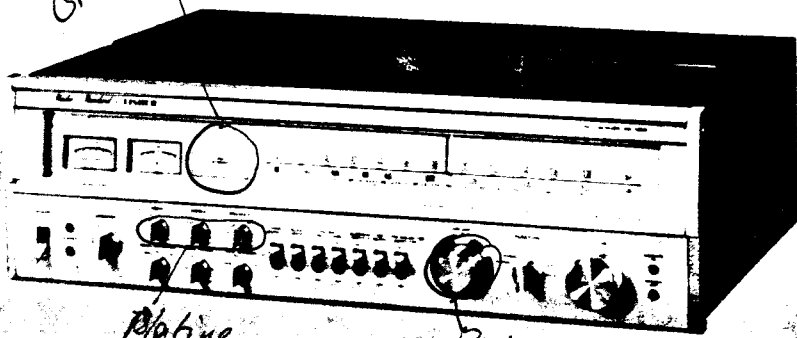
FISHER

RS-1060

RS-1080

Stereo Receivers

"Globe Borne" → FM Stereo
(EUROPE)



Platine

Regle

RS-1060



RS-1080

THE FIRST NAME IN HIGH FIDELITY

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Nominal Specifications For Information Only.

RECEIVERS		RS-1060	RS-1080
POWER AMPLIFIER SECTION Continuous RMS sine wave power per channel within stated bandwidth at no more than stated distortion and with an 8 ohm load.		125 W	170 W
Power Bandwidth		20 Hz/20 kHz	20 Hz/20 kHz
Total Harmonic Distortion		0.1 %	0.1 %
PREAMPLIFIER SECTION Input Sensitivity and Impedance At rated output, 8-ohms at 1 kHz			
Phono (1 and 2)		2 mV/50k ohm	2 mV/50k ohm
Phono (max input capability)		300 mV	300 mV
Auxiliary		150 mV/100k ohm	150 mV/100k ohm
Tape Monitor (1 and 2)		150 mV/100k ohm	150 mV/100k ohm
Hum & Noise (below rated output) Phono (1 and 2)		70 dB	70 dB
Auxiliary		82 dB	82 dB
Tape Monitor (1 and 2)		80 dB	80 dB
Frequency Response Phono (30 Hz – 15 kHz)		± 0.5 dB	± 0.5 dB
Auxiliary input 20 Hz – 20 kHz		± 0.5 dB	± 0.5 dB
Tape Monitor input 20 Hz – 20 kHz		± 0.5 dB	± 0.5 dB
Bass Control Range (at 100 Hz)		± 12 dB	± 12 dB
Treble Control Range (at 10 kHz)		± 12 dB	± 12 dB
Bass Selector (Bass Range: Max.)		45 Hz/OFF/80 Hz	45 Hz/OFF/80 Hz
Loudness Contour (at 30 dB volume attenuation)		+8 dB at 100 Hz	+8 dB at 100 Hz
		+3.5 dB at 10 kHz	+3.5 dB at 10 kHz
High Filter		-6 dB (5 kHz)	-6 dB (5 kHz)
Low Filter		-6 dB (30 Hz)	-6 dB (30 Hz)
Separation (Stereo from AUX)		50 dB	50 dB
POWER SECTION INPUT		150 mV/100k ohm	150 mV/100k ohm
FM TUNER SECTION			
Usable Sensitivity	Mono	1.7 μ V/9.8 dBf	1.7 mV/9.8 dBf
	Stereo	4.3 μ V/17.9 dBf	4.3 μ V/17.9 dBf
50 dB Quieting Sensitivity	Mono	2.5 μ V/13.2 dBf	2.5 μ V/13.2 dBf
	Stereo	34 μ V/35.8 dBf	34 μ V/35.8 dBf
Capture Ratio		0.8 dB	0.8 dB
Alt. Channel Selectivity		75 dB	75 dB
Image Response Ratio		100 dB	100 dB
Spurious Response Ratio		100 dB	100 dB
AM Suppression Ratio		65 dB	65 dB
Signal-to-Noise Ratio (Mono & Stereo)		80/75 dB	80/75 dB
Total Harm. Distortion (Mono & Stereo)		0.1/0.15 %	0.1/0.15 %
50 dB Quieting Sensitivity THD	Mono	0.3 %	0.3 %
	Stereo	0.4 %	0.4 %
Stereo Separation (1 kHz/10 kHz)		50/36 dB	50/36 dB
Sub-Carrier Product Ratio		70 dB	70 dB
AM TUNER SECTION			
Sensitivity		280 μ V/m	280 μ V/m
Selectivity (±10 kHz)		45 dB	45 dB
Signal-to-Noise Ratio		55 dB	55 dB
Image Response Ratio		70 dB	70 dB
IF Response Ratio		80 dB	80 dB
GENERAL			
Power Requirements (50 Hz)		AC 110/220V	AC 110/220V
Power Consumption		800 W/920 VA	1000 W/1200 VA
Dimensions H x W x D (inches)		7-3/8" x 23-3/4" x 16-15/16"	7-3/8" x 23-3/4" x 18-9/16"
Weight (lbs.)		54	65

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RECOMMENDED TEST EQUIPMENT

The following test equipment is recommended to completely test and align the Receiver.

- Line Voltage Isolation Transformer.
- AC DC Multimeter.
- Accurately Calibrated AC Voltmeter.
- Oscilloscope (Flat to 100 KHz Minimum)
- Low-Distortion Audio Sine-Wave Generator
- Harmonic Distortion Analyzer
- Two (2) Load Resistors, 8-ohms, 250 Watts (Minimum Rating)
- Low-Distortion AM-FM Signal Generator
- 10.7 MHz Sweep Generator
- Multiplex Generator
- 455 kHz Sweep Generator

HARMONIC DISTORTION TEST

CAUTION: Limit the following tests to no more than ten minutes each. Use 8-ohm resistors with a minimum power rating of 250 watts when connecting a load across the SPEAKERS terminals.

CONTROL SETTINGS:

Unplug the AC power cord and set the front panel controls as follows,

TONE controls and BALANCE controls to center positions
POWER switch to OFF
SPEAKERS switch to PHONES
FUNCTION switch to AUX
HIGH & LOW, FILTER, MONO MODE, LOUDNESS CON-
TOUR and TAPE MONITOR switch to OFF and SOURCE
VOLUME control to MINIMUM position
LEFT CHANNEL DRIVEN

ONE CHANNEL DRIVEN:

- 1) Connect a low distortion audio generator to LEFT AUX IN jack. Set generator frequency to 1 kHz and output to minimum.
- 2) Connect an 8-ohm load resistor between SPEAKERS MAIN LEFT and COM terminals. Connect a Harmonic Distortion analyzer and an AC VTVM in parallel across the 8-ohm load.
- 3) Connect the AC power cord and set SPEAKERS switch to MAIN. Turn VOLUME control to MAX.
- 4) Increase generator output for
RS-1060 125W RMS (31.6V across the 8-ohm load)
RS-1080 170W RMS (36.8V across the 8-ohm load)
Harmonic Distortion Analyzer should measure approxi-
mately 0.1% distortion.
- 5) Repeat steps 1 through 4 for RIGHT CHANNEL.

BOTH CHANNELS DRIVEN

Connect 8-ohm load resistors across LEFT and RIGHT MAIN SPEAKERS terminals. Push down "MONO" switch. Adjust generator output and "BALANCE" control for RS-1060: 125W/RS-1080: 170W at Left and Right Channels (RS-1060: 31.6V /RS-1080: 36.8V) across the 8-ohm loads. Harmonic Distortion Analyzer should measure approximately 0.1% distortion at each channel.

DISASSEMBLY INSTRUCTIONS

Removal of Chassis from Cabinet

1. Remove 6 screws from left and right sides of cabinet.
2. Separate cabinet from chassis.
3. Remove 18 screws from bottom of cabinet.
4. Remove 4 screws from Leg.
5. Separate bottom of cabinet from chassis.

Removal of Front Panel Assembly

1. With Allen wrench remove Tuning and Volume Knobs.
2. Remove all Knobs and Lever switches from panel.
3. Remove 2 screws from top of panel.
4. Remove 2 screws from bottom of panel.
5. Remove nut from "Function" and "Speaker" switches located on Front Panel Assembly.
6. Separate Front Panel Assembly from chassis.

Removal of Slide Rail Pointer

1. Remove Metal Slide Pointer from Slide Rail Pointer.
2. Remove 3 screws from top of Slide Rail Pointer.
3. Remove 2 screws from left and right sides of Slide Rail Pointer.

Removal of Meter

1. Remove One screw and Meter Cover.
2. Unsolder leads from meter terminals.
3. Grasp Meter firmly and pull back separating Meter from panel.

Removal of AM-FM Stereo Function Indicator Lamps

1. Grasp base of lamp with long-nosed Pliers and Carefully extract from grommet holder.
2. Unsolder AM-FM Indicator Lamp from P.C. Board.

Removal and Replacement of Dial Lamps

1. Remove 4 plastic screws from top of Dial P.C. Board.
2. Grasp Dial Lamp and extract from lamp grommet holder.

Removal of Front End from Chassis

1. Unsolder leads from Front End terminal.
2. Unscrew 2 screws from Drum. (Do Not Remove Dial String From Drum.)
3. Remove 4 screws from insides of Front End. (Do Not Remove 4 screws From Outsides Of Front End Case.)

Testing and troubleshooting any of the P.C. boards does not require removal since all component parts are top board mounted. For underneath board inspection purposes or when a defective component is to be unsoldered and replaced, the P.C. board can be sufficiently turned over by only removing the hold down hardware. Where it necessitates complete removal of any individual board then proceed as follows.

Removal of AM-FM RF/IF/MPX Amp P.C. Board

1. Unsolder wire wraps from terminals.
2. Remove 4 screws from P.C. Board.
3. Slide P.C. Board from plastic clip.

Removal of Multi Path and Dolby P.C. Board (RS-1080 Only)

1. Unsolder wire wraps from terminals.
2. Remove 4 hold down screws.

Removal of EQ-Amp P.C. Board

1. Unsolder wire wraps from terminals.
2. Remove 4 Hold down screws.
3. Grasp P.C. Board and extract from Shield Case. (Do Not Remove Shield Case From Chassis.)

Removal of Protector P.C. Board

1. Unsolder wire wraps from terminals.
2. Remove 4 hold down screws.

Removal of Volume Ind and Volume P.C. Board

1. With Allen wrench remove Volume Ind P.C. Board from Volume Shaft.
2. Remove One nut holding Volume P.C. Board.
3. Unsolder wire wraps from terminals.

Removal of Pre Amp P.C. Board

1. Remove 14 screws from 7 Lever Switches.
2. Unplug 2 connectors.
3. Unsolder wire wraps from terminals.

Removal of Tone Control Amp P.C. Board

1. Remove 3 hold down nuts from Tone Control P.C. Board.
2. Unplug 2 connectors.

Removal of Low Range P.C. Board

1. Remove 2 hold down nuts from Low Range P.C. Board.
2. Unplug One connector.

Removal of Power Supply P.C. Board.

1. Remove 2 screws releasing clip holding P.C. Board.
2. Grasp P.C. Board firmly and extract from plug. (Do Not Remove Plug From Chassis.)

Removal of Power Amp P.C. Board

- * Please refer to Exploded View on Page 8.

PARTS LIST

Ref.No.	Part Number	Description
ACCESSORIES PARTS LIST		
RS-1060	4 2349 20600	Fuse 5A Slow (Replacement Fuse)
	4 2349 29997	Fuse 10AT (Replacement Fuse)
RS-1080	4 2349 29996	Fuse 8AT (Replacement Fuse)
	4 2349 29998	Fuse 15AT (Replacement Fuse)
	4 2449 20230	Antenna FM
RS-1060	1316 4119 51205	Explanatory Booklet (English)
	1316 4119 51225	Explanatory Booklet (German)
RS-1080	1316 4119 51206	Explanatory Booklet (English)
	1316 4119 51226	Explanatory Booklet (German)
	1316 4159 26600	Notes (AC VOLT) (RS-1060)
	1316 4159 26601	Notes (AC VOLT) (RS-1080)

CABINET PARTS LIST

1	1310 1101 09000	Cabinet Assy (RS-1060)
1	1310 1101 09100	Cabinet Assy (RS-1080)
2 *	1312 1105 18200	Plate Bottom (RS-1060)
2 *	1312 1105 18300	Plate Bottom (RS-1080)
3	1312 1801 13800	Leg

APPEARANCE PARTS LIST

	1310 1001 35500	Knob, Function
5	1312 1601 41700	Knob, Tuning
6	1312 1601 41800	Knob, Volume
7	1310 1001 38000	Knob, Controls
8	1310 1001 36100	Knob, Lever Switch
9	1310 1016 23500	Dress Panel Assy (RS-1060)
9	1310 1016 23600	Dress Panel Assy (RS-1080)
10	1310 3011 16800	Dial Pointer Assy
*	1312 6308 16400	Filter
11	1312 1201 29000	Dial Plate (RS-1060)
11	1312 1201 29100	Dial Plate (RS-1080)

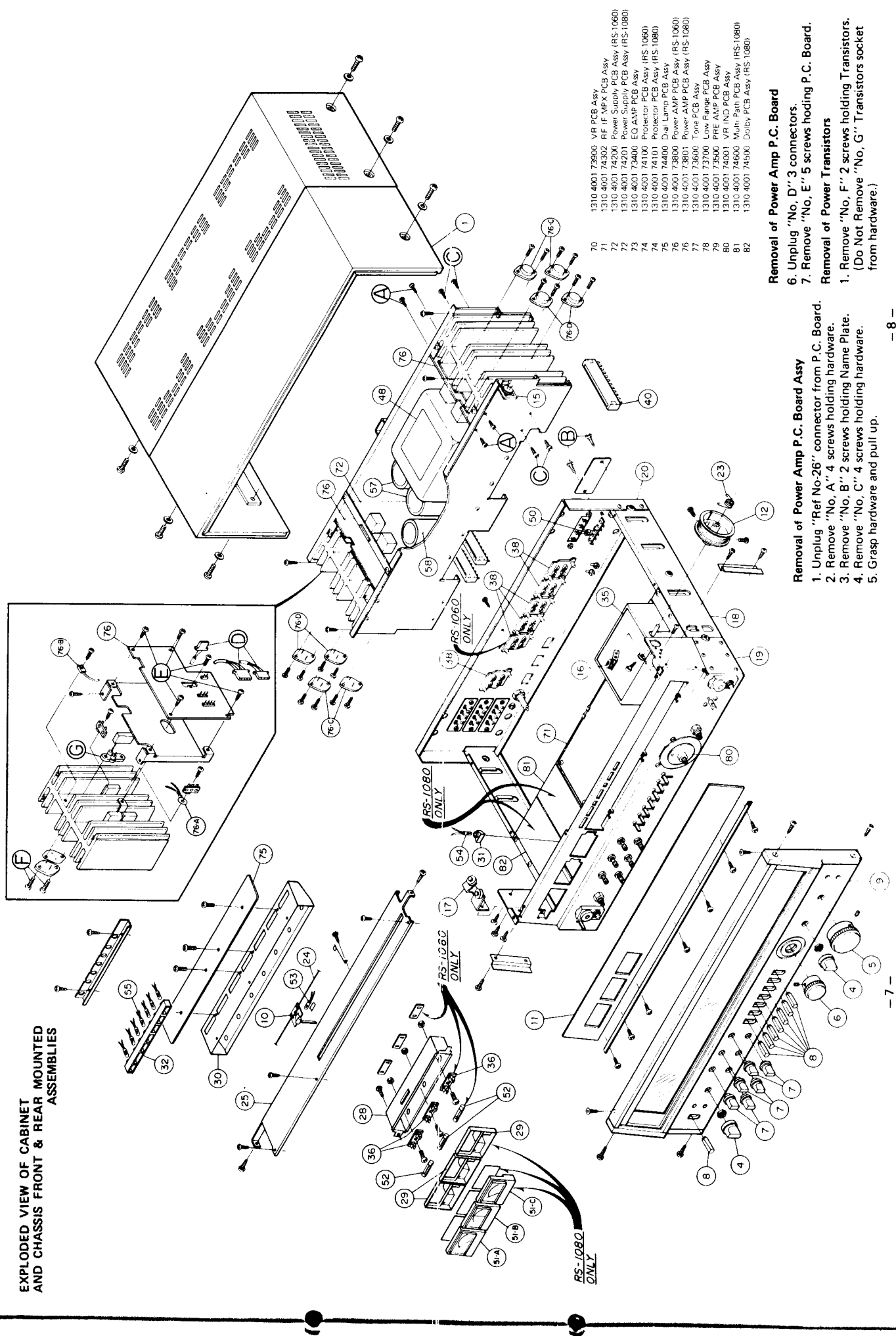
CHASSIS PARTS LIST

12	1310 3002 11100	Drum Assy, Tuning Gang
13	1310 3003 19600	Tuning Shaft Assy
14	1310 3008 11700	Support, Antenna Assy
15 *	1310 3020 05800	Pulley Assy Panel Rear
16 *	1310 3020 07800	Pulley Assy Right Front
17 *	1310 3020 07900	Pulley Assy Left Front
18 *	1312 3301 22200	Chassis
19 *	1312 3305 20900	Front Panel (RS-1060)
19 *	1312 3305 20901	Front Panel (RS-1080)
20 *	1312 3306 23002	Rear Panel (RS-1060)
20 *	1312 3306 23302	Rear Panel (RS-1080)
21	1312 3621 00400	Clamp, 75 ohm Coax.
22	1312 3621 00500	Base, Coax, Clamp
23	1312 4111 00400	Tension Spring
24 *	1312 4112 10200	Dial Cord
25 *	1312 4120 11500	Slide Rail Dial Pointer
26	1312 4121 00100	Coupling (Nylon)
27 *	1312 4201 12701	Screw, Panel Rear (FM ANT)
28 *	1312 6110 26100	Housing, Meter Lamp (RS-1060)
28 *	1312 6110 26600	Housing, Meter Lamp (RS-1080)
29 *	1312 6110 26200	Housing, Meter
30 *	1312 6110 26500	Housing, Dial Lamp P.C.B.
31 *	1312 6111 12100	Housing, Stereo Beacon Lamp
32 *	1312 6111 20200	Housing, IND Lamp (RS-1060)
32 *	1312 6111 20300	Housing, IND Lamp (RS-1080)
33 *	1312 6111 14801	Bushing, Line Cord
34 *	1312 6111 14200	Bushing, AM Antenna Lead

Ref.No.	Part Number	Description
ELECTRICAL PARTS LIST		
35	4-1259 20400	Front End (Component parts used in Front End are not serviceable and available.)
36	4 2359 20160	Holder Lamp
37	4 2312 00030	Switch, Voltage Selector
38	4 2359 22710	Rear Accessory Jack
39	4 2359 22730	Jack, Phones/Record Out
40	4 2359 23010	Connector 22P
41	4 2359 21820	Fuse Holder (Mini Type)
42	4 2359 23050	Fuse Holder 6P
43	4 2369 20561	Plug 1P
44	4 2369 21220	Short Plug
45	4 2379 21460	Terminal, Antenna Connector
46	4 2379 21400	Terminal, Speakers Connector
47 *	4 2439 20740	Line Cord
48	4 2519 23852	Power Trans (RS-1060)
48	4 2519 23892	Power Trans (RS-1080)
49	4 2579 25040	AM Antenna
50	4 2599 20300	Balun
51-A	4 5119 20670	Meter, Signal Strength
51-B	4 5119 20680	Meter, Center of Channel
51-C	4 5119 20710	Meter, FM Multipath (RS-1080)
52	4 6129 20280	Pilot Lamp 6.3V 250mA
53	4 6129 20592	Small Lamp Indicator 5V 60mA
54	4 6129 20740	Small Lamp Stereo Indicator
55	4 6129 20750	Small Lamp Dolby IND 6.3V 80mA
56	C2JNRM103C	Capacitor, Polypropilene 0.01 μ F 630V \pm 20 %
(C01)	4 2239 21050	Capacitor, Electrolytic 15000 μ F 75V (RS-1060)
57	4 2239 21080	Capacitor, Electrolytic 22000 μ F 80V (RS-1080)
57	4 2239 21060	Capacitor, Electrolytic 22000 μ Fx2 100V
58	4 2239 21060	Capacitor, Electrolytic 22000 μ Fx2 100V
(C02,03)	C05,06 C1HYDZ473A	Capacitor, Ceramic 0.047 μ F 50V +80, -20 %
59	C2HYDP103A	Capacitor, Ceramic 0.01 μ F 500V +100, -0 %
(C10,11 12,13)	C14,15 C1HYDZ473A	Capacitor, Ceramic 0.047 μ F 50 V +80, -20 %
C16	C1CUEX225A	Alsicon 2.2 μ F 16V +40,-20%
60 (D01)	D0D-S25VB40	Diode S25VB40
61 (F01,02, 03,04)	4 2349 21340	Fuse 10 A Slow Blow
62 (F05,06)	4 2349 21240	Fuse 2.5A Slow Blow 125V
63(F07)	4 2349 20600	Fuse 5A (220V) (RS-1060)
	4 2349 29997	Fuse 10AT (110V) (RS-1060)
63(F07)	4 2349 29996	Fuse 8AT (220V) (RS-1080)
	4 2349 29998	Fuse 15AT (110V) (RS-1080)
64	4 2319 34230	Switch Rotary Function
65	4 2319 34250	Switch Rotary Tape Monitor
66	4 2319 34330	Switch Rotary SP Selector
67	4 2319 34160	Switch Lever AC

NOTE: * Asterisk indicates not a service part.

**EXPLODED VIEW OF CABINET
AND CHASSIS FRONT & REAR MOUNTED
ASSEMBLIES**



- 1310 4001 73900 VR PCB Assy
- 1310 4001 74300 RF IF MIX PCB Assy
- 1310 4001 74300 Power Supply PCB Assy (RS 1060)
- 1310 4001 74301 Power Supply PCB Assy (RS 1080)
- 1310 4001 74302 Tone Amp PCB Assy
- 1310 4001 74100 Protector PCB Assy (RS 1060)
- 1310 4001 74101 Protector PCB Assy (RS 1080)
- 1310 4001 74400 Dial Lamp PCB Assy
- 1310 4001 73800 Power AMP PCB Assy (RS 1060)
- 1310 4001 73801 Power AMP PCB Assy (RS 1080)
- 1310 4001 73600 Tone PCB Assy
- 1310 4001 73700 Low Range PCB Assy
- 1310 4001 73500 PRE AMP PCB Assy
- 1310 4001 74001 VR IND PCB Assy
- 1310 4001 74600 Multi-Path PCB Assy (RS 1080)
- 1310 4001 74500 Dolby PCB Assy (RS 1080)

Removal of Power Amp P.C. Board

6. Unplug "No. D" 3 connectors.
7. Remove "No. E" 5 screws holding P.C. Board.

Removal of Power Transistors


1. Remove "No. F" 2 screws holding Transistors. (Do Not Remove "No. G" Transistors socket from hardware.)

Removal of Power Amp P.C. Board Assy

1. Unplug "Ref No.26" connector from P.C. Board.
2. Remove "No. A" 4 screws holding hardware.
3. Remove "No. B" 2 screws holding Name Plate.
4. Remove "No. C" 4 screws holding hardware.
5. Grasp hardware and pull up.



AM-FM MULTIPLEX ALIGNMENT

AM ALIGNMENT

Step	Adjusting circuit	Connection		SG frequency	Position of tuning dial	Adjustment	V.T.V.M. oscilloscope	
		Input	Output					
1	IF	Connect sweep generator to test point TP 7 through 0.01 μ F	Connect oscilloscope to test point TP 41	455 KHz	Near max. capacity of VC at position with no signal.	AM 1st 9-21310	 455 KHz	
2	RF	Connect standard loop antenna to loop antenna to output terminal of Signal Generator and V.T.V.M. to Records Output.	Connect Oscilloscope and V.T.V.M. to Records Output.	600 KHz (400 Hz, 30% modulation) 1400 KHz (400 Hz, 30% modulation)	600 KHz	AM ANT 9-25040 AM OSC 9-20880 AM RF 9-20440	Max.	
3				1400 KHz (400 Hz, 30% modulation)	1400 KHz	TC01 TC02 TC03	Max	
4	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 "AM".
5. Use a screwdriver with plastic grip for all adjustments.

FM ALIGNMENT

Step	Adjusting circuit	Connection		SSG frequency	Position of tuning dial	Adjustment	V.T.V.M. oscilloscope	
		Input	Output					
1	IF	Connect FM Signal Generator to FM ANT terminals. Set Generator RF Level to 65 dB μ .	Connect AC V.T.V.M. Distortion Analyzer and Oscilloscope to ANT terminals. Records Output.	98 MHz (none modulation)	Near max. capacity of VC at position with no signal.	IFT1 in FRONT END	 DC V.T.V.M. Center Meter	
2	Quadrature Detector	Connect DC V.T.V.M. to test point TP13 (+) and TP15 (-).	Connect DC V.T.V.M. to Records Output.	88 MHz (400 Hz, 30% modulation) 108 MHz (400 Hz, 30% modulation)	88 MHz	LO LA, IFT1 LR1, LR2, LR3.	 Max.	
3	RF	Connect FM Signal Generator to FM ANT terminals. Set Generator RF Level to 12 dB μ .	Connect V.T.V.M. to Records Output.		108 MHz	TC1, TC2, TC3, TC4	Max.	
4								
5	Repeat adjustments.							

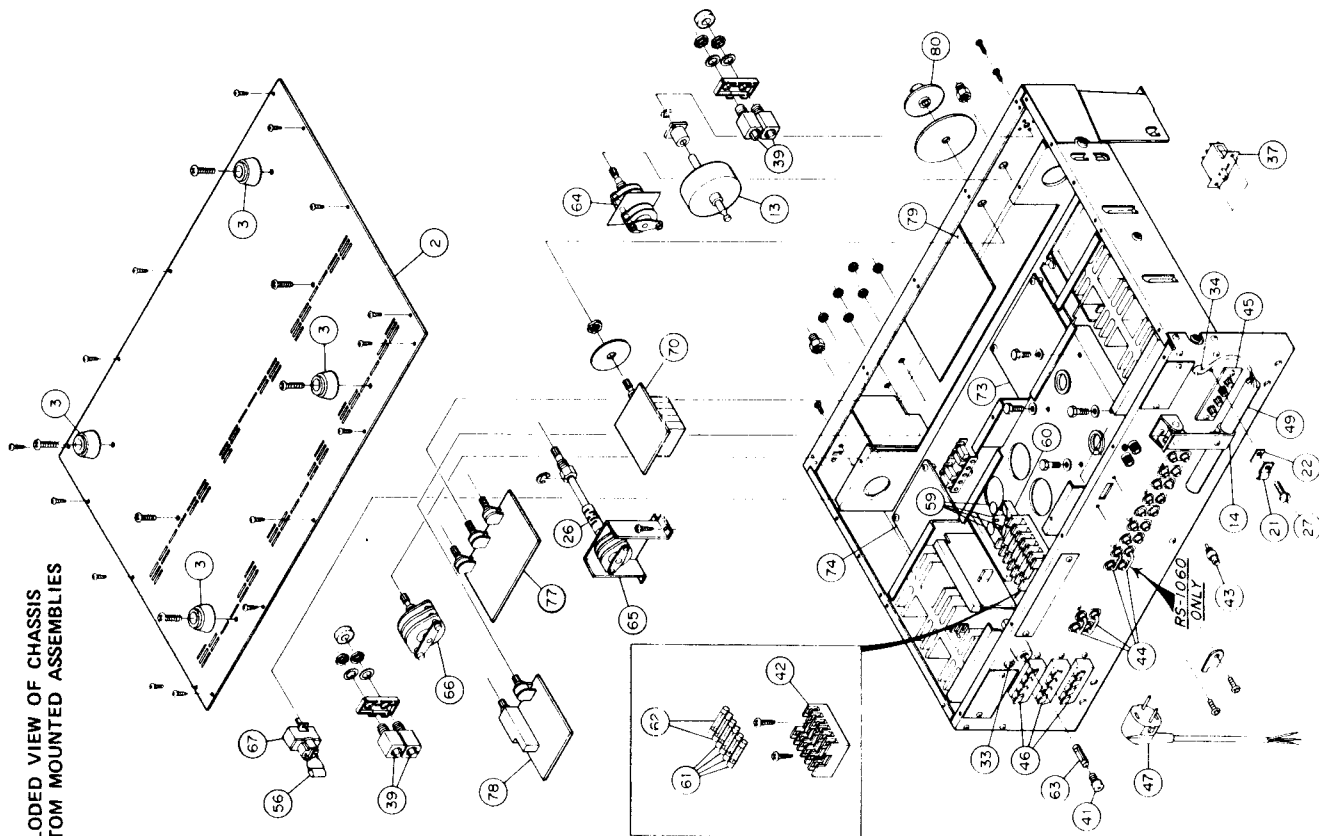
1. Variable capacitor completely closed.
2. Set the dial pointer to zero on logging scale.
3. Connect FM Signal Generator, V.T.V.M. and oscilloscope.
4. Function switch to "FM".
5. Use a screwdriver with plastic grip for all adjustments.

FM MPX ALIGNMENT

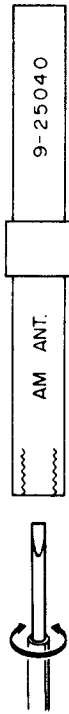
Step	Adjusting circuit	Connection		Position of tuning dial	Adjustment
		Input	Output		
1	PLL IC FO (19 KHz) Adjustment	None	Connect Frequency Counter or synchroscope to TP 20		Adjust VR02 (4.7K) so that 19 KHz may be indicated on the frequency counter or synchroscope.
2	FM STEREO Signal Separation	Connect FM stereo SG to FM ANT terminals. 19 KHz signal ON. Main channel, sub-channel signal ON. Add 1000 Hz signal from L Ch.	Connect V.T.V.M. to output terminal (R channel).		Near max. capacity of VC at position with no signal.
		Connect FM stereo SG to FM ANT terminals. 19 KHz signal ON. Main channel, sub-channel signal ON. Add 1000 Hz signal from R Ch.	Connect V.T.V.M. to 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.

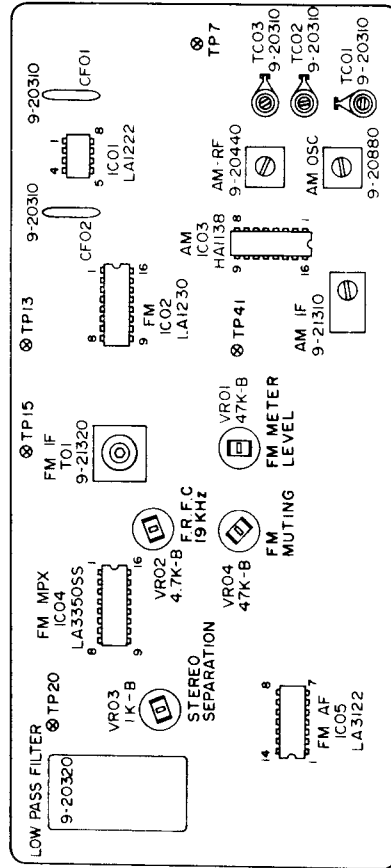
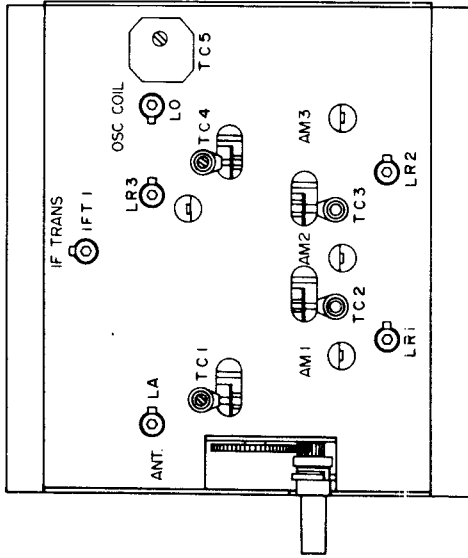
EXPLODED VIEW OF CHASSIS BOTTOM MOUNTED ASSEMBLIES



AM-FM RF/IF MPX BOARD LAYOUT



FRONT END BOTTOM VIEW

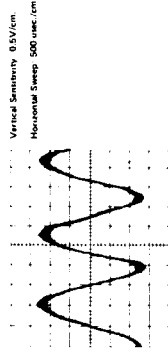


TOP VIEW

ALIGNMENT WAVE FORMS

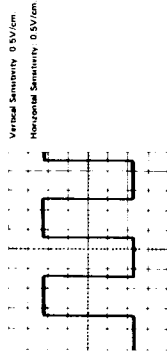
WITH OSCILLOSCOPE TIME BASE SETTINGS

SINE WAVE



SYMMETRICAL TUNING

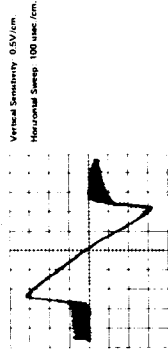
SQUARE WAVE



MPX F R F C ADJUSTMENT

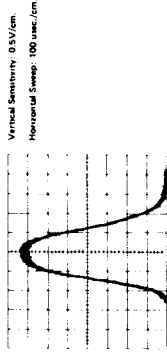
S-CURVE

100KHZ

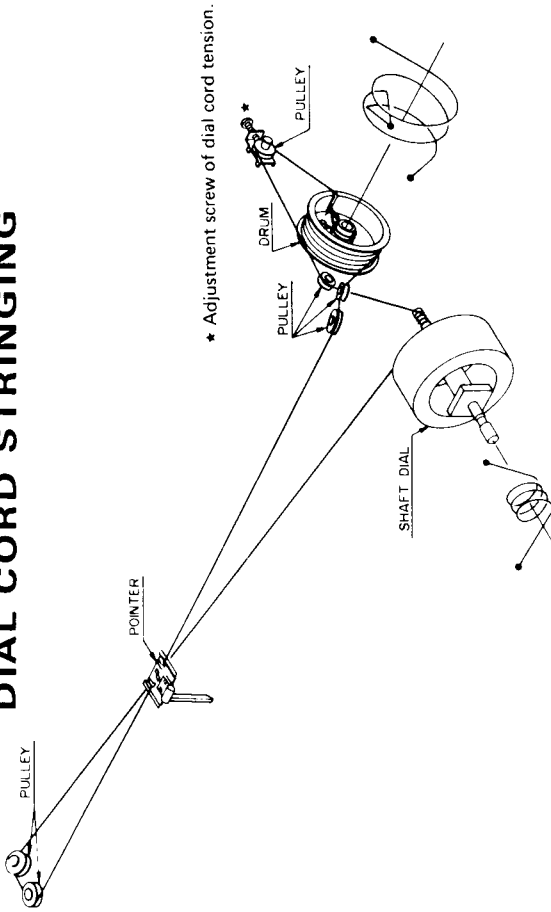


FM DETECTOR ALIGNMENT

AM IF CURVE

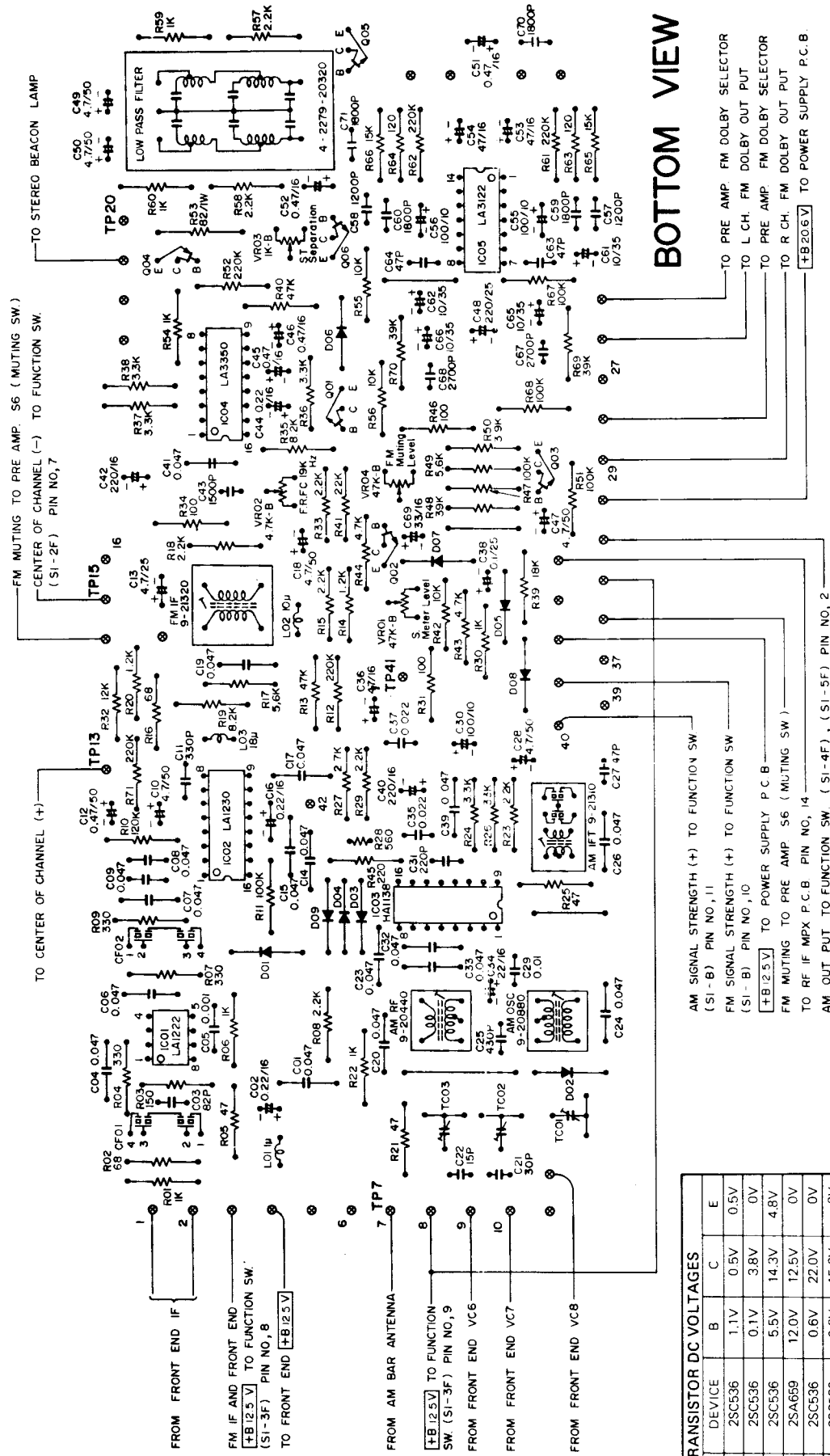


DIAL CORD STRINGING



★ Adjustment screw of dial cord tension.

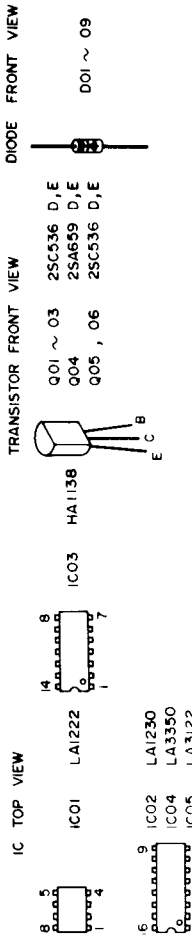
AM-FM RF/IF MPX P.C. BOARD



BOTTOM VIEW

SYMBOL No.	DEVICE	B	C	E
Q01	2SC536	1.1V	0.5V	0.5V
Q02	2SC536	0.1V	3.8V	0V
Q03	2SC536	5.5V	14.3V	4.8V
Q04	2SA659	12.0V	12.5V	0V
Q05	2SC536	0.6V	22.0V	0V
Q06	2SC536	0.6V	15.6V	0V

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC01 LA1222	1.3V	1.3V	0V	11.1V	11.9V	1.3V	9.5V	11.9V								
IC02 LA1230	2.8V	2.8V	0.1V	1.7V	5.7V	5.6V	5.7V	5.7V	12.5V	3.4V	0.3V	0.1V	5.1V	0.1V		
IC03 HA1138	10.0V	2.7V	11.7V	10.1V	4.8V	8.4V	1.9V	0.8V	0.9V	3.5V	4.1V	10.5V	2.7V	2.5V	2.6V	0.1V
IC04 LA3350	11.0V	2.7V	4.7V	8.4V	8.4V	12.0V	0.1V	0.4V	6.4V	0.5V	1.7V	2.4V	1.9V	2.0V	2.0V	2.7V
IC05 LA3122	10.4V	0.5V	32.2V	0.6V	8.2V	1.9V	0V	20.0V	1.9V	8.2V	0.6V	32.0V	0.5V	1.7V	4V	



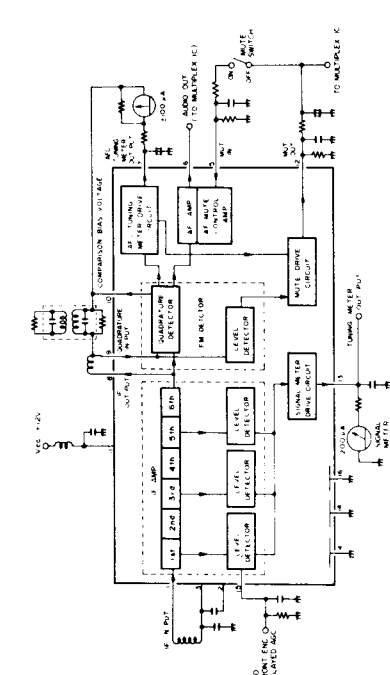
S-7
T-4
T-4
C-2

DS-441

REF. IF, MPX P.C.B. ASSY

PARTS LIST

FM IF IC LA1230 SIGNAL FLOW



Ref.No.	Part Number	Description
C57.58	C1HFRK122A	Mylar 1200 pF 50V ±10%
C59.60	C1HFRK182A	Mylar 1800 pF 50V ±10%
C61.62	C1VRE-106A	Electrolytic 10 μF 35V
C63.64	C1HCSK470SL	Ceramic 47pF 50V ±10%
C65.66	C1VRE-106A	Electrolytic 10 μF 35V
C67.68	C1HSEJ272A	Styrol 2700 pF 50V ±10%
C69	C1CRE 336A	Electrolytic 33 μF 16V
C70.71	C1HFRK182A	Mylar 1800pF 50V ±10%

SEMICONDUCTORS

D01.02	2055 9040	442210 Diode DS-442
IC01	03.04.05.06.07.08.09	IC LA1230
IC02	2065 0151	23010 IC LA1230
IC03	1KK-HA1138	IC HA1138
IC04	2065 0743	35019 IC LA3350SS
IC05	2065 0763	12210 IC LA3122
IC06	2035 5100	53640 TR 25C536 D
IC07	2035 5100	53640 TR 25C536 D

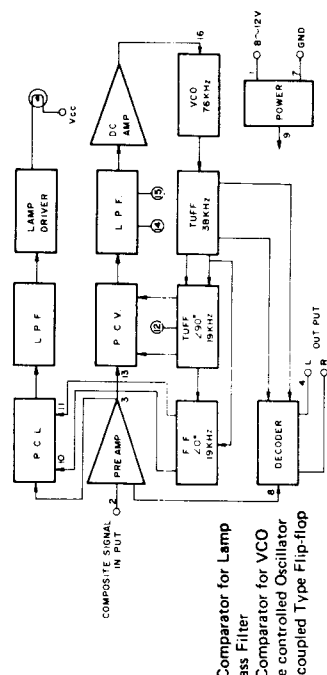
RESISTORS

R01.06	R2EDSJ102A	Carbon 1k 1/4W ±5%
R02.16	R2EDSJ680A	Carbon 68 1/4W ±5%
R03	R2EDSJ151A	Carbon 150 1/4W ±5%
R04	R2EDSJ331A	Carbon 330 1/4W ±5%
R05.21	R2EDSJ470A	Carbon 47 1/4W ±5%
R08.15	R2EDSJ222A	Carbon 2.2k 1/4W ±5%
R10.23	R2EDSJ124A	Carbon 120k 1/4W ±5%
R11.47	R2EDSJ104A	Carbon 100k 1/4W ±5%
R13.40	R2EDSJ224A	Carbon 220k 1/4W ±5%
R14.20	R2EDSJ473A	Carbon 47k 1/4W ±5%
R17.49	R2EDSJ562A	Carbon 5.6k 1/4W ±5%
R19.35	R2EDSJ822A	Carbon 8.2k 1/4W ±5%
R24.36	R2EDSJ332A	Carbon 3.3k 1/4W ±5%
R26	R2EDSJ333A	Carbon 33k 1/4W ±5%
R27	R2EDSJ272A	Carbon 2.7k 1/4W ±5%
R28	R2EDSJ661A	Carbon 560 1/4W ±5%
R31.34	R2EDSJ101A	Carbon 100 1/4W ±5%
R32	R2EDSJ123A	Carbon 12k 1/4W ±5%
R39	R2EDSJ183A	Carbon 18k 1/4W ±5%
R41	R2EDSJ223A	Carbon 22k 1/4W ±5%
R42.55	R2EDSJ103A	Carbon 10k 1/4W ±5%
R43.44	R2EDSJ472A	Carbon 4.7k 1/4W ±5%
R45	R2EDSJ21A	Carbon 220 1/4W ±5%
R48.69	R2EDSJ393A	Carbon 39k 1/4W ±5%
R50	R2EDSJ392A	Carbon 3.9k 1/4W ±5%
R53	R3AXPK820A	Oxide Metal Film 82 1W ±10%
R63.64	R2EDSJ121A	Carbon 120 1/4W ±5%
R65.66	R2EDSJ153A	Carbon 15k 1/4W ±5%

CAPACITORS

C01	C1HYSZ473A	Ceramic 0.047 μF 50V +80, -20%
C02	C1CUEX224A	Aliscon 0.22 μF 16V +40, -20%
C03	C1HCSK820SL	Ceramic 82pF 50V -10%
C04	C1HYSZ473A	Ceramic 0.047 μF 50V +80, -20%
C05	C1HYSZ102A	Ceramic 0.001 μF 50V +80, -20%
C06.07	C1HYSZ473A	Ceramic 0.047 μF 50V +80, -20%
C08.09	C1HBDM473W	Semiconductor 0.047 μF 50V -20%
C10	C1HRE-475A	Electrolytic 4.7 μF 50V
C11	C1HCSK331SL	Ceramic 330pF 50V ±10%
C12	C1HRE-474A	Electrolytic 0.47 μF 50V
C13	C1HRE-474A	Aliscon 4.7 μF 25V ±20%
C14.15	C1HYSZ473A	Ceramic 0.047 μF 50V +80, -20%
C16	C1CUEX224A	Aliscon 0.22 μF 16V +40, -20%
C17	C1HYSZ473A	Ceramic 0.047 μF 50V +80, -20%
C18	C1HRE-475A	Electrolytic 4.7 μF 50V
C19.20	C1HYSZ473A	Ceramic 0.047 μF 50V +80, -20%
C21	C1HCSK300VK	Ceramic 30pF 50V ±10%
C22	C1HCSJ150WK	Ceramic 150pF 50V ±5%
C23.24	C1HYSZ473A	Ceramic 0.047 μF 50V +80, -20%
C25	C1HSEJ431A	Styrol 430pF 50V ±5%
C26	C1HYSZ473A	Ceramic 0.047 μF 50V +80, -20%
C27	C1HCSK470SL	Ceramic 47pF 50V ±10%
C28	C1HRE-475A	Electrolytic 4.7 μF 50V
C29	C1HFRM103A	Mylar 0.01 μF 50V -20%
C30	C1ARE-107A	Electrolytic 100 μF 10V
C31	C1HCDK221SL	Ceramic 220pF 50V -10%
C32.33	C1HYSZ473A	Ceramic 0.047 μF 50V +80, -20%
C34	C1CRE 226A	Electrolytic 22 μF 16V
C35	C1HFRM223A	Mylar 0.022 μF 50V ±20%
C36	C1CRE 476A	Electrolytic 47 μF 16V
C37	C1HFRM223A	Mylar 0.022 μF 50V ±20%
C38	C1HFRM104A	Aliscon 0.1 μF 25V ±20%
C39	C1HYSZ473A	Ceramic 0.047 μF 50V +80, -20%
C40	C1CRE 227A	Electrolytic 220 μF 16V
C41	C1HFRM473A	Mylar 0.047 μF 50V ±20%
C42	C1CRE 227A	Electrolytic 220 μF 16V
C43	C1HSEJ152A	Styrol 1500pF 50V ±5%
C44	C1CRE 224A	Aliscon 0.22 μF 16V +40, -20%
C45.46	C1CUEX474A	Aliscon 0.47 μF 16V +40, -20%
C47	C1HRE 475A	Electrolytic 4.7 μF 50V
C48	C1HRE 227A	Electrolytic 220 μF 25V
C49.50	C1HRE 475A	Electrolytic 4.7 μF 50V
C51.52	C1CUEX474A	Aliscon 0.47 μF 16V +40, -20%
C53.54	C1CRE 476A	Electrolytic 47 μF 16V
C55.56	C1ARE 107A	Electrolytic 100 μF 10V

FM MPX IC LA3350 SIGNAL FLOW



The function of LA3350 is divided into two sections:
 the PLL section that reproduces the .38 KHz subcarrier, and the decoder section that switches the composite signal. The phase-duty cycle stability of the switching signal reproduced by the PLL determines the separation and the distortion factor of the demodulated signal. The phase comparator detects the phase difference between the VCO oscillator signal and the pilot signal. The detected output is in turn used as the control signal for the VCO.
 Since higher harmonics are contained in this phase difference signal, it is necessary that a loop filter be used to eliminate these harmonics. The resulting DC component is applied to the VCO as the control signal. The characteristics of the loop filter practically determines the characteristics of the PLL. Stability of the signal synchronized to the input cannot be obtained unless the VCO itself is stable.

The voltage controlled oscillator generates a saw-tooth wave of 76 KHz, and is frequency-controlled by the output from the DC amplifier. The frequency of the DC amplifier output is reduced to half, or 38 KHz, by means of a direct-coupled flip-flop circuit FF-1. This 38 KHz signal is applied to the demodulator circuit and demodulates the stereo composite signal. The FF-1 output is again reduced to 19 KHz by another direct-coupled flip-flop circuit FF-2.

This FF-2 output is then applied to a phase comparator, PC-1, and its phase is compared with that of the pilot signal contained in the input signal. The output from the FF-3 is 19 KHz and 90 degrees lagging in phase behind that of the FF-2 output. It is then applied to another phase comparator, PC-2, where the 19 KHz component of the input signal is detected and fed to the stereo broadcast indicator circuit of activate the pilot lamp.

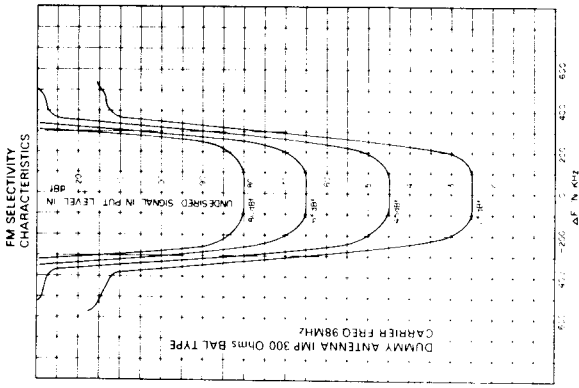
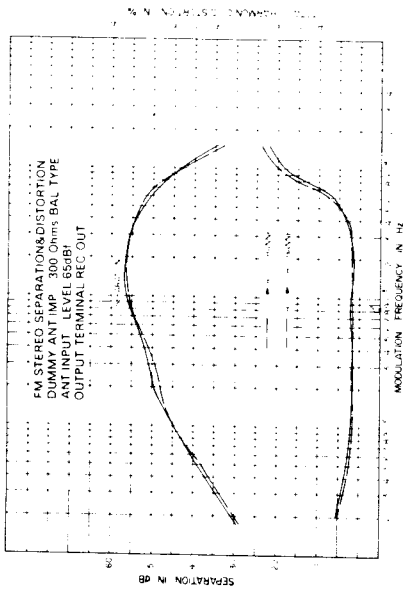
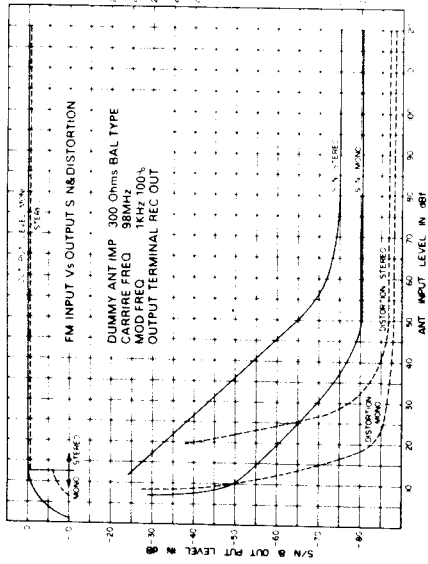
Here, only the demodulator circuit is essential as the FM stereo multiplex demodulator. The other components are the PLL as the 19 KHz selective circuit, and the stereo broadcast indicator circuit. The functions of these components are briefly described below.

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

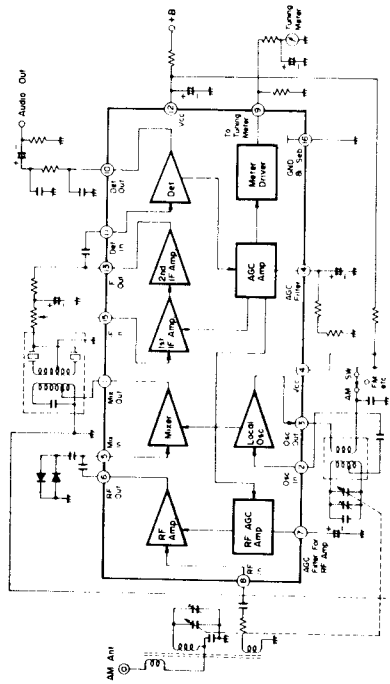
DC AMP
 LAMP DRIVER
 L.P.F.
 P.C.V.
 P.C.L.
 VCO 76KHZ
 TUFF 38KHZ
 LAMP

VCC
 0V
 8-12V
 0V GND

FM TUNER SECTION CHARACTERISTIC CURVE



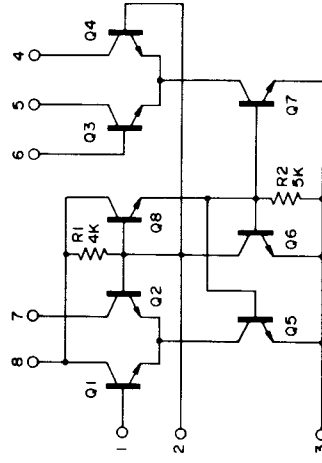
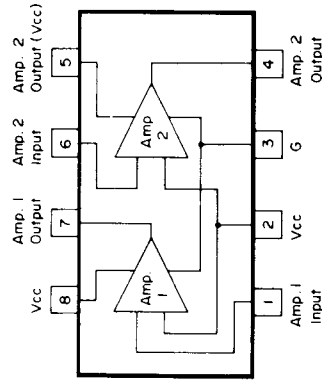
AM RF IF IC HA1138 SIGNAL FLOW



Signal enters R.F. AMP of I.C. where it is amplified. The converter section consists of a mixer and a local oscillator. The output of the mixer stage contains two frequency components.

The 455 KHz component signal is then fed to the I.F. amplifier. The tuned Frequency of the I.F. filter is 455 KHz. When the I.F. signal appears at the low pass filter, the 455-KHz carrier component is then locked, allowing only its audio component to pass.

FM IF IC LA1222 SIGNAL FLOW AND EQUIVALENT DIAGRAM

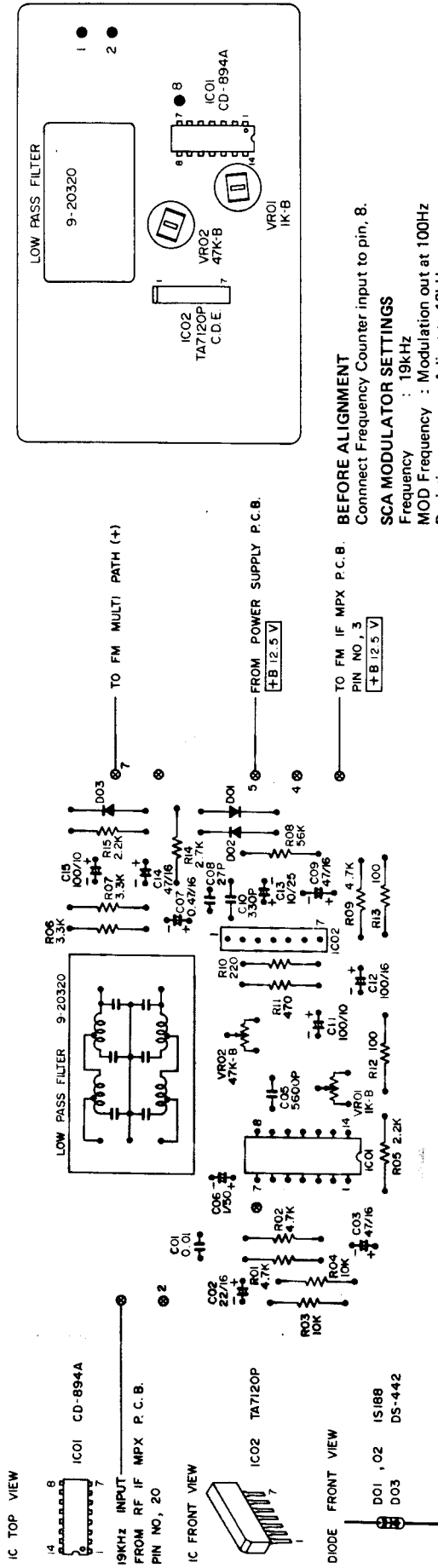


The circuit contains two steps of an independent differential amplification circuit, although the LA1222 is rated to operate on 12-volt power, it can also be used at low voltage, it also permits desired current limitation through insertion of a resistor between pins (2) and (8).

The limiting action by this circuit has current-limiting type limiter characteristics. The advantages that the current-limiting type limiter are: It improves capture ratio against input variation, it does not deviate center frequencies, etc...

RS-1080 ADJUSTMENT OF FM MULTIPATH P.C. BOARD

FM MULTIPATH P.C. BOARD



BOTTOM VIEW

PIN NUMBERS VOLTAGES										
	1	2	3	4	5	6	7	8	9	10
IC-01 CD894A	0V	5.7V	5.7V	7.6V	7.6V	10.3V	10.3V	10.4V	5.1V	11.6V
IC-02 TA7120	2.0V	0.6V	0V	0.6V	4.4V	12.2V				

PARTS LIST

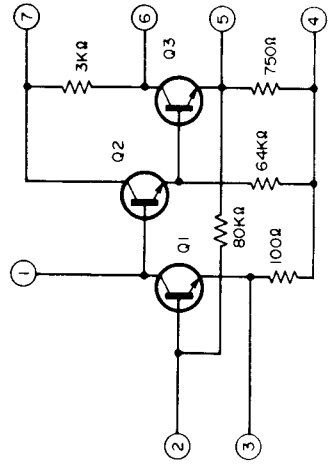
MULTI PATH PCB ASSY

Ref.No.	Part Number	Description	Ref.No.	Part Number	Description
81	1310 4001 74600	Multi Path PCB Assy	D01.02	2025 9110 18820	Diode IS 1888F M1
VR01	4 2279 20320	Low Pass Filter	D03	2055 9040 44210	Diode DS-442
VR02	4 2229 22910	VR B-1kx1	IC01	ISS-CD-894A	IC CD894A
	4 2229 25100	Semi-Fixed VR 47k-B	IC02	ITT-TA7120P-C	IC TA7120P
CAPACITORS					
C01	C1HFRM103A	Mylar 0.01 μ F 50V $\pm 20\%$	R01.02	R2EDSJ472A	Carbon 4.7k 1/4W $\pm 5\%$
C02	C1CRE-226A	Electrolytic 22 μ F 16V	R03.04	R2EDSJ103A	Carbon 10k 1/4W $\pm 5\%$
C03	C1CRE-476A	Electrolytic 47 μ F 16V	R05	R2EDSJ222A	Carbon 2.2k 1/4W $\pm 5\%$
C05	C1HSEJ562A	StyroI 5600pF 50V 5%	R06.07	R2EDSJ332A	Carbon 3.3k 1/4W $\pm 5\%$
C06	C1HRE-105A	Electrolytic 1 μ F 50V $\pm 20\%$	R08	R2EDSJ563A	Carbon 56k 1/4W $\pm 5\%$
C07	C1CUEX474A	Alsicron 0.47 μ F 16V $\pm 10\%$	R09	R2EDSJ472A	Carbon 4.7k 1/4W $\pm 5\%$
C08	C1HCSK2705L	Ceramic 27pF 50V $\pm 10\%$	R10	R2EDSJ221A	Carbon 2.2k 1/4W $\pm 5\%$
C09	C1CRE-476A	Electrolytic 47 μ F 16V	R11	R2EDSJ471A	Carbon 470 1/4W $\pm 5\%$
C10	C1HCSK331SL	Ceramic 330pF 50V $\pm 10\%$	R12.13	R2EDSJ101A	Carbon 100 1/4W $\pm 5\%$
C11	C1ARE-107A	Electrolytic 100 μ F 10V	R14	R2EDSJ272A	Carbon 2.7k 1/4W $\pm 5\%$
C12	C1CRE-107A	Electrolytic 100 μ F 16V	R15	R2EDSJ222A	Carbon 2.2k 1/4W $\pm 5\%$
C13	C1ERE-106A	Electrolytic 10 μ F 25V			
C14	C1CRE-476A	Electrolytic 47 μ F 16V			
C15	C1ARE 107A	Electrolytic 100 μ F 10V			

FUNCTION SETTINGS

Set the FUNCTION selector to FM.
Set the FM DOLBY NR switch to OFF.

IC TA 7120P EQUIVALENT DIAGRAM



BEFORE ALIGNMENT

Connect Frequency Counter input to pin, 8.

SCA MODULATOR SETTINGS

Frequency : 19kHz
 MOD Frequency : Modulation out at 100kHz
 Deviation : Adjust to 10kHz

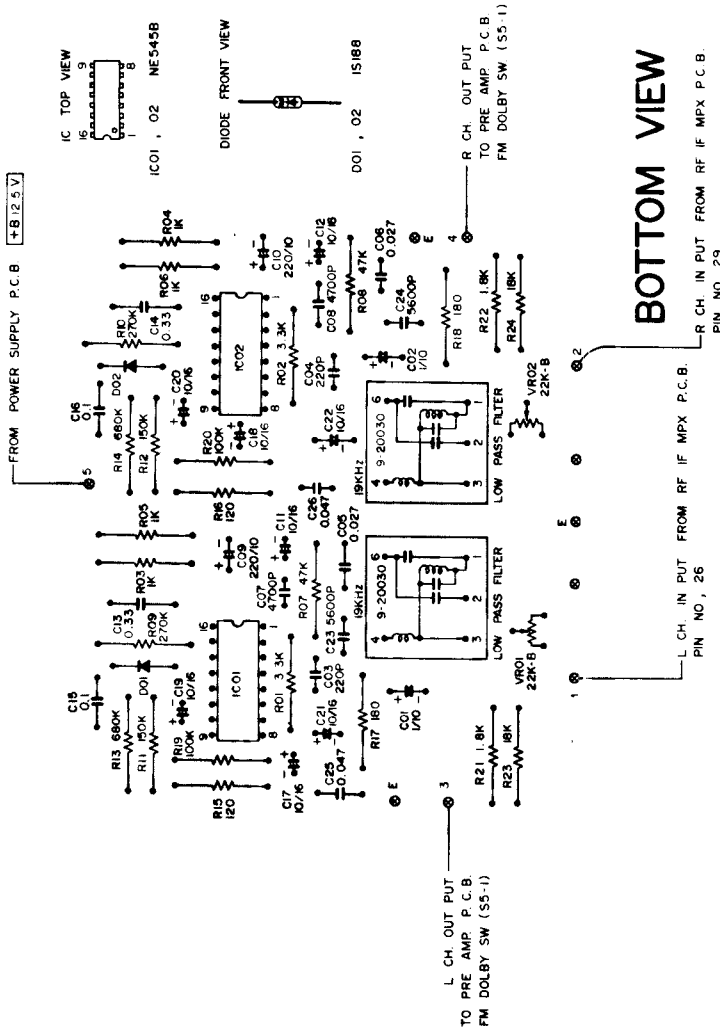
SIGNAL GENERATOR SETTINGS

Modulation output 8%(6k Dev) from Signal of 100Hz, 0.1kHz deviation.
 ANT input to 60dB at 1mV.

FM MULTIPATH FREQUENCY ADJUSTMENT

1. Connected jumper from pin, 3 to pin, 2 on Multipath P.C. Board.
2. Adjust of VR 01(1k) so that the Frequency Counter reads 19kHz(= 100kHz) in the absence of input signal.
3. Remove jumper from P.C. Board.
4. Adjust of VR 02(4.7k) so that the Frequency Counter reads 19kHz(= 100kHz) Then adjust of VR 02(4.7k) so that the defect of Multipath Meter reads (80%) in the absence of input signal.

FM DOLBY P.C. BOARD

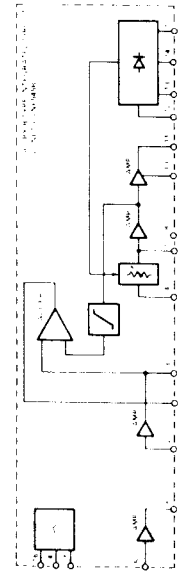


BOTTOM VIEW

PIN NUMBERS VOLTAGES

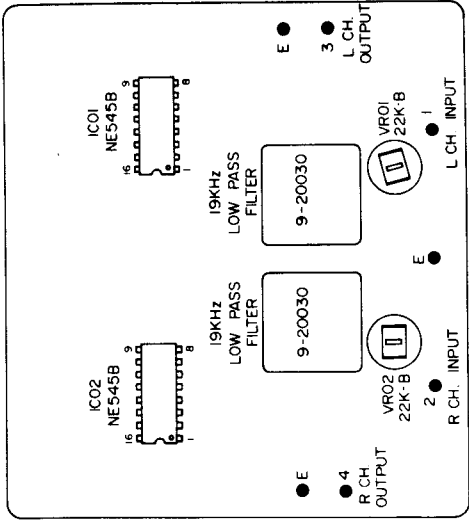
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC01,02 NE545	5.5V	6.3V	6.2V	6.3V	6.0V	6.3V	6.0V	6.8V	1.0V	6.9V	7.5V	0.6V	0.6V	0.5V	0.5V	12.5V

FM DOLBY IC NE545B BLOCK DIAGRAM



Dolby Noise Reduction System is licensed from Dolby Laboratories. The Name "Dolby" and the "Double D" symbol (Ⓜ) are trademarks of Dolby Laboratories.

ADJUSTMENT OF FM DOLBY P.C. BOARD



BEFORE ALIGNMENT

1. Set the signal generator output to 60dB.
 2. Set the position of noninterference.
 3. Connect AC voltmeter input to Lch pin, 3 and Rch pin, 4 to ground pin.
- FM DOLBY GAIN ADJUSTMENT
Adjust each of VR 01, VR 02(22k) so that the AC VTVM reads 580mV in pin 3&4 of output terminals.

FUNCTION SETTINGS

Set the function selector to FM.
Set the FM DOLBY NR switch to OFF.

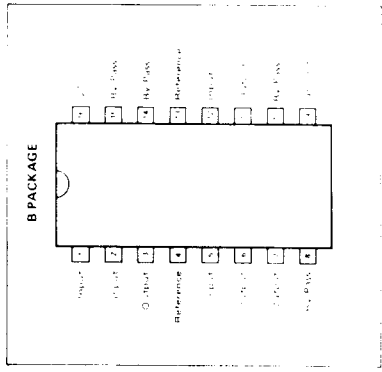
PARTS LIST

Ref.No.	Part Number	Description
DOLBY PCB ASSY		
82	1310 4001 74500	Dolby PCB Assy
	4 2529 20030	Low Pass Filter
	4 2229 25670	VR 22K-B
CAPACITORS		
C01,02	C1AUEX105A	Alsicon 1.0µF 10V +40,-20%
C03,04	C1HCDK221SL	Ceramic 220pF 50V ±10%
C05,06	C1HFRK273A	Mylar 0.027µF 50V ±10%
C07,08	C1HFRK472A	Mylar 0.0047µF 50V ±10%
C09,10	C1ARB-227A	Electrolytic 220µF 10V
C11,12	C1CRB-106A	Electrolytic 10µF 16V
C13,14	C1HFRK334A	Mylar 0.33µF 50V ±10%
C15,16	C1HFRK104A	Mylar 0.1µF 50V ±10%
C17,18	C1CRB-106A	Electrolytic 10µF 16V
	19,20	
	21,22	
C23,24	C1HSE1562A	SMVrol 5600µF 50V ±5%
C25,26	C1HFRK473A	Mylar 0.047µF 50V ±10%
SEMICONDUCTORS		
D01,02	2025 9110 18820	Diode 1S188FM1
IC01,02	ISS-NE545B	Dolby NR IC NE545B
RESISTORS		
R01,02	R2EDVJ332A	Carbon 33k 1/4W ±5%
R03,04	R2EDVJ102A	Carbon 1k 1/4W ±5%
	05,06	
R07,08	R2EDVJ473A	Carbon 47k 1/4W ±5%
R09,10	R2EDVJ274A	Carbon 270k 1/4W ±5%
R11,12	R2EDVJ154A	Carbon 150k 1/4W ±5%
R13,14	R2EDVJ684A	Carbon 680k 1/4W ±5%
R15,16	R2EDVJ121A	Carbon 120 1/4W ±5%
R17,18	R2EDVJ181A	Carbon 180 1/4W ±5%
R19,20	R2EDVJ104A	Carbon 100k 1/4W ±5%
R21,22	R2EDVJ182A	Carbon 1.8k 1/4W ±5%
R23,24	R2EDVJ183A	Carbon 18k 1/4W ±5%

DOLBY PCB ASSY

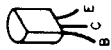
Ref.No.	Part Number	Description
82	1310 4001 74500	Dolby PCB Assy
	4 2529 20030	Low Pass Filter
	4 2229 25670	VR 22K-B

PIN CONFIGURATION (Top View)



EQUALIZER P.C. BOARD

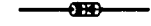
TRANSISTOR FRONT VIEW



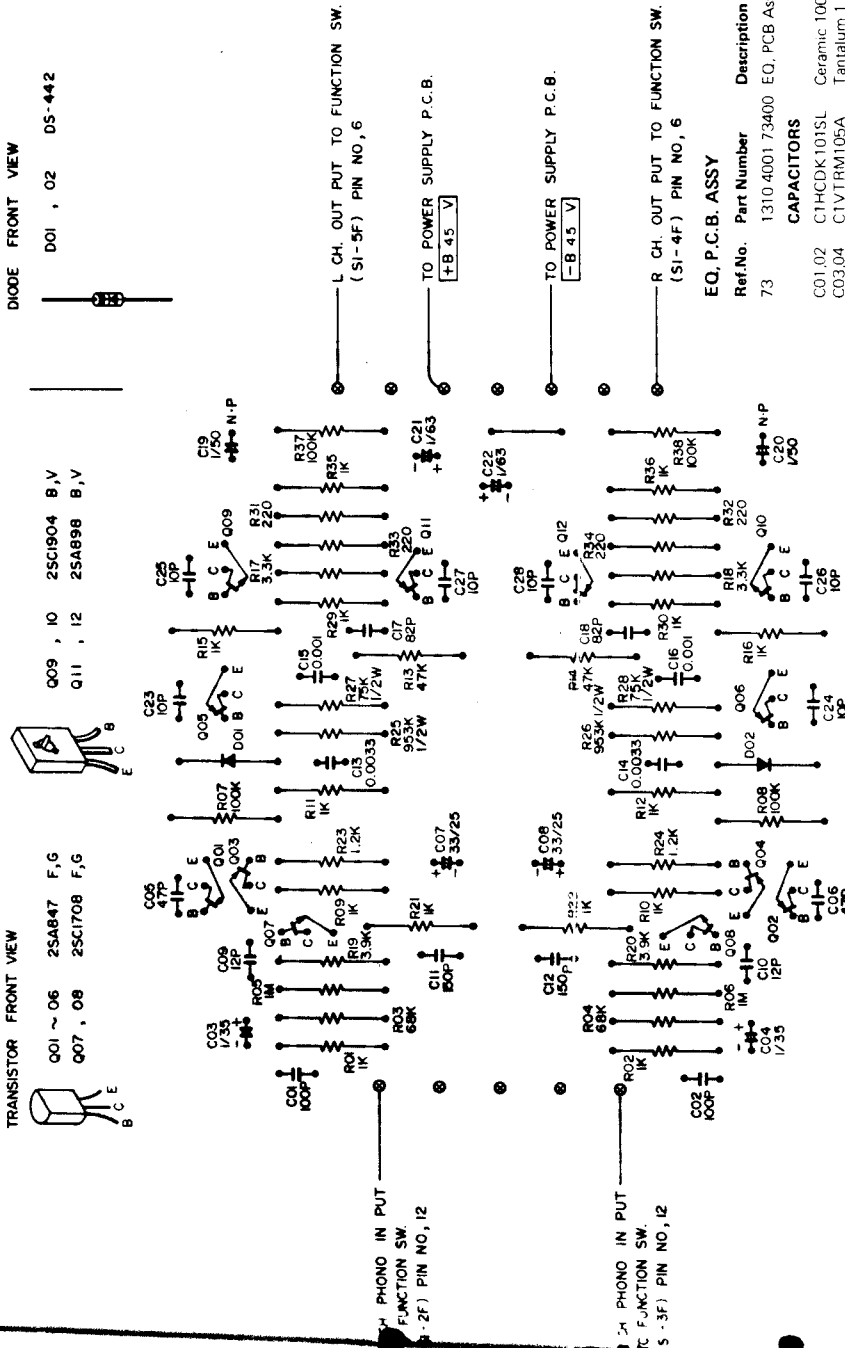
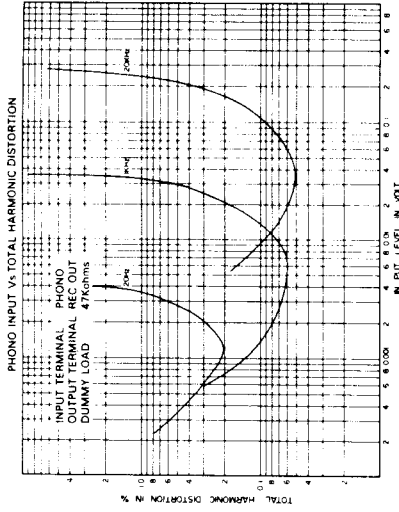
Q01 ~ 06 2SA847 F,G
Q07, 08 2SC1708 F,G

Q09, 10 2SC1904 B,V
Q11, 12 2SA898 B,V

DIODE FRONT VIEW



D01, 02 05-442



BOTTOM VIEW

TRANSISTOR DC VOLTAGES				
SYMBOL No.	DEVICE	B	C	E
Q01, 02	2SA847	0.2V	-43.0V	0.8V
Q03, 04	2SA847	0.2V	-43.0V	0.8V
Q05, 06	2SA847	43.4V	1.1V	44.0V
Q07, 08	2SC1708	-43.0V	-1.8V	-43.9V
Q09, 10	2SC1904	1.1V	45.0V	0.5V
Q11, 12	2SA898	-43.9V	-1.2V	-45.0V

PARTS LIST

Ref. No.	Part Number	Description	Ref. No.	Part Number	Description
73	1310.4001.73400	EQ, PCB Assy	Q07, 08	TMM-2SC1708-F	TR 2SC1708
CAPACITORS					
C01, 02	CIHCDK101SL	Ceramic 100pF 50V ±10%	Q09, 10	THH-2SC1904-B	TR 2SC1904
C03, 04	CIVTRM105A	Tantalum 1.0µF 35V ±20%	Q11, 12	THH-2SA898-B	TR 2SA898
C05, 06	CIHCDK470SL	Ceramic 47pF 50V ±10%	RESISTORS		
C07, 08	CIERE-336AL	Electrolytic 33µF 25V	R01, 02	R2EDVJ102A	Carbon 1k 1/4W ±5%
C09, 10	CIHCDJ120SL	Ceramic 12pF 50V	R03, 04	R2EDVJ683A	Carbon 68k 1/4W ±5%
C11, 12	CIHCDK151SL	Ceramic 150pF 50V ±10%	R05, 06	R2EDVJ105A	Carbon 1M 1/4W ±5%
C13, 14	4.2239.21030	Mylar 0.0033µF 100V ±2%	R07, 08	R2EDVJ104A	Carbon 100k 1/4W ±5%
C15, 16	4.2239.21031	Mylar 0.001µF 100V ±2%	R09, 10	R2EDVJ102A	Carbon 1k 1/4W ±5%
C17, 18	CIHCDK820SL	Ceramic 82pF 50V ±10%	11, 12	R2EDVJ473A	Carbon 47k 1/4W ±5%
C19, 20	CIHAENT05A	Electrolytic 1µF 50V ±30%	R15, 16	R2EDVJ102A	Carbon 1k 1/4W ±5%
C21, 22	CIJRE-105A	Electrolytic 1µF 63V	R17, 18	R2EDVJ332A	Carbon 33k 1/4W ±5%
C23, 24	CIHCDK100SL	Ceramic 10pF 50V ±0.25%	R19, 20	R2EDVJ392A	Carbon 3.9k 1/4W ±5%
25, 26,	27, 28,		R21, 22	R2EDVJ102A	Carbon 1k 1/4W ±5%
SEMICONDUCTORS					
D01, 02	2055.9040.44210	Diode DS-442	R23, 24	R2EDVJ122A	Carbon 1.2k 1/4W ±5%
Q01, 02,	TMM-2SA847-F	TR 2SA847	R25, 26	4.2219.20410	Oxide Metal Film 953k 1/2W ±2%
Q3, 04,			R27, 28	4.2219.20400	Oxide Metal Film 75k 1/2W ±2%
Q5, 06			R29, 30	R2EDVJ102A	Carbon 1k 1/4W ±5%
			R31, 32	R2EDVJ221A	Carbon 220 1/4W ±5%
			R35, 36	R2EDVJ102A	Carbon 1k 1/4W ±5%
			R37, 38	R2EDVJ104A	Carbon 100k 1/4W ±5%

PARTS LIST

PRE AMP P.C.B. BOARD

PRE AMP P.C.B. Assy

Ref.No.	Part Number	Description
79	1310 4001 73500	Pre AMP, PCB Assy
	4 2319 34180	SW Lever
	4 2319 34181	SW Lever
	4 2319 34191	SW Lever

CAPACITOR

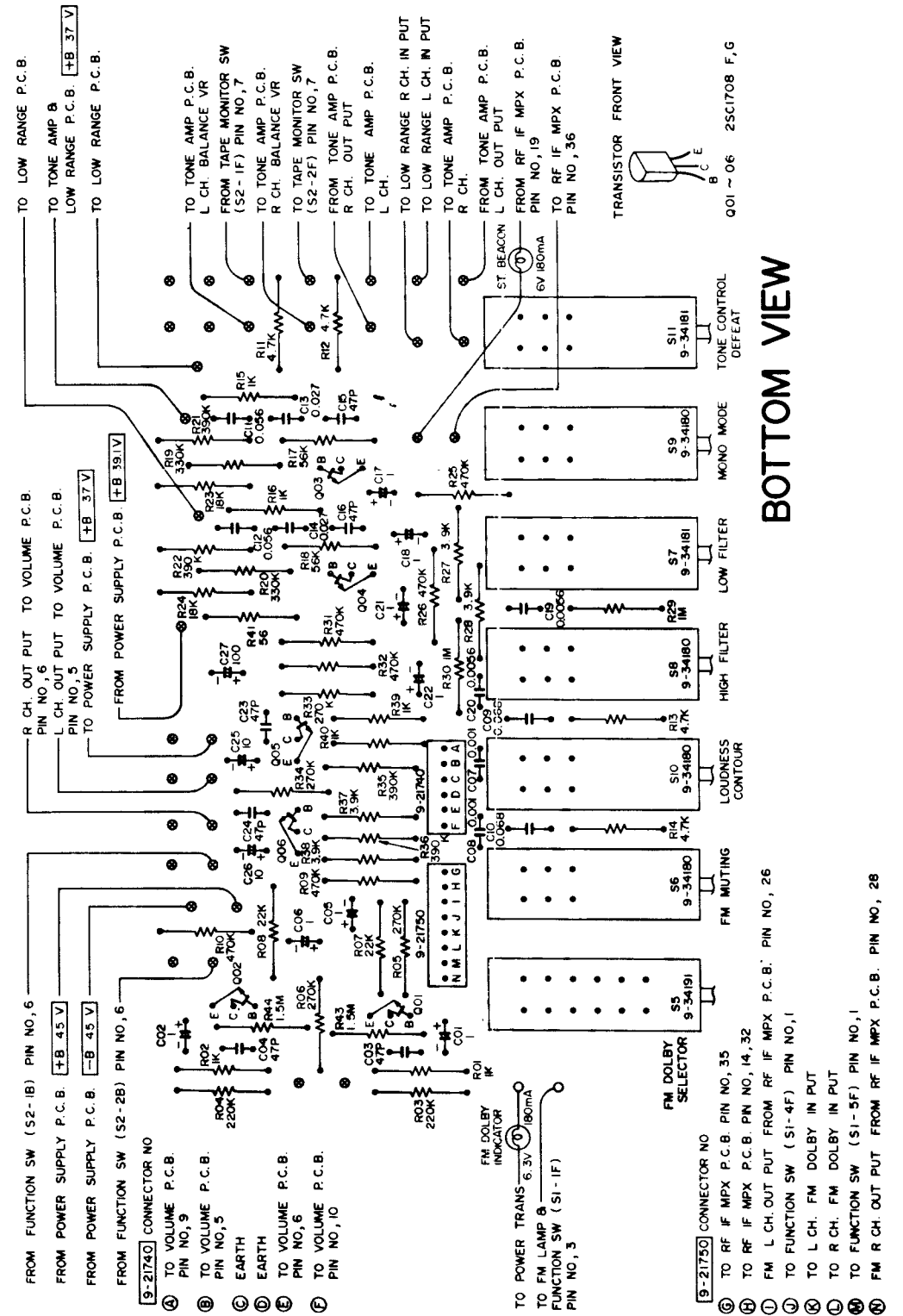
C01.02	C1EUM105A	Aliscon 1 .F	25V	± 20%
C03.04	C1HCDK4705L	Ceramic 47pF	50V	± 10%
C05.06	C1EUM105A	Aliscon 1 .F	25V	± 20%
C07.08	C1HFRK102A	Mylar 0.001 .F	50V	± 10%
C09.10	C1HFRK683A	Mylar 0.068 .F	50V	± 10%
C11.12	C1HFRK563A	Mylar 0.056 .F	50V	± 10%
C13.14	C1HFRK273A	Mylar 0.027 .F	50V	± 10%
C15.16	C1HCDK4705L	Ceramic 47pF	50V	± 10%
C17.18	C1VTRM105A	Tantalum 1 .F	35V	± 20%
C19.20	C1VTRM562A	Tantalum 0.0056 .F	50V	± 10%
C21.22	C1VTRM105A	Tantalum 1 .F	35V	± 20%
C23.24	C1HCDK4705L	Ceramic 47pF	50V	± 10%
C25.26	C1VTRM106A	Tantalum 10 .F	35V	± 20%
C27	C1HRB-107A	Electrolytic 100 .uF	50V	

SEMICONDUCTORS

Q01.02	TMM-25C1708.F	TR 25C1708
Q03.04		
Q05.06		

RESISTORS

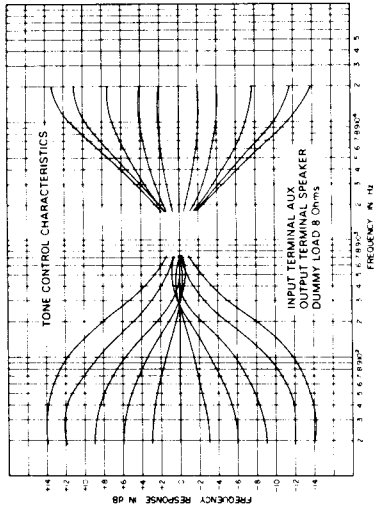
R01.02	R2EDVJ102A	Carbon 1k	1/4W	± 5%
R03.04	R2EDVJ224A	Carbon 220k	1/4W	± 5%
R05.06	R2EDVJ274A	Carbon 270k	1/4W	± 5%
R07.08	R2EDVJ223A	Carbon 22k	1/4W	± 5%
R09.10	R2EDVJ474A	Carbon 470k	1/4W	± 5%
R11.12	R2EDVJ472A	Carbon 4.7k	1/4W	± 5%
R13.14				
R15.16	R2EDVJ102A	Carbon 1k	1/4W	± 5%
R17.18	R2EDVJ563A	Carbon 56k	1/4W	± 5%
R19.20	R2EDVJ334A	Carbon 330k	1/4W	± 5%
R21.22	R2EDVJ394A	Carbon 390k	1/4W	± 5%
R23.24	R2EDVJ183A	Carbon 18k	1/4W	± 5%
R25.26	R2EDVJ474A	Carbon 470k	1/4W	± 5%
R27.28	R2EDVJ392A	Carbon 3.9k	1/4W	± 5%
R29.30	R2EDVJ105A	Carbon 1M	1/4W	± 5%
R31.32	R2EDVJ474A	Carbon 470k	1/4W	± 5%
R33.34	R2EDVJ274A	Carbon 270k	1/4W	± 5%
R35.36	R2EDVJ394A	Carbon 390k	1/4W	± 5%
R37.38	R2EDVJ392A	Carbon 3.9k	1/4W	± 5%
R39.40	R2EDVJ102A	Carbon 1k	1/4W	± 5%
R41	R2EDVJ560A	Carbon 56	1/4W	± 5%
R43.44	R2EDVJ155A	Carbon 1.5M	1/4W	± 5%



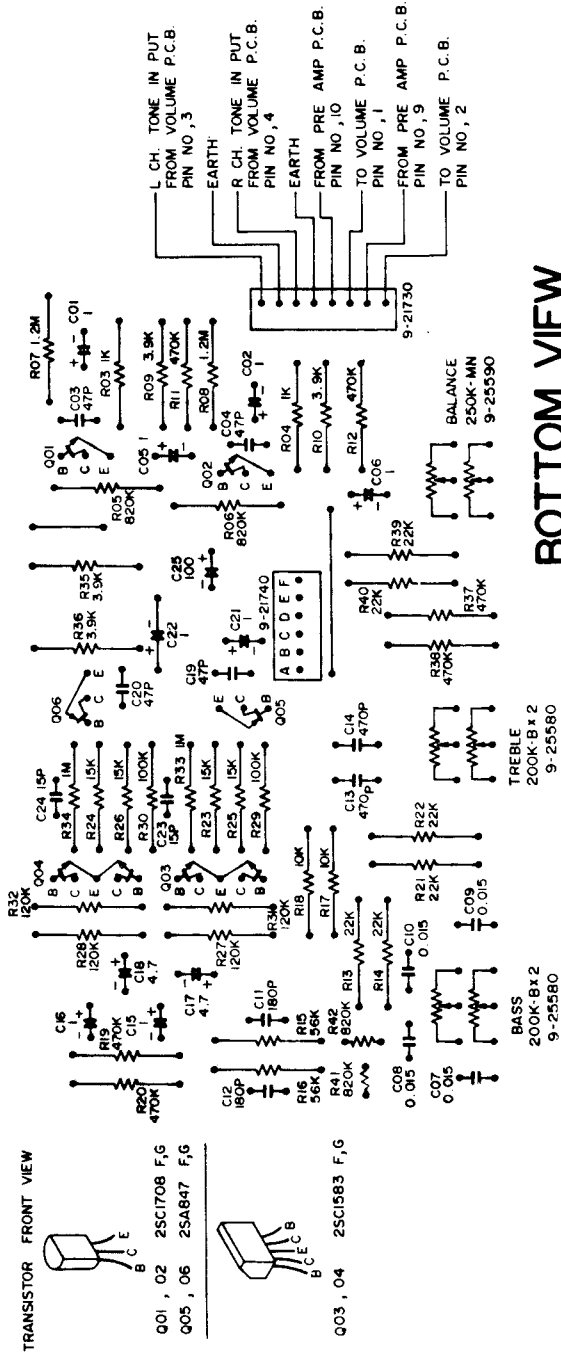
BOTTOM VIEW

TRANSISTOR DC VOLTAGES				
SYMBOL No	DEVICE	B	C	E
Q01.02	25C1708	11.0V	45.0V	11.3V
Q03.04	25C1708	12.9V	37.0V	19.0V
Q05.06	25C1708	20.0V	37.0V	19.8V

CHARACTERISTIC CURVE



TONE CONTROL P.C. BOARD



BOTTOM VIEW

PARTS LIST

Ref. No.	Part Number	Description	Part Number	Description
77	1310 4001 73600	Tone PCB Assy	RESISTORS	
	4 2229 25580	VR B-200K x2	R03.04	R2EDVJ102A Carbon 1k 1/4W ±5%
	4 2229 25590	VR MN-250K x2	R05.06	R2EDVJ824A Carbon 820k 1/4W ±5%
			R07.08	R2EDVJ125A Carbon 1.2M 1/4W ±5%
			R09.10	R2EDVJ392A Carbon 39k 1/4W ±5%
			R11.12	R2EDVJ474A Carbon 470k 1/4W ±5%
			R13.14	R2EDVJ223A Carbon 22k 1/4W ±5%
			R15.16	R2EDVJ563A Carbon 56k 1/4W ±5%
			R17.18	R2EDVJ103A Carbon 10k 1/4W ±5%
			R19.20	R2EDVJ474A Carbon 470k 1/4W ±5%
			R21.22	R2EDVJ223A Carbon 22k 1/4W ±5%
			R23.24.	R2EDVJ153A Carbon 15k 1/4W ±5%
			25.26	
			R27.28	R2EDVJ124A Carbon 120k 1/4W ±5%
			R29.30	R2EDVJ104A Carbon 100k 1/4W ±5%
			R31.32	R2EDVJ124A Carbon 120k 1/4W ±5%
			R33.34	R2EDVJ105A Carbon 1M 1/4W ±5%
			R35.36	R2EDVJ392A Carbon 39k 1/4W ±5%
			R37.38	R2EDVJ474A Carbon 470k 1/4W ±5%
			R39.40	R2EDVJ223A Carbon 22k 1/4W ±5%
			R41.42	R2EDVJ824A Carbon 820k 1/4W ±5%
			CAPACITORS	
			C01.02	C1EUEM105A Aliscan 1.0F 25V ±20%
			C03.04	C1HCDK4705L Ceramic 470pF 50V ±10%
			C05.06	C1VTRM105A Tantalum 1.0F 35V ±20%
			C07.08.	C1HFRK153A Mylar 0.015F 50V ±10%
			09.10	
			C11.12	C1HCDK1818L Ceramic 180pF 50V ±10%
			C13.14	C1HCDK4715L Ceramic 470pF 50V ±10%
			C15.16	C1EUEM105A Aliscan 1.0F 25V ±20%
			C17.18	C1ERE-475A Electrolytic 4.7F 25V ±20%
			C19.20	C1HCDK4705L Ceramic 470pF 50V ±10%
			C21.22	C1VTRM105A Tantalum 1.0F 35V ±20%
			C23.24	C1HCDJ1505L Ceramic 15pF 50V ±5%
			C25	C1HRB-107A Electrolytic 100F 50V
			SEMICONDUCTORS	
			Q01.02	TMM-25C1708-F TR 25C1708
			Q03.04	TMM-25C1583-F TR 25C1583 F
			Q05.06	TMM-25A847-F TR 25A847

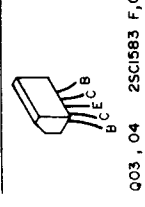
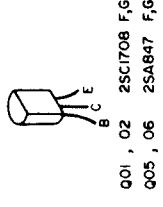
TONE P.C.B. Assy

Ref. No.	Part Number	Description
77	1310 4001 73600	Tone PCB Assy
	4 2229 25580	VR B-200K x2
	4 2229 25590	VR MN-250K x2

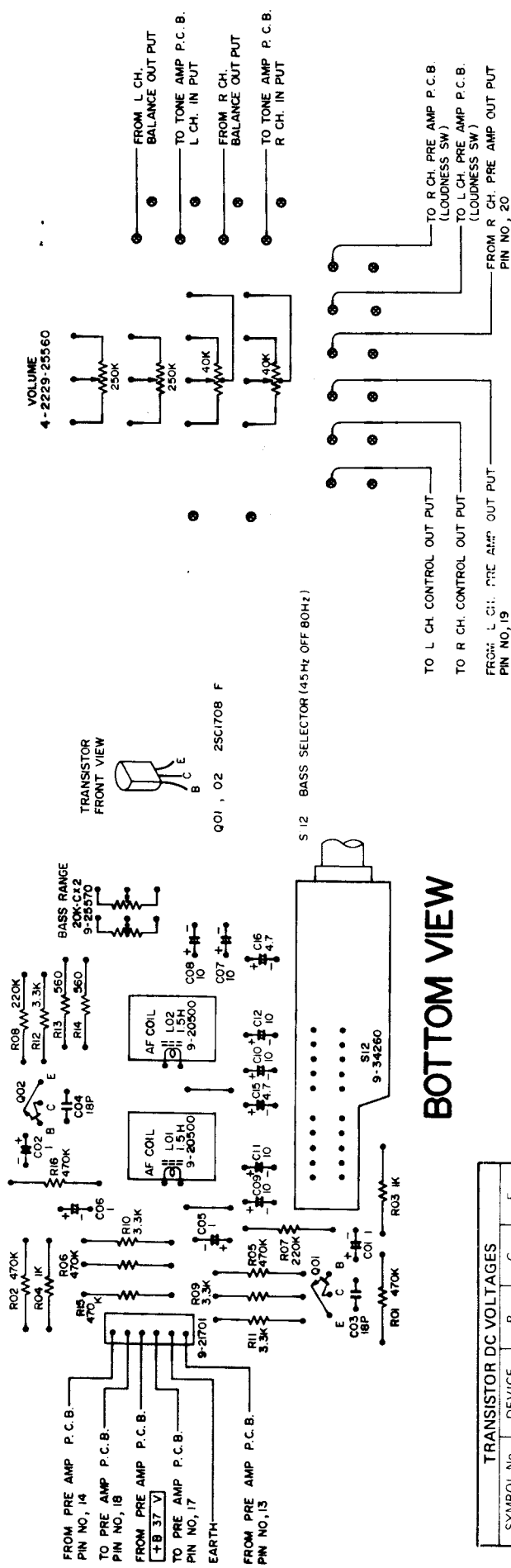
TRANSISTOR DC VOLTAGES					
SYMBOL No.	DEVICE	B	C	E	C
Q01, 02	25C1708	17.6V	38.0V	17.7V	B
Q03, 04	25C1583	20.6V	36.5V	20.2V	20.6V
Q05, 06	25A847	37.3V	38.0V	21.0V	

- (A) L CH. OUT PUT TO PRE AMP P.C.B. PIN NO, 11
- (B) EARTH
- (C) R CH. OUT PUT TO PRE AMP P.C.B. PIN NO, 12
- (D) FROM PRE AMP P.C.B. (TB 37 V)
- (E) TO PRE AMP P.C.B. PIN NO, 16
- (F) TO PRE AMP P.C.B. PIN NO, 15

TRANSISTOR FRONT VIEW

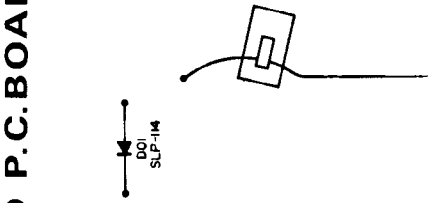


VR P.C. BOARD



BOTTOM VIEW

VR IND P.C. BOARD



BOTTOM VIEW

TRANSISTOR DC VOLTAGES				
SYMBOL No.	DEVICE	B	C	E
Q01,02	2SC1708	10.6V	26.9V	10.1V

PARTS LIST

Ref.No.	Part Number	Description
78	1310 4001 73700	Low Range, PCB Assy
	4 2229 25570	VR C-20kx2
	4 2319 34260	Switch Slide
	4 2559 20500	AF Coil Trans
L01,02		CAPACITOR
C01,02	C1VTRM105A	Tantalum 1 .F 35V ± 20 %
C03,04	C1HCDK180SL	Ceramic 18pF 50V ± 10 %
C05,06	C1VTRM105A	Tantalum 1 .F 35V ± 20 %
C07,08	C1ETRM106A	Tantalum 10 .F 25V ± 20 %
C09,10	C1ETRK106A	Tantalum 10 .F 25V ± 10 %
11,12	C1ETRK475A	Tantalum 4.7 .F 25V - 10 %
C15,16	C1ETRK475A	Tantalum 4.7 .F 25V - 10 %
		VR P.C.B. ASSY
Ref.No.	Part Number	Description
80	1310 4001 74901	
		SEMICONDUCTORS
	DOO-SLP-114B	SLP-114B (LED)
Q01,02	TMM-2SC1708-F	TR 2SC1708
		RESISTORS
R01,02	R2EDVJ474A	Carbon 470k 1/4W ± 5 %
R03,04	R2EDVJ102A	Carbon 1k 1/4W ± 5 %
R05,06	R2EDVJ474A	Carbon 470k 1/4W ± 5 %
R07,08	R2EDVJ224A	Carbon 220k 1/4W ± 5 %
R09,10	R2EDVJ332A	Carbon 3.3k 1/4W ± 5 %
11,12	R2EDVJ561A	Carbon 560 1/4W ± 5 %
R15,16	R2EDVJ474A	Carbon 470k 1/4W ± 5 %
		VR IND P.C.B. ASSY
Ref.No.	Part Number	Description
80	1310 4001 74901	
		SEMICONDUCTORS
	DOO-SLP-114B	SLP-114B (LED)

PROTECTOR P.C.B. BOARD

TRANSISTOR DC VOLTAGES					
RS-1060					
SYMBOL No.	DEVICE	B	C	E	RS-1080
Q01	2SD438		1.8V		C 1.9V
Q02	2SB560		-11.1V		E -12.0V
Q03	2SC1439	1.8V	1.4V	1.3V	1.9V 1.5V 1.3V
Q04	2SC2071	1.3V	1.4V	0.6V	1.3V 1.5V 0.6V

PARTS LIST

PROTECTOR P.C.B. ASSY

Ref.No.	Part Number	Description
74	1310 4001 74100	Protector, PCB Assy (RS-1060)
74	1310 4001 74101	Protector, PCB Assy (RS-1080)
	4 2329 20250	Relay

CAPACITORS

C01,02	C1VRE-227A	Electrolytic 220 μ F 35V
C03	4 2239 21020	Electrolytic 33 μ F 16V \pm 20 %
C04	4 2239 21070	Electrolytic 220 μ F 100V

SEMICONDUCTORS

D01	DIIN-RD15E	Diode RD-15E
D02,03	2055 9040 44210	Diode DS-442
D04,05	2025 2310 13020	Diode DS-130YD
D06,07	2055 9040 44210	Diode DS-442
Q01	2035 6920 43840	TR 2SD438
Q02	2035 6930 56040	TR 2SB560
Q03	THH-25C1439-B	TR 25C1439 B
Q04	THH-25C2071-B	TR 25C2071 B

RESISTORS

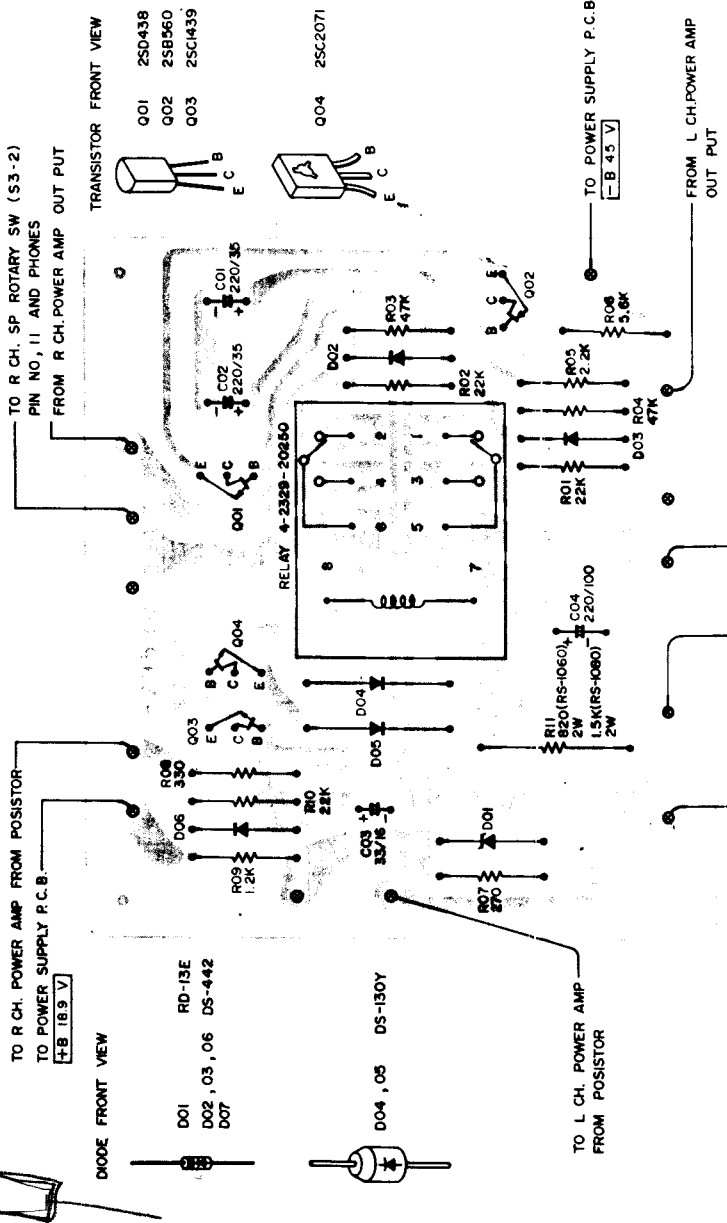
R01,02	R2EDVJ223A	Carbon 22k 1/4W \pm 5 %
R03,04	R2EDVJ473A	Carbon 47k 1/4W \pm 5 %
R05	R2EDVJ222A	Carbon 2.2k 1/4W \pm 5 %
R06	R2EDVJ562A	Carbon 5.6k 1/4W \pm 5 %
R07	R2EDVJ271A	Carbon 270 1/4W \pm 5 %
R08	R2EDVJ331A	Carbon 330 1/4W \pm 5 %
R09	R2EDVJ122A	Carbon 1.2k 1/4W \pm 5 %
R10	R2EDVJ223A	Carbon 22k 1/4W \pm 5 %
R11	R3DXPK821A	Oxide Metal Film 820 2W \pm 10 % (RS-1060)
R11	R3DXPK152A	Oxide Metal Film 1.5k 2W \pm 10 % (RS-1080)

DIAL LAMP P.C.B. ASSY

Ref.No.	Part Number	Description
75	1310 4001 74400	Dial Lamp, PCB Assy
	4 2349 21310	Fuse 4A
	4 2359 23000	Fuse Holder
	4 6129 20280	Pilot Lamp 6.3V 250mA
	4 6129 20730	Small Lamp 6.3V 80mA

RESISTORS

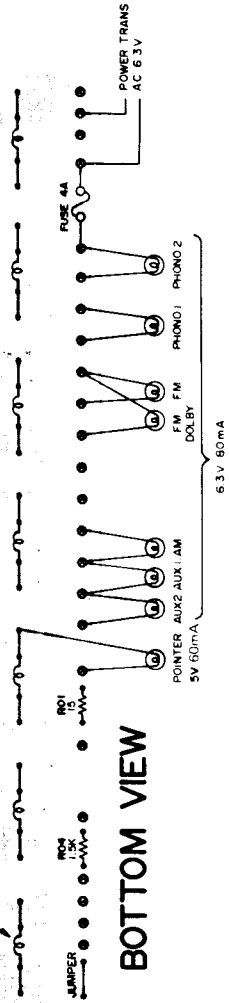
R01	R2EDSJ150A	Carbon 15 1/4W \pm 5 %
R04	R2EDSJ152A	Carbon 1.5k 1/4W \pm 5 %



BOTTOM VIEW

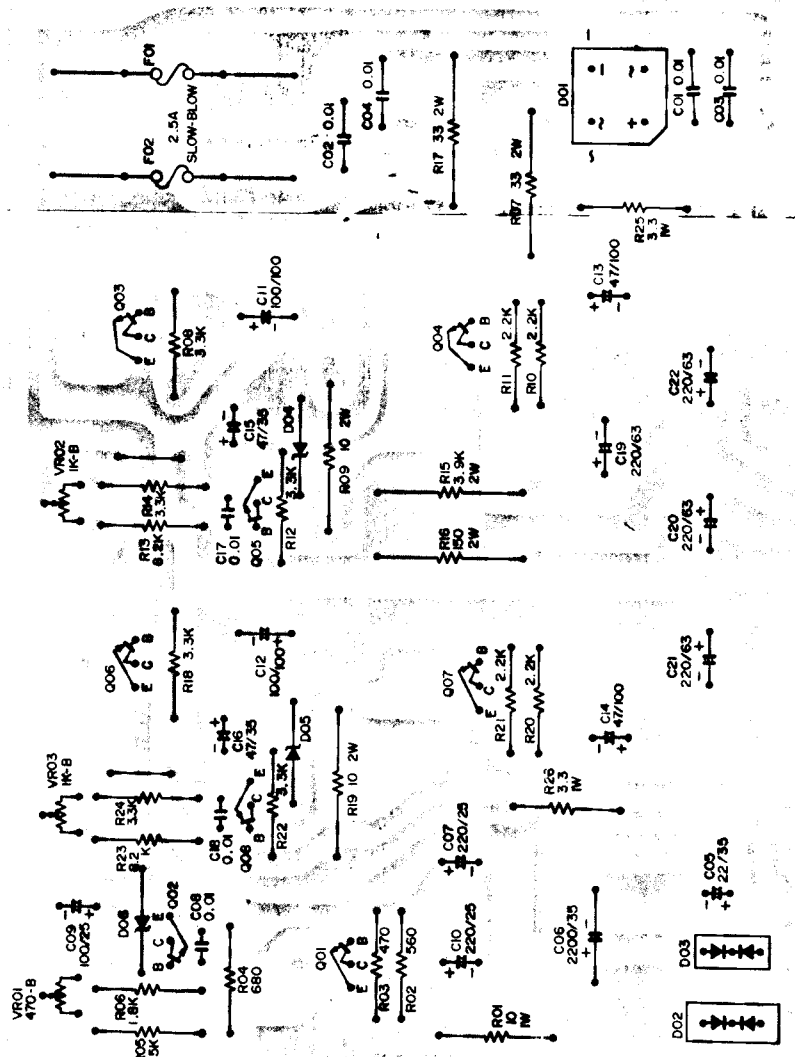
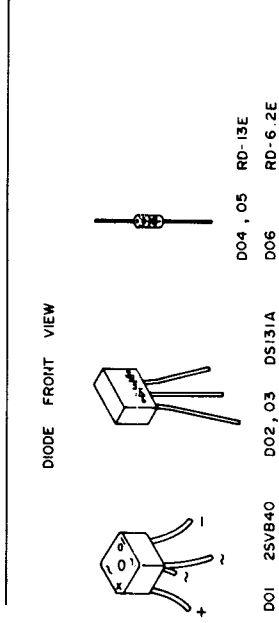
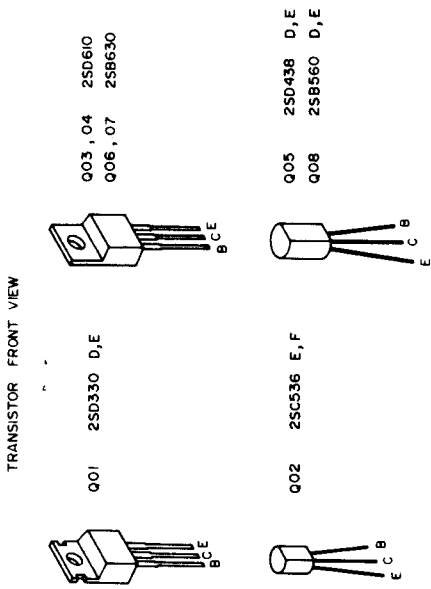
DIAL LAMP P.C.B. BOARD

LAMP (FUSE TYPE 6.3V 250mA) x 7

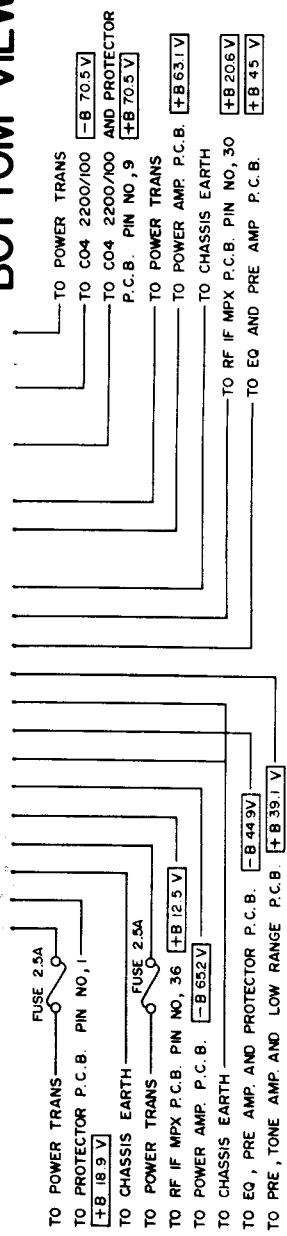


BOTTOM VIEW

POWER SUPPLY P.C. BOARD



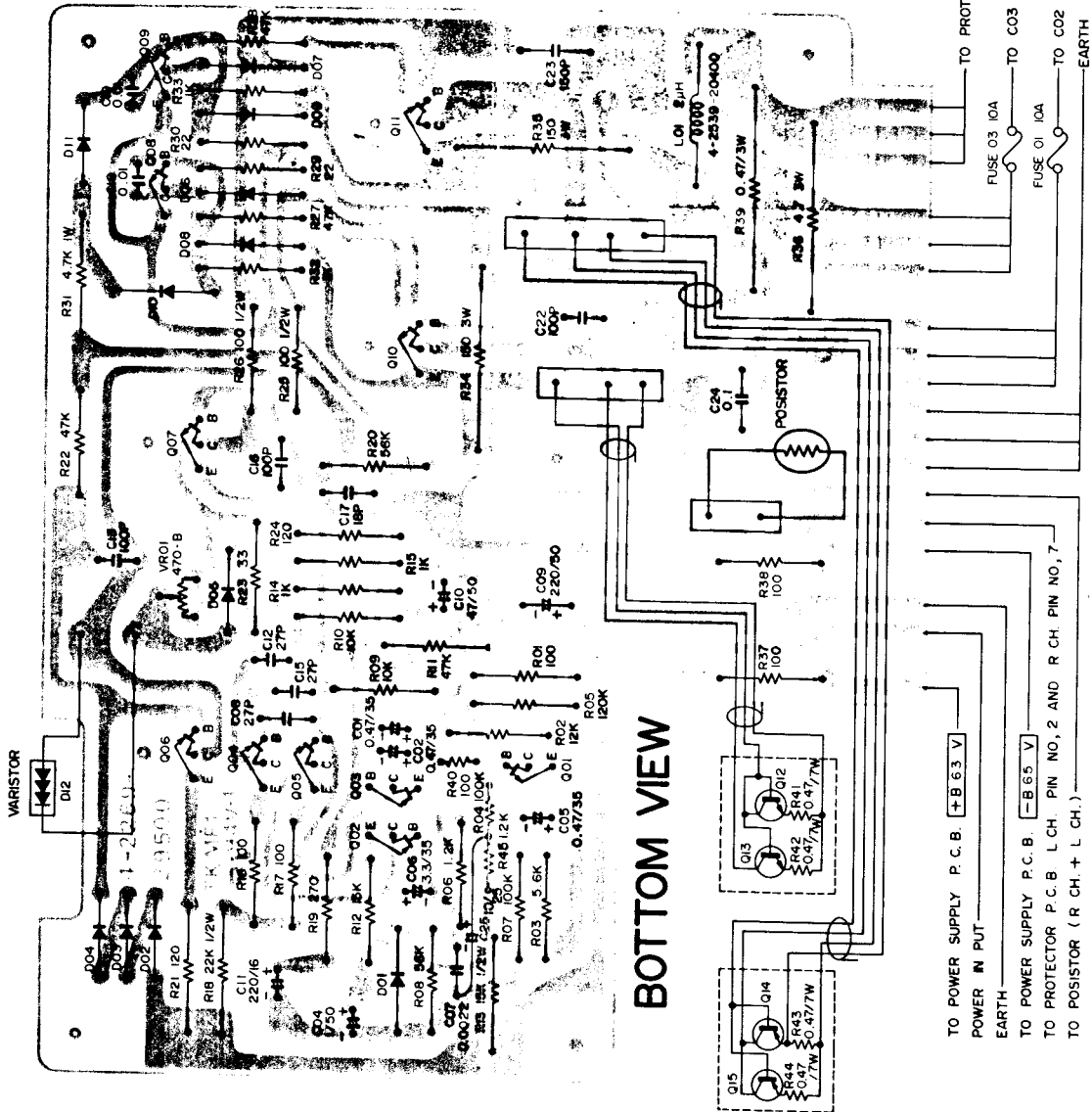
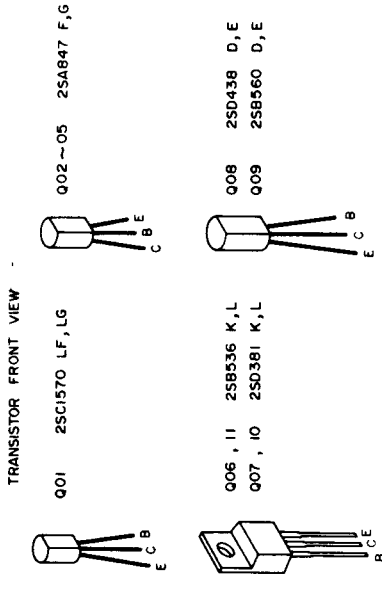
BOTTOM VIEW



TRANSISTOR DC VOLTAGES

SYMBOL No.	DEVICE	B	C	E
001	2SD330	13.1V	19.7V	12.5V
002	25C536	6.7V	13.1V	6.1V
003	2SD610	64.5V	67.0V	63.9V
004	2SD610	45.2V	63.2V	44.0V
005	2SD438	12.7V	45.2V	12.0V
006	2SB630	-66.5V	-69.1V	-65.9V
007	2SB630	-45.2V	-65.5V	-44.2V
008	2SB560	-13.1V	-45.2V	-12.5V

POWER AMP P.C. BOARD



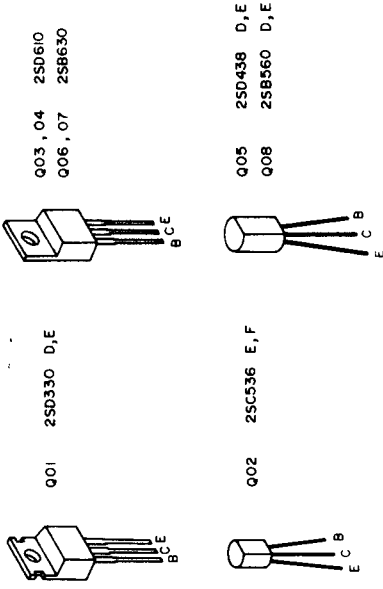
BOTTOM VIEW

TRANSISTOR DC VOLTAGES

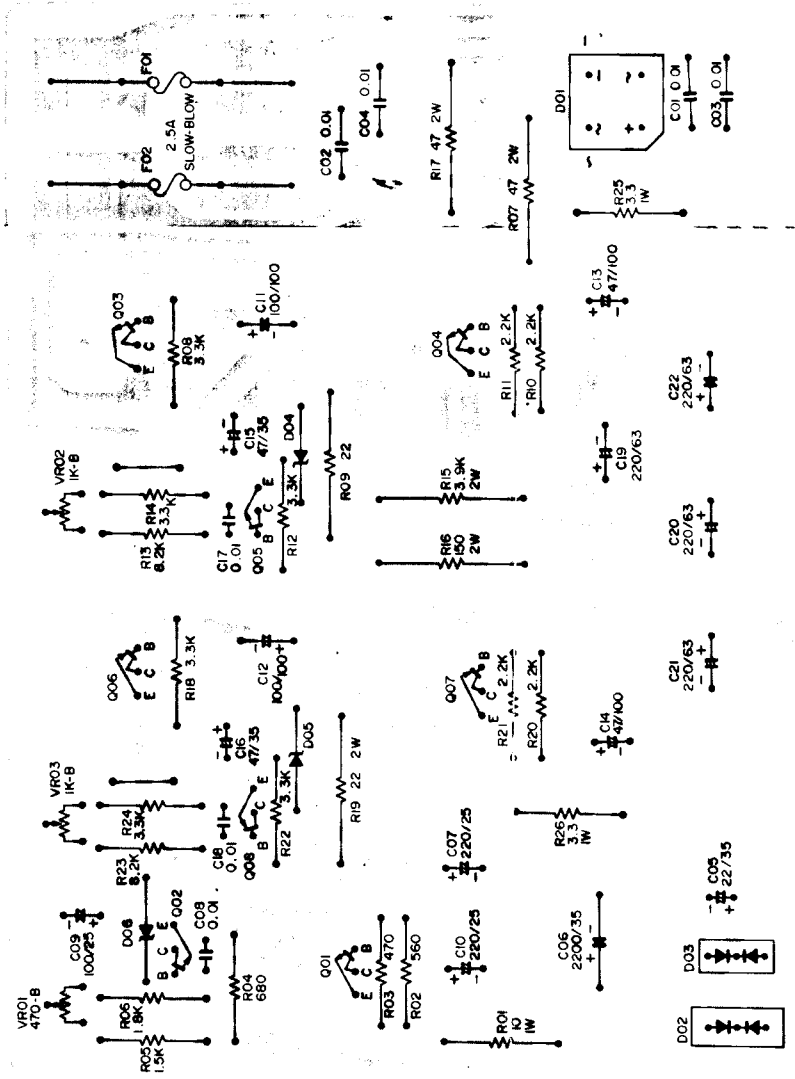
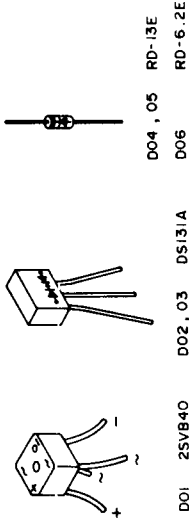
SYMBOL No.	DEVICE	B	C	E
Q01	25C1570	6.2V	11.7V	5.6V
Q02	25A847	44.6V	-25.0V	0.6V
Q03	25A847	50.7V	-25.0V	0.6V
Q04	25A847	25.0V	-62.0V	-25.2V
Q05	25A847	-25.6V	-62.0V	-25.0V
Q06	25B536	59.5V	1.0V	60.1V
Q07	25D381	62.0V	-1.1V	-62.5V
Q08	25D438	26.0V	1.0V	-
Q09	25B560	-76.0V	-1.0V	-
Q10	25D381	1.1V	58.0V	0.6V
Q11	25B536	-1.1V	-58.0V	-0.6V

POWER SUPPLY P.C. BOARD

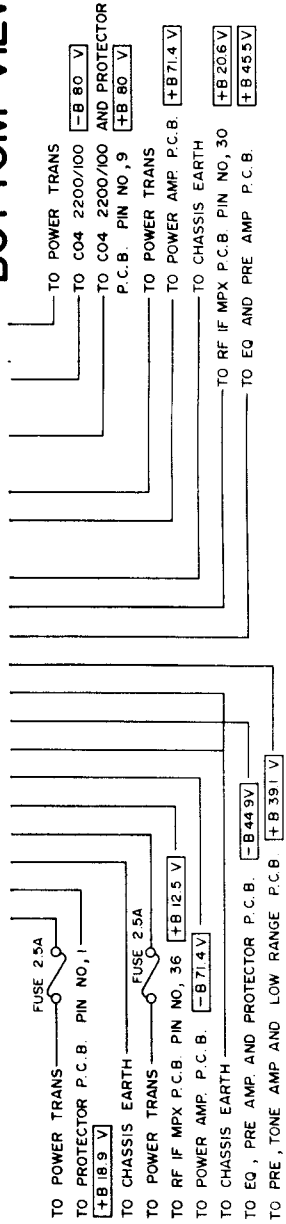
TRANSISTOR FRONT VIEW



DIODE FRONT VIEW

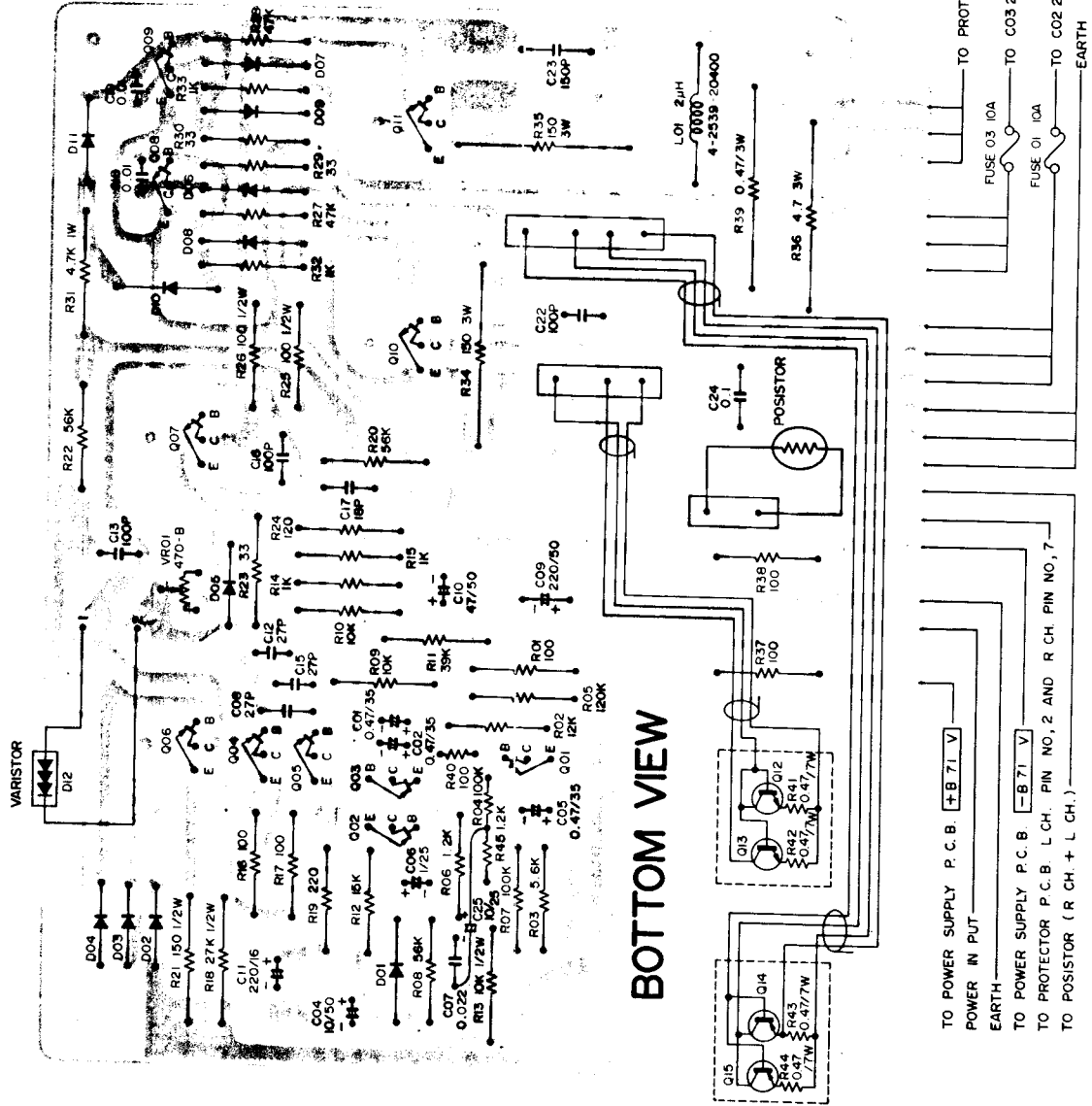
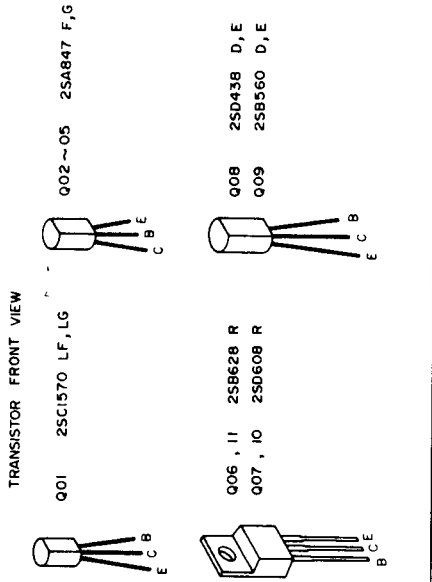


BOTTOM VIEW



TRANSISTOR DC VOLTAGES				
SYMBOL No.	DEVICE	B	C	E
Q01	25D330	13.1V	18.2V	12.5V
Q02	25C536	6.5V	13.1V	5.8V
Q03	25D610	72.4V	74.7V	71.7V
Q04	25D610	45.9V	69.8V	45.5V
Q05	25D438	13.6V	45.9V	13.1V
Q06	25B630	-74.8V	-77.5V	-74.3V
Q07	25B630	-45.3V	-73.3V	-44.8V
Q08	25B560	-13.6V	-45.3V	-13.0V

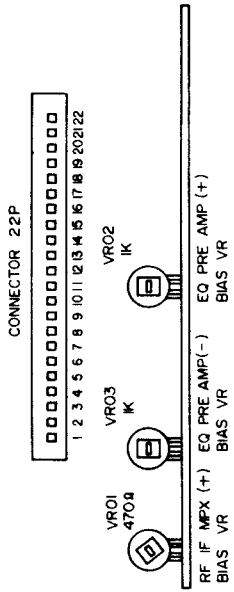
POWER AMP P.C. BOARD



TRANSISTOR DC VOLTAGES

SYMBOL No.	DEVICE	B	C	E
Q01	25C1570	6.2V	11.6V	5.6V
Q02	25A847	32.0V	-34.8V	0.6V
Q03	25A847	32.5V	-34.7V	0.6V
Q04	25A847	-34.7V	-71.0V	-34.4V
Q05	25A847	-43.3V	-71.7V	-34.2V
Q06	25B628	68.3V	1.1V	69.1V
Q07	25D608	-71.6V	-1.2V	-72.0V
Q08	25D438	58.4V	1.0V	—
Q09	25B560	-52V	-1.0V	—
Q10	25D608	1.15V	68.0V	0.6V
Q11	25B628	-1.1V	-68.1V	-0.6V

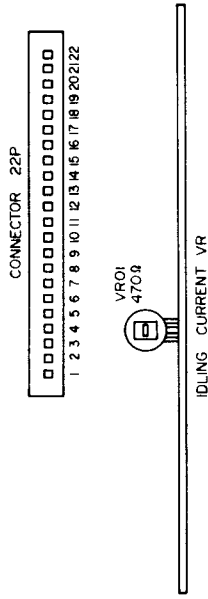
POWER SUPPLY P.C. BOARD LAYOUT



(A) ADJUSTMENT OF THE POWER SUPPLY P.C. BOARD

1. Adjust of VR 01 so that the DC V.T.V.M. reads 12.5V in pin No, 5 of connector.
2. Adjust of VR 02 so that the DC V.T.V.M. reads +45V in pin No, 11 of connector.
3. Adjust to VR 03 so that the DC V.T.V.M. reads -45V in pin No, 8 of connector.

POWER AMP P.C. BOARD LAYOUT



(B) ADJUSTMENT OF THE POWER AMP P.C. BOARD BEFORE ADJUSTMENT

1. Disconnect the PRE OUT/MAIN IN connector.
2. After the power switch is turned ON, allow a few minutes before making adjustment, to be sure of the most stable operation.
3. Connect dummy load resistors (8 ohms) the speaker terminals.
4. Use DC V.T.V.M. (Input impedance; More than 50k ohms/V)

IDLING CURRENT ADJUSTMENT

Adjust VR 01 for an idling current of 40mA. Measure the voltage at both sides of R14 resistor (0.47 ohms) and adjust VR 01 to indicate 0.038V ± 0.001V.

Note: Polarity of Emitter of Q12 is (+).
Mid-point is (-).

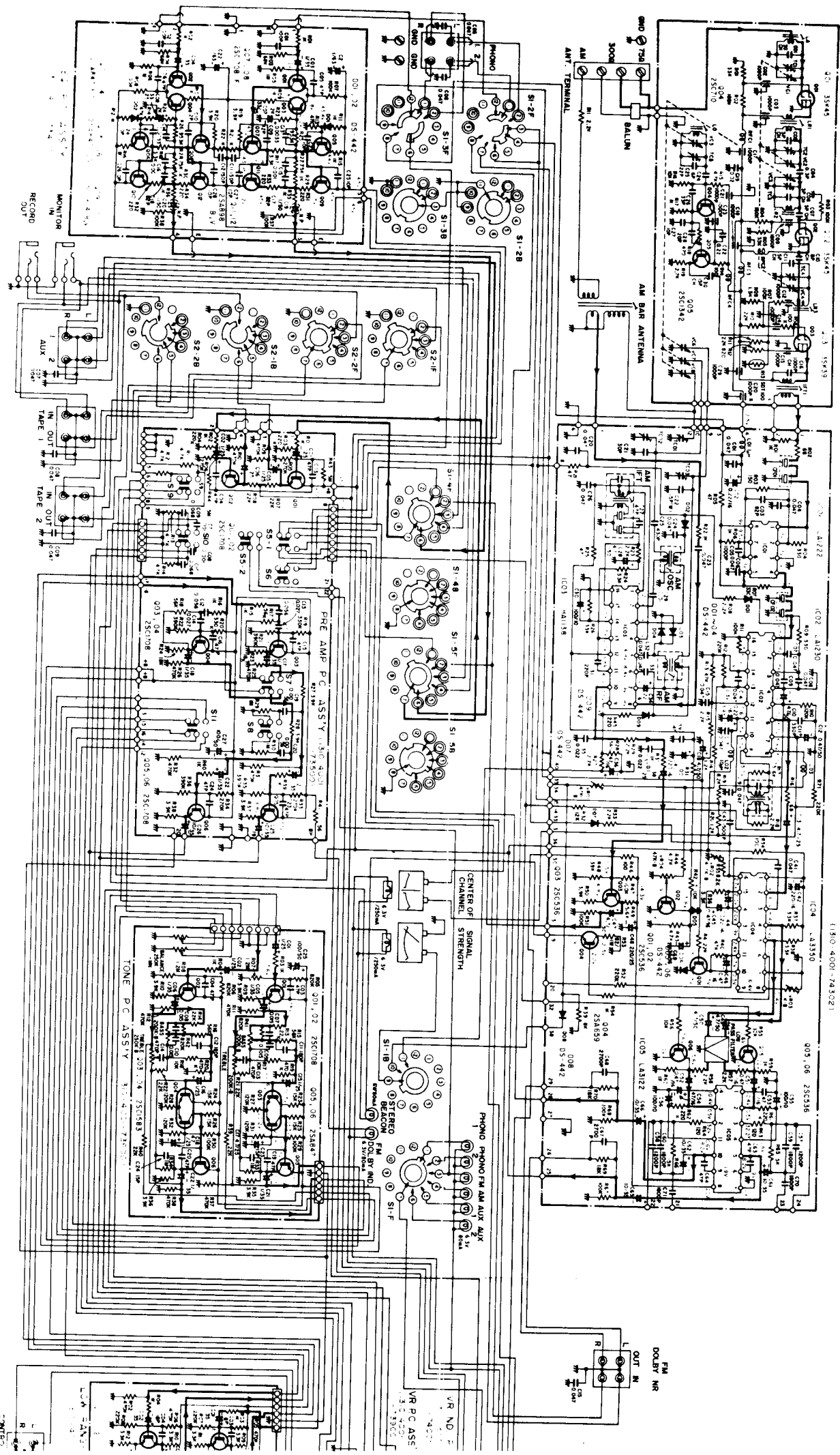
Repeat steps A and B for optimum results.

Note: a. Turn the clockwise variable resistor for increase on voltage.
b. Be careful of the polarity of each measurement point.

PARTS LIST

Ref.No.	Part Number	Description
POWER SUPPLY PCB ASSY		
72	1310 4001 74200	Power Supply PCB Assy (RS-1060)
F01,02	4 2349 21240	Fuse 2.5A Slow Blow
	4 2359 23000	Fuse Holder
VR01	1312 6201 23300	Plate Heat Sink
VR02,03	4 2229 25850	VR 470-B
	4 2229 22910	VR B-1k
CAPACITORS		
C01,02	C2HYDP103A	Ceramic 0.01 μF 500V
C03,04		+100, -0 %
C05	C1VRE-226A	Electrolytic 22 μF 35V
C06	C1VRE-228A	Electrolytic 2200 μF 35V
C07	C1ERE-227A	Electrolytic 220 μF 25V
C08	C1HFRM103A	Mylar 0.01 μF 50V ± 20 %
C09	C1ERE-107A	Electrolytic 100 μF 25V
C10	C1ERE-227A	Electrolytic 220 μF 25V
C11,12	4 2239 21072	Electrolytic 100 μF 100V
C13,14	4 2239 21071	Electrolytic 47 μF 100V
C15,16	C1VRE-476A	Electrolytic 47 μF 35V
C17,18	C1HFRM103A	Mylar 0.01 μF 50V ± 20 %
C19,20	C1JRE-227A	Electrolytic 220 μF 63V
21,22		
SEMICONDUCTORS		
D01	DDD-S2VB40	Diode S2VB40
D02,03	2025 2320 13110	Diode DS131
D04,05	DNN-RD13E	Diode RD-13E
D06	DNN-RD6.2E	Diode RD-6.2E
Q01	2035 8220 33040	TR 2SD330 D
Q02	2035 5100 53650	TR 2SC536 E
Q03	TNN-2SD610-Q	TR 2SD610 Q
Q04	TNN-2SD610-Q	TR 2SD610 Q
Q05	2035 6920 43840	TR 2SD438
Q06,07	TNN-2SB630-Q	TR 2SB630 Q
Q08	2035 6930 56040	TR 2SB6560
RESISTORS		
R01	R3AXPK100A	Oxide Metal Film 10 1W±10 %
R02	R2EDVJ561A	Carbon 560 1/4W ±5 %
R03	R2EDVJ471A	Carbon 470 1/4W ±5 %
R04	R2EDVJ681A	Carbon 680 1/4W ±5 %
R05	R2EDVJ152A	Carbon 1.5k 1/4W ±5 %
R06	R2EDVJ182A	Carbon 1.8k 1/4W ±5 %
R07	R3DXPK330A	Oxide Metal Film 33 2W±10 % (RS-1060)
	R3DXPK407A	Oxide Metal Film 47 2W±10 % (RS-1080)
R08	R2EDVJ332A	Carbon 3.3k 1/4W ±5 %
R09	R3DXPK100A	Oxide Metal Film 10 2W±10 % (RS-1060)
	R3DXPK220A	Oxide Metal Film 22 2W±5 % (RS-1080)
R10,11	R2EDVJ222A	Carbon 2.2k 1/4W ±5 %
R12	R2EDVJ332A	Carbon 3.3k 1/4W ±5 %
R13	R2EDVJ822A	Carbon 8.2k 1/4W ±5 %
R14	R2EDVJ332A	Carbon 3.3k 1/4W ±5 %
R15	R3DXPK392A	Oxide Metal Film 3.9k 2W±10 %
R16	R3DXPK151A	Oxide Metal Film 150 2W±10 %
R17	R3DXPK330A	Oxide Metal Film 33 2W±10 % (RS-1060)
	R3DXPK470A	Oxide Metal Film 47 2W±10 % (RS-1080)
R18	R2EDVJ332A	Carbon 3.3k 1/4W ±5 %
R19	R3DXPK100A	Oxide Metal Film 10 2W±10 % (RS-1060)
	R3DXPK220A	Oxide Metal Film 22 2W±10 % (RS-1080)
R20,21	R2EDVJ222A	Carbon 2.2k 1/4W ±5 %
R22	R2EDVJ332A	Carbon 3.3k 1/4W ±5 %
R23	R2EDVJ822A	Carbon 8.2k 1/4W ±5 %
R24	R2EDVJ332A	Carbon 3.3k 1/4W ±5 %
R25,26	R3AXPK3R3A	Oxide Metal Film 3.3 1W±10 %

FRONT END
4-259, 2-9-53



RS-1060 SCHEMATIC DIAGRAM

IF MPX P.C. ASSY
(1310-4001-74302)

RECORD OUT

MONITOR

AUX 2

AUX 1

IN OUT

TAPE 2

TAPE 1

IN OUT

RECORD

MONITOR

AUX 2

AUX 1

IN OUT

TAPE 2

TAPE 1

IN OUT

RECORD

MONITOR

AUX 2

AUX 1

IN OUT

TAPE 2

TAPE 1

IN OUT

RECORD

MONITOR

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AUX 2

AUX 1

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IN OUT

RECORD

MONITOR

AUX 2

AUX 1

IN OUT

TAPE 2

TAPE 1

IN OUT

RECORD

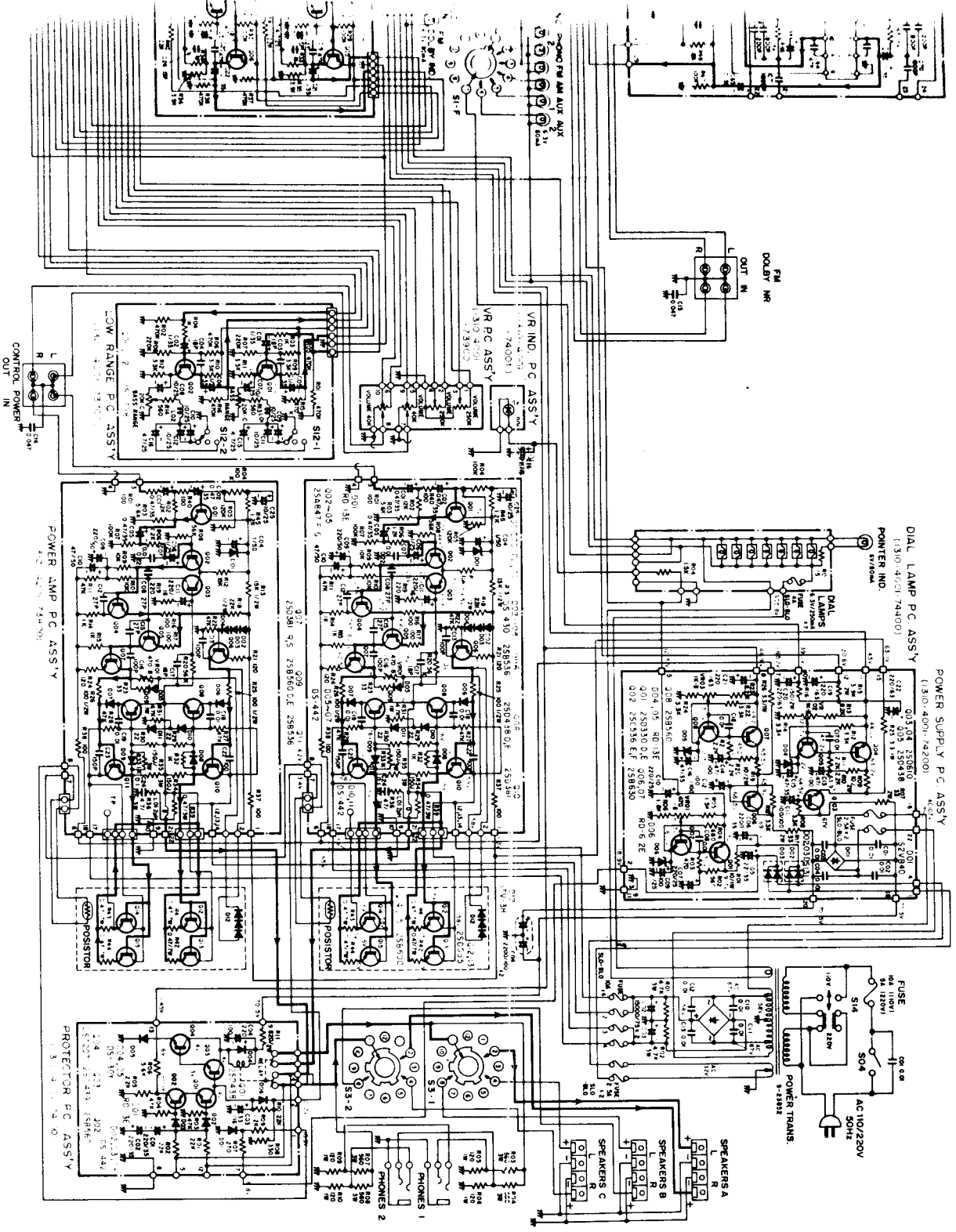
MONITOR

AUX 2

AUX 1

IN OUT

SCHEMATIC DIAGRAM

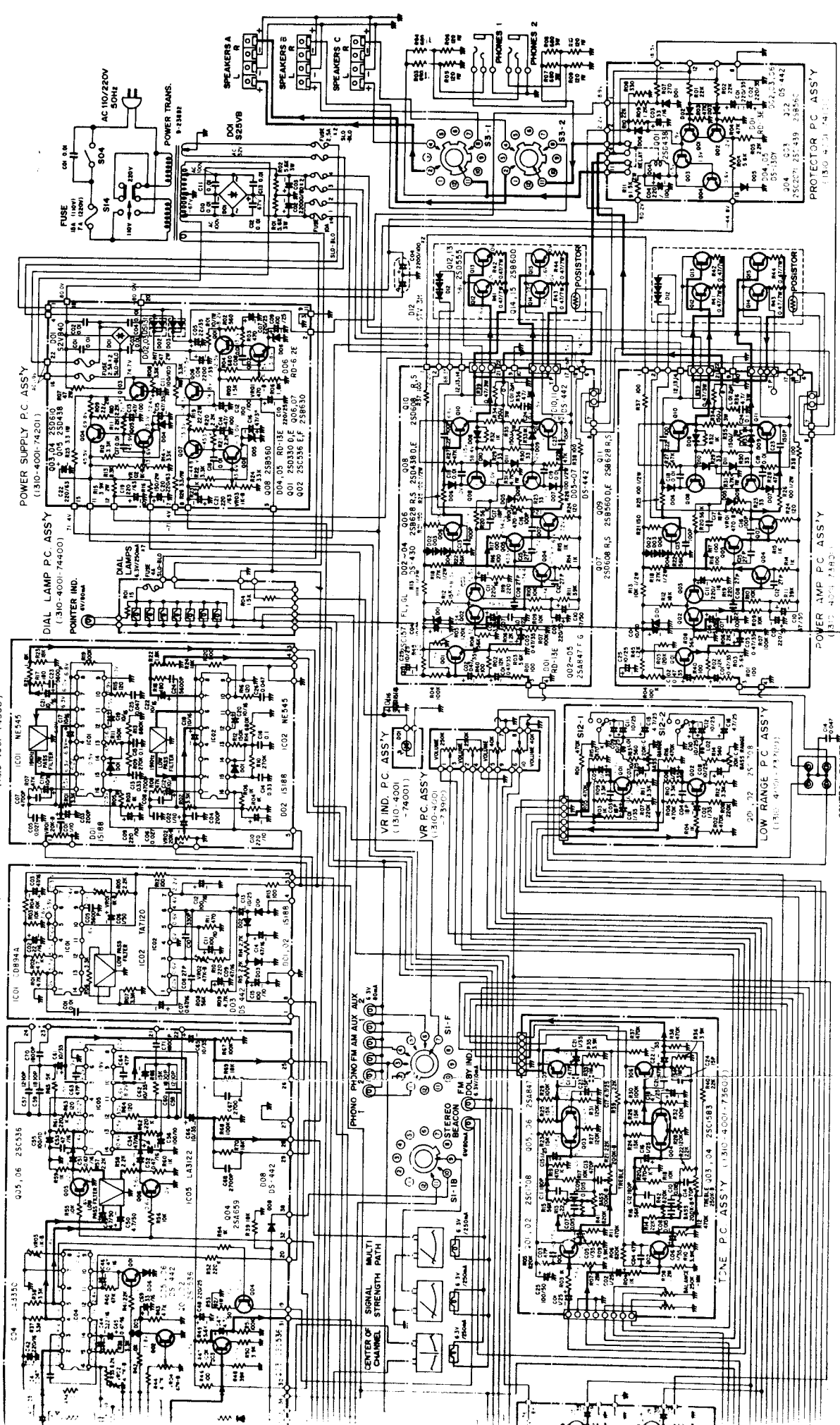


S-1080 SCHEMATIC DIAGRAM

IF MPX PC ASS'Y
(1310-4001-74302)

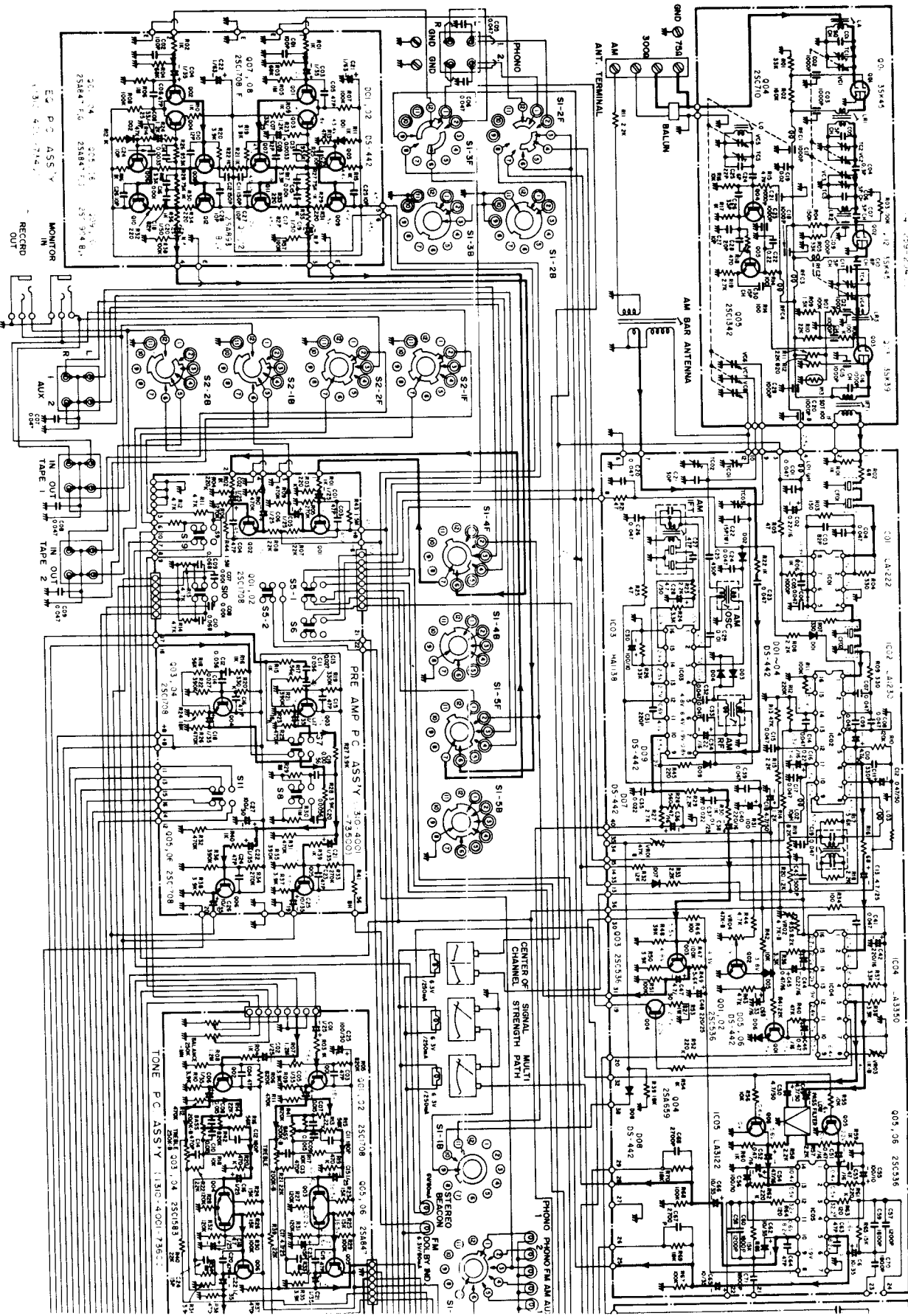
MULTI PATH PC ASS'Y
(1310-4001-74600)

DOLBY PC ASS'Y
(1310-4001-74500)



RS-1080 SCHEMATIC DIAG

IF MPX P.C. ASS'Y
1310-4001-743021



FRONT END
4 259-2744

EQ P.C. ASS'Y
1310-4001-743500

MONITOR
IN

REC'D
OUT

AUX
1

IN
OUT

TAPE
1

IN
OUT

TAPE
2

IN
OUT

REC'D
OUT

PHONO
FM AM

STEREO
FM

MONO
FM

REC'D
OUT

PHONO
FM AM

STEREO
FM

MONO
FM

REC'D
OUT

PHONO
FM AM

STEREO
FM

MONO
FM